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# FOREWORD

Intellectbase International Consortium (IIC) is a professional and academic organization dedicated to advancing and encouraging quantitative and qualitative, including hybrid and triangulation, research practices. This Volume contains articles presented at the Fall 2012 conference in Atlanta, GA – USA from October 18-20, 2012.

The conference provides an open forum for Academics, Scientists, Researchers, Engineers and Practitioners from a wide range of research disciplines. It is the twenty fourth (24<sup>th</sup>) Peer-Reviewed Volume produced in a unique format. The theme of Intellectbase Academic conferences is “MULTI-DISCIPLINARY FOUNDATIONS and INTELLECTUAL PERSPECTIVES”

Intellectbase International Consortium is responsible for publishing innovative and refereed research work in the following hard and soft systems related disciplines – Business, Education, Science, Technology, Music, Arts, Politics, Sociology (BESTMAPS), as designed on the back cover of the proceeding. These subsequent disciplines: Law, Anthropology, Theology and Entrepreneur (LATE) will be included in the next Volume.

The scope of the proceeding (International Handbook of Academic Research & Teaching - IHART) highlights the following philosophical format: original research titles, abstracts, introductory concepts, literature reviews and data collection, choice of methodology, hypothesis-based composition, creative and convincing arguments, research design, data reliability and evaluation, findings and analysis, data interpretation, conclusion with intellectual contribution, research limitations (weakness) acknowledgement, etc.

The theme “multi-disciplinary foundations and intellectual perspectives” of the proceeding is related to *pedagogy, research methodologies, organizational ethics, accounting, management, leadership, marketing, economics, administration, policies and political issues, health-care systems, engineering, multimedia, music, arts, sociology, psychology, eBusiness, technology information science, law, theology and other disciplines*. Intellectbase International Consortium promotes broader intellectual resources and exchange of ideas among global research professionals through a collaborative process.

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Senior, Middle and Junior level scholars are invited to participate and contribute one or several article(s) to the Intellectbase International conferences. Intellectbase welcomes and encourages the active participation of all researchers seeking to broaden their horizons and share experiences on new research challenges, research findings and state-of-the-art solutions.

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Daleen	van Biljon	Regional Manager of Khulisa		South Africa
Sanet Jansen	van Rensburg	Potchefstroom Service Centre for the Aged		South Africa
Victor A.	Vega-Lozada	Universidad de Anahuac/University of Phoenix		Mexico and USA
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Glee	Whitsett	University of Montevallo	AL	USA
J. D.	Williams	Kutztown University	PA	USA
Jiaqing	Yang	Georgia College & State University	GA	USA
Eric Jen-Hsiang	Yang	The George Washington University	DC	USA

## LIST OF INSTITUTIONS, STATES AND COUNTRIES

<b>Institution</b>	<b>State</b>	<b>Country</b>
Air University		USA
Alabama Agricultural and Mechanical University	AL	USA
American InterContinental University	CA	USA
Athens State University	AL	USA
Bellevue University and Walden University		USA
Borough of Manhattan Community College	NY	USA
Chasse Consulting	TX	USA
Clark Atlanta University	GA	USA
Clayton State University	GA	USA
Curtin University	NSW	Australia
Dell, Inc.		USA
Emory University	GA	USA
Florida State College at Jacksonville	FL	USA
George Washington University	DC	USA
Georgia College & State University	GA	USA
Guangxi Teachers Education University		China
Hunter College	NY	USA
IAP Worldwide Services Inc.	FL	USA
Inter American University of Puerto Rico	PR	USA
Inter-American Development Bank	VA	USA
International Islamic University Malaysia		Malaysia
Jacksonville University	FL	USA
Kennesaw State University	GA	USA
King Saud University		Saudi Arabia
Kutztown University	PA	USA
Lander University	SC	USA

## LIST OF INSTITUTIONS, STATES AND COUNTRIES<sub>(CONTINUED)</sub>

Institution	State	Country
Lane College	TN	USA
Mercer University	GA	USA
Mid-Continent University		USA
Middle Tennessee State University	TN	USA
Mississippi State University	MS	USA
Morgan State University	MD	USA
North Greenville University	SC	USA
North-West University		South Africa
Norwegian University of Science and Technology		Norway
Nova Southeastern University	FL	USA
Penn State University	PA	USA
Perkins Coie	DC	USA
Potchefstroom Service Centre for the Aged		South Africa
Regional Manager of Khulisa		South Africa
Saint Leo University	GA	USA
San Diego State University	CA	USA
Shorter University	GA	USA
Southern Polytechnic State University	GA	USA
Strayer University	AL	USA
Swinburne University of Technology		Australia
Tennessee State University	TN	USA
The George Washington University	DC	USA
Troy University	AL	USA
Universidad Anáhuac Norte		Mexico
Universidad de Anahuac/University of Phoenix		Mexico and USA
Universidad del Turabo	PR	USA

## LIST OF INSTITUTIONS, STATES AND COUNTRIES<sub>(CONTINUED)</sub>

<b>Institution</b>	<b>State</b>	<b>Country</b>
University of Calabar		Nigeria
University of Miami	FL	USA
University of Montevallo	AL	USA
University of Puerto Rico	PR	USA
University of Puerto Rico - Mayagüez	PR	USA
University of Puerto Rico - Río Piedras	PR	USA
University of South Carolina Aiken	SC	USA
University of St. Thomas	TX	USA
University of West Georgia	GA	USA
University of Wisconsin-Stout	WI	USA

# TABLE OF CONTENT

<b>LIST OF CONTRIBUTORS.....</b>	<b>VIII</b>
----------------------------------	-------------

<b>LIST OF INSTITUTIONS, STATES AND COUNTRIES .....</b>	<b>VIII</b>
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## SECTION 1: BUSINESS & MANAGEMENT

Competitive Intelligence Process and Customer Service Assessment: SMEs Western Region of Puerto Rico <i>Samuel Vélez Miranda and José Gerardo Martínez Martínez .....</i>	<i>1</i>
Senior Leadership and Middle Management Impact on Lean Enterprise Initiatives <i>Elmer R. Humbert, Ron Mesia, Thomas Griffin and Ed Sherbert .....</i>	<i>9</i>
Poise - The 6th 'P' in the New Marketing Mix <i>J. D. Williams.....</i>	<i>21</i>
The Relationship Between Self Efficacy, Project Leadership Outcome and Future Intentions to Engage in Organizational Business Process Improvement Opportunities <i>Jim Mirabella and Elizabeth Chase.....</i>	<i>39</i>
Leadership Within Business Systems Thinking, and Ethical Dilemma in Today's Workplace <i>Oris Guillaume and Craig Cleveland .....</i>	<i>46</i>
Exploring the Determinants of Sustainability Commitment Level among Australia's Largest Listed Firms <i>Evangeline O. Eljido-Ten.....</i>	<i>53</i>
Could Mind-Stimuli Improve Sales Aptitude? <i>J.D. Williams.....</i>	<i>68</i>
Employee Development, Customer Satisfaction and Financial Performance in a High Contact Service Environment in Puerto Rico <i>María D. Vargas Arenas, Mario J. Córdova and Carlos Lebrón.....</i>	<i>79</i>
An Organizing Structure for Personal Income Tax Planning Updated for the 2012 Tax Year <i>Barbara Poole and Thomas Langdon.....</i>	<i>90</i>
Technical Aspects and Psychological Stress of Federal Government Contracting <i>Peggy Jackson, Loren Garner and Aikyna Finch.....</i>	<i>102</i>
More About the Decrease in the Velocity of Money in the United States: Some Potential Causes and Policy Implications <i>Harrison C. Hartman.....</i>	<i>108</i>
Integrity and Ethics in Leadership <i>Richard Murphy, William Crosby and Jim Mirabella .....</i>	<i>125</i>
Evaluating Export Market Destinations <i>Amarilis Santiago-Rivera, María Amador-Dumois, Mario J. Córdova-Claudio and Rosario Ortiz-Rodríguez .....</i>	<i>134</i>
Sales Engineers Impact on New Product Development <i>J. D. Williams, Christoph Fischer, David McGonigal and Eric Maher .....</i>	<i>147</i>
The Relationship Between the Type of Endorser and Patients' Attitudes and Behaviors in Direct to Consumer Advertisement <i>Rana Salman and Jim Mirabella.....</i>	<i>163</i>
What to do When a Salesperson Fails? <i>J.D. Williams.....</i>	<i>168</i>
My Personal Take on Business Ethics <i>Peggy Jackson .....</i>	<i>174</i>
Ethics: A Seemingly Insurmountable Challenge for Marketing Research Firms <i>J. D. Williams and Kristen Maehrer .....</i>	<i>182</i>

The Relationship Between Customer Incentives and Customer Service Scoring <i>Jim Mirabella and Jeremy Smith</i> .....	195
Market-Driven Firms: Is its High Energy Too Much for its Employees? <i>J.D. Williams, JianNan Ke, George Markert and Kellsey Maxwell</i> .....	199
Moderating Effect of Human IT Infrastructure in the Relationship Between IT-Business Alignment and Business Performance <i>Isabel Rivera-Ruiz and Edgar Ferrer-Moreno</i> .....	210
Raising the Levels of Interpersonal Conflict in Industrial Sales Environments <i>J. D. Williams, Christopher Hine, Thomas Sywensky and Matthew Blumberg</i> .....	218
Effects of Geographic and Demographic Dispersion on the Performance of System Engineering Teams <i>Marco Segura, Shahram Sarkani and Thomas Mazzuchi</i> .....	227
The Relationship of Cultural Experience and Attitudes and Willingness to Accept an Expatriate Assignment <i>Louis F. Jourdan Jr., Kenneth Tillery and Arthur L. Rutledge</i> .....	230
Islamic Ethics of Manufacturing <i>Muhammad Amanullah</i> .....	232
The Facebook Fumble: Analysis of an IPO <i>Uma V Sridharan</i> .....	233
An Examination of the Predictors of Organizational Citizenship Behaviour in the Banking Sector of Saudi Arabia <i>Anwar Rasheed, Mazen F. Rasheed, Khawaja Jehanzeb and Alam Zeb Aamir</i> .....	234
Emergent Behavior of the US Government Workforce: An Agent-Based Model of Worker Loyalty <i>Paul Shapiro, Shahram Sarkani, Thomas A. Mazzuchi</i> .....	235

## SECTION 2: SCIENCE & TECHNOLOGY

RFID Technology: Automating, Informating, or Strategizing? <i>Elham Mousavidin</i> .....	237
Using Tools, Properties and Models of Complexity Theory in Interdisciplinary Research <i>Charles Pierre, Gary Chung, Fisseha Abebe and Temesgen Kebede</i> .....	249
Integrating 3D Modeling to Support Sociological Research <i>Latina E. Davis and LeeRoy Bronner</i> .....	256
Using Chatbots to Easily Create Interactive and Intelligent FAQ Webpages <i>Alan Shaw</i> .....	268
Development of a Decision Support System Using Object Oriented Technology and Network Analysis <i>Kamara K. Conyette and LeeRoy Bronner</i> .....	272
The Effects of Sustainable Development on Technological Innovation Performance – an Empirical Approach <i>Eric Jen-Hsiang Yang, Shahram Sarkani and Thomas A. Mazzuchi</i> .....	282
Development of an Education and Workforce Model to Support Energy Efficient Building Innovations <i>Denis Kirumba and LeeRoy Bronner</i> .....	285
Mitigating Biodiversity Loss in Nigeria’s Rainforest Ecozone - Watershed Management Approach <i>Ani Nkang</i> .....	293
Development of a Green Campus Model Focusing on Energy Efficient Buildings <i>Montier Kess and LeeRoy Bronner</i> .....	300
Simulating Fixed Point Properties of a Two Dimensional Dynamical System <i>Temesgen Kebede, Fisseha Abebe, Charles Pierre and Gary Chung</i> .....	310
Engineering the Analysis and Evaluation of the HIV Epidemic <i>Janea Lowery and LeeRoy Bronner</i> .....	319
Combinatorial Dimensions of Sets <i>Lin Ge</i> .....	327
Time and Voltage Dependent Ion Flux Model Results <i>Brett A. Sims, Abdur-Rahman Munajj and Abdul-Waajid Munajj</i> .....	334
Developing an Energy Efficiency Model for Universities <i>William Emanuel, Corey Dickens and Albert Sweets</i> .....	338
What Happened at the Macondo Well: A Review of Offshore Drilling and the British Petroleum-Macondo Well Disaster of April, 2010 <i>Kenton Fleming</i> .....	340
Low SNR OFDM using Nonparametric Estimator <i>Victor A. Vega-Lozada and Angel Lambertt Lobaina</i> .....	341
Academic Department’s Workstations: A System Engineering Framework for Implementation of Security and Critical Patch Management Process (SCPMP) for Diverse Environments <i>Hadi Mohammadi, Shahram Sarkani and Thomas A. Mazzuchi</i> .....	343
Perception to Climate Variability and related Vulnerabilities in the Lake Bosomtwe Basin- Ghana <i>Emmanuel Acheampong</i> .....	344
Sustainability and Education Methodologies: Various Ways to Green the Business Curriculum <i>Anne Hoel, Sarit Levy, Doreen Sams, Sherry Robinson and Minna Rollins</i> .....	345

## SECTION 3: EDUCATION, POLITICAL & SOCIAL

Troy University's Secondary Education Internship Orientation: Fostering Stronger Reading Competencies: from The Prospective of a Visiting Chinese Scholar <i>Liqin Chen, Charlotte Minnick, Isabelle L. Warren, Pat Warren, Carolyn S. Russell</i> .....	347
Developing the Next Generation of Graduate and Doctoral Level Public Health and Safety Leadership Professionals in the US Federal Government through Leadership Development Internship Programs <i>Darrell Norman Burrell, William Quisenberry and Aikyna Finch</i> .....	354
Connections Between Playing Sports and Success in English Composition <i>Yvette Bolen, Bruce Thomas, Tony Ricks and James Reid</i> .....	357
The Effect of IT Ability on Social Capital, Knowledge Sharing and Student Retention <i>Jeffrey S. Siekpe</i> .....	363
Assessment Learning Style Considerations for Online Professional Science Graduate Programs <i>Aikyna Finch, Darrell Norman Burrell, Vanessa Graha<sup>1</sup> and William Quisenberry</i> .....	369
Teaching Tax Effectively Using the AICPA's Model Tax Curriculum <i>Gail D. Moore and Lara D. Cassidy</i> .....	381
Relating Online Flow Experience with Internet Addiction <i>Aurore Kamssu and Jeffrey Siekpe</i> .....	386
Relationship between the Experience of Death or Serious Injury/Illness and the Presence of DSM-IV Criteria-Based Generalized Anxiety among Older Adults <i>Ryan N. Schmidt and Jong Deuk Baek</i> .....	391
Is Ethics Education Necessary? <i>Aikyna Finch and Ouida McAfee</i> .....	404
Autism and the Criminal Justice System: Incompatible Differences <i>Rebecca Ingram, Barbara Lyons, Jeffrey Lee and Rhonda Bowron</i> .....	409
Body Mass Index Differences Between Undergraduate Physical Education Major Athletes Versus Physical Education Major Non-Athletes <i>James Reid, Yvette Bolen, Jonathan Ratliff, Kay Hamilton, Dana Ratliff</i> .....	418
Correlation of Student Housing and Academic and Social Performance – A Case Study <i>Blair Welch and Jiaqing Yang</i> .....	422
The Black Christian Students: Diary of a Social Movement <i>Sloan T. Letman III and Janell Bryant</i> .....	433
Relationship Between the Experience of Death or Serious Injury/Illness and the Presence of DSM-IV Criteria-Based Major Depression (MDD) Among Older Adults <i>Ryan N. Schmidt and Jong Deuk (JD) Baek</i> .....	447
A Review of Current Bully Etiology and Why School Bully Interventions Don't Work <i>Peter Ross</i> .....	466
The Benefits of E-Learning to Higher Education in Public Health and Public Health Research <i>Aikyna Finch, Darrell Norman Burrell and Ouida McAfee</i> .....	470
Some Businesses Have Been Asking: <i>Where are the Personal Development Skills Set Taught in Higher Education?</i> Your Authors May Have the Answer <i>J.D. Williams, Robert McCarthy, Taylor Kent &amp; Joshua Kester</i> .....	479
The Impact of E-Readers on Comprehension and Reading Interest <i>Jo Lynn Suell, Donald Ratchford, Tammy Cook and Holly Cost</i> .....	488
Evaluating the Student Learning and Teacher Effectiveness in Adult Health Nursing Utilizing a Jeopardy Game <i>Joyce W. Pompey</i> .....	491

Social Comparison Theory, Media Exposure, and Body Dissatisfaction Among African American Women at a Historically Black University <i>Kisha M. James, Joan E. Popkin and Mary V. Shelton</i> .....	495
Online Students Preference in Learning Activities <i>Jo Lynn Suell and Glee Whitsett</i> .....	518
The Content of an Empowerment Program for Retired Volunteers at a Service Center for the Elderly <i>Sanet Jansen van Rensburg and Herman Strydom</i> .....	522
Predictors of Parent and Peer Attachment in African American College Students: Fatherless Versus Dual Parent Homes <i>Ariane S. Narain, Joan E. Popkin and Mary V. Shelton</i> .....	524
Youth In Conflict With the Law: A Diversion Program to Improve Their Psycho-Social Functioning <i>Corinne Strydom and Daleen van Biljon</i> .....	532
Code of Medical Ethics in Islam: A Case Study of The Code of Medical Ethics for Malaysian Muslim Doctors <i>Muhammad Amanullah</i> .....	533
Higher Education: Teetering on the Brink of Irrelevancy <i>Rodney Davis</i> .....	534
Views and Perceptions of Tennessee State University Students on the Efficacy of Online College Courses at Tennessee State University <i>Samad Dimbie-Mumuni</i> .....	535

# **SECTION 1**

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## **BUSINESS & MANAGEMENT**

# COMPETITIVE INTELLIGENCE PROCESS AND CUSTOMER SERVICE ASSESSMENT: SMES WESTERN REGION OF PUERTO RICO

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## SUMMARY

*The objective of this study was to assess whether there is a positive relationship between the process of Organization Competitive Intelligence and the key indicator of performance: customer service, using as a case study small and medium-sized enterprises, i.e. SMEs, originated with native or Puerto Rican capital in the manufacturing segment of the Western region. It was determined that there is no significant relationship between the process of competitive intelligence and the key performance indicator.*

**Keywords:** *Competitive Intelligence Process, Customer Service, SMEs.*

## INTRODUCTION

### Background

In today's global economy, the term *competitive intelligence* (CI) is a key factor to optimize the position of companies and corporations in the market, as exposed in Stauffer (2003). On the other hand, Bose (2007) refers to the definition established by Calof & Skinner (1998) to indicate that competitive intelligence are actionable recommendations that arise from a systematic process that involves the following factors:

- *planning and management of the program or process*
- *collection of data*
- *analysis of the data*
- *-communication and dissemination of information obtained from the external environment in the organization.*

Bose (2007) also indicates that the information gathered should provide growth opportunities that deliver a potential impact on the competitiveness of the company or the country's situation. The goal of the process is that the Organization or Department may have the knowledge or the necessary intelligence for strategic decision-making, which will lead them to a competitive advantage in the market.

### Problem

Studies show the usefulness of competitive intelligence in small and medium-sized enterprises in various countries. At the time, it is necessary that both small and medium-sized enterprises in Puerto Rico identify its usage, determine the effectiveness of the process and its components, and measure the impact of the process of competitive intelligence through the key performance indicator: customer service.

### Objective

The objective of this study was to assess whether there is a positive relationship between the process of competitive intelligence of the Organization and the key performance indicator: customer service, using as a case study the SMEs originated with native or Puerto Rican capital in the segment of manufacturing in the Western region.

### Justification of the Study

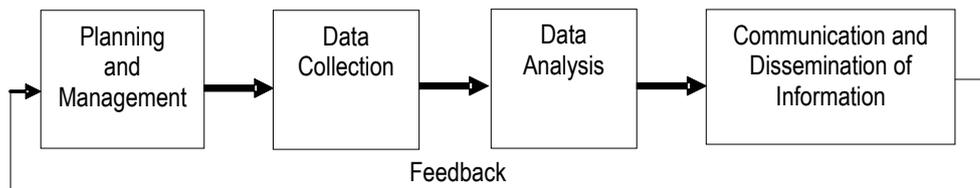
This research study is justified from various perspectives. The importance of SMEs in the economy and economic development of Puerto Rico, the value of the information in any organization of work, the importance of internal knowledge to achieve competitive advantage, and the relevance of the process of competitive intelligence for collecting data and information from the external environment to optimize customer service.

## Research Question

1. What is the relationship between customer service as a key indicator of performance and (a) planning and management (b) data collection (c) data analysis, and (d) the dissemination and communication of information of the competitive intelligence process?

## THEORETICAL FRAMEWORK

The theoretical framework is based on the definition of the concept of competitive intelligence of Bose (2007). It should be noted that the concept of competitive intelligence is both a process and a product. It is a process, i.e. a systematic and organized sequence of steps or stages that culminates in a product, i.e. gained information (Calof & Wright, 2008). In this sense, it integrates both concepts and definitions applied to the SMEs with native or Puerto Rican capital as shown in Figure 1.



**Figure 1:** Theoretical framework: competitive intelligence process (Calof & Skinner, 1998)

This theoretical model covers *the process of competitive intelligence* and the product which are the same. It includes the steps of: planning and management of the process, collecting or obtaining data, data analysis and, lastly, the communication or dissemination of data transformed into actionable information for internal and external use of the Organization (Wright & Calof, 2006).

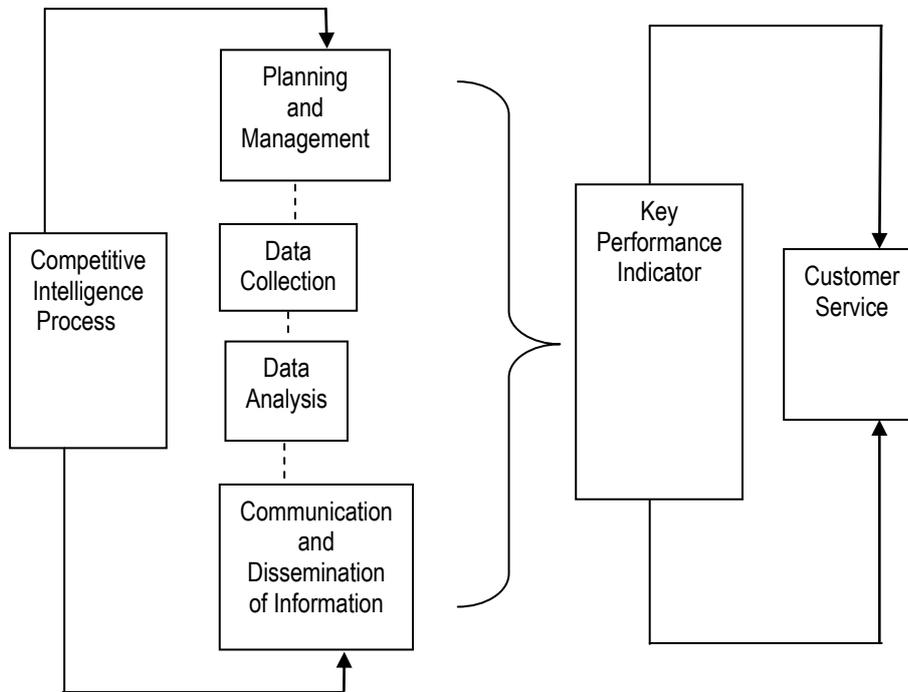
The stages of the planning and management seek to identify the requirements that the company has in terms of the information needed: why, for whom, and when. Defining the information needs of the company in terms of what information is needed, why it is needed, and when it is needed (Bose, 2007).

Once the process has been scheduled, the data is collected. In doing so, the researcher identifies potential sources of information, searches and collects data to answer the information questions that have been identified by users. In addition, legal and ethical aspects of all available data and information sources are determined (Bose, 2007).

After the data collection stage is completed, it is followed by the data analysis a crucial stage, where the collected data is reviewed to identify patterns, relationships, or anomalies between them. In other words, it consists of the interpretation and the transfer of raw data into actionable intelligence that will improve the planning and decision-making or allow the development of strategies to support a sustainable competitive advantage. Therefore, the analysis stage must yield a recommendation for a specific action (Bose, 2007).

The next stage is the dissemination and communication of information gathered to the people who make decisions in a simple way to understand within the company. It is conceptually the final product and usually occurs through reports, meetings, or balanced progress cards (Miller, 2001 & Krizan, 1999).

This study presents a conceptual model based on the *process of competitive intelligence* of Bose (2007) incorporating the management of knowledge in the company; validated with the key indicator of organizational performance: customer service. This model seeks to determine the possible relationship between the process of competitive intelligence and customer service. Consequently, it measures the level of relationship between the components of competitive intelligence process and the key performance indicator: customer service, as shown in Figure 2.



**Figure 2:** Conceptual framework

## METHOD

### Hypothesis

*H<sub>1</sub>*: There is a significant relationship between customer service as a key indicator of performance and a) planning and management b) data collection c) data analysis, and d) communication and dissemination of information in the process of competitive intelligence.

### Research Design

This study was completed through the use of a validated questionnaire that was randomly distributed between the identified sample. The questionnaire consisted of 19 closed questions which sought to determine the relationship, if any, between the service to the customer and the competitive intelligence process.

### Population and Sample

The population (N) consisted of 316 SMEs located in the so-called corridor *Puerto Rico Technoeconomic Corridor, PRTEC*. At the same time, the sample was comprised of owners, managers, administrators or persons responsible for strategic decision-making within each company. For research purposes, only those companies with five hundred (500) employees or less were used.

### Description of the Research Questionnaire

A questionnaire was constructed to determine the relationship between the components of the competitive intelligence process, i.e. the planning and management, data collection, data analysis, dissemination and communication of information and the key performance indicator, customer service. The questionnaire consisted of nineteen (19) questions covering several areas which were coded for the analysis as follows (a) the process of competitive intelligence in general (PCI), (b) the planning and address (PLA), (c) the collection of data (DAT), (d) the analysis of the data (ANA), (e) the dissemination and communication (DIS) and (f) customer service (SER).

The assertions were built in a positive way. These were answered using the Likert scale of five (5) evaluation criteria, on a scale from one (1) very much in disagreement, to five (5) agree. Space was also provided to write a comment or point.

## Procedure

Based on data from the *Census of the United States in 2008*, companies were identified to be contacted on the basis of the definition used for the study of the small and medium enterprises. The reliability of the questionnaire was established through a pilot study that examined 15% of the population (N = 115), resulting in 17 questionnaires. Established in this way to not deplete the sample size (n = 44). The internal consistency of the contents of the questionnaire was determined by the index of Cronbach (with a minimum rate of 0.70), obtaining the questionnaire a rate of 0.91.

## Statistical Analysis

The collected data were analyzed using the test (a) Pearson, (b) ANOVA, (c) t-test, (d) descriptive statistics, such as mean, figures, tables, and (e) side effect analysis. The importance of the results of the study lies in having determined if there is a significant relationship between the components of the process of competitive intelligence and customer service.

## Demographic Data

According to information from the *Census of the United States of America* for the year 2008, the Western region of Puerto Rico called PRTEC consisted of 316 enterprises SMEs. However, due to the economic situation of the country, at the time of administering the questionnaire there were a total of 115. As a result, the optimal sample size for the study was adjusted. For the initial sample, an acceptable margin of error of 0.031 for a reliability of 96.9% was identified. For the sample set, there was an acceptable range of error of 0.033 for a reliability of 96.7%, according to Bartlett, j., Kotrick, j. & Higgins, C. (2001) (Refer to Table 1).

**Table 1: Population and Sample for the Study**

	Population	Sample	Percentage	Acceptable Margin of Error
Census 2008	316	95	30.06	0.031
RPE 2011	115	44	38.26	0.033

## FINDINGS

Cronbach statistics were calculated to determine the instrument's internal validity (See Table 2). It was concluded that the instrument has a very good internal consistency.

**Table 2: Values of Cronbach.**

	PCI	PLA	DAT	ANA	DIS	SER		
Reagent	0.562	0.865	0.518	0.499	0.644	0.961		
Reagent / process	global variables (5) five 0.808					0.961		
Test	global variables (6) six 0.907							

The questionnaire was distributed to 52 SMEs in the Western region of Puerto Rico, called PRTEC, of which 44 responded, for an 84% response rate. The results are presented in Table 3.

**Table 3: Usage of the Competitive Intelligence Process**

Response	Usage	Percentage
Yes	14	31.82
Not	19	43.18
Undecided	11	25.00

As indicated in the *Literature Review*, the process of competitive intelligence is made up of four components that produce the data and information necessary for decision-making. It is important that these be completed

progressively. For that reason, it was assessed if there is a statistically significant relationship between processes sequentially. From the procedural point of view, there are moderate and statistically significant correlations between the components of the process of competitive intelligence. Refer to table 4, which shows a strong relationship between the components, thus validating the theoretical framework.

**Table 4:** *Correlations Between the Components of the Competitive Intelligence*

	$r_s$	P	Determination
PLA – DAT	0.574	0.000	Moderate and statistically significant correlation
DAT – ANA	0.545	0.000	Moderate and statistically significant correlation
ANA – DIS	0.367	0.014	Moderate and statistically significant correlation

$n = 44$

Table 5 presents the results on the relationship between the process of competitive intelligence and key performance indicator: customer service.

**Table 5:** *Summary of the Results of the Research Question*

Relations	Theoretical Framework	Statistics Used	Decision of the Research Question
PCIGEN - SERGEN PLA – SER	Baggs & Kleiner (1996); Bailine & Dall (2004); Miao & Wang (2007); Robbins & Coulter (2009) Spencer-Matthews & Lawley (2006) Miao & Wang (2007), Turban <i>et to the.</i> (2002)	Spearman  Pearson  Linear regression	The relationship is not significant $r(44) = -0.170, p = 0.915$  The relationship is not significant $r(44) = 0.003, p = 0.986$  Does not predict the variable customer service
DAT – SER		Pearson  Linear regression	The relationship is not significant $r(44) = -0.050, p = 0.975$  Does not predict the variable customer service
ANA – SER		Pearson  Linear regression	The relationship is not significant $r(44) = -0.050, p = 0.975$  Does not predict the variable customer service
DIS – SER		Pearson	The relationship is not significant $r(44) = 0.028, p = 0.085$
PLA, DOT, ANA, DIS – SER		Linear regression Multiple regression	Does not predict the variable customer service  The model does not predict the variable customer service $F(1,42) = 0.383, p < 0.820$

## DISCUSSION

### Research Interest

The completed study demonstrated that all companies, including the SMEs of manufacturing in the Western region of Puerto Rico, PRTEC, can benefit from the process of competitive intelligence, as defined by Poulsen & Bailetti (2008), Bose (2007) and Guimarães (2000), among others.

This study validated the aspect that competitive intelligence is both a product, i.e. data and information arising from the same, and a structured process, i.e. components of planning and management, data collection, analysis of data and the communication and dissemination of information. This is in accordance with stipulations by Wright & Calof (2006) who established that the process of competitive intelligence is not merely a simple process of collection of data and information, but it contains a more comprehensive approach that includes an understandable structured process.

### **Process of Competitive Intelligence and Customer Service**

This study demonstrated what was established by Bailine & Dall (2004). They pointed out that the level of quality of customer service has decreased recently, and it is attributed to the lack of support and understanding by the top management and media policies of satisfaction to the customer. There is no statistically significant relationship between the components of the process of competitive intelligence and customer service.

This research validated Miao & Wang (2007) findings. They found no statistically significant relationship between competitive intelligence and optimal treatment to enterprise customers. In addition, they mentioned that organizations have to determine what customers want, so they may use that information to create products and satisfactory services.

The study pointed out the need to put in place mechanisms to listen to what customers want. In this manner, Emerald Group Publishing Ltd. (2009) exposes the key aspect that must be present in customer service, i.e. pay attention to the voice of the customer.

This research study did not find a statistically significant relationship between the process of competitive intelligence and the dissemination and communication of information. Robbins & Coulter (2009) set out that companies that provide excellent service to customers must have strategies that cultivate this guideline at all levels of the company. However, the idea of having a system of direct and effective communication with customers that gives managers the information necessary to establish action plans for the satisfaction of the clients was not validated in this study.

The hypothesis was answered stating no statistically significant correlations were found in the variables of planning and management, data collection, data analysis, communication and dissemination of information, and customer service.

### **Contribution of the Study**

The results of this study contribute in various areas of business administration. These are: the management of *SMEs*, *SMEs* in manufacturing in Puerto Rico, the management of human resources, the handling of the data, information and knowledge within the company, and service to the client.

First, it provides information on the administration of the *SMEs* in Puerto Rico, which is an economic sector of Puerto Rico with few scientific studies and literature on the subject. In addition, it identifies how the flow of data and information within these companies is and the importance that customer service has for them. In this sense, the study provides information relevant to the discipline of business management.

A significant fact is that the study presents what the ratio of the *SMEs* of manufacturing is in the Western region of Puerto Rico who have used the process of competitive intelligence. It was found that only 43.48% of these had not used it.

Secondly, it contributes to the discipline of study of human resource management how data is handled, information disseminated, and knowledge conveyed in small and medium-sized manufacturing companies. As the study suggests, there is no significant relationship between the process of competitive intelligence and customer service.

Thirdly, it is interesting how the study upshots about customer service, item of great importance today in the business. It also validated Bailine & Dall (2004) findings, which establish that the level of quality of customer service has decreased recently, and is attributed to the lack of support and understanding by the top management and media policies of satisfaction to the customer.

As a fourth point, in addition to the above, the study allows SMEs have a point of reference about which aspects are important to have a healthy and productive competitive intelligence process. This gives an overview of what is required, i.e., relevant information, systems of communication and dissemination of information, interest groups, among other considerations.

Finally, small and medium-sized enterprises may use this questionnaire to validate its degree of competitive intelligence. The questionnaire has an index of Cronbach of 0.907, which is indicative of very good internal consistency.

### **Theoretical Implications Arising from the Discussion**

The theoretical implications of the study are: (1) there is no significant relationship between the product of the process of competitive intelligence and customer service, (2) the importance to follow a structurally competitive intelligence process, and (3) the dynamics of the flow of data, information, and knowledge in the *SMEs*.

### **Findings of the Study**

1. There is a relatively medium usage of the process of competitive intelligence in the *SMEs* of manufacturing in the Western region of Puerto Rico, PRTEC.
2. There is no statistically significant relationship between the product and the components of competitive intelligence and customer service.

### **Limitations of the Study**

1. The population and the sample of the study participants are limited.
2. The availability of the participants to answer the questionnaire.
3. Given that the study was designed to examine the potential relationship between the process of competitive intelligence and customer service, the same results cannot be easily extrapolated out of the sample.

### **Recommendations for Future Studies**

1. Complete additional studies involving the relation or effect of the process of competitive intelligence with other key performance indicators.
2. Extend the study to other regions of Puerto Rico, countries or regions of the world.
3. Analyze the relation or effect of the process and the product of competitive intelligence with relevant demographic data.
4. Assess whether the personality of managers of the *SMEs* has an effect on the competitive intelligence process.
5. Complete an inquiry on which performance indicators are most important in the *SMEs* in Puerto Rico.

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# SENIOR LEADERSHIP AND MIDDLE MANAGEMENT IMPACT ON LEAN ENTERPRISE INITIATIVES

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## ABSTRACT

*Lean Enterprise Initiatives (LEIs) have been recently applied to several commercial large volume manufacturing processes with minimal variation in the automobile and aerospace industries, with continued success, Murman, et al., (2002). The study showed that there was some correlation achieved by applying LEIs to value stream analysis, supply chain management, total quality management, six sigma, ISO certifications, and process reduction initiatives to low volume manufacturing processes with multiple variations typically found in the defense industry. This research attempts to show if there are significant difference between the viewpoints of senior leadership and middle management toward LEIs at Department of Defense contractors. This research found that that no significant correlation was identified between these two variables.*

**Keywords:** *Lean, KPM, Department of Defense, Supply Chain, Defense Contractor, Management.*

## INTRODUCTION

The primary purpose of this research is to identify if there are significant correlation between the views of senior leadership and middle management on LEI. According to Huthwaite (2004), the word “lean” has its roots in the lean manufacturing revolution that has been sweeping the industrialized world. The word “lean” itself was coined by a researcher, John Krafcik working on the MIT team that eventually gave the world the classic book, *The Machine That Changed the World*.

This study was conducted to determine the correlation of defense contractors implementing LEIs such as: value stream analysis, supply chain management, total quality management, six sigma, ISO certifications, continuous improvements and process reduction initiatives in their companies and correlating changes in KPMs, such as: financial, manufacturing methods, quality management and environmental management.

## Problem Background

The senior leadership of the DoD and their counterparts in defense contractor organizations has been searching for ways to include contract incentives addressing the challenges of a dynamic evolving defense budget and still meet the financial margins required to keep stakeholders satisfied. Addressing these incentive strategies, Under Secretary of Defense, J. Gansler (2001), has stated that contractual incentives should target the business relationship between the government and the contractor in such a way as to produce the maximum value for taxpayers, for the contractor, for the war fighter, and for the organization in pursuit of its mission. The defense contractor workforce must not only improve its ability to use existing contractual incentives, but also develop a range of new and innovative contractual incentives.

To meet these DoD challenges, this study may show if a statistically significant correlation exists between LEIs and KPMs. A correlation could show relationships between the efficient production of DoD products, services and systems, the reduction of costs and increased product quality. The Lean Aircraft Initiative Policy Focus Group (1996) investigated the adoption of commercial practices in the DoD and discovered:

This senior leadership commitment to remove roadblocks and empower employees conveys the acceptance of LEI principles throughout the organization. This support also includes the funding of LEI projects in an effort to meet DoD, corporate, and stakeholder objectives.

## **Problem Statement**

The senior leadership of the DoD and defense contractor organizations is committed to the implementation of LEIs in the defense industry. Under Secretary of Defense, J. Gansler (2001) has stated "...action by (DoD) leadership that not only talked about change, but also accepted the responsibility for implementing change and formed a partnership with industry to make change a reality." This quantitative study surveyed functional organizations including; program management, operations management, environmental management, engineering management, quality management, and the senior leadership (director and above) of full time defense contractor employees. These survey participants represented the organization in determining how the views of defense contractor senior leadership differ from the views of middle management regarding LEIs. If such a correlation were found, the study findings could provide information to the DoD and defense contractors for additional expansion of LEIs throughout the defense industry.

## **Purpose of the Study**

The purpose of this quantitative correlation research study is to determine the degree to which the defense contractor senior leadership defers from the views of middle management regarding LEIs. The conclusions and recommendations of this research may provide the senior leadership of the DoD and defense contractor organizations a basis to promote the use of LEIs in their organizations to reduce costs maintain critical delivery schedules and adhere to product quality requirements. According to Warren (1998), "DoD is attempting to bring about a revolution in its business and support operations by identifying and adapting the best business practices from the private sector."

## **Significance of the Study**

This study was significant in the study of leadership and organizational performance. When the senior leadership of organizations supports employee implementation of LEIs by directives and improvement measures, it provides a foundation for both the DoD and defense contractors to work together. By creating an organizational atmosphere of contract incentives and initiatives to advance technology and implement LEIs, defense contractors can supply products, services, and systems to the DoD at reduced costs, on schedule and satisfy program quality requirements.

The DoD is awarding more contracts to defense contractors who provide the best overall value to the Government in all evaluated areas. The senior leadership of the DoD and defense contractor organizations is committed to the implementation of LEIs in the defense industry. This commitment balances the objectives of both organizations by offering additional market share to defense contractors and satisfying the financial and technical requirements of the DoD when awarding best value contracts.

This study, using a correlation matrix design, tested and answered the research questions by comparing them through analysis of the data collected and statistically test the stated hypotheses. In order to extend Johnson, Sun, & Johnson (2007), research to the defense industry, the following question must be worded within the same context to guide the correlation study.

How do the views of defense contractor senior leadership differ from the views of middle management regarding LEIs?

## **Theoretical Framework**

The senior leadership of the defense industry can use the results of this study to determine if efforts to implement LEIs in their organizations are warranted. Moreover, since implementing LEIs may be a long-term venture, these senior leaders may elect to supplement these initiatives with specific DoD and company policies to compensate for an identified organizational deficiency in lean enterprise levels.

The information obtained from this study will advance the knowledge of the DoD and defense contractors providing insight into the operational, organizational and leadership aspects of the implementation of LEIs. The correlation between LEIs and KPMs can be of assistance to future corporate strategies as senior leaders prepare their organizations to meet the challenges and demands of the defense budgets and defense industry stakeholders.

## Assumptions

The following assumptions are included in the preparation of this study.

1. All participants responded to the best of their knowledge.
2. The survey answers of the participants are representative of defense contractors.
3. The sample size is a good representation defense contractor.
4. The Web survey was the primary means of data collection.
5. This is a controlled survey.

## Scope and Limitations

This study was limited to full time employees of defense contractors who voluntarily agreed to respond to the survey. The findings from this research are sought to gain a level of understanding and interpretation of LEIs affecting changes to the KPMs in defense contractors. The size of the sample could pose limitations and generalizations of the study results to defense contractors. This research is also limited by the honesty of the survey participants and the amount of time available to conduct the study. The reliability and validity of this study is limited by the reliability and validity of the original (Automobile Industry) study that was established in the research performed by Johnson, Sun, & Johnson (2007).

## LITERATURE REVIEW

This wake-up call for U.S. industry was the identification of Japanese Lean methods that transitioned from Toyota to General Motors and other U.S. automobile manufacturers. These lean methods were than embraced by Boeing and the aerospace industry and finally by the U.S. Air Force and the defense industry. According to Murman, et al., (2002):

Many industries establish a set of values and culture that dominates its thinking and behavior. They go through phases of development periods in which they evolve because of changes in the industry, technologies, the marketplace, competition, (and) consumer preferences. As consumer values changed in the Automobile Industry to smaller, more fuel efficient, more reliable and safer automobiles, the U.S. Automobile Industry needed a wake-up call from Japan to react to this change.

Recently, DoD budget cuts by Congress are forcing the military and other DoD organizations to rethink the acquisition of its products, services and systems by taking advantage of the implementation of LEIs by contractors in the defense industry to meet the DoD challenges to and stakeholder objectives.

According to Chandler (1977), Henry Ford, in the early 1900s, refined the mass production of automobiles with the use of the assembly line. All assembly line operations were linked and synchronized so there was a set rate that the assembly line had to meet. The Ford automobiles were all painted black and used common parts, which reduced manufacturing costs. These production initiatives led to high volume manufacturing in the automobile industry. The combination of high volume and reduced costs helped make Ford automobiles affordable to a majority of consumers. The National Academy of Engineering (2008) stated "The savings in time and money were so dramatic that the assembly line approach was soon extended to virtually every phase of the manufacturing process."

Integration of mass production with mass distribution afforded an opportunity for manufacturers to lower costs and increase productivity through more effective administration of the processes of production and distribution and coordination of the flow of goods through them. The first industrialists to integrate these two basic processes did so

because the existing salespersons were unable to sell and distribute products in the volume they were produced (Chandler, 1977).

By making the transactions between units routine, the costs of these transactions were lowered and by linking the administration of producing units with the purchasing and distribution of units, market costs, and suppliers were reduced. This allowed the internalization of many units to permit the flow of goods from one unit to another to be administratively coordinated. This achieved effective scheduling and a more constructive use of facilities and personnel employed so the increased productivity and reduced costs in the overall production of the automobile.

The senior leadership of Boeing wanted to streamline these Lean Principles, believing the company's organizations would operate more efficiently, experience a reduction in production costs, and remain competitive in foreign markets within the aerospace industry. Resolving issues that arise within organizations is the responsibility of its senior leadership. This can be accomplished by creating a successful working environment in which employees can share beliefs and values.

Cultures represent unique basic assumptions to their organizations (Schein, 1999), and since they represent human beliefs and values, they are susceptible to change from time to time to resolve conflicts and pressures. The culture created by Boeing's senior leadership needed to provide a purpose and common goal in the organization. According to Schein (1997), "The bottom line for leaders is that if they do not become conscious of the cultures in which they are embedded, those cultures will manage them."

The team responsible for making recommendations for change within an organization should be focused on the implementation of changes leading to successful business strategies and the accomplishment of the identified business goals. Schermerhorn, Hunt, & Osborn (2003) state: "... innovative organizations benefit from top-management support...(and) employees know what needs to be done, and management's job is to trust and help them to do their best." Changes require senior leadership support within the organization to be successful, but the change also needs the employees to believe in the corporation's new vision. Carr and Hard (1996) state: "we are extremely serious about the need for all employees to buy into the new corporate culture and to participate in the change process." The implementation of lean within the organization is a long-term process that requires corporate senior leadership support with a large initial investment in the form of employee training by specialty consultants.

## **Need for Current Research**

The need for this research exists because the DoD has challenged defense contractors to use their business strategies in achieving goals to the benefit of both parties. Defense contractors are using LEIs to meet these challenges and achieve these goals. This research will provide the basis for answering this challenge and can address if this same research can be applied to other industries, products, services, and systems. The senior leadership of the DoD supports additional research by industry and academia. Under Secretary of Defense Gansler (2001) stated:

*Thorough market research should be conducted to develop a better understanding of the business strategy from both the government's and the contractor's viewpoints, leading to behavior that jointly achieves the mutual goals of all parties (e.g., best value acquisitions and targeting high performance based on best business practices).*

The results of this research determined the impact of LEIs on KPMs but might also provide information on the possibility of future research in the defense industry on other initiatives and areas of interest.

Through this literature research, there is not much information specifically on the incorporation of LEIs for products, services, and systems in the DoD industry. There have been many generalities on the subjects, but the specifics are few. There has been more research and publicized studies on individual topics of lean including: value stream analysis, supply chain management, six sigma, total quality management, ISO certifications, continuous improvement, and process reduction initiatives related to the commercial automotive and aerospace industries.

This research expands the body of knowledge to determine and validate if a correlation exists between the implementation of LEIs by defense contractors and KPMs. According to LAI Team (2005), ‘Government transformation will have a near term focus on processes at the interface between government and industry. Related research on issues for the 21<sup>st</sup> Century aerospace workforce will support the role of that stakeholder in the transformation process.’

## RESEARCH METHODOLOGY

The purpose of this quantitative correlation research study was to determine the degree to which the implementation of LEIs affect KPMs when full time defense contractors located throughout the U.S. are surveyed. It also compares the viewpoints of defense contractor senior leadership and middle management and the results in the previous automobile industry survey with the results from this defense industry research.

An existing survey instrument was modified for this defense contractor research. The survey instrument was previously developed and validated by Johnson, Sun, & Johnson, (2007), while researching the integration of multiple manufacturing initiatives in the automobile industry. This study determined the causal relationship between the independent variables (LEIs) and the dependent variables (KPMs) and determined if a statistical correlation exists. This research added to the body of knowledge by determining the degree of correlation between LEIs and KPMs using correlation statistics. This methodology is appropriate for this type of research because it describes and measures the degree of association between the variables in the study.

### Research Method and Design Appropriateness

A correlation study was selected for this research because it measures the degree of association between or among the variables or sets of data (Creswell, 2002). A correlation research method investigates relationships between two or more variables. It is based on analysis to determine if the variables occur together and if they can predict outcomes. This study should also provide additional measurable and observational data that would lead to statistical analysis correlation and conclusion (Leedy& Ormrod, 2001).

This research method focused on the views of defense contractor’s senior leadership from the views of middle management. After the research results were collected, reviewed, and analyzed, they were evaluated to see if a correlation exists between the variables and the study results. This evaluation of research results will lead to a study conclusion, and possibly suggest the need for future research.

In order to extend Johnson, Sun, & Johnson (2007), research to the defense industry, the following question must be worded within the same context to guide the correlation study.

How do the views of defense contractor senior leadership differ from the views of middle management regarding LEIs?

### Hypotheses

The independent variables in this research are the LEIs and the dependent variables are the KPMs. This study attempts to determine the causal relationship between these variables, determining the relationship of senior leadership and middle management support of implementing LEIs in the organization. According to Neuman, (2003), causal explanations between variables are usually in linear form or state cause and effect. Causal studies seek to discover the effect that variables have on other variables and that the concept of causality is grounded in the logic of hypothesis testing producing inductive conclusions and probabilistic and can never be demonstrated with certainty (Cooper & Schindler, 2003).

**Ho1:** *There is no statistically significant difference between the viewpoints of senior leadership and middle managers toward LEIs at Department of Defense contractors.*

**Ho1a:** *There is a statistically significant difference between the viewpoints of senior leadership and middle managers toward LEIs at Department of Defense contractors.*

## Data Collection

On October 2008, 150 full-time employees in the defense industry were contacted by e-mail asking them to participate in this research project. Permission from Dr. Johnson was granted, to the researcher to modify the original automobile industry survey instrument for this defense contractor research. In 2007, Johnson, Sun, & Johnson validated the automobile industry survey instrument. With minor terminology changes, that automobile industry survey was tailored for this similar research in the defense industry. Using this validated survey with minor revisions, provided the best instrument for this defense industry correlational study. A correlation study is appropriate for determining if variables are related and the nature of that relationship, understanding that correlations do not imply causation (Leedy & Ormond, 2004).

## Data Analysis

This research used descriptive statistics that include measures of the mean, standard deviation, minimum value, and maximum value giving insight into study observations. The Pearson  $r$  correlation coefficient is “used to determine the magnitude of association between two variables and to detect the direction of a relationship. It can also establish construct validity. The statistic is used to test theories when researchers collect data to confirm or disconfirm hypothesis” (Creswell, 2002, p.371).

The resultant coefficients were compared to the critical value and the predicted slope polarity of the hypotheses as the basis of either accepting or rejecting a correlation between the variables. This correlation research should provide specific data on the support of senior leadership in the implementation of LEIs in the defense industry.

## RESULTS

This study expands the previous research by Johnson, Sun, & Johnson (2007), in the automobile industry by analyzing the results reflected in the categories of Quality Management, Lean Manufacturing, and Environmental Management, compared with the same category results obtained in this research from the defense industry. This analysis could provide information useful to the senior leadership of defense contractors, the Department of Defense (DoD), and other defense industry support organizations by discovering if a correlation exists between these categories based on the survey comparison results.

This study expands the body of knowledge on LEIs in defense industry organizations. It attempts to show how defense contractors view these initiatives on influencing KPMs and the categories of Quality Management, Lean Manufacturing, and Environmental Management within their organization. In addition, this study augments the past automobile industry research by Johnson, Sun, & Johnson (2007) in analyzing results from the perspective of the defense industry. This current research in the defense industry may provide organizations in the defense industry the knowledge to implement changes that may improve on the results identified in both industries.

## Findings

The study findings focused on the data relevant to the research question and hypotheses. In order to extend the Johnson, Sun, & Johnson (2007), research to the defense industry, the following research questions were used to guide the quantitative study:

How do the views of defense contractor senior leadership differ from the views of middle management regarding LEIs?

Table 1 through Table 7 represents the senior leadership and middle management responses to the research question: How do the views of defense contractor senior leadership differ from the views of middle management regarding KPMs? Sections two and three of the survey instrument address this question. The KPMs are represented by the individual survey questions in the categories of Sales Dollars, New Program Win Ratio, Operating Costs, and Profit.

**KPM - Sales Dollars**

The senior leadership responses show that they are more aware of the impact of LEIs on company sales than middle management as indicated by the recognition of a 0-10% change. Middle management survey responses indicated that the impact of LEIs did not apply to the increase or decrease of company sales.

**Table 1:** Summary Statistics of Senior Leadership Sales Dollars Responses

Senior Leadership	Sales \$	Delta Sales \$
Count	11	11
Average	2.36	3.27
Median	3.0	1.0
Standard Deviation	1.36	2.61

**KPM - New Program Win Ratio (NPWR)**

The senior leadership responses show that they are more aware of the impact of LEIs on company new program win ratios than middle management as indicated by the recognition of a 0-10% change. Middle management responses indicated that the impact of LEIs did not apply to the increase or decrease of company new program win ratios.

**Table 2:** Summary Statistics of Senior Leadership New Program Win Ratio Responses

Senior Leadership	NPWR	Delta NPWR
Count	11	11
Average	2.73	3.27
Median	3.0	1.0
Standard Deviation	1.19	2.61

**Table 3:** Summary Statistics of Middle Management New Program Win Ratio Responses

Middle Management	NPWR	Delta NPWR
Count	12	12
Average	3.67	5.58
Median	4.0	6.0
Standard Deviation	0.49	1.44

**KPM - Operating Costs**

The senior leadership responses show that they are more aware of the impact of LEIs on company operating costs than middle management as indicated by the recognition of a decrease of 20-30%. Middle management responses indicated that they did not know if the LEIs increased or decreased company-operating costs.

**Table 4:** Summary Statistics of Senior Leadership Operating Costs Responses

Senior Leadership	Operating Costs	Delta Operating Costs
Count	11	11
Average	2.73	3.0
Median	2.0	2.0
Standard Deviation	1.10	2.41

**Table 5:** Summary Statistics of Middle Management Operating Costs Responses

<i>Middle Management</i>	<i>Operating Costs</i>	<i>Delta Operating Costs</i>
Count	12	12
Average	2.92	4.92
Median	3.0	6.0
Standard Deviation	1.16	1.98

**KPM – Profits**

The senior leadership responses show they are more aware of the impact of LEIs on company profits than middle management as indicated by the recognition of an increase of 20-30%. Middle management responses indicated that they did not know if the LEIs increased or decreased company-operating costs.

**Table 6:** Summary Statistics of Senior Leadership Profit Responses

<i>Senior Leadership</i>	<i>Profits</i>	<i>Delta Profits</i>
Count	11	11
Average	1.91	2.64
Median	1.0	2.0
Standard Deviation	1.38	2.20

**Table 7:** Summary Statistics of Middle Management Profit Responses

<i>Middle Management</i>	<i>Profits</i>	<i>Delta Profits</i>
Count	12	12
Average	2.58	4.33
Median	3.0	6.0
Standard Deviation	1.31	2.46

Table 8 through Table 13 represents the senior leadership and middle management responses to the research question: How do the views of defense contractor senior leadership differ from the views of middle management regarding LEIs? Sections two, three, and four of the survey instrument address this question. The LEIs are represented by the individual survey questions in the categories of Quality Management Systems, Lean Manufacturing Initiatives, and Environmental Management.

**Quality Management Systems**

The following Table 8 and Table 9 represent the responses on how senior leadership and middle management answered questions relating to their companies Quality Management Systems. The participants had six possible choices in a Likert scale: [1] Strongly Disagree, [2] Disagree, [3] Neutral or Undecided, [4] Agree, [5] Strongly Agree, and [6] Not Applicable.

**Table 8:** Summary Statistics of Senior Leadership Quality Management Systems Responses

<i>Senior Leadership</i>	<i>QMS1</i>	<i>QMS2</i>	<i>QMS3</i>	<i>QMS4</i>	<i>QMS5</i>	<i>QMS6</i>	<i>QMS7</i>	<i>QMS8</i>	<i>QMS9</i>	<i>QMS10</i>
Count	11	11	11	11	11	11	11	11	11	11
Average	4.09	3.90	3.81	3.81	3.81	4.36	3.54	3.72	3.54	3.45
Median	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Standard Deviation	4.22	1.04	1.25	0.75	0.98	0.50	1.50	1.19	1.13	1.29

**Table 9:** Summary Statistics of Middle Management Quality Management Systems Responses

Middle Management	QMS1	QMS2	QMS3	QMS4	QMS5	QMS6	QMS7	QMS8	QMS9	QMS10
Count	12	12	12	12	12	12	12	12	12	12
Average	4.0	3.75	3.75	3.66	3.5	4.0	3.25	3.42	3.5	3.75
Median	4.0	4.0	4.0	4.0	3.5	4.0	3.5	3.0	3.5	4.0
Standard Deviation	0.95	1.13	1.13	1.23	1.16	1.04	1.13	0.99	1.31	0.86

The mean results for the 10 Quality System questions indicate a central tendency for senior leadership agreeing more than middle management does about their participation and support of the quality systems within their organizations. The senior leadership average for the 10 questions was 3.80 compared to 3.66 for middle management.

Specific questions identified senior management as part of the companies Quality Management System Process and they encouraged participation by other employees' who differed from the responses of middle management. For these same questions, middle management stated they were neutral or undecided as to senior leadership involvement or their encouragement of employees to participate in the company Quality Management System Process.

### Lean Manufacturing Initiatives

The following Table 10 and Table 11 represent the responses on how senior leadership and middle management answered questions relating to their companies Lean Manufacturing Initiatives. The participants had six possible choices in a Likert scale: [1] Strongly Disagree, [2] Disagree, [3] Neutral or Undecided, [4] Agree, [5] Strongly Agree, and [6] Not Applicable.

**Table 10:** Summary Statistics of Senior Leadership Lean Manufacturing Initiatives Responses

Senior Leadership	LEI1	LEI2	LEI3	LEI4	LEI5	LEI6	LEI7	LEI8	LEI9	LEI10
Count	11	11	11	11	11	11	11	11	11	11
Average	5.0	5.45	4.0	4.63	5.09	4.72	4.0	4.72	4.09	4.72
Median	6.0	6.0	4.0	5.0	6.0	6.0	4.0	5.0	4.0	6.0
Standard Deviation	1.26	1.21	1.73	0.67	1.57	1.67	1.26	0.64	1.04	1.55

**Table 11:** Summary Statistics of Middle Management Lean Manufacturing Initiatives Responses

Middle Management	LEI1	LEI2	LEI3	LEI4	LEI5	LEI6	LEI7	LEI8	LEI9	LEI10
Count	12	12	12	12	12	12	12	12	12	12
Average	4.91	5.66	4.41	5.0	4.5	4.08	4.58	4.5	4.58	4.66
Median	5.5	6.0	4.5	5.0	6.0	4.0	5.0	4.5	4.0	5.0
Standard Deviation	1.37	0.77	1.67	0.85	1.97	1.44	1.16	1.24	0.99	1.43

The results indicate that the differences between senior leadership and middle management responses in these questions were more diverse. The senior leadership responses were higher than middle management responses in questions LEI 6, and LEI 8. In questions LEI 3 and LEI 7, their responses were lower. In further analysis, the higher responses from senior leadership to questions LEI 6, and LEI 8 resulted in:

- [1] LEI 6 – senior leadership agrees more strongly that they support the process of work balancing than middle management.

[2] LEI 8 - senior leadership agrees more strongly that a program exists to recognize the contributions of employees regardless of position within the company than middle management.

The lower responses from senior leadership to questions LEI 3, and LEI 7 resulted in:

[1] LEI 3 – middle management agrees more strongly that senior leadership has applied the concepts of waste reduction more than senior leadership.

[2] LEI 7 – middle management agrees more strongly that senior leadership has accepted the ideas and suggestions from employees regarding continuous improvement more than senior leadership.

### **Environmental Management**

The following Figures Table 12 and Table 13 represent the responses on how senior leadership and middle management answered questions relating to their companies Environmental Management. The participants had six possible choices in a Likert scale: [1] Strongly Disagree, [2] Disagree, [3] Neutral or Undecided, [4] Agree, [5] Strongly Agree, and [6] Not Applicable.

**Table 12:** Summary Statistics of Senior Leadership Environmental Management Responses

Senior Leadership	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8	ENV9	ENV10
Count	11	11	11	11	11	11	11	11	11	11
Average	3.81	3.18	3.18	3.27	3.72	3.72	4.81	3.63	3.72	4.36
Median	4.0	3.0	3.0	3.0	3.0	4.0	5.0	4.0	4.0	4.0
Standard Deviation	0.87	1.47	1.07	1.00	1.42	1.00	0.40	1.02	1.10	0.50

**Table 13:** Summary Statistics of Middle Management Environmental Management Responses

Middle Management	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8	ENV9	ENV10
Count	12	12	12	12	12	12	12	12	12	12
Average	3.75	3.5	3.33	3.25	3.75	3.91	4.41	3.25	3.66	4.08
Median	4.0	3.5	3.0	3.0	4.0	4.0	5.0	3.0	4.0	4.0
Standard Deviation	1.28	1.16	1.07	1.42	0.96	0.79	0.99	1.13	0.77	0.66

The results indicate that the differences between senior leadership and middle management responses in these questions were more diverse, especially in questions ENV 2, ENV 5, and ENV 8. The senior leadership response was higher than the middle management response in ENV 8 and the responses were lower in ENV 2 and ENV 5. In further analysis the response from senior leadership to question ENV 8, agreed that regular internal and external communications exist regarding the company's environmental activities and operations.

However, middle management was neutral or undecided when it came to answering this question. The senior leadership responses were neutral or undecided for questions ENV 2 and ENV 5. This was contradictory to the middle management belief agreeing with the fact that senior leadership reviews the companies environmental management system yearly and environmental management plans are developed each year as part of the strategic planning process.

An ANOVA was performed to determine if a statistically significant correlation existed between the viewpoints of senior leadership and middle managers toward LEIs at DoD contractors. For Ho1, Tables 8 through, 13 show that no statistically significant correlation exists. Therefore, Ho1 was accepted by the findings of the research.

## CONCLUSION

The research data obtained from the senior leadership and middle management responses on how LEIs influenced the organizational KPMs was used to evaluate and analyze statistically the research question. Of the responses received, it was determined there were statistically significant correlations between the senior leadership and middle management opinions for the following LEIs and KPMs: Lean Manufacturing initiatives and [1] Sales Dollars, [2] New Program Win Ratio, [3] Quality Parts per Million, and [4] On-Time Delivery Performance. There was also a statistically significant correlation between ISO 9000 initiatives and Quality Parts per Million.

These senior leadership and middle management responses also provided data to evaluate and analyze statistically the second research question. The research asked the participants' 10 questions in each category of Quality Management Systems, Lean Manufacturing Initiatives, and Environmental Management. The resulting data was evaluated and analyzed statistically and while the research showed that while there were differences in senior leadership and middle management question responses, the Lean Manufacturing Initiative category received the highest mean value for both groups. This could be an indication as to what category was most important to defense industry organizations.

## RECOMMENDATIONS

Based on the findings and conclusions of the research, the following recommendations are offered by the researcher for future research beyond the defense industry. The importance of linking LEIs to KPMs in determining overall organizational effectiveness is critical to defense contractors. First, researchers should continue to evaluate other companies within the defense industry to determine if the conclusions are consistent. By evaluating the finding with other companies within the defense industry, the conclusions may be further supported or determined not to be consistent.

Second, research that may be of interest to future researchers would be to continue evaluating other LEI factors believed to influence defense company KPM results. Third, researchers could explore other measurement goal constructs that may offer improved reliability and validity. Reviewing past research may offer improved constructs not considered in the current research. Finally, as more organizations implement the development of LEI approaches, research could be conducted on the strategy, such as the foundation of philosophy behind the decisions on how LEIs are implemented in the defense industry or any other industry. Finally, this research could be expanded to other industries other than the automobile and defense industries.

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# POISE - THE 6TH 'P' IN THE NEW MARKETING MIX

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## ABSTRACT

*Marketing's three new Marketing Mix elements has promised broader and deeper focus into understanding clientele as well as having offered better client focus and depth of analysis. These new elements have so far not gain wide recognition yet they have already been adopted by some of the Western World's most pro-active market-driven firms. POISE is one of those new Marketing Mix elements and it has been this paper's aim to acquaint the readers as to its marketing prowess.*

**Keywords:** *Poise, Marketing Management & Strategy, Marketing Mix.*

## RESEARCH PURPOSE

This descriptive research project has delved into the use and value of incorporating **POISE** as a new but necessary Marketing Mix component. The causal analysis should offer ample justification incorporating **POISE** into the on-going market planning functions of American corporations.

## LITERATURE REVIEW

A Literature Review was quite minimal for this research as the subject was too new and yet to have been well supported and documented by a multitude of scholarly researchers. After reviewing close to 30 current marketing books, only a very few presented information about the concept of **POISE**. Much of the research developed in the study would represent new and extremely current thinking on the subject of **POISE**.

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## INTRODUCTION

For at least 15 years, marketing has maintained its marketing mix elements as a combination of 4 'Ps': 1) Product, 2) Place, 3) Promotion, and 4) Price. If one were to consider that during that same time period, marketing has tended to change its programs and activities approximately every five years as a response to global market dynamics, it's amazing that the well-thought-out 4 'P's' had remained intact for that period of time. The past 5 years has ushered in 3 more marketing Mix 'P's', as an answer to the necessity toward enhanced planning and implementation of more innovative marketing programs and enhanced business perspectives about the marketplace, and so marketing ushered in three new Marketing Mix elements: 1) **POWER**; 2) **POISE**; and 3) **POSITIONING**. Each of these elements generated a world-wide buzz of excitement and as one would surmise, each element has necessitated its own extensive research study. The 5<sup>th</sup> element, **POWER**, developed by Philip Kotler, has been widely studied and was clearly valued for its ability to more effectively utilize management to overcome both strategic and tactical hurdles, particularly in overseas markets. The 7<sup>th</sup> element, **POSITIONING**, developed by a group of marketers, addressed the need to not just position products into the marketplace, but to position the firm, itself, while attempting to understand the competitive prowess of such action.

The 6<sup>th</sup> Marketing Mix element, **POISE**, has been the least understood, yet its designed purpose has been to create a highly flexible component or structure for the firm to better respond to market fluctuations. A marketing directive of **POISE** would be an opportunity seeker, one with concentration and intensity to capture opportunities at their earliest stages. **POISE**, in its simplest meaning would be a way to balance or hold a status of equilibrium. Yet, the Raynet Marketing Dictionary has defined **POISE** as standing for profitable, offensive, integrated, strategic, effective marketing (Businessdictionaries.org), and that would seem more in line with its Marketing Mix focus.

## UNDERSTANDING THE NEW MARKETING MIX ELEMENT- POISE

**POISE** was an acronym developed by Hugh Davidson and Warren Keegan in their book, *Offensive Marketing, an Action Guide to Gaining Competitive Advantage* (Davidson & Keegan, 2003). The perspective that Davidson & Keegan took was that in order for marketing to be successful, it needed to have been balanced with both a somewhat conservative posture to sustain market and economic shocks as well as an aggressive stance to having taken full advantage of marketing niche opportunities, even to the point of creating marketing demand, of which ten years was thought not possible. In terms of 'offensive marketing,' these two authors defined the five key elements of **POISE**. Below, Table 1, established the thrust and power of **POISE**:

**Table 1:** *Offensive Marketing of P.O.I.S.E.*

<p><b>P: Profitable</b>- Proper balance between firms' needs for profit and customers' needs for value</p> <p><b>O: Offensive</b>- Must lead market, take risks and make competitors followers</p> <p><b>I: Integrated</b>- Marketing approach must permeate whole company</p> <p><b>S: Strategic</b>- Probing analysis leading to a winning strategy</p> <p><b>E: Effectively executed</b>- Strong and discipline execution on a daily basis (Davidson &amp; Keegan)</p>
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### Profitable Marketing

Davidson & Keegan described *profitable marketing* as the objective of marketing, intriguingly controversial and not without challenge, not just to increase market share or to provide good value for consumers, but to increase profits.

Offense-oriented marketers would have likely encountered conflicts between having offered their consumers what they want and, on the other side, running the marketing program, if not the entire company efficiently. One of the marketers' skills would have to have been the creative ability to achieve the tenuous balance between these sometimes opposing elements (Davidson, et.al. 21). As one may surmise, the aforementioned statements made by these two authors would necessitate a rather significant paradigm shift for salespersons, particularly those in B2C sales environments due to them being so isolated from profit center-based orientation and operations.

Davidson & Keegan wrote that every marketer should have the skills to leverage short-term profits without mortgaging the future. Profitability, according to Davidson and Keegan, would have been the balance between a firm's need for profits and the customers' need for value. Profit would represent the reward companies earn for delivering superior customer value very efficiently. Davidson and Keegan also believed that maximizing profits would come from lowering costs, and that profitable companies would necessarily understand that the key to marketing profitability was keeping the customers you already have because they were, compared to new customers, a rather cost free factor (Davidson, et.al. 25, 36 & 64).

Davidson & Keegan focused on matching company's brand strengths to the best opportunities in the marketplace in order to have built long-term above-average profits. The authors described a five-step *marketing alignment process* (MAP) that matched markets, channels, and customers with the firm's assets and competencies, in order to have assisted in having achieved above-average profits. The concept of MAP was a systematic process for identifying and prioritizing opportunities. The authors stated that a MAP would drive consumer value and efficiencies as well as profits, by having linked a company's strengths to areas of best fit and focus (Davidson, et.al. 51 & 64). These profoundly creative steps have been presented below in **Table 2**:

**Table 2:** Davidson's Offensive Marketing of the Marketing Alignment Process

<b>Rank</b>	<b>MAP Steps</b>
1	Identify exploitable assets
2	Identify exploitable competencies
3	Rank attractiveness of priority business areas
4	Match assets and competencies to future market, channel, & customer opportunities
5	Identify assets and competencies to be strengthen (Davidson, et.al.).

At rank level 1, '*exploitable assets*' were areas where a company could create a unique competency to become stronger than the competition. Rank level 2, '*exploitable competencies*' were those areas in which a firm has or could likely build an edge over competitors. This would mean identifying a list of exploitable competencies and point to important skill areas that needed to be improved to match or beat competition in the future. Rank level 3, '*attractiveness of priority business areas*', would involve reviewing the *magnetism* of the markets, channel relationships, and profiling customer groups, both current and future Rank level 4, '*matching future assets and competencies for the future*,' involved matching rank levels one through three in order have identified where the firm would be most effective to compete in the future. The last rank level 5, '*assets & competencies for strengthening*,' was to have identified, developed or acquired the necessary competencies that may have been missed (Davidson, et.al.).

The aforementioned rank ordered steps oriented themselves toward two well-known concepts of Marketing Value Analysis (VA) and Value Engineering (VE). Both of these concepts had already addressed two key questions:

1. What has been the customer value of each part of every product or service and how does this relate to its cost?
2. How can one translate its cost into greater customer value (Davidson & Keegan, 62)?

Davidson & Keegan concluded, "Marketers need to map out the total customer experience, break it down into value elements and judge the relative important of each one (Davidson & Keegan)."

## Offensive Marketing

In order for a company to succeed today in the marketing world, it would need to have utilized its Marketing Mix as effectively as possible. Offensive Marketing has been defined as having created superior and recognized customer

value as well as having achieved above-average profits (Davidson & Keegan). The main goal in Offensive Marketing essentially was to focus completely on the customer's values and a company's profits. By employing this type of marketing, a company would define and designate every employee to establish and then maintain the greatest amount of customer value while still achieving the highest profit possible (Mintzberg & Quinn, 1988). This would come by any means, even taking on competitors with a full-frontal-attack as a straight on attack towards any competitor that stood in the company's way. In order for this to have occurred, the company must have fractured their marketing plan into the essential core dimension of the Marketing Mix known as **POISE**. When the company assessed the critical components and aspects of **POISE**, it would likely have positioned itself towards a prime or dominate place in the marketplace (Davidson, 2005).

### ***POISE Necessitates an Offensive Marketing Strategy***

**POISE**, as an implementable concept must have fully incorporated the full essence and activity of **Offensive Marketing**. There were five different types of marketing-oriented corporate "warfare", known to be the origin of Offensive Marketing Strategy that could assist a company towards dominating its market. These five different strategies, presented in **Table 3** below, were created by Kotler and Singh to assist firms designing different distinct methods to "attack" another companies marketing programs and products in order gain marketing share, create buzz in the marketplace and/or totally dominate the market by setting its competitors into a downwardly spiral free-fall. Kotler and Singh had decided to name these strategies after war terms to reflect the shear dynamic relationship between business/marketing situations and warfare situations (Kotler & Singh, 1981).

**Table 3:** OFFENSIVE MARKETING STRATEGIES- ATTACK

- Frontal Attack
- Flanking Attack
- Encirclement Attack
- Bypass or End-around Attack
- Guerrilla Attack

Before employing any one of the **Offensive Attack Strategies**, there were four fundamental principles that a company must assess before they are fully committed:

1. The firm must locate the key strengths of the company that they are targeting. The company needs to keep in mind the potential for ally companies that may help the competitor.
2. The firm must identify the main weakness of the target company. Once they identify this weakness, they will need to plan a strategy to attack this spot in the company and make sure they plan on continuing this market attack when the competitor tries to recoup.
3. The company then needs to attack on this certain area of the competitor. By concentrating on this one area of the competitor, they can effectively eliminate the competitor's threat in the market.
4. Finally, the company needs to attack the weakness quickly as to retain the element of surprise in the competitor and market (Kotler et.al.).

And now, onto the strategic Offensive Attack positions, which have begun with the first of these warfare strategies being the Frontal Attack. This posture has been considered the most direct, blunt approach of the five. The focus of this strategy has been to design a direct approach towards the leading competitor(s) and so doing, to go all out against the primary marketing strategies of this/these firms by offering the same marketplace niche similar product line(s), at nearly identical price(s), coupled with a very similar customer and/or consumer promotion(s). The Frontal Attack would clearly represent the riskiest of them all because the company would be trying to attack the main strengths of their competitor(s), which would serious marketing and financial challenges to that firm as well as being extremely difficult to succeed. This attack has required the least amount of planning since it was a 'mimicking' of the competitors marketing approach. Even though the planning for this has been minimal, this strategy would, more than likely have been extremely costly and would require intensive preparation from the entire company- from the people in production all the way to those up in the marketing department and at the executive levels. This method would be considered appropriate when:

- That particular market was homogeneous,
- Brand equity was low,
- Customer loyalty was marginally low,
- Products were poorly differentiated,
- The target competitor has relatively limited resources, or
- The attacker has a wide variety of resources (Bookrags.com).

Consider, if you will, the tremendously powerful marketing Frontal Attack that the Japanese automobile conducted, beginning in the 70's, against the 'Big Three' automotive industry in the U.S. It literally took the Japanese government to back these companies during that period, and, for the most part, it worked!

The next of the warfare strategies was the **Flanking Attack**. Unlike the frontal posture, the **Flanking Attack** was formulated to seek out the weaknesses of the competitors instead of their strengths. In this situation, the firm that was posturing such an attack would try to undermine their competitors in the market where the competition was considered of marginal value or were essentially non-existent. By having chosen this form of attack, a company was attempting to establish themselves in the market, and eventually may have eventually attempted to overtake their competitors' strengths once the company has become a new market 'powerhouse.' The core principles of the **Flanking Attack** were:

- To avoid areas that there would be rather immediate confrontation,
- To make the move in the market quickly and stealthy, and
- To make the move seem non-threatening so that the target competitor would not try to respond.

**Flanking Attacks** would necessitate that the company focused mostly on one or a very few distinct selling feature(s) as well as a well-focused but somewhat subtle public relations effort. A company would want to pursue this strategy:

- When the market was segmented,
- The target company would likely be able to withstand a frontal attack, or
- There were some segments that were not well served by the existing competitors.

The **Encirclement Attack** has been the most dynamic of all the strategies and was formulated to prevent the competitor from being able to get back in the market's upper echelon after it was overtaken. In order for a company to achieve this dominance over a competitor, they would need to supply quite different variations of the same product. Along with providing these distinct differentiations, the firm would need to further enhance their product(s) to make it/them suitable for all market segments that their competitor had developed, while having provided an aggressive and timely distribution channel. All in all, the key to this strategy has been to weaken the competitor while blocking all possible latent opportunities in the market for competitor re-entry or a market 'comeback.' This strategy has been very useful:

- If the market was loosely segmented,
- If the segments were relatively free of well-endowed competitors,
- If the attacker had strong product development resources,
- If the attacker had enough resources for multiple segments, or
- If the attacker had a decentralized organizational structure (Bookrags.com).

The attack strategy that created the least amount of conflict and confrontation amongst competitors has been the **Bypass Attack** strategy. By choosing this strategy, a company would be attempting to make a name for itself in the market without causing any trouble amongst other leading companies. This could be done by going into a field that has a very small amount of competitors in it or by creating a new type of product altogether. The three types of bypasses that a company can go about doing are by developing a new product, diversify into unrelated products, or diversify into new geographical markets (Kotler et.al.).

The final of these attacks, but by far the most intriguing was known as the **Guerilla Attack**. This method was comprised of making small, stealth-like moves, in the market to gain or maintain market share while still remaining immune to attack on itself. This strategy was intended to chip away at the competitor with small attacks at them while still remaining mobile (Kotler et.al.). This attack strategy required constant re-focusing the firm's strategy based upon both market demand factors and competition dynamics. Market data, including up-to-date competitive information was critical in maintaining market share; while quick turn-around product and service delivery was necessary gain small market value. Few companies could maintain a viable Guerilla strategy due to its tremendous strain on human resources and its constantly changing employee demands. But, in spite of the inherent challenges, it presented marketers with a 'Disney ride' of excitement. Many of the high-tech companies, particularly those in state-of-the-art, highly transportable and transformation systems and those in the software development industry may have played in the fast-paced **Guerilla Attack** market strategy game.

As time has passed over the last two decades, various companies have begun to stray away from some of these above-mentioned tactics and have instead gone about forming partnerships with other companies in order to help provide growth in the market instead of trying to break apart the market and its competitors. Such companies have now focused primarily on the internal aspects of the company that can help build and sustain their power in the marketplace. Of course, providing excellent customer/consumer services has remained a necessity. Some the **Offensive Marketers** today have set goals and strategies that would build the company internally instead of breaking apart its assets or downsizing the corporation (Reis & Trout, 2005).

During much of the 80's and 90's, many companies were created and/or re-formed for the sole purpose of revenue growth, which in turn translated for many firms, into massive profits. In order to maintain such new-found financial postures of that era, many companies tried to maintain this revenue growth by cutting costs and downsizing, right-sizing or performance-based sizing- resource reduction programs that sliced non- producing high enough margins- margins, as it turned out, that were unrealistic to maintain for the long haul anyway. None-the-less, even the more humane approaches in reducing the firms' employees, such as right-sizing and performance-based sizing, still created hazardous conditions for those companies in the forms of a depleted market shares and/or significantly more horrible workplace environments, in which the workers who remained had no desire to stay as well as constantly feared being fired for seemingly the smallest of reasons.

In contrast to this once helter-skelter form of organizational leadership, an **Offensive Marketer**, in today's business environment, would have tried to improve every aspect of their company in order to have maintained revenue growth. These marketers have understood that in order to create market growth, they needed to have designed and constructed a company that offered a superior quality mixed with:

- Quality work environment for employees to thrive with creative suggestions for future business improvements and new product ideas,
- Excellent clientele service based upon a high level of support and attention to detail, and,
- A competitive price that either matched the competitors or beat them with bargains galore.

For **Offensive Marketing** to work, the company would need to appoint a **Brand Equity Manager (BEM)** whose chief goal was to establish superior business performance while helping position the company in the best position possible amongst its competitors. The company would view and value this manager as a leader that was capable of having built the best future possible for the corporation. There have been six different development aspects of the company, presented in **Table 4**, in which the **BEM** took control of the firm in order to obtain the best growth possible in the business:

**Table 4:** *BEM Development Support Aspects of Company*

- ❖ The manager has had a deep understanding of consumer needs, and possessed an awareness of potential future changes in the market and technology. This has entailed a **BEM** to learned as much as possible about the customers/consumers in their target market, and in so doing, have realized what the market would become in the near term future as well as the means and methods for business to adapt to the future.
- ❖ The next aspect that the **BEM** needed was to focus their attention towards the enhancement of the company's marketing strategy and product-portfolio management. As such, the **BEM** would have laid the framework for the company's future. This has entailed a productivity and visionary blueprint for every department of the company.
- ❖ The **BEM** would need to monitor the development of the goods or services that the company provided. This would entail the **BEM** to know most everything there would have been to know about the production area of the company.
- ❖ The **BEM** would monitor the company's investments in the plant and administrative operations, service improvements, and also consumer relationships. The criteria for this aspect would have included prioritizing what were the most important concerns in the company and where improvements could be made. This also required that the **BEM** to have examined how the customer/consumer perception towards their product quality and customer service.
- ❖ The **BEM** would need to research and encourage the employees to search for cost savings in the company, and then follow that cost savings all the way through the organization in order to have passed on the cost savings as a benefit to the consumer.
- ❖ The final task of the **BEM** was to have effectively embraced the **Offensive Marketing** approach. In which would have necessitated the **BEM** to make sure every department of the company was performing at its peak in order to have helped build the company's value. Once the **BEM** would have accomplished this task, the **BEM** would need to have pointed out the departments that were most proficient and thusly, exploit them for the entire company and their consumers to have seen (Davidson, 2005).

Armed with this *Equity Brand Leader* at or near the top of the company, the firm would then have been market-ready and, as such, focused completely on being '**Offensive**' in the marketplace. Such actions would additionally prepare the firm for building the institutional empire of their well-thought dreams derived from visions of the future- a clear vision of the future of its business as an **Offensive Marketer**. This vision must have inspired and motivate all of the employees and its shareholders. With an inspirational and legitimate business plan for the future the employee morale would have remained high and even the investors would want to invest more which would afford the company a better position in the market (Davidson).

Then the firm would have needed to anticipate any opportunity or problem-resolution change in the company as well as the marketplace while having established the mechanisms for adapting to change. This same institutional vision would have needed to provide a future of clear directions that helped to constantly re-formulate its own strategy while having gained market share points on its competitors due to those competitors not having been able to react to such change dynamics. It would then be feasible for the firm to begin to realize and rationalize both functional and perceived benefits. The functional benefit would have been the proven performance of the product(s) over the time, whereas the perceived benefit would have been how the consumers feel about the product as compared to its competition (Davidson, 2001).

The next key requirement in the **Offensive Marketing Strategy** was that the firm would have been able to generate a strongly committed desire for innovative. Realizing that in a market with a number of aggressive-minded competitors, a company must develop and maintain the sustained drive towards a multi-faceted improvement agenda. The business would need to continually upgrading its technology and its human resource competence for both effective cost management and state-of-the-art product development. Given the firm would take on a longer term, strategic market posture; it would need to invest heavily in the stronger, most viable components of the business that would have likely generated the higher returns. It would then have been feasible for the company to have invested large sums of capital towards its future and in so doing reap the market position benefits of being able to easily adapt to the ever-changing demands of the market. For the few firms that would have clearly understood the future viability of their firm, it may have been possible to not only adapt to market trends but to have actually influence the trend momentum.

Another requirement of an **Offensive Marketing Strategy** was that the company must have had implemented a persistently attacking program towards its market, employing both overt and stealth tactics. By always taking on the

lead role amongst its competitors, the firm would have maintained a solid grip on its market segment(s). The ability of a company to have made fast and stealthy moves in the market would, for the near term future, seemingly always be imperative to keep its competitive advantage and to respond extremely quickly and effectively to market conditions.

### ***POISE Necessitates Integrated Marketing***

Looking at major corporations typically there have been a multitude of different departments that worked independently in accomplishing distinctly unique or somewhat share goals (Scott, 2010). These different departments have ranged from promotion mix efforts such as advertising, to customer relations, to marketing research, to operations management, to human resources, and finally to financial and accounting departments. Outside of financial and accounting management, which have required legal separation, firms must consider integrating many of these departments, realizing that the overall goals for those department would likely dovetail into working towards the same goals of: 1) insuring internal growth of competence and innovation; 2) generating the highest quality product output; making a profit; while 3) building and sustaining a viable customer base. As such, integrated organizational dynamics may prove highly beneficial. And, those firms that believe that such integration should form their firm around marketing have begun to form a market-driven firm- considered to be the most powerful organization posture for the 21<sup>st</sup> Century. In essence, an **Integrated Marketing Strategy**, which has also been referred to as the total marketing approach, would mean that every functional area of the business, accept for accounting & finance's investor relations, would combine to deliver a maximum of customer value at minimum cost. As such, this integrated approach would have been the driving force behind **Offensive Marketing's** attractiveness for today's businesses.

In past years, Integrated Marketing was used to describe a much more narrow approach by integrating the increasingly diverse range of marketing communications, which included advertising, relationship marketing, sponsorship, event promotions, public relation and web initiatives. However, Mr. Howard Morgens, a former Chairman of Procter & Gamble, up lifted the case for integrated marketing by stating,

“There is no such thing as marketing skill by itself. For a company to be good at marketing, it must be good at everything else from R&D to manufacturing, from quality controls to financial controls (Yagmin, 1997).”

Implementing **Integrated Marketing** logically would require everyone in the firm to have been judged on five dissimilar, yet linked criteria, presented in **Table 5**:

**Table 5: Integrated Marketing Judging Criteria**

- |  |
|--|
| <ol style="list-style-type: none"> <li>1. The contribution to superior customer value, which included customer relations, innovation and investment;</li> <li>2. The contribution to superior long-term profit group, which included reductions in cost, increased productivity and value engineering;</li> <li>3. The inter- and cross-departmental teamwork, in which every individual and department in the organization would need to have created a jointly-recognized unique value for the customers by having established an integrated atmosphere;</li> <li>4. An active and viable team and departmental interaction and dialogue, in which a healthy combination of both personal interactions and professional interactions; and lastly</li> <li>5. A fusion of sales, marketing and service towards the common goal of satisfying their clientele (Yagmin).</li> </ol> |
|--|

In essence, **Integrated Marketing** have created a Market-driven firm by ensuring that all of its marketing tools worked in harmony with all other departments and functions within the firm, while also achieving synchronized steps towards common mission/objective.

Using the online service, LINKEDIN, and having recently posed the question, what was **integrated marketing**, the response was most intriguing? Jason A., a consultant, at Designer & Marketing MacGyver at Jaffy Designs wrote, “To me, integrated marketing is a way of thinking - at its most basic, it's the art and science of conveying your brand/product's truth across multiple channels, whether that's a super-bowl ad, a tweet, or a friend's review over

coffee.” “The major benefit of thinking in an integrated way is because this is how customers are thinking - few consume only one form of media today, and as these channels splinter and multiply, single-channel marketing executions simply get lost in the shuffle, limiting their reach and potential effectiveness (LINKEDIN).”

Jean S. who was an award winning content strategist wrote, “Integrated marketing lets you ‘supersize’ your efforts by harnessing all relevant channels to meet your goals. You can use the different channels to highlight facets of your offering and reach different segments, but at the end of the day, you need all the efforts to move you toward your objective (LINKEDIN).”

KC. K. wrote, “(Integrated Marketing) will defeat your business competition and produce more profit, if it is market intelligently and implemented effectively (LINKEDIN).”

Another view offered by Alan D., director at Lutton Consultancies Limited, stated that integrated marketing does what is says on the tin. It is part of the closed loop system of product brief/ concept/design/aftermarket support/imagery and marketing (LINKEDIN).

In summary, after all of the research on **Integrated Marketing**, even though it was not a new concept in marketing and even though it may have remained the best approach, it has been the case that adopting this concept has not come easy to many companies in America. It has been clearly recognized that implementing *Market-driven Strategies* would necessarily require a great deal of work to design and establish a lasting value impression on and for all employees. Each department would have learned to work together in a team-like atmosphere and found value in excelling as a team rather than individuals- not an easy task when one considers that many of these firms have existed for many years under a departmental structure.

**POISE necessitates Strategic Marketing Management-** One of the main aspects of **POISE** has been its long-range marketing management focus. **Strategic Marketing Management (SMM)** has enabled a company to concentrate on initializing the smallest niche opportunities into something that would have given them a distinct competitive advantage as well as increasing sales and share value. The likely tool to have employed was *Strategic Dynamics*, which has been designed for maximizing marketing strategies for businesses. The primary goal within **SMM** was to formulate a dynamic posture to gain competitive advantages at literally all levels of the business involvement with the marketplace. *Strategic Dynamics* focused upon utilizing all of the marketing mix elements, including **POISE** to enhance its customer analysis, target market analysis, competitor analysis and whatever else that could have been measured to determine to bolster the firm’s success (Aaker).

The concept of **SMM** has also played an important role in product cost leadership- when a company tried to sell their higher valued product at a price that was equal or lower than competitive offering in the industry. As one would surmise, multiple factors have driven cost leadership. Certainly, the company’s size as well as its shareholders interests has always played a role in determining prices, but this would have been a function of **SMM** (Aaker). Through effective use of **SMM**, the investors in the company would have been willing to invest more money in the company by improving means and methods of production, which would have enabled the firm to lower the prices of their product(s). It would also have been the case that through employing SMM tactics in the arena of new product development, leading edge products may have been able to command substantially higher prices than competitors, such as Apple Company’s I-Pad. It has been inherently the case that companies have wanted to achieve both product leadership, cost leadership and price leadership at the same time and over extended time periods. When this has been achieved, the company has reached its market dominance.

The business that would have been the closest to the market leader was called the primary competitor or primary challenger. The challenger, having likely employed **SMM**, found a way to compete with the leader of the market and other competitors by securing a viable niche, without having expended as much capital resources as the market leader. This primary challenger may have used similar strategies or may have strategies of their own that the leader company failed to capture and would have had products that stood out from all of the lesser competitive products in the industry. As such, one should remember that **SMM** strategies would benefit both market leaders and close

aligned competitors. Applying **SMM** towards company growth development has carried some interesting wrinkles. Clearly a company must foresee its future organizational dynamics and aggressively plan for such growth. Of the distinctly different ways a company can grow, **SMM** may best serve a company in either one of three postures:

1. Horizontal growth
2. Vertical growth
3. Hybrid growth through diversification (Aaker)

Horizontal growth has been usually employed by a business that plans on selling its products in more than one market. Horizontal growth companies view mergers and/or acquisitions as highly sought after growth strategies. Through **SMM**, a firm could have determined market benefits of merging itself to its competitors for market share dominance, research & development enhancements, product leadership, distribution or logistical dominance, and/or greater customer/consumer recognition.

Vertical market growth has been based upon a wide variety of different products produced and offered to the marketplace. Through **SMM's** vertical integration strategy the main manufacturer would establish distinctly beneficial ties to its raw material and semi-finished goods suppliers, wholesalers, and vendors along the vertical marketing chain. The past relationships were built upon contractual relationships, but **SMM** demands a shared benefit relationship in which all companies would share in the risks and financial benefits of the products being produced and sold (Aaker).

Hybrid growth, through business line and product diversification, has been utilized to generate a more balanced profit position through having diversified sales in new and existing products, and in equally diverse industries, as well as in new markets. As one may remember that a prime directive of **POISE** was to have been able to balance the firm's financial picture while maintaining aggressive marketing activities. An inherent feature of a hybrid **SMM** growth was to smooth out revenue streams within different economically respondent industries as well as having sought new marketing niche opportunities (Aaker).

As one can see **SMM** has played an enormous role in **POISE** management style. Even though each part of **POISE** has its equal balance for a successful operation, the manner in which a company strategizes its success would play an immense role towards the firm's success. By being prepared for the future, the firm would increase its viable posture at becoming the dominant marketing company. The business world has for many years been difficult for sustained success, much less survival. But, armed with **SMM**, being prepared for most every situation and having prepared known routes for either growth sustained market positioning, a firm clearly increases its long-term viability in the market. What is a company without a strategy...nothing? What is a company without **SMM** planning...a company with a limited future?

**POISE necessitates Effective Marketing-** Effective executed marketing has been a marketing program that created measurable results in consistent return investments in its growth. Whereas marketing programs that have not led to measurable increases towards a company's future, would have been a waste of time, money and human resources. To avoid the latter, all aspects of the marketing mix would need to have been addressed in order to effectively execute marketing as it relates to **POISE**. This would have forced marketers to have concentrated and incorporated several distinct **Effective Marketing (EM)** concepts as competitive weapons from the company's perceived image, to its vision, to its project management, to production, to its products, to all of the remaining marketing mix elements, to its perception of value from its market.

Consider the examples, presented in **Table 6**, of **EM** by having efficiently linked a product to its promotion:

**Table 6:** *EM's Linking Product to Promotion*

- ❖ ... the bunny on the Energizer battery package as a reminder that it keeps going and going, or
- ❖ ... the effectiveness of building at the point of purchase and consumption of the Coca Cola Company's coke logo that literally greets its consumers everyone each time the fridge is opened, or
- ❖ ... the perception of being a better driver just because one purchased a BMW, or
- ❖ ... being the most high tech in one's neighborhood just because one purchased Apple's I-pad, or
- ❖ ...feeling so much healthier just because one was comforted by milk's slogan, milk does a body good, or
- ❖ ... the age old occult symbol of a VW Beetle representing a testament against the power-elite to which by driving one, you had to be 'cool,' or
- ❖ ... the modern day equivalent of the Beetle being Toyota's Prius, representing the smart, green alternative.

**Effective Marketing** of brand equity has played an important role in establishing distinct advantages towards a firm's marketing perceived value from its marketplace. For example, many brands of toothpaste have fluoride, yet Crest has the largest market share primarily through promoting this attribute. According to Aaker, "Crest's effectively executed marketing has rewarded them with the majority of their market, and a deep brand loyalty; when customers already trust in the name, and a company introduces a new product or service, the likely hood that their marketing efforts will be successful are significantly higher (Aaker, 2008)." There has been clear evidence to support good brand names ability to have evoked feelings of trust, confidence, security, strength, and many other desirable characteristics. Another example has been the sustained success of the J.C. Penny's Company, in which it only took Penny's only five short years to take their private jean brand, Arizona Jeans, and turn it into a five-hundred million dollars a year brand, along with building a sustained feeling of product and company trust of the JC Penny's brand name.

As to be expected, in order to have effectively executed these product-to-brand-to consumer programs, marketers would have had to conduct extensive research of the marketplace. Marketing research has established itself as both a necessary and important step in the evolution of businesses in today's highly competitive marketplace. Some of the questions marketing research assist the business in determining have been presented in **Table 7**:

**Table 7:** *Marketing Research Questions to Assist Businesses*

- Who is your target market?
- Do your current customers fit into that market?
- Where, geographically, does your market have strong holds?
- Do you believe your product is one that will last or is the market a fad?
- Does your company's image match with your brands and products?
- What forms of product/service selling will work best?
- Where and how should the firm conduct its new product or new niche test marketing?
- What are the best media services to employ?
- Is your company properly structured for the future of market opportunities and challenges?
- Does the company desire to improve it competitive position? (Elcock, 1996; Isenberg, 1986; and McGee, 2006)

These questions have been so pivotal when deciding how, where, and to who would be necessary to design a successful marketing campaign. To have an executable an effective marketing plan, marketers must maximize information while minimizing superfluous data. The level of market coverage, and who controls the coverage, cost, and length of time for advertisements, all must have been taken into close consideration when having decided the successful marketing approach. So much has been required to have an effectively executable marketing approach, from extensive marketing research and new concept developments, to what new packaging concepts, to what new media outlets to attempt to use, to the different distribution channels that would have been more time or cost effective.

## DESIGN - RESEARCH APPROACH

The quantitative research has examined the relevant marketing challenge factors of POISE and its beneficial factors as components of the marketing mix. This has generated a series of subordinate research objectives, which attempted to rationalize the contribution and weighted value of each of the POISE sector elements. The net result of research would also have given credence to the notion that the long term benefits of POISE should prove valuable to implement over time.

## DESIGN - METHODOLOGY

The research offered within this study has presented both secondary and primary research to present an exhaustive perspective on one of the marketing mix's most unique elements, **POISE**. As determined through secondary research, **POISE** would offer a series of beneficial factors for marketers to include a deeper understanding of external competitive forces, technological forces, corporate cultural dynamics, customer and/or consumer knowledge, and learning-curve challenges. The secondary research also revealed the overall benefits and implementation hurdles of incorporating **POISE** and as such, the likely overall commitment towards implementing **POISE** for long-term application. These published aspects greatly assisted in constructing the salesperson relationship model.

None-the-less, hypotheses were constructed on the basis of the secondary investigation of **POISE** and its related components, of which a multi-segmented and multi-scaled online survey was constructed. The hypotheses for this research project were:

**H1:** Few marketing persons are yet aware of POISE as the 6<sup>th</sup> 'P' of the expanded marketing mix.

**H2:** Few marketing professionals understand the company-wide implications of POISE.

**H3:** Few marketing professionals understand the company-wide applications of POISE.

Taken from Davidson & Keegan:

**H4a:** Marketers would agree to be **Profitable**- Proper balance between firms' needs for profit and customers' needs for value.

**H4b:** Marketers would agree to be **Offensive**- Must lead market, take risks and make competitors followers.

**H4c:** Marketers would agree to be **Integrated**- Marketing approach must permeate whole company.

**H4d:** Marketers would agree to be **Strategic**- Probing analysis leading to a winning strategy.

**H4e:** Marketers would agree to be **Effectively Executed**- Strong and discipline execution on a daily basis.

Taken from Davidson's Offensive Marketing of the Marketing Alignment Process:

**H5a:** Marketers would agree that '**exploitable assets**' were areas where a company could create a unique competency to become stronger than the competition.

**H5b:** Marketers would agree that '**exploitable competencies**' were those areas in which a firm has or could likely build an edge over competitors.

**H5c:** Marketers would agree that '**attractiveness of priority business areas**', would involve reviewing the *magnetism* of the markets, channel relationships, and profiling customer groups, both current and future.

- H5d:** Marketers would agree that ‘*matching future assets and competencies for the future,*’ involved matching rank levels one through three in order have identified where the firm would be most effective to compete in the future.
- H5e:** Marketers would agree that ‘**assets & competencies for strengthening,**’ was to have identified, developed or acquired the necessary competencies that may have been missed.
- H6:** Marketers would agree that **Offensive Marketing** would be valuable for having created superior and recognized customer value as well as having achieved above-average profits.
- H7:** Of the five **Offensive Marketing Attack Strategies**, which one(s) remain in use as valued competitive practices?
- a. Frontal Attack
  - b. Flanking Attack
  - c. Encirclement Attack
  - d. Bypass or End-around Attack
  - e. Guerrilla Attack
- H8:** Very few companies have yet to incorporate a **Brand Equity Manager**, whose chief goal was to establish superior business performance while helping position the company in the best position possible amongst its competitors.
- H9:** Through an **Offensive Marketing Strategy**, the firm would have been able to generate a strongly committed desire for innovative.
- H10:** Most marketers would agree that an **Integrated Marketing Strategy**, which has also been referred to as the *total marketing approach*, would mean that every functional area of the business, accept for accounting & finance’s investor relations, would combine to deliver a maximum of customer value at minimum cost.
- H11:** Most marketers would agree that **Strategic Marketing Management** has enabled a company to concentrate on initializing the smallest niche opportunities into something that would have given them a distinct competitive advantage as well as increasing sales and share value.
- H12:** Most marketers would agree that **Effective Marketing**, through brand equity, has played an important role in establishing distinct advantages towards a firm’s marketing perceived value from its marketplace.

## ANALYSIS AND FINDINGS:

There were 150 invitations to marketing professionals to take the online survey and 114 completed the survey, having represented 76% response rate. A composite of all responses yielded the following: mean 4.47, mode 4, variance 3.11, and std. var. 1.76. It was to have been expected that the first few questions would have had very low level responses given the subject matter, POISE, was neither little know nor well understood. A summary of the statistical findings has been presented in **Table 8** below:

**Table 8:** Statistical Summary of Hypotheses Testing

HYPOTHESIS	QUES. No.	MEAN	MODE	VARIANCE	STD. DEV.
H-1	1	2.82	1	3.53	1.88
H-2	2	2.57	1	3.15	1.61
H-3	3	2.45	1	2.85	1.48
H-4a	4a	5.58	7	1.82	1.17
H-4b	4b	5.29	6	1.61	1.27
H-4c	4c	5.30	5	1.52	1.23
H-4d	4d	5.39	6	1.39	1.29
H-4e	4e	5.28	6	1.24	1.25
H-5a	5a	5.29	6	1.28	1.53
H-5b	5b	5.30	5	2.13	1.89
H-5c	5c	5.39	6	2.09	1.56
H-5d	5d	5.28	5	1.66	1.45
H-5e	5e	4.89	5	1.57	1.30
H-6	6	4.40	4	2.30	1.71
H-7a	7a	4.20	4	2.43	2.01
H-7b	7b	4.04	4	2.11	1.83
H-7c	7c	4.04	4	1.69	1.17
H-7d	7d	3.90	4	2.26	1.24
H-7e	7e	4.15	4	2.71	1.65
H-8	8	4.12	5	3.47	1.86
H-9	9	5.06	6	2.09	1.45
H-10	10	5.04	5	1.42	1.19
H-11	11	5.33	5	1.45	1.20
H-12	12	5.54	6	1.47	1.21

**Hypotheses 1, 2 and 3** were accepted as their respective mean and mode values reflected little knowledge of the 6<sup>th</sup> 'P', **POISE**. **Hypotheses 4a through 4e** reflected strong mean and mode responses and were accepted. **Hypotheses 5a through 5e** also shown strong mean and mode responses and were, likewise accepted. **Hypothesis 6** (... that **Offensive Marketing** would be valuable for having created superior and recognized customer value as well as having achieved above-average profits) reflected mixed responses of mean 4.40 and mode 4, as many respondents may not have fully understood the connection that Offensive Marketing plays within the **POISE** strategy. As such this hypothesis was neither accepted nor rejected.

**Hypotheses 7a through 7e & 8** reflected only moderate mean and mode responses, likely due to the subject matter being so new, and were neither accepted nor rejected. However, the clearly well understood marketing subjects of **Hypotheses 9 through 12** were well received with strong means and modes, and, as such these hypotheses were accepted.

As some the questions were distinctly related both One-way ANOVA and Covariance analysis were preformed and presented in **Table 9**.

**Table 9:** *Advanced Statistical Analysis or Distinct Subject Relationships*

Question/ Hypothesis	One-way ANOVA	Question/ Hypothesis	Covariance
Q-7a & 7e	0.557	Q-1 & 3	2.605
Q-7a & 7d	0.712	Q-1 & 2	2.796
Q-7a & 7c	0.055	Q-2 & 3	2.822
Q-a & 7b	0.462	Q-4a & 4c	0.622
Q-7b & 7e	0.186	Q-4a & 4b	0.866
Q-7b & 7d	0.735	Q-10 & 12	0.862
Q-7b & 7c	0.234	Q-10 & 11	0.828
Q-7c & 7e	0.012	Q-11 & 12	1.048
Q-7c & 7d	0.132	-----	-----
Q-7d & 7e	0.340	-----	-----

As to have been expected, there were close relationships in the respondent responses to Question/Hypothesis 7a **Frontal Attack** and 7b **Flanking Attack**. It was also expected that there would have been higher correlations shared with the other three **Offensive Marketing Attack Strategies**, but it was not the case.

Clearly, it was expected that since the subject matter of POISE was so new, there would likely to have been strong correlations in respondent responses associated with **Q-1** (... aware of **POISE** as the 6<sup>th</sup> 'P' of the expanded marketing mix), **Q-2** (... understand the company-wide implications of **POISE**), and **Q-3** (... understand the company-wide applications of **POISE**). In addition there was strong response association from the respondents, **Q-11** (... **Strategic Marketing Management**) and its commonly understood associate **Q-12** (...**Effective Marketing**, through brand equity).

## RESEARCH LIMITATIONS:

Although a new venture into a brand new marketing mix element, POISE, it has to be obvious that a plethora of future research will be conducted on this subject matter. Considering the strategic implications of POISE creating change dynamics throughout entire organizations, the issues, obstacles and challenges for these firms has yet to be determined. In addition, the international adaptation of POISE would likely create additional sets of issues and challenges both foreign and domestic... it's like the Wild, Wild West, all over again, but with large and mega-large businesses.

This present research effort was limited by a non-statistical sample size (n) and lacked sufficient national and international coverage. It was hoped that through the online survey mode of response data gathering that the respondents were objective in all answers as there were no methods utilized to verify and/or validate the objectivity of their responses.

## CONCLUSIONS

As a new element, **POISE** has clearly brought forth new paradigms of thinking. **POISE** has been a enormous addition to the marketing mix, one that has already profoundly altered marketers' views and actionable efforts. Like the rest of the marketing mix, a business will not be successful by implementing only a few parts. The entire system of profitable, offensive, integrated, strategic, and effectively executed marketing need to be implemented together and along with other variables of the marketing mix in order to be successful.

Davidson & Keegan summarized the use of **POISE**:

Following the elements of **POISE** – Profitable, Offensive, Integrated, Strategic and Effectively Executed – creates the opportunity for real marketing leadership in the organization and the foundation for sustainable competitive advantage in markets that are sure to get only more combative (Davidson 36).

No two companies would have been exactly the same, so businesses would need to choose the variables of the marketing mix that may hopefully help them succeed.

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## APPENDIX-A

### Questionnaire: POISE- the 6th 'P' in the New Marketing Mix

This survey will analyze the application value of incorporating POISE and its related attributes into America's marketing management practices. This survey is being administered by Dr. J.D. Williams, college professor from Kutztown University. I thank you for participation in this survey. Your participation in this study is voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw, simply do not complete the survey. By completing the survey you are consenting to participate in the study and that you are 18 years of age or older. All information from this survey will be handled in a confidential manner, so no one will be able to identify you when results are reported. This questionnaire was reviewed and approved for distribution by K.U.'s I.R.B on \_\_\_\_\_.

Please circle the number that best relates to your business situation.

#### Screening Questions:

1. Are you 18 years or older?
2. Are you currently employed in a marketing capacity?
3. Are you currently working as a marketer in the United States?

#### General knowledge of POISE

##### Q-1. To what extent are you knowledgeable of the new 6<sup>th</sup> 'P' in the marketing mix, POISE?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

##### Q-2. To what extent are you aware of the company-wide implications of POISE?

1	2	3	4	5	6	7
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##### Q-3. To what extent are you aware of the company-wide applications of POISE?

1	2	3	4	5	6	7
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#### Davidson's Offensive Marketing of the Marketing Alignment Process:

##### Q-4. To what extent would you agree as to the relative importance of the following statements?

- |  |                   |   |   |   |   |                          |
|--|-------------------|---|---|---|---|--------------------------|
|  | <b>Not at all</b> |   |   |   |   | <b>To a Great Extent</b> |
| a. Marketers being <b>Profitable</b> - Proper balance between firm's needs for profit and customers' needs for value.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| b. Marketers focused on ' <b>exploitable competencies</b> ' in which a firm has or could likely build an edge/wedge over competitors.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| c. Marketers being <b>Integrated</b> - in which marketing approach must permeate whole company.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| d. Marketers focusing upon ' <b>matching future assets and competencies for the future,</b> ' involved matching rank levels (1- Identify exploitable assets, 2- Identify exploitable competencies & 3- Rank attractiveness of priority business areas) in order have identified where the firm would be most effective to compete in the future. | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| e. Marketing needs to be <b>Effectively Executed</b> - Strong and discipline execution on a daily basis.   | 1                 | 2 | 3 | 4 | 5 | 6 7                      |

#### Davidson's Offensive Marketing of the Marketing Alignment Process:

##### Q-5. To what extent would you agree as to the relative importance of the following statements?

- |  |                   |   |   |   |   |                          |
|--|-------------------|---|---|---|---|--------------------------|
|  | <b>Not at all</b> |   |   |   |   | <b>To a Great Extent</b> |
| a. Marketers focusing upon ' <b>exploitable assets</b> ' in which a company could create a unique competency to become stronger than the competition.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| b. Marketers focusing upon ' <b>exploitable competencies</b> ' in which those areas in which a firm has or could likely build an edge over competitors.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| c. Marketers thinking of ' <b>attractiveness of priority business areas</b> ', would involve reviewing the <i>magnetism</i> of the markets, channel relationships, and profiling customer groups, both current and future.           | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| d. Marketers think that ' <b>matching future assets and competencies for the future,</b> ' involved matching rank levels one through three in order have identified where the firm would be most effective to compete in the future. | 1                 | 2 | 3 | 4 | 5 | 6 7                      |
| e. Marketers would think that ' <b>assets &amp; competencies for strengthening,</b> ' was to have identified, developed or acquired the necessary competencies that may have been missed.  | 1                 | 2 | 3 | 4 | 5 | 6 7                      |

**Q-6:** Would you agree that **Offensive Marketing** would be valuable for having created superior and recognized customer value as well as having achieved above-average profits?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

**Q-7:** Of the five **OFFENSIVE MARKETING ATTACK STRATEGIES**, which one(s) remain in use as valued competitive practices?

	<b>Not at all</b>					<b>To a Great Extent</b>
	1	2	3	4	5	6
a. Frontal Attack	1	2	3	4	5	6
b. Flanking Attack	1	2	3	4	5	6
c. Encirclement Attack	1	2	3	4	5	6
d. Bypass or End-around Attack	1	2	3	4	5	6
e. Guerrilla Attack	1	2	3	4	5	6

**Q-8:** Has your company incorporate a **Brand Equity Manager**, whose chief goal was to establish superior business performance while helping position the company in the best position possible amongst its competitors?

<b>Do not understand</b>		<b>Not at all</b>		<b>We are considering it</b>		<b>Absolutely</b>
1		2		3		4

**Q-9:** Do you agree that through an **Offensive Marketing Strategy**, the firm would be able to generate a strongly committed desire for innovative?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

**Q-10:** Do you agree that an **Integrated Marketing Strategy**, which has also been referred to as the *total marketing approach*, would mean that every functional area of the business, except for accounting & finance's investor relations, would combine to deliver a maximum of customer value at minimum cost?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

**Q-11:** Do you agree that **Strategic Marketing Management** has enabled a company to concentrate on initializing the smallest niche opportunities into something that would have given them a distinct competitive advantage as well as increasing their sales and share value?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

**Q-12:** Do you agree that **Effective Marketing**, through brand equity, has played an important role in establishing distinct advantages towards a firm's marketing perceived value from its marketplace?

<b>Not at all</b>						<b>To a Great Extent</b>
1	2	3	4	5	6	7

Thank you so very much. Your involvement with this survey has been greatly appreciated. If you like, I would be pleased to offer you a copy of my findings once the paper has been published, which could take up to a year. If yes, the please leave me your email address:

\_\_\_\_\_.

# THE RELATIONSHIP BETWEEN SELF EFFICACY, PROJECT LEADERSHIP OUTCOME AND FUTURE INTENTIONS TO ENGAGE IN ORGANIZATIONAL BUSINESS PROCESS IMPROVEMENT OPPORTUNITIES

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## ABSTRACT

*Most experienced managers know at the gut level that employees with higher confidence and a positive belief in their abilities will perform better than those without them. As Henry Ford put it, "If you think you can or think you can't, you are right." Six Sigma is but one in a long line of programs (e.g. quality circles, kaizen, TQM, etc) to support the development of a culture of continuous improvement. The reality is that arming individuals with increasingly more robust approaches to identify new opportunities, at a cost of billions annually has failed to eliminate the gap between knowing what needs to be done and making it happen. Investigation of employee behavior and motivation within the construct of social cognitive theory, more specifically the concept of self-efficacy, provides evidence for the importance of one's resilient self-belief as a predictor of success. Does a mastery experience influence one's level of motivation to engage in organizational business process improvement (BPI)? This is consistent with "mastery experience" as the most important source of self-efficacy development. The central hypotheses of this study investigated the relationship between the outcome of one's most recent project leadership attempt and future intent to: a) use the methodology, b) lead a project, or c) participate on a project team. The results of the analysis showed that the intent to use BPI tools in the future and likelihood to participate in a future BPI project depends on past success with BPI projects as well as one's self-efficacy. It showed the significance of the mastery experience as an influence on one's personal belief in their abilities and subsequently on their future intent to engage in business process improvement efforts.*

**Keywords:** *Self-Efficacy, Leadership, BPI, Process Improvement, Project Management.*

## INTRODUCTION

Most experienced managers know at the gut level that employees with higher confidence and a positive belief in their abilities will perform better than those without them. As Henry Ford put it, "If you think you can or think you can't, you are right." Managers also know that the ability to drive continuous improvement and change in an organization is no longer an advantage, but rather a prerequisite for survival (Kotter, 1996). The amount of popular literature dedicated to the topic of change and leading change is representative of the priority this issue has with contemporary organizational leaders. Organizational leaders want to know how to more effectively and efficiently seek out new opportunities and also what can be done to ensure success in taking advantage of them.

Six Sigma has continued to gain popularity as the approach of choice for leaders in today's business environment who recognize the vital importance of continuous improvement. This methodology has gained momentum primarily as a result of its recognition as a means of creating a corporate culture with a bias for action, change and improvement (Anonymous, 2006). This management system focuses on achieving lasting business leadership and top performance that will benefit not just the business, but all its stakeholders to include; customers, associates, and shareholders. Evidence has shown though, that this program and others like it are still prone to failure (Warnack, 2000).

To successfully implement change, there is the inevitable need for employees to enact new behaviors so that desired changes can be realized (Armenakis & Bedeian, 1999). Six Sigma is but one in a long line of programs (e.g. quality circles, kaizen, TQM, etc) introduced in support of an organizational goal to create a culture of continuous improvement. The reality is that arming individuals with increasingly more robust approaches to identify new opportunities, at a cost of billions annually (Bandura, 1997), there has been a failure to eliminate the gap between

knowing what needs to be done and making the change a reality, with the failure of organizational change efforts reported to be 70-80% (Higgs & Rowland, 2005). Investigation of employee behavior and motivation within the construct of social cognitive theory, more specifically the concept of self-efficacy, provides evidence for the importance of one's resilient self-belief as a predictor of success.

The basic premise of most approaches in the abundance popular change management literature is that a leader can navigate and even influence change (Rosenberg, 2003), but that managing it is nearly impossible. The challenges facing the modern manager include: continually assessing how things could be done better, getting employees to share their change goals, and working together with them to achieve those goals (Paglis & Green, 2002). With a need for continuous improvement achieved through dramatic and rapid change, managers need to have a clear vision for the organization that takes into account the many factors that can influence success (Rosenberg, 2003). Leaders who are successful at driving continuous improvement in their organizations are also likely the ones who are successful at motivating and retaining high performing employees. This relationship supports an investment in investigations to understand what makes an employee motivated to step up and achieve the type of real and sustainable business results a corporation needs to remain competitive.

When a person's high self-expectations result in high performance, the Galatea effect is said to occur. One of the key conceptual formulations of self-expectations of performance is task specific self-efficacy (McNatt & Judge, 2004). According to Self-Fulfilling Prophecy theory, one's behavior is consistent with his or her expectations, and those behaviors in turn will influence outcomes (Merton, 1948). Research in the area of psychology has suggested that individual personality type and efficacy may serve as predictors of leadership effectiveness especially in leading change efforts (Atkinson & Millar, 1999). Self-efficacy is a person's conviction about his or her abilities to mobilize the motivation, cognitive resources, and courses of action needed to successfully execute a specific task within a given context (Stajkovic & Luthans, 1998). Not only does a person's beliefs about their abilities have an influence on the outcome of their actions, people tend to avoid activities and situations where they believe they are likely to fail, and will adjust their level of effort based on the outcome they expect. Bandura (1997) contends that one's behavior is better predicted from his or her beliefs than from the actual consequences of his or her actions. The importance of this theory is the implications it has on where a manager should target his or her energies in the hopes of developing employees who can and will succeed at the efforts needed to change an organization.

A person with strong self-efficacy, when faced with task failure and frustrations, is more likely to recover quickly, to demonstrate persistence, and to employ creative problem solving when faced with challenges. This type of individual believes they will find a way if they work hard enough. When they are unsuccessful, it will not be attributed to their ability, motivation or the situation, but instead to a lack of effort on their part. People with high self-efficacy will persevere at tasks even when they are doomed to fail. They will persevere even when they really do not have the ability to perform a task; they will not "throw in the towel"; because they are spurred by obstacles to greater effort (Bandura, 1999).

Research within organizations (Bandura, 1999; Stajkovic & Luthans, 1998) has demonstrated that self-efficacy is strongly related to performance. Research has shown that self-efficacy affects peoples' thoughts, actions, levels of motivation and perseverance, and susceptibility to stress and depression. In light of what has been recognized about the challenges of transformation in an organization, the impact of a trait like self-efficacy seems intuitive. The implications to managers seeking means develop motivated employees, task specific self efficacy is increased through successful performance, but management could also structure successful repetitious and progressively more difficult mastery experiences for employees, so that they learn that they can "do it" (Eden & Yaakov Zuk, 1995; McNatt & Judge, 2004).

Albert Bandura (2000) proposed that one's achievement is dependent on having the required skills and a resilient self-belief in one's ability to apply the skills, and made this concept the foundation of social cognitive theory. Organizations focused on creating a culture of continuous improvement are interested in engaging all employees in the use of the desired behavior not just once, but as a norm going forward. To do this, organizations must understand factors that impact whether or not employees have the motivation to step up to the challenge of leading

change. The modern organization needs all employees to be actively engaged in continuous improvement efforts, in the target of this study, using Six Sigma methodology.

Self-efficacy is developed in four ways: mastery experience, social modeling, social persuasion, and affected state (Bandura, 2000; Goddard, Hoy, & Hoy, 2004). The mastery experience, considered to be the most powerful source of developing strong self-efficacy, is the focus of this research study. An understanding of organizational change, the Six Sigma methodology for continuous improvement, and the social cognitive construct of self-efficacy provide the context for this study.

## RESEARCH OBJECTIVES

The purpose of this quantitative correlation research study is to investigate, in one large high tech company, the relationship between the outcome of one's most recent BPI project leadership attempt, his or her self reported motivation to attempt future use the BPI methodology, and his or her level of BPI Skill Self-Efficacy (BPI SE). The four research questions addressed are: (1) Is one's self-reported likelihood to attempt Business Process Improvement in the future dependent on the outcome of his or her most recent BPI project leadership attempt? (2) Is one's level of BPI self-efficacy dependent on and the outcome of his or her most recent BPI project leadership attempt? (3) Is there a relationship between an employee's self-reported likelihood to attempt Business Process Improvement in the future and his or her level of BPI self efficacy? and (4) Is one's level of BPI self efficacy dependent on his or her total project leadership experience? The research questions are primarily based on the work of Albert Bandura (2000) who theorized the mastery experience to be the most powerful source of self-efficacy.

## METHODOLOGY

The target of this study is a Fortune 100 high tech company. The leadership introduced the Six Sigma based methodology they called Business Process Improvement (BPI) several years ago as the chosen approach to understanding and improving business processes, product quality, and service. One of the company's three guiding initiatives is "Winning Culture", and BPI is a key component of this initiative. The company encourages the use of BPI to increase productivity, reduce cost, foster global sharing of key learning's and enhance individual and team development. BPI provides every team member the opportunity to develop new skills while helping the company become continuously more efficient and productive. It is a vehicle that enables every employee to excel.

In this study the relationship between an employee's likelihood of engaging in opportunities to improve the organizational performance through the application of a Six Sigma methodology for continuous improvement and the outcome of their most recent leadership attempt using the methodology is investigated. The Project Tracking Tool (PTT), an intranet application used to document all BPI efforts, was the source used to identify the population of 759 Green Belt BPI projects completed in the last two fiscal quarters (green belt projects are the BPI projects most representative of a culture of continuous improvement where all employees are empowered to drive change, and 95% of the employee skill certifications are at the Green Belt level). This secondary data source provided data that included the project leader, project outcome, and the existence and outcome of any previous leadership attempts. The identified project leaders were sent a web-based, two-part questionnaire to gather self-reported information: (a) confidence in successfully completing the tasks associated with BPI projects, and (b) intention to use the BPI methodology and tools again in the future. The questionnaire consisted of two parts -- BPI Skill Appraisal and future intentions. The BPI Skill Appraisal had 13 tasks with a 10 point scale to assess one's confidence in completing the task, while the second part on future intentions had three questions about leadership of, participation in and use of the methodology for improvement opportunities in the future. The company email address was used to distribute the survey. Of the 759 surveys sent, 449 responses (59.2%) were received.

## ANALYSIS AND RESULTS

**Hypothesis 1:** *One's intention to use BPI in the future is independent of the outcome of his or her most recently led BPI project. Note that for this Chi Square analysis, the 5-point Likert scale values were combined to create two*

categories. "No" included (a) strongly disagree, (b) disagree, and (c) neither agree nor disagree, while "yes" included both (d) agree and (e) strongly agree.

**Chi Square Test of Independence**

		Outcome		Total
		Deactivated	Complete	
Use BPI in future	No	55	21	76
	Yes	176	197	373
Total		231	218	449

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.030	1	0.0000

With a p-value of .0000 which is less than .05, the null hypothesis is rejected. It can be concluded that the intent to use BPI tools in the future depends on past success, with likely participation greater following successful projects.

**Hypothesis 2:** *There is no difference in the mean BPI Self Efficacy as a function of the result of one's most recently led BPI project.*

**Independent Samples t-test**

		Outcome	N	Mean	Std. Deviation	Std. Error Mean
BPI Self-Efficacy	Deactivated		231	7.91	1.599	0.105
	Complete		218	8.69	1.401	0.095

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean difference
BPI Self-Efficacy	Equal variances assumed	-5.473	447	.000	-0.78

With a sig. value of .000 which is less than .05, the null hypothesis is rejected. It can be concluded that the mean BPI self-efficacy level differs as a function of one's most recently led BPI project, with those who successfully led a BPI project to completion having significantly higher self-efficacy vs. those who were unsuccessful.

**Hypothesis 3:** *There is no difference in the mean BPI Self Efficacy as a function of one's future intention to participate in a BPI project.*

**Independent Samples t-test**

		Likely to Participate	N	Mean	Std. Deviation	Std. Error Mean
BPI Self-Efficacy	No		76	7.36	1.704	0.195
	Yes		373	8.48	1.452	0.075

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean difference
BPI Self-Efficacy	Equal variances assumed	-5.948	447	.000	-1.12

With a sig. value of .000 which is less than .05, the null hypothesis is rejected. It can be concluded that the mean BPI self-efficacy level differs as a function of one's likelihood to participate in a future BPI project, with those likely to participate having a significantly higher BPI self-efficacy than those who are neutral or unlikely to participate in a BPI project again.

**Hypothesis 4:** *There is no difference in the mean BPI Self Efficacy as a function of one's total BPI project leadership experience. Total experience is shown in two parts: the first lists "none", "past complete" or "past deactivated", depending on experience and success with a BPI-led project prior to the most recent one. The second part lists "deactivated" or "complete" depending on the success of the most recently led project. An Analysis of Variance was conducted with a .05 level of significance.*

<b>Total BPI Project Leadership Experience</b>	<b>Mean</b>	<b>N</b>
Past complete / recent complete	8.95	80
Past complete / recent deactivated	8.40	85
Past deactivated / recent complete	8.24	50
Past deactivated / recent deactivated	7.55	58
None / recent complete	8.71	80
None / recent deactivated	7.68	88

**ANOVA**

	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Sq</i>	<i>F</i>	<i>Sig.</i>
<i>Between Groups</i>	116.695	5	23.339	10.716	0.000
<i>Within Groups</i>	964.863	443	2.178		
<i>Total</i>	1081.558	448			

With a sig. value of .000 which is less than .05, the null hypothesis is rejected and it can be concluded one's level of BPI self-efficacy is a function of total project leadership experience. A post-hoc evaluation determined which categories significantly differ. The following table shows the 6 pairings which were significant at the .05 level.

<i>Category 1</i>	<i>Category 2</i>	<i>Mean Diff</i>
<i>Past complete / recent complete</i>	<i>None / recent deactivated</i>	1.27
<i>Past complete / recent complete</i>	<i>Past deactivated / recent deactivated</i>	1.40
<i>Past complete / recent deactivated</i>	<i>None / recent deactivated</i>	0.73
<i>Past deactivated / recent complete</i>	<i>Past deactivated / recent deactivated</i>	0.85
<i>None / recent complete</i>	<i>None / recent deactivated</i>	1.04
<i>None / recent complete</i>	<i>Past deactivated / recent deactivated</i>	1.16

The results here were quite revealing. Those whose most recent projects were deactivated and who had no prior success with BPI had the lowest self-efficacy scores, while those who had success on the most recent BPI project or a past one had the highest self-efficacy scores, and these two groups were significantly different. Whether in the past or present, success and high self-efficacy go together just as lack of success and low self-efficacy go together.

**CONCLUSION AND FUTURE RESEARCH**

This study demonstrated the significance of the mastery experience as an influence on one's personal belief in their abilities and subsequently on their future intent to engage in business process improvement efforts. To successfully implement change, there is the inevitable need for employees to enact new behaviors so that desired changes can be realized (Armenakis & Bedeian, 1999). Six Sigma is but one in a long line of programs (e.g. quality circles, kaizen, TQM, etc) introduced in support of an organizational goal to create a culture of continuous improvement.

The results of the analysis showed that (1) the intent to use BPI tools in the future depends on past success, with likely participation greater following successful projects; (2) the mean BPI self-efficacy level differs as a function of one's most recently led BPI project, with those who successfully led a BPI project to completion having significantly higher self-efficacy vs. those who were unsuccessful; (3) mean BPI self-efficacy level differs as a function of one's likelihood to participate in a future BPI project, with those likely to participate having a significantly higher BPI self-efficacy than those who are neutral or unlikely to participate in a BPI project again; and (4) one's level of BPI self-efficacy is a function of total project leadership experience, with those who never had success on a BPI project having significantly lower self-efficacy scores than those who had any success on one.

People approach and explore situations within their perceived capabilities, while avoiding situations they think exceed their ability (Bandura, 2000). Important theoretical implications of the findings of this study are based on the research that has also shown that the greater the confidence individuals have in their capabilities, the more vigorous their effort and persistence (Bandura, 1997). It is theorized that, compared to low self-efficacy employees, the high self-efficacy employees are more likely to take on difficult challenges, will likely exert more effort, and will persist longer when faced with inevitable obstacles. Relatively unburdened by the stress associated with self-doubters, the high self-efficacy employees may be expected to respond more aggressively to opportunities to engage in change and continuous improvement (Paglis & Green, 2002). The study provides valuable support for the applicability of SCT and the concept of self-efficacy to a business organization.

Support for the practical applicability of BPI mastery experience findings are based on the malleability of self-efficacy. The manager has organizational responsibility to both process and people. Because self-efficacy has been described as a malleable quality, any management attempt to proactively intervene in an effort to raise an employee's self-efficacy seems intuitively obvious. With the potentially viable activity of providing individuals with additional information and experience to consider in their ever-continuous self-evaluation (Gundlach, Martinko, & Douglas, 2003), managers should eagerly support any person in their organization who takes on the challenge of BPI project leadership. Because a BPI project is the type of significant and important event that supports development of self-efficacy, it has the "double edge" capacity of creating a negative workplace experience in the event of failure. If a manager is supportive of an employee engagement in his or her first BPI opportunity, that manager's ongoing engagement and monitoring to assist in making the endeavor a successful one will potentially make that employee more self-motivated toward BPI efforts in the future.

While many organizations start out with motivated employees and focused initiatives, their ability to maintain the initiatives often wanes over time (Bullington, Easley, Greenwood, & Bullington, 2002) The question of whether managers should pay attention to people or process is futile at best. The truth is they need to pay attention to both. Despite all of the evidence for primacy of the process there is even more evidence for concern for people. Evidence shows that the likelihood of failure of improvement efforts in an organization to be roughly two-thirds of those initiated. This study provided support for the idea that the failure to assess human perceptions and behaviors has some value in explaining the frequent failures.

Future research opportunities include an investigation of importance of a mastery experience for the team members. Though the role of team members on a project is inconsistent from project to project and from organization to organization, the idea of group efficacy in this setting is a future research opportunity. Understanding how group efficacy influences the success of a project is valuable to building a culture of continuous improvement where competent individuals are available where and when needed. As a culture is developing, the hope is that a "critical mass" is created, one that ensures support for any opportunity. Another possibility is to conduct a longitudinal study so as to investigate if the novice project leader with a successful outcome changes future intent over time. Can a task be so formidable that despite a positive outcome, a person can hardly fathom doing it again when asked shortly after the event?

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# LEADERSHIP WITHIN BUSINESS SYSTEMS THINKING, AND ETHICAL DILEMMA IN TODAY'S WORKPLACE

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## ABSTRACT

*Leadership is a process whereby an individual influences a group of individuals to achieve a common goal (Northouse, 2010). To be an ethical leader, then, is not a matter of following a few simple rules. The leader's responsibility is complex and multi-dimensional, rooted less in technical expertise than in simple human integrity. "To do this to the right person, to the right extent, at the right time, with the right motive, and in the right way, that is not for everyone nor is it easy; wherefore goodness is both rare and laudable and noble." (Aristotle, Ethics II.9). This study quantitative study observed a multiple workplace that leaders practice business systems thinking and face ethical dilemmas in today's workplace. The finding from this study revealed that ethical issues were given little attention in applying business systems thinking.*

**Keywords:** Leadership, System Thinking, Ethics, Ethical Dilemma, Workplace.

## PURPOSE OF THE STUDY

The Aim of this study is to gain a deeper understanding of the relationship between Leadership within Organization, system thing and ethical dilemma in today's workplace compensation and firm performance in publicly traded parents of for-profit colleges and universities. The researcher will seek to explore how leaders perceive System Thinking, and Ethical Dilemmas in today's workplace. According to Savage-Austin and Guillaume (2012), the subject of leadership is complex and one of the main issues facing organizational leaders today is how to motivate employees to actively participate in the efforts that lead to accomplishing organizational goals. The researcher will seek to link leadership with systems thinking, and ethical dilemmas in the workplace. In addition, the purpose of this paper is to point out the types of ethical systems those managers; leaders have being used in the workplace.

With the help of the economic downturn, the benefit of good leaders has become one of the fastest growing trends in the leadership and internet related-business. Leaders in business realizes that in order to accomplish success it takes teams of individuals of who each are recognized for their importance and their ability to add value to the company or business.

## STUDY BACKGROUND AND METHODOLOGY

This study used a qualitative research method to leaders assess system thinking in the workplace and how leaders perceive ethical dilemma within organization. The methodology of this study explored and observed to gather information about today's leaders. Shank (2002) defines qualitative research as a form of systematic empirical inquiry into meaning. By systematic the researched planned, ordered, and public, following rules, agreed upon by members of the qualitative research community. By empirical, the researcher meant that this type of inquiry is grounded in the world of experience.

1. How do leaders approach systems thinking in the workplace?
2. How do leaders perceive ethical dilemma in their organization?

A qualitative study was conducted to analyze and understand their view. The researcher founded that leadership links to system thinking and ethical dilemmas. Organizations are becoming more complex. Leaders need systems that can integrate all aspect of their organization. The role of managers has changed drastically in the new century. They must become real thinkers in order to understand the complexity of the problems and interrelations among the components of the organizations. The researcher develop a three dimensional approach after the study.

## Definition of Systems Thinking

According to Reed (2006) Systems thinking are like the human body, they have parts, and the parts affect the performance of the whole. All of the parts are interdependent. The liver interacts with and affects the internal organs—the brain, heart, kidneys, etc. You can study the parts singly, but because of the interactions, it doesn't make much practical sense to stop there.

Kalim, Carson & Cramp (2006) defines systems thinking (ST) as a framework of thought that helps managers deal with complex problems holistically. Researchers identified several Systems Thinking techniques, models, and methodologies, developed for different situations in various fields. System thinking includes Hard Systems Thinking (HST), Soft System Thinking (SSM), Critical Systems Thinking (CST), Multimodal Systems Thinking (MST) (Erickson, 2003). Hard System Thinking (HST) consists of four systems approaches: operations research, systems analysis, system engineering, and system dynamics. These four systems help solve problems in organizations, using mathematical and statistical tools. Soft Systems Thinking (SST) has four components: interactive planning, strategic assumption surfacing and testing, interactive management, and soft systems methodology (Erickson, 2003). Critical Systems Thinking (CST) focuses on instrumental reason. It provides homological causal knowledge and practical understanding of human beings. Multimodal Systems Thinking (MST) is a new Systems Thinking approach. It presupposes that the universe has order, which covers natural phenomena and human life holistically (Erickson, 2003). Managers use these four systems to help them achieve different organizational goals.

The systems approach is to identify a system. After all, not all things are systems. Some systems are simple and predictable, while others are complex and dynamic. Most human social systems are the latter. In addition, the system thinking is to explain the behavior or properties of the whole system. This focus on the whole is the process of synthesis and the behavior or properties of the thing to be explained in terms of the role(s) or function(s) of the whole (Reed, 2006).

## Importance and Application of Systems Thinking

According to Palaima and Skaržauskienė (2010), the recent leadership theories emphasize the importance of holism, intuition, creativeness, and systems conception, for the success of leadership potential. Thus, leadership becomes a matter of conception including reflecting and thinking. Thinking includes manipulating information, forming concepts, ways of solving problems, and making decisions. The use of systems thinking is essential in this creative work (Palaima & Skaržauskienė, 2010). An organization is viewed as a complex open system (Skaržauskienė, 2010; Conti, 2010). As the environment influences the system it also influences the environment while making plans for changes, making decisions, and solving problems (Skaržauskienė, 2010). Skaržauskienė believes there is a relationship between systems thinking and organizational performance. She notes that the concept of systems thinking becomes very important in the twenty-first century, which generates more information than what we can control and creates interrelations that are difficult to foresee. She argues that in today's unstable and unpredictable environment, organizational leaders need to have the skills to act and also to understand the reasons problems occur. Systems thinking provides new productive ways and tools for the improvement of organizational performance. Therefore, systems thinking is a good tool to help achieve organizational goals (Skaržauskienė, 2010).

Jonker and Karapetrovic (2004) believe that the solution to address the growing needs for integration of management systems requires a conceptual model and a supporting methodology. Systems thinking can be used to facilitate the development and integration of integrated management systems (IMS) in organizations. Systems thinking can create significant value in the area of total quality management (Conti, 2010). Systems thinking allow organizational managers to monitor the strengths and weaknesses of the entire organization and identify opportunities and areas of improvement (Seiler & Kowalski, 2011). Systems thinking tools can help managers understand the complexity of today's organization and improve organizational performance (Wreme & Sorrenti, 1997). For instance, soft systems methodologies (SSM) help clarify confused and complex situations by providing managers with coherent and flexible thoughts process (Kalim, Carson, & Cramp, 2006). Systems thinking helps managers perform risk analysis and root cause analysis, which are closely related to organizational goals (Hughes,

Hall, & Rygaard, 2009). Systems thinking ability of managers can improve the management of supply chains (Moon, & Dong-Jin, 2005). Systems thinking have been used in a variety of disciplines to help achieve company goals and improve organizational performance.

## THEORETICAL FRAMEWORK

The researchers adopted the New Zealand government theoretical framework which is a way to tact ethical decision that we are making in the workplace. The researcher covers the following topics concept of leadership; leadership and theoretical framework. The flowchart below outlines the steps in the ethical decision-making framework. Each step represents how leaders use system thinking deliberately in the work place to resolve Ethical Dilemmas.

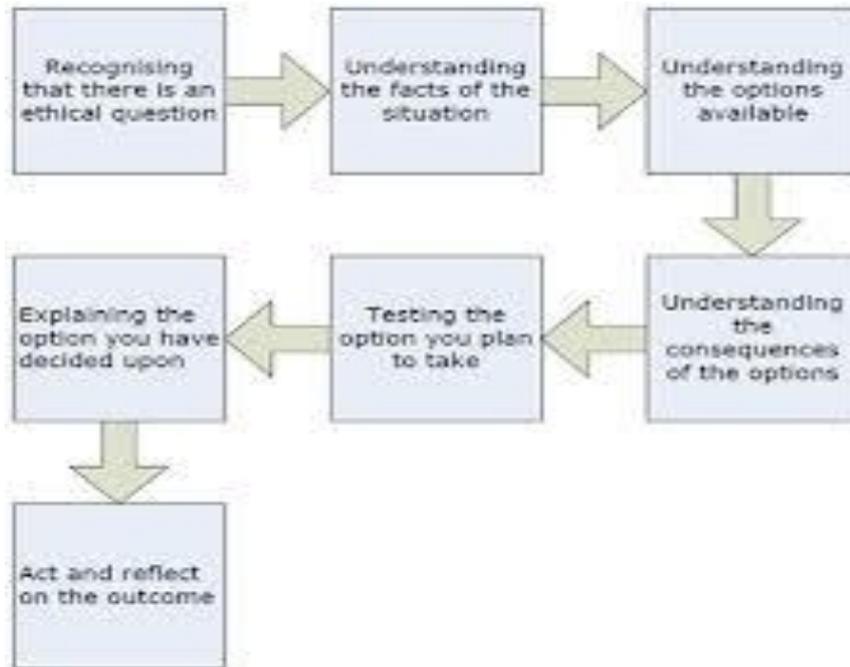


Figure 1: Ethical decision-making framework

## Systems Thinking and Strategic Planning

Wright, Pingle, and Kroll (1992) define strategy as “top management’s plans to attain outcomes consistent with the organization’s missions and goals.” For Marcus (2005), a strategy consists of the actions that managers take to achieve sustained competitive advantage. Strategy help businesses create competitive advantage by allowing them to lower their costs and improve the quality of the goods and services they provide (Marcus 2005). Strategic planning is a long-term plan that involves forming a strategic vision and mission, setting objectives, formulating a strategy to achieve the desired outcomes, implementing and executing the chosen strategy, evaluating performance, monitoring new developments, and taking corrective actions (Thompson & Strickland, 1999). During the strategic planning process, managers analyze the internal and external environment to identify the company’s strengths, weaknesses, opportunities, and threats.

Organizations are becoming more complex and system thinking provides strong foundation for managing high-performance companies (Skaržauskienė, 2010). Many researchers believe managers need more than the traditional strategic planning for the success of an organization. Good Systems thinking methodologies are crucial for today’s organizations. As organizations are becoming more complex, more problems arise and identifying and solving problems are becoming more difficult. Getting to the root cause of problems in complex organizations is very challenging for business leaders. Managers must be knowledgeable of their systems and subsystems and establish lines of communication among them. Managers must evaluate their systems on a regular basis in order to uncover any potential problems that could affect their operations and performance. Systems thinking can be a great help for managers or strategic planners. It helps identify a problem, develop hypothesis to explain why the problem occurs.

Using a computer simulation model, managers can discover the root cause of the problem. They can test the model in the real world, create alternative solutions, and implement them (Erickson, 2003).

System thinking is a component of strategic planning called strategic thinking. Strategic thinking provides a holistic view of the organization (Liedtka, 1998; Graetz, 2002; O'Shannassy, 2003). Strategic thinking is built on a systems perspective of the organization. It views the organization as an open system (Liedtka, 1998). For example, soft system thinking is a planning methodology. It helps improve communication and facilitate understanding among people. It takes a holistic view of problem by recognizing the interconnection of all the components (Liedtka, 1998; Boon, 2005).

Strategic thinking and strategic planning complement themselves (Graetz, 2002). O'Shannassy (2003) define strategic thinking as a specific way of solving strategic problems in the whole organization by joining rational and generative thinking. Managers should embrace strategic thinking instead of the traditional strategic planning (O'Shannassy, 2003). The rational systematic process of strategic planning provides a clear, understandable, and systematic approach but some of its assumptions are not sustainable. What evolves in reality may be different from what managers intended. Therefore, in a very unpredictable environment, strategic thinking provides a more creative, dynamic and responsive, and intuitive process (Graetz, 2002; O'Shannassy, 2003).

Organizations are becoming more complex. Managers need systems that can integrate all aspect of their organization. The role of managers has changed. They must become real thinkers in order to understand the complexity of the problems and interrelations among the components of the organizations. Managers need the proper tools that systems thinking can provide. Systems thinking can be combined with the rational approach of the strategic planning process to improve organizational performance and create sustainable competitive advantage.

### ***The Thinking behind Ethical Systems***

Whittington (2010) defines ethics as "The study of moral principles and values that govern the actions and decisions of an individual or group." He believes that most people within a society can agree on what is considered ethical and unethical behavior. For Spiceland, Sepe, and Nelson (2011), ethics refers to a code or moral system that allows people to evaluate what is right or wrong. Although organizations and professional groups have established codes of ethics and guidelines to urge their members to behave ethically, people are facing ethical dilemmas in their professional and personal lives. Ethical dilemma is a situation that challenges an individual's ethical behavior. It also involves a situation in which the decision of an individual will affect the welfare of one or more other individuals (Whittington, 2010). According to Grayson (2000), individuals and organizations of all kind are facing ethical dilemmas.

Management of most public companies prefers reporting earnings that increase smoothly. A decrease in a company's earnings can cause its stock price to drop. According to Martin (2011), the stock of a company performs better when it meets or beat market expectations. Earnings management is very common among public companies. Based on the agency theory, managers have the responsibility to maximize shareholders wealth. However, they are often interested in maximizing their own wealth than that of their shareholders. Therefore, they often face ethical dilemmas when reporting company earnings because they are pressed between following the ethical standards and acting in their own interest.

According to Thibodeau and Freier (2011), many executives exert unethical behavior. For example, Qwest senior management put pressure on subordinate managers and employees to meet or exceed publicly announced revenue target. Only those who achieved the targets received a bonus. Earnings management, to a certain extent, is a serious ethical dilemma. It often violates ethical standards and generally accepted accounting principles. It influences investors and creditors' perceptions of the company and adds more risks to their investment portfolio. Johnson (2012) "Leaders have a moral obligation to carry particular task or functions."

## **FUTURE RESEARCH**

The research purposed was not to change how researchers currently approach a subject, but to offer alternatives to make research more effective. The goal was to provide new knowledge and offer alternative views on the approaches to leadership, system thinking and ethical dilemmas. Bredillet (2006) notes that the necessary conditions supporting a sound translation of research results into practice being a preamble to any relevant research is clarification of our perception and understanding. To aid leaders in their efforts to propel successfully their organizations into the 21st century, researches should note that there might be a need to alter their methodological approach to understand the realm of leadership in the workplace. Leaders should have and be willing to act on a definite sense of ethical standards. New sphere for research can be impact of system thinking and Emotional intelligence within organizational Ethics. Another research can dig deeper on ethical challenges that face leaders when approaching system thinking.

### **Conclusion 1**

#### ***Leadership and System thinking***

Reed (2006), suggested the following the following concepts and approaches embedded in the systems thinking literature, however, that can be very helpful when considering why a situation seems to be immune to intervention, or why a problem thought to be solved has returned with a vengeance. Here are some of the concepts:

- Focus on the reason for which a system was created over the processes and procedures of the system.
- Simple cause-and-effect relationships are insufficient to understand or explain a complex social system. Patterns over time and feedback loops are a better way to think about the dynamics of complex systems.
- Think in terms of synthesis over analysis; the whole over the parts.
- Busyness and excessive focus on short term gains interferes with our ability to use a systems approach.
- Leaders must see what is actually happening over what they want to see happen.
- Thinking about systems and their dynamics suggests alternative approaches and attunes leaders to important aspects of organizational behavior, especially in military organizations that value tradition and standardization.

System thinking affects the nature of an organization. For instance Goodman (1997) asked the following questions, what Does Systems Thinking Involve? When Should we Use Systems Thinking? Where should we start? Why use Systems Thinking? How do we use Systems Thinking Tools? How do we know that we have "Got It"? Once you've started to use systems thinking for inquiry and diagnosis, you may want to move on to more complex ways to model systems - accumulator and flow diagrams, management flight simulators, or simulation software. Or you may find that adopting systems thinking perspective and using causal loop diagrams provide enough insights to help you tackle problems. This article Literature provides a starting point and overview for people new to the field of Systems Thinking.

### **Conclusion 2**

#### ***Leadership and Ethical Dilemmas***

In view of the fact that conflicts between values cannot be waved away as if they do not exist, ethical leadership, then, involves learning to reframe problems as dilemmas. Ethical leadership also requires organizational leaders to mature as their primary concern ought to be the acquisition of virtue not technique and character not expertise. Ethical leaders, then, are those women and men who possess an abiding interest in forging a shared purpose and set of values among contending factions of followers in practice episodes, not making them subservient and acquiescent functionaries.

Review of the literature concluded that when an organizational leader's decision causes harm—and it is quite likely that any decision made in an ethical dilemma will cause some degree of harm—it is entirely natural that the leader will wonder if one is at fault, even if to outsiders it is patently obvious that the organizational leader bears no ethical responsibility for that harm. Human beings are not so finely tuned, however, that they can turn powerful emotions on and off like light switches and water faucets. Leaders cannot ignore ethical dilemma when apply system thinking.

One system thinking Leaders may be ways to use collaborative measures and changes that involving both organizations and ethics. We can conclude that "Effective leaders concentrate on doing the right thing, not on doing things right." Reviewed of literature indicated there is no ethical "recipe book" that provides easy answers to complex dilemmas; however leaders can often reframe ethical issues. Research findings aim to contribute to the body of knowledge and to make an important contribution to scholars, students, and purist to the national and the international level of literature. What do you think about business system thinking and ethical dilemma? Johnson (2012) suggested that when using cognitive Decision-Making, we should for moral awareness which is how we perceive the ethical dimensions of an organization issues, sensitivity and stakeholders.

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# EXPLORING THE DETERMINANTS OF SUSTAINABILITY COMMITMENT LEVEL AMONG AUSTRALIA'S LARGEST LISTED FIRMS

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## ABSTRACT

*There is an increasing number of firms committing substantial resources to embed ecologically sustainable strategies, measures and targets at all levels of operations and using a multi-perspective performance measurement model commonly referred to as Sustainability Balanced Scorecard (SBSC) to monitor their performance. This voluntary adoption and public disclosure of SBSC signals the firm's level of commitment to sustainability. This study explores the determinants of corporate sustainability commitment level (SCL) among Australia's largest listed firms. The aim is to understand whether firms with higher sustainability commitment level have different characteristics from those that display less commitment to sustainability. Building on two earlier studies (Eljido-Ten, 2011a; Eljido-Ten & Tjan 2011), the largest 100 Australian listed companies are categorised into five sustainability commitment levels: (1) No SCL; (2) SCL-reactive; (3) SCL-defensive; (4) SCL-accommodative; and (5) SCL-proactive. Multinomial logistic regression analysis reveals that large companies and those that belong to environmentally sensitive industries have greater propensity to show higher SCL. Proxies for earnings ability and business uncertainty are not found to be significantly related to sustainability commitment.*

**Keywords:** *Sustainability Commitment Level, Largest Australian Firms, Environmentally Sensitive Industry.*

## INTRODUCTION

The 'green' business literature advocates that there is no alternative to sustainable development<sup>1</sup>. Numerous contemporary management thinkers (see Hart, 1995; Porter & van der Linde, 1995) agree that focusing on environmentally sustainable economic activity creates competitive advantage. Porter and Kramer (2011) promote the idea of 'creating shared value' on the premise that business success is intertwined with the welfare of communities surrounding them. Similarly, sustainability is described as the touchstone for innovation which is essential to the creation of new business opportunities leading to eco-efficiency and effective cost control (Nidumolu, Prahalad & Rangaswami 2009).

Whilst it is clear that the firm's financial success is crucial to sustainability, there is a necessity to keep track of non-financial performance such as those pertaining to learning, innovation, internal business processes as well as customers and society's welfare, among others. This recognition of the inadequacy of financial measures is the catalyst for the increasing adoption of multi-perspective performance measurement model, the most common of which is the Balanced Scorecard (BSC) (Kaplan & Norton 1992; 1996).

Further, as climate change issues continue to dominate the business agenda and regulatory policies, there is an increasing pressure for companies to monitor their performance on the three dimensions of sustainability, i.e. the 3P's: planet (environmental), people (social) and profit (financial). This creates the need to extend the multi-perspective performance model to what is now commonly referred to as Sustainability Balanced Scorecard (SBSC<sup>2</sup>). Indeed, there are some evidence that a growing number of firms are now adopting and disclosing BSC and sustainability reports (Eljido-Ten, 2011a) and committing substantial resources to embed ecologically sustainable strategies, measures and targets at all levels of operations (e.g. Figge et al, 2002; Nidumolu, et al 2009; Eljido-Ten & Tjan, 2011).

<sup>1</sup> The term 'sustainable development' is defined by the United Nations (cited in Langfield-Smith *et al* 2009, p. 851) as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs".

<sup>2</sup> SBSC is used loosely in this paper to refer to various forms of multi-perspective performance measurement models that incorporate both financial and non-financial performance measures, targets and initiatives that are linked to ecologically sustainable corporate strategies and mission/vision.

Competitiveness, eco-efficiency, sustainable innovation and 'shared value' creation are great testaments to the idea that sustainability may have its profitable pay-offs. There are, however, empirical evidence that state otherwise. For example, a number of studies fail to find significant relationship between financial performance and environmental performance (Benito & Benito, 2005; Walsh, 2010). Margolis and Walsh (2001) earlier review of studies examining the relationship between social and financial performance report that about half either showed no/negative relationship or mixed results.

These studies have prompted the motivation for this research. Whilst prior studies look at relationships between social/environmental performance and economic performance, little is known about the determinants of sustainability commitment level. This study is an attempt to fill this gap in the literature. The aim is to understand whether firms with higher commitment level have different characteristics from those that display less commitment to sustainability. It is also insightful to examine whether sustainability commitment may differ when companies face business uncertainty (e.g. when share prices crash).

In examining the level of commitment, the Reactive-Defensive-Accommodative-Proactive (RDAP) model is used. The social and environmental responsibility literature typically uses the reactive-proactive continuum to distinguish between firms that simply react to mandatory requirements and those that act ahead of regulations thereby proactively leading their industry.

To facilitate an exploratory analysis, this study will build on two prior studies (Elijido-Ten 2011a; Elijido-Ten & Tjan 2011) that examined BSC and SBSC disclosures from publicly available reports of Australia's largest 100 listed firms in 2007 and 2008. These two years are appropriate to explore whether the period leading to and during the 2008 economic turbulence brought about by global financial crisis has affected corporate sustainability commitment and disclosure behaviour. The largest 100 Australian listed companies are chosen as the focus for this study for three reasons. Firstly, previous studies show that greater BSC usage is related to large firms (Hoque & James 2000). Secondly, there is prior evidence that large and highly visible companies provide more sustainability disclosures (KPMG 2008; Elijido-Ten 2011a). Finally, the Australian context is deemed suitable because although the country's economy may not have been as badly hit during the 2008 GFC, the share prices of its largest listed firms have plummeted to a great degree during the crisis. Therefore, if the firm's sustainability commitment level is driven by business uncertainty, the Australian setting could provide meaningful insights.

Although Elijido-Ten (2011a) reports that majority of the Top100 firms provide sustainability reports (i.e. 74% in 2007 and 83% in 2008), Elijido-Ten & Tjan's (2011) analysis shows that companies providing SBSC disclosures are much less, albeit there is a slight increase from 39 firms in 2007 to 41 in 2008. The firm's sustainability commitment levels (SCL) are classified into five categories: (1) No SCL; (2) SCL-reactive; (3) SCL-defensive; (4) SCL-accommodative; and (5) SCL-proactive. Multinomial logistic regression analysis reveals that large companies and those that belong to environmentally sensitive industries have greater propensity to show higher SCL. Proxies for earnings ability and business turbulence are not found to be significantly related to sustainability commitment. The rest of the paper will proceed as follows. The next section outlines a brief review of the relevant literature leading to hypotheses development. Research methods are provided next followed by the discussion of results. Finally, the summary and concluding comments are offered together with the limitations of this study.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### Sustainability Literature

Business and society have long been perceived to be in a symbolic 'tug of war'. This is in line with the widely held neoclassical view which promotes that while the business' primary function is to create wealth, this function must be tempered by its obligations to society (see Freeman, 1984). Tempering with societal obligations such as pollution control, responsible carbon sequestration, employee and product safety, just to name a few, inevitably increase costs thereby reducing profitability.

Education and legislation are the two most common means used to ensure that businesses do not neglect their social and environmental responsibility. Others claim that educating the general public particularly the consumers about the companies' social and environmental responsibilities would force businesses to put sustainability at the top of their priority list (Eljido-Ten, 2011b). Some argue that corporate voluntary actions are not likely to be sufficient in our quest to save the planet and its inhabitants, hence the need for tougher regulations (Alexander, 2007). Still others believe that even a combination of this two-pronged solution (education and legislation) will not be a panacea as long as society and businesses are seen to be at odds with each other (Porter & Kramer, 2011).

As climate change continues to become a significant public policy issue, businesses around the world face increasing pressure to adopt environmentally sustainable practices and to keep their important stakeholders informed about their sustainability performance to remain competitive. Over the years, there is a general perception of an increased demand for sustainability reporting. Bebbington, Larrinaga and Moneva (2008) believe that there is an element of 'reputation risk management' involved in the firm's decision to provide such disclosures.

The overlapping socio-political theories, commonly referred to in the sustainability reporting literature, have much to offer in providing theoretical 'lens' by which we can understand the motivations behind providing sustainability disclosures and by extension, sustainability commitment. Collectively, these theories, including political economy, legitimacy and stakeholder theory (see Lindblom, 1994; Gray, Kouhy & Lavers, 1995; O'Donovan, 2002; Patten, 2002; Eljido-Ten, 2008; 2009), advocate that as firms face more societal and political pressures, their incentive to provide more disclosure also increases. Given this, it is reasonable to suggest that the large companies and those in environmentally sensitive industries, by virtue of their public visibility, are the ones likely to provide ample disclosures on their performance evaluation system incorporating sustainability strategies, measures and targets which could then convey their true commitment to sustainability (or lack thereof).

While the determinants of corporate sustainability commitment has not been explored in previous studies, the proliferation of studies investigating the link between sustainability/corporate social performance (CSP) and corporate financial performance (CFP) has been well documented. Just in the first half of the 2000-2010 decade, there were, at least, three reviews conducted on the literature examining the correlation between CSP and CFP. Margolis and Walsh (2001) reported that about 50% of the studies reviewed found positive relationship between CSP and CFP. Orlitzky, Schmidt and Rynes (2003), in their meta-analysis of corporate social and financial performance literature spanning more than 25 years, found that there was generally a positive association between CSP and CFP and this occurred mostly across industries and in a wide variety of study contexts. Similarly, an analysis of 70 studies examining the relationship between environmental governance and financial performance was commissioned by the Environment Agency, the leading public body protecting the environment in England and Wales, in collaboration with Innovest (White & Kieman, 2004). The result revealed that positive relationship existed in 85% of the total number of studies assessed.

Many contemporary management scholars affirm the notion that profitability and sustainability should not be mutually exclusive. To expound on how shared value is achieved, Porter and Kramer (2011) described how General Electric (GE) reconceived its products and markets. In 2009, GE invested \$1.5 billion on a business initiative called ecomagination. The aim of ecomagination is to develop more energy-efficient products to satisfy customer demand for environmentally-friendly products. GE's ecomagination revenues increased by 6% to \$18 billion in the same year. Likewise, as Wal-Mart redefined its productivity measures thereby cutting 100 million miles from truck delivery routes and using less packaging materials, lower carbon emissions and cost savings of about \$200 million were achieved. Similarly, Johnson and Johnson saved \$250 million on health care costs by investing on employee wellness programs.

Furthermore, drawing from the twin-concept of sustainability and innovations, Nidumolu, et al. (2009) reported that firms such as HP was able to enhance its reputation and save more than \$100 million from 2003 to 2007 through the creation of European Recycling Platform in partnership with three electronic makers - Sony, Braun and Electrolux. Unilever's investment in developing sustainable practices with their suppliers (farmers) resulted in techniques to improve seed production and crop yields. Procter and Gamble's cold water detergent was introduced

to help save consumers on energy usage. By 2008, 21% of British households had switched to cold water detergent. Indeed, not only did sustainable innovations generate additional revenues, these initiatives also enabled the creation of new business opportunities.

Despite the mostly positive relationship between sustainability and profitability reported in early reviews cited (Margolis & Walsh, 2001; Orlitzky, et al, 2003) magnified by these real-world examples reaffirming the synergies arising from shared value creation and sustainable innovations, many would wonder why businesses are not rushing to commit to sustainable practices. Perhaps it is because there is no guarantee that profitability and sustainability should come hand-in-hand. Later studies affirm this notion. For example, Benito and Benito's (2005) study of 186 industrial companies found no evidence that environmental proactivity translate into higher profitability. This led to their conjecture that it may be difficult to offset the initial investments required to implement environmentally-friendly practices, at least, in the short term. Similarly, Walsh's (2010) study of companies repeatedly listed in the "Global 100 Most Sustainable Corporations" (G100), from 2005 to 2008, matched with 30 competitor firms found that the G100 firms generally do not financially outperform their competitors. Thus, he concluded that sustainability actions do not necessarily lead to competitive advantage.

To add to this literature, this research examines the characteristics of firms that display high sustainability commitment level. As noted earlier, this study uses the RDAP model to examine the companies' commitment to sustainability by building on prior studies that analyse the SBSC adoption and disclosures. As such, the subsequent sections provide a brief overview of the literature on BSC, SBSC and the RDAP Model.

### **Balanced Scorecard (BSC) and Sustainability Balanced Scorecard (SBSC)**

Introduced by Kaplan and Norton (1992; 1996) in the early 1990s, the Balanced Scorecard (BSC) is a performance measurement system that translates an organisation's mission and strategy into action. The initial idea of devising BSC is to provide a set of measures that gives managers a fast but comprehensive view of the business in four perspectives namely: 1) *Financial* - shows whether the translation of the company's missions and strategies lead to improved economic success; 2) *Customer* - focuses on how to create and keep customers; 3) *Internal Business Process* - monitors the internal processes that are critical to delivering products/services to customers such as product quality and innovation; and 4) *Learning and Growth* - describes the infrastructure needed to achieve the objectives in the other three perspectives such as employee and information system capabilities.

BSC has gained a high degree of recognition as one of the most widely used recent innovations in management accounting (Lawrie & Cobbold 2004). In less than a decade since its introduction, Renaissance Worldwide (cited in Langfield-Smith *et al* 2009) finds that more than 30% of Australian firms in the Top 500 use some form of BSC by 1999. More recently, Bain and Company's *Management Tools & Trends Report* (Rigby & Bilodeau 2011) reveals that BSC is the sixth most used management tools globally<sup>3</sup> with actual 2010 usage of 47% and projected usage of 63% in 2011<sup>4</sup>.

In building up a BSC, performance targets and measures have to be formulated for every chosen perspective. These performance targets and measures consist of lag and lead indicators that are causally linked. Figge *et al* (2002) define lag indicators, otherwise known as 'key performance indicators' (KPIs), as the outcome measures that indicate whether the strategic objectives in each perspective are achieved. Lead indicators, also called 'key performance drivers' (KPDs), are the performance drivers which reflect how the lag indicators come about.

As noted earlier, the increasing pressure for firms to embed ecologically sustainable strategies and targets at various operational levels provides the impetus to extend BSC into SBSC. Epstein and Wisner (2001) suggest that an SBSC is useful in communicating the importance of a company's sustainability strategy thereby helping senior managers to reposition and improve their corporate image. The improvement in sustainability performance, they assert, is associated with lower operational costs, improved productivity, increased employee satisfaction, increased

<sup>3</sup> Bain and Company's survey reports that BSC ranked 5<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup> & 12<sup>th</sup> in Latin America, Europe, Asia and North America, respectively.

<sup>4</sup> The actual and projected BSC usage is based on the 13<sup>th</sup> survey conducted by Bain and Company consisting of more than 11,000 business executives from around the world (Rigby & Bilodeau, 2011).

market opportunities and better shareholder relationship. Furthermore, SBSC adoption helps to identify the important strategic environmental and social objectives of the firm in order to create effective and efficient causal linkages between financial and non-financial performance (Bieker *et al.* 2001; Figge *et al.* 2002).

Despite these advantages, Bieker (2002, p. 9), however, states that “according to practical experiences, developing and implementing an SBSC ... is rather complex”. He also claims that an important precondition for SBSC adoption is a commitment from top management (Bieker 2003). For example, senior managers should take into account possible mental reservations of employees and tackle them in a proactive way. This means that commitment from top management and the whole organisation plays a significant role in SBSC development as well as in deciding whether to provide SBSC disclosure publicly. Thus, drawing from the brief overview of the BSC and SBSC literature, it is clear that the firm’s sustainability commitment can be determined by examining SBSC-related disclosures provided by companies. For this reason, the literature on the RDAP model is reviewed next.

### The Reactive-Defensive-Accommodative-Proactive (RDAP) Model

Social responsiveness and environmental commitment have generally been categorised using various typologies (e.g. e.g. Hunt & Auster 1990; Henriques & Sadosky 1999; Buysse & Verbeke 2003) that distinguish between firms adopting the ‘outside-in’ (reactive) and the ‘inside-out’ approach<sup>5</sup> (proactive). Carroll (1979) suggests that sustainability responsiveness can range on a continuum from a ‘do- nothing’ stance to a proactive response. The most common sustainability commitment categorisations is the Reactive-Defensive-Accommodative-Proactive (RDAP) model based on the typology originally introduced by Wilson (1995) and later adopted and further expounded by numerous researchers (Carroll 1979; Wartick & Cochrane 1985; Clarkson 1995).

**Reactive firms** are more concerned about being caught while doing something wrong suggesting that they are likely to do something for fear of negative publicity. Consequently, limited resources are committed to solve social and environmental problems. These limited resources are made to comply with the legal requirement. Henriques and Sadosky (1999) assert that reactive companies can be characterised as those that provide little or no environmental reports, no employee environmental training and those that do not have much top management involvement concerning sustainability issues.

**Defensive firms** are described as those committing limited environmental competencies, little development of employee skills, little external reporting and a rather weak integration of environmental issues into corporate strategy (Henriques & Sadosky 1999; Buysse & Verbeke 2003). Buysse and Verbeke (2003) also find that the environmental managers in these firms have limited participation in corporate strategic planning. Thus, defensive firms tend to admit their responsibility but do only what is required (Carroll 1979).

**Accommodative firms**, on the other hand, do more than is legally required (Clarkson 1995). Companies fitting this profile value the input from community stakeholders and are more progressive. Henriques and Sadosky (1999) suggest that accommodative companies view environmental management as a worthwhile function by involving top management, initiating employee environmental training and providing more external reports to inform the public of their ongoing social and environmental commitment.

Finally, **Proactive firms** are the leaders in the industry. These firms embed environmental management in their primary business function (Henriques & Sadosky 1999, McAdam (1973) by conducting research and development projects in the area of sustainability (Buysse & Verbeke 2003). The inclusion of environmental issues into corporate strategy beyond what is required by regulation is viewed as a priority. Henriques and Sadosky (1999) assert that the companies’ actions with reference to environmental issues describe their level of commitment. They suggest that companies with environmental practice should: (1) have an environmental plan and a written document describing its plan; (2) communicate its environmental plan to shareholders or stakeholders; (3) communicate this plan to employees; (4) have an environmental, health, and safety unit; and (5) have a board or management committee dedicated to deal with environmental issues.

<sup>5</sup> ‘Outside out approach’ pertains to reported measures of sustainability performance driven by external regulations. ‘Inside out approach’ refers to sustainability measures developed proactively ahead of regulations that feed through to sustainability reports (Langfield-Smith *et al.*, 2009)

## Hypotheses Development

Consistent with the aim of exploring the determinants of corporate sustainability commitment level (SCL), the following hypotheses, stated in alternate form, are tested:

- H1: SCL and the earnings ability of the firm are positively associated.*
- H2: SCL and the size of the firm are positively associated.*
- H3: SCL and the environmental sensitivity of the industry are positively associated.*
- H4: SCL and business uncertainty are associated.*

The logic underlying **H1** is drawn from the claimed benefits of sustainability leading to shared value creation, competitiveness, effective cost control and sustainable innovations that could improve the firm's earning performance. Thus, **H1** tests whether it is reasonable to assume that the earnings ability of the firm is related to SCL. Both **H2** and **H3** are derived from the environmental reporting literature employing socio-political theories. These theories collectively suggest that corporate sustainability commitment is heightened when it is geared towards changing public perceptions/ expectations, deflecting attention from an issue of concern and/or educating the public about change in their operational performance (see e.g. Lindblom, 1994; Clarkson, et al. 2008). Therefore, it is intuitive that large companies and those that belong to environmentally sensitive industries, being more exposed to higher societal pressure, would have higher propensity to show greater commitment to sustainability in order to deflect public pressure. Finally, to explore whether sustainability commitment level is related to business uncertainty, SCL disclosures before and during the GFC period are examined. Given the massive market turbulence introduced by the GFC, it is conceivable that if sustainability commitment level is affected by business uncertainty, a significant change will be observed during-GFC (2008) compared to pre-GFC (2007) period.

## RESEARCH DESIGN

### Extending Two Prior Studies

To enable the identification of sustainability commitment level derived from BSC and SBSC disclosures, this study builds on two earlier studies. Elijido-Ten's (2011a) study examines the extent of Australia's Top100 disclosure of BSC and sustainability reports. It is reported that there are 42 and 48 BSC disclosers among Australia's Top100 listed companies in 2007 and 2008 respectively. From this finding, Elijido-Ten and Tjan (2011) investigate whether the BSC disclosers have extended their BSC to incorporate sustainability thus identifying the SBSC disclosers. In both studies, a set of criteria is developed based on the BSC and SBSC literature to determine which among Australia's largest 100 companies are adopting and disclosing their SBSC. The criteria and explanations are provided as follows:

- 1) Strategy Statement.** Having a sustainability strategy statement is the most basic criterion that must be met before a company is classified as an SBSC discloser. To meet this criterion, the disclosure must state why sustainability is important to the company, how it affects the company and how the targets can be achieved.
- 2) Backward Looking Statement.** To identify whether past sustainability initiatives, actions and measures are linked to corporate strategy, backward looking statements must relate to these items.
- 3) Forward Looking Statement.** By examining the forward looking statements, future sustainability goals and targets have to be recognised. To satisfy this criterion, the statement has to indicate how things need to be different in the future.

As these three criteria are fundamental requirements for a firm developing an SBSC, all three criteria must substantially be fulfilled before a company is identified as an SBSC discloser. Elijido-Ten and Tjan (2011) find that there are 39 and 41 SBSC disclosers for 2007 and 2008, respectively. In order to identify the SBSC disclosers' commitment level, SBSC disclosers are categorised as either reactive, defensive, accommodative and proactive. The criteria for the RDAP analysis are developed based on the 'green' business literature. Collectively, this literature posits that an entity's level of commitment to sustainability is shown in, at least, five areas: (a) in their strategic orientation (Clarkson 1995; Stead & Stead 2009); (b) willingness to provide highly specific sustainability disclosure

(Salancik 1977; Kolk, Levy & Pinkse, 2008); (c) sustainability commitment from top management (Buzzelli 1993); (d) willingness to provide sustainability training to employees; and (e) including sustainability measures as part of top management incentive schemes (Henriques & Sadosky 1999; Buysse & Verbeke 2003). Thus, the criteria used to categorise the level of sustainability commitment by the target companies are summarised in Table 1.

**Table 1:** *Criteria for the RDAP Analysis*

Criteria	Rationale	Reactive	Defensive	Accommodative	Proactive
Backward, Forward & Strategy Statement	The clearer the link between sustainability measures, targets and strategy statements provided, the more the company is committed toward sustainability.	More backward than forward statements and unclear link to strategy statement	More balanced backward and forward statement but, unclear link to the strategy	More balanced backward and forward statements as well as clear link to the strategy	More detailed and more specific backward and forward statements with very clear link to the strategy
Participation in Carbon Project Disclosure (CDP)*	'Going public' builds commitment to a plan; voluntarily disclosing their sustainability information shows the company's commitment to social/environmental plans and targets.	No	Yes - may or may not be publicly available	Yes - may or may not be publicly available	Yes - publicly available
Sustainability Board Committee	Creation of a board committee dedicated to dealing with social/environmental issues demonstrates the commitment of top management to sustainability.	No	No	Yes	Yes
Employee Sustainability Training	Providing employee trainings enables sustainability initiatives to filter through all levels	None	None to a few	Yes - less to more intensive	Yes - more to very intensive
Sustainability Measure as part of Directors' Key Performance Indicators (KPI)	By including sustainability measures within top management's KPI, incentives and rewards schemes are aligned with sustainability targets	No	No	No	Yes
* The Carbon Disclosure Project (CDP), an independent not-for-profit organisation, annually invites companies to respond to their survey on the business implication of climate change. These responses are made publicly available unless companies request otherwise. Consequently, CDP now holds the largest database of primary corporate climate change information voluntarily provided by companies around the world.					
Source: Adapted from Eljido-Ten & Tjan (2011)					

## Logistic Regression Model

To facilitate an exploration of the determinants of corporate sustainability commitment level (SCL), the findings from the previous two studies (Eljido-Ten, 2011a; Eljido-Ten & Tjan 2011) are used to conduct regression analysis. Industry and other financial data such as total revenue, and earnings per share are gathered from FinAnalysis<sup>6</sup> database.

The empirical test in this study use measures of sustainability commitment level, firm size, industry, earnings per share and business uncertainty. Multinomial logistic regression is conducted using the following model:

$$SCL_{it} = \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 EPS3Av_{it} + \beta_5 SIZE_{it} + \beta_6 INDY_i + \beta_7 GFC_i + e$$

<sup>6</sup> FinAnalysis is a database providing up to 12 years of historical financial data for companies listed in the Australian Stock Exchange (ASX).

- Where:**  $SCL_{it}$  = Sustainability commitment level (SCL) is determined from SBSC disclosures for firm  $i$  in period  $t$ ; 0 = No SBSC disclosure, i.e. No SCL; 1 = SCL-reactive; 2 = SCL-defensive; 3 = SCL-accommodative; and 4 = SCL-proactive;
- $\beta_0$  to  $\beta_3$  = Intercept
- $EPS3Av_{it}$  = Earnings per share 3-year average for firm  $i$  in period  $t$ ;
- $SIZE_{it}$  = Natural log for total revenue for firm  $i$  in period  $t$ ;
- $INDY_i$  = Presence of firm  $i$  in environmentally sensitive industry at period  $t$ ; 1 if the firm belongs to energy, utilities, transportation, materials, and telecommunication industry; 0 otherwise;
- $GFC_i$  = Period for firm  $i$  before and during the global financial crisis (pre-GFC & during-GFC), 2007 and 2008 respectively; 0 = 2007; 1 = 2008;
- $e$  = error term

## Variable Measurement and Justification

**Sustainability Commitment Level (SCL).** As explained earlier, the dependent variable SCL is derived from prior studies. Elijido-Ten and Tjan (2011) report the number of firms from the Top100 fitting the RDAP profile<sup>7</sup>. Thus, SCL is determined from SBSC disclosures. A score of 0 is given to firms with no SBSC disclosure, i.e. considered to have No SCL; 1 for firms that fit the SCL-reactive; 2 for SCL-defensive; 3 for SCL-accommodative; and 4 for SCL-proactive category.

**Earnings Ability (EPS3Av).** In exploring the determinants of SCL, it is deemed important to ascertain whether firms with stable earnings ability have a greater propensity to commit to sustainable practices. Prior studies use various forms of proxy for financial performance, such as return on assets (e.g. Roberts, 1992) and shareholder returns (e.g. Iltner et al., 2003; Crabtree & Debusk, 2008) recognising a time lag. To capture stability in earnings ability and take into account the time lag as in prior research, the three-year-average earnings per share (EPS3Av) is used as proxy. For example, 2007 EPS3Av is the mean average EPS for 3 years 2005 to 2007.

**Firm Size (SIZE).** The size of the firm can be measured in a number of ways such as total assets, number of employees, sales revenue and market capitalisation. In this study, the natural log of revenue is used as proxy for size consistent with prior accounting research (Roberts, 1992; Hoque & James, 2000; Elijido-Ten, 2009).

**Industry (INDY).** Previous research suggests that industry classification captures certain systematic relation between consumer visibility and other associated risks that could lead to regulatory intervention. In this study, the environmental sensitivity of the industry is a dichotomous variable. Various studies have shown that industries such as those in the oil, electronic computing, chemical, pulp and paper, mining, electricity and utilities (e.g. Roberts, 1992; Clarkson, et al, 2004; Elijido-Ten, 2009) face unique societal pressures because of their negative impact on the environment. Based on this list, a perusal of the industries included in this study shows that the energy, utilities, transportation, materials (including mining) and telecommunication industries have the most intuitive appeal to be categorised in the environmentally sensitive industries. Thus, a score of 1 is awarded to firms belonging in the environmentally sensitive industries and 0 otherwise.

## RESULTS AND DISCUSSION

### Descriptive Statistics

Table 2 shows the descriptive statistics. Panel A contains the continuous variables whilst Panel B has the indicator variables. The natural log of 2007 (2008) revenues have a minimum of 6.4472 (4.4914), maximum of 10.7276 (10.9152) with mean of 9.3018 (9.3527) and standard deviation of .8185 (.9289). The three-year average earnings per share (EPS3Av) in 2007 has a maximum (minimum) of 485.33 (-11.50) and a mean (standard deviation) of

<sup>7</sup> For details of firms in each of the RDAP profile and the criteria met by each of the SBSC disclosers, please refer to Elijido-Ten and Tjan (2011) on [http://www.utas.edu.au/\\_data/assets/pdf\\_file/0009/188442/ElijidoTen\\_Tjan.pdf](http://www.utas.edu.au/_data/assets/pdf_file/0009/188442/ElijidoTen_Tjan.pdf)

72.5054 (85.9348) while EPS3Av in 2008 has higher maximum (lower minimum) 658.73 (-55.43) and a mean (standard deviation) of 81.1116 (104.1722).

**Table 2: Descriptive Statistics**

Panel A: Continuous Variables							
Variable	Variable Description	Range	Minimum	Maximum	Mean	Standard Deviation	N
SIZE07	Natural log of total revenue for 2007	4.2804	6.4472	10.7276	9.3018	.8185	98
SIZE08	Natural log of total revenue for 2008	6.4238	4.4914	10.9152	9.3527	.9289	100
EPS3Av07	Earnings Per Share 3-year Average from 2005 to 2007	496.83	-11.50	485.33	72.5054	85.9348	100
EPS3Av08	Earnings Per Share 3-year Average from 2006 to 2008	714.16	-55.43	658.73	81.1116	104.1722	100
Panel B: Indicator Variables							
Variable	Variable Description	Number of Firms with 4	Number of Firms with 3	Number of Firms with 2	Number of Firms with 1	Number of Firms with 0	N
SCL07	Sustainability commitment level (SCL) is determined from SBSC disclosures for firm <i>i</i> in 2007; 0 = No SBSC disclosure, i.e. No SCL; 1 = SCL-reactive; 2 = SCL-defensive; 3 = SCL-accommodative; and 4 = SCL-proactive;	7	10	16	6	61	100
SCL08	Sustainability commitment level (SCL) is determined from SBSC disclosures for firm <i>i</i> in 2008; 0 = No SBSC disclosure, i.e. No SCL; 1 = SCL-reactive; 2 = SCL-defensive; 3 = SCL-accommodative; and 4 = SCL-proactive;	8	10	18	5	59	100
INDY	Industry Prominence: 1 for firms in the energy, transportation, materials and utilities industries; 0 otherwise			--	43	57	100
GFC	Global Financial Crisis (GFC): Period for firm <i>i</i> before (pre-GFC) and during the global financial crisis (during-GFC), i.e. 2007 and 2008 respectively; 0 = 2007; 1 = 2008			--	100	100	200

Panel B of Table 2 shows a small decrease in companies with no SCL from 61 in 2007 to 59 in 2008. SCL-reactive firms also decrease slightly from 6 to 5. The number of SCL-defensive firms increase from 16 to 18 while the SCL-accommodative category remains the same at 10. The number of firms displaying the highest level of commitment to sustainability has also increased, albeit minimally, from 7 in 2007 to 8 in 2008. This indicates a slight improvement in SCL among Australia's Top100 amidst business uncertainty of global scope. The descriptive statistics also show that only 43% of the firms included in the sample belong to environmentally sensitive industries such as utilities, energy, telecommunications, transportation and materials industry which include the mining as well as the pulp and paper sector. Finally, the GFC indicator variable shows equal number of firms in the pre-GFC (2007) and during-GFC (2008) period since the same number of firms is included in the analysis of panel data.

## Bivariate Correlations

The correlation matrix is provided in Table 3 below. Panels A and B show the bivariate correlations between the dependent variable Sustainability Commitment Level for 2007 (SCL07) and 2008 (SCL08), respectively, and the independent variables EPS3Av, SIZE and INDY. The results show that for both years, the earnings ability, size and industry proxies are highly significant and positively associated with SCL at  $p < .01$ .

The panel data correlations shown in Panel C include all the variables from Panels A and B plus the business uncertainty dummy variable, i.e. GFC. As expected from prior correlation results, EPS3Av, SIZE and INDY are significant and positively related to SCL. Interestingly, GFC is not significant.

**Table 3: Correlations**

<b>Panel A#: 2007 Correlations</b>		SCL07	EPS3A7	SIZE07	INDY
SCL07	Pearson Correlation	1	.263**	.286**	.327**
	Sig. (2-tailed)		.008	.004	.001
	N	100	100	100	100
EPS3Av07	Pearson Correlation	.263**	1	.347**	-.043
	Sig. (2-tailed)	.008		.000	.670
	N	100	100	100	100
SIZE07	Pearson Correlation	.286**	.347**	1	-.221*
	Sig. (2-tailed)	.004	.000		.027
	N	100	100	100	100
INDY	Pearson Correlation	.327**	-.043	-.221*	1
	Sig. (2-tailed)	.001	.670	.027	
	N	100	100	100	100

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

<b>Panel B#: 2008 Correlations</b>		SCL08	EPS3A8	SIZE08	IND
SCL08	Pearson Correlation	1	.299**	.381**	.334**
	Sig. (2-tailed)		.003	.000	.001
	N	100	100	100	100
EPS3Av08	Pearson Correlation	.299**	1	.433**	-.014
	Sig. (2-tailed)	.003		.000	.891
	N	100	100	100	100
SIZE08	Pearson Correlation	.381**	.433**	1	-.158
	Sig. (2-tailed)	.000	.000		.116
	N	100	100	100	100
INDY	Pearson Correlation	.334**	-.014	-.158	1
	Sig. (2-tailed)	.001	.891	.116	
	N	100	100	100	100

\*\* Correlation is significant at the 0.01 level (2-tailed).

<b>Panel C#: Correlations for 2007-2008 Panel Data</b>		SCL	EPS3Av	SIZE	INDY	GFC
SCL	Pearson Correlation	1	.283**	.313**	.330**	.026
	Sig. (2-tailed)		.000	.000	.000	.717
	N	200	200	200	200	200
EPS3Av	Pearson Correlation	.283**	1	.364**	-.027	.045
	Sig. (2-tailed)	.000		.000	.705	.525
	N	200	200	200	200	200
SIZE	Pearson Correlation	.313**	.364**	1	-.191**	.093
	Sig. (2-tailed)	.000	.000		.007	.189
	N	200	200	200	200	200
INDY	Pearson Correlation	.330**	-.027	-.191**	1	.000
	Sig. (2-tailed)	.000	.705	.007		1.000
	N	200	200	200	200	200
GFC	Pearson Correlation	.026	.045	.093	.000	1
	Sig. (2-tailed)	.717	.525	.189	1.000	
	N	200	200	200	200	200

\*\* Correlation is significant at the 0.01 level (2-tailed).

#See Table 2 for a complete description of the variables.

There is no indication that an unacceptable level of multicollinearity is present because none of the correlation coefficient between predictor variables is higher than 0.80. Statistics experts (e.g, Hair et al., 1998; Tabachnik & Fidell 2001) suggest that a harmful level of multicollinearity is not present until the correlation coefficient reaches around 0.80 or 0.90.

## Logistic Regression Results

The hypotheses developed in this study, H1 to H4, are tested using multinomial logistic regression from the panel data covering 2007 to 2008. The empirical model is significant at the 0.0001 level with a Chi-square score statistic of 89.808 and 16 degrees of freedom. The McFadden  $R^2$ , Cox & Snell  $R^2$ , and Nagelkerke  $R^2$  are .188, .362 and .399, respectively, indicating that the model explains approximately between 19% to 40% of the variability in the dependent variable. Pseudo  $R^2$  for logistic regression is interpreted the same way as in ordinary least squares regression. The classification accuracy rate of the model is 64% which is greater than the proportional by chance accuracy criteria of 46%. Furthermore, the Pearson and Deviance goodness-of-fit tests have significance level greater than 0.05 implying that the model's estimates fit the data at an acceptable level.

The model estimation is shown in Table 4 below. Panel A contains the regression model and Panel B presents the results. Using the dependent variable "No SCL" as the reference category, the determinants of sustainability commitment level (SCL) are examined.

**Table 4: Logistic Regression Model and Results**

<b>Panel A: Logistic Regression Model</b>						
$SCL_{it} = \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 EPS3Av_{it} + \beta_5 SIZE_{it} + \beta_6 INDY_i + \beta_7 GFC_i + e$						
<b>Where:</b>						
$SCL_{it}$ = Sustainability commitment level (SCL) is determined from SBSC disclosures for firm $i$ in period $t$ ; 0 = No SBSC disclosure, i.e. No SCL; 1 = SCL-reactive; 2 = SCL-defensive; 3 = SCL-accommodative; and 4 = SCL-proactive;						
$\beta_0$ to $\beta_3$ = Intercept						
$EPS3Av_{it}$ = Earnings per share 3-year average for firm $i$ in period $t$ ;						
$SIZE_{it}$ = Natural log for total revenue for firm $i$ in period $t$ ;						
$INDY_i$ = Presence of firm $i$ in environmentally sensitive industry at period $t$ ; 1 if the firm belongs to energy, utilities, transportation, materials, and telecommunication industry; 0 otherwise;						
$GFC_i$ = Period for firm $i$ before and during the global financial crisis (pre-GFC & during-GFC), 2007 and 2008 respectively; 0 = 2007; 1 = 2008;						
$e$ = error term						
<b>Panel B: 2007-2008 Panel Data Results (N=200)</b>						
Dependent Variable <sup>#</sup>	Independent Variables	Coefficient	Standard Error	Wald Statistic	Significance	Exp(B)
SCL-Reactive	EPS3Av	.005	.004	2.085	.149	1.005
	SIZE	1.064	.591	3.238	.072	2.899
	INDY=0	-1.188	.679	3.065	.080	.305
	GFC=0	.288	.656	.193	.661	1.334
	$\beta_0$	-12.156	5.480	4.920	.027	
SCL-Defensive	EPS3Av	.003	.003	.879	.349	1.003
	SIZE	1.501	.424	12.519	.000	4.488
	INDY=0	-1.573	.452	12.109	.001	.207
	GFC=0	-.007	.431	.000	.986	.993
	$\beta_1$	-14.638	3.922	13.927	.000	
SCL-Accommodative	EPS3Av	-.002	.005	.279	.598	.998
	SIZE	1.510	.515	8.598	.003	4.525
	INDY=0	-2.441	.591	17.045	.000	.087
	GFC=0	.111	.529	.044	.833	1.118
	$\beta_2$	-14.573	4.472	9.442	.002	
SCL-Proactive	EPS3Av	.004	.004	1.168	.280	1.004
	SIZE	2.786	.748	13.860	.000	16.216
	INDY=0	-2.757	.735	14.058	.000	.063
	GFC=0	.072	.646	.012	.911	1.075
	$\beta_3$	-27.924	7.188	15.090	.000	
<b>Model Chi-square = 89.808 with 16 df significant at less than 0.0001 level</b>						
<b>Pseudo <math>R^2</math>: Cox &amp; Snell = .362; Nagelkerke = .399; McFadden .188</b>						
	<b>Marginally significant at <math>p &lt; .10</math></b>			<b>Highly significant at <math>p &lt; .01</math></b>		
<sup>#</sup> The reference category is: No SCL						

In contrast to the bivariate results, the logistic regression results indicate that the earnings ability proxy, EPS3Av, and sustainability commitment, at all levels, are not significantly associated. Thus, H1 is not supported. On the other hand, consistent with the bivariate results, the logistic regression results show that, compared to companies in the "No SCL" category, sustainability commitment is significant and positively associated with SIZE and INDY. Indeed, it

appears that higher sustainability commitment levels are highly significantly associated to size. Whilst the SIZE and "SCL-reactive" category shows only marginally significant and positive association ( $p < 0.10$ ), all the other SCL categories, i.e. "SCL-defensive", "SCL-accommodative" and "SCL-proactive", are highly significant and positively associated with SIZE at  $p < .001$ . Therefore, **H2** is supported.

Likewise, the logistic results reveal that companies in the environmentally sensitive industries have greater propensity to commit to sustainability. Again, although INDY and SCL-reactive are marginally significant and positively associated at  $p < 0.10$ , all the other SCL categories, i.e. "SCL-defensive", "SCL-accommodative" and "SCL-proactive", are highly significant and positively associated with INDY at  $p < .001$ . As such, **H3** is supported confirming that firms in environmentally sensitive industries have greater incentive to show their sustainability commitment as they face more pressure from the public.

Interestingly, the odds ratio (Exp(B)) for SIZE suggests that the odds of a firm displaying a proactive commitment level (accommodative) is about 16 times (4.5 times) higher for companies that are large. For INDY, the result indicates that firms in non-environmentally sensitive industries are 93.7% (Exp(B) of  $.063 - 1 = -.937$ ) less likely to be in the SCL-proactive category compared to No SCL firms.

Finally, despite the slight increase in SCL from 2007 to 2008, the regression result indicates that the independent variable GFC is not significant, suggesting that sustainability commitment may not necessarily be influenced by turbulence in the business environment. It is also quite likely that the GFC may not have had an immediate impact on corporate sustainability practices and initiatives. Thus, the results show no support for **H4**.

## SUMMARY AND CONCLUDING COMMENTS

The purpose of this study is to explore the determinants of sustainability commitment level (SCL) among Australia's largest 100 listed companies through an examination of the relationship between SCL and various firm characteristics including uncertainties in the business environment. Of the four independent variables used to predict the level of sustainability commitment, two are found to be unrelated SCL.

Although the 'green' business literature promotes that commitment to sustainability could create new business opportunities, competitive edge, eco-efficiency and effective cost control leading to improved earnings ability, the findings in this study find no support for **H1**. This hypothesis is developed to test whether positive association exists between EPS3yrAv (earnings ability) and SCL. It is quite possible that while sustainability commitment might pave the way to some innovative ideas that could lead to competitive advantage, it may be that for some firms, the creation of new business opportunities might take some time to translate to profitable outcomes. Furthermore, suggestions that the onset of economic turbulence brought about by the global financial crisis might affect corporate SCL are rejected. **H4**, testing for any association between SCL and business uncertainty using the two years - pre-GFC (2007) and during-GFC (2008) - as proxy, is also not supported. However, this finding should be treated with caution as it is possible that the GFC impact on committed resources may not be deployed instantaneously. This can be further explored in longitudinal studies covering longer periods.

On the other hand, SIZE and INDY are both positively and significantly related to the company's SCL. These results confirm the predictions from socio-political theories that large companies and those that belong to environmentally sensitive industries are more likely to commit to sustainable practices and make it publicly known possibly to deflect public scrutiny. Therefore, **H2** and **H3** are supported.

As noted earlier, the motivation for this research emerge from the fact that whilst prior studies look at relationships between social/environmental performance and economic performance, little is known about the determinants of sustainability commitment level. This study is an attempt to fill this gap in the literature. The purpose here is to understand whether firms with higher commitment level have different characteristics from those that display less commitment to sustainability.

The results from this exploratory study are of interest given the insights they provide. Indeed, the findings that large firms and those in the environmentally sensitive industries are the ones likely to demonstrate high SCL can be taken in a positive light. There is, indeed, a real opportunity for this highly visible large firms to commit to sustainable practices given the larger pool of resources available at their discretion. This is encouraging since large and highly polluting firms are inevitably the ones having huge impact on environmental degradation by virtue of the size and nature of their operation. As more exemplary examples of sustainable practices and eco-efficient business opportunities from these firms are publicised through appropriate media exposure, other firms could follow suit particularly when economies of scale from large firms' operations are made available from sustainability initiatives developed. These initiatives could range from eco-efficient carbon sequestration to clean energy generation.

The findings from this study, however, are subject to a number of limitations. Although considerable efforts have been made to choose appropriate proxies in line with the relevant literature, data constraints may limit the construct validity of some variables. Furthermore, the inherent limitations of positivistic empirical research to capture the complexity of numerous dimensions influencing disclosure decisions need to be recognised. It should also be borne in mind that the empirical tests in this study are performed on the Top100 Australian listed companies. As such, caution must be exercised in terms of its generalisability.

Despite these constraints, the insights gathered from this exploratory research can be used for more in-depth studies. For example, case studies from companies representing each SCL type can be conducted to identify and investigate further the sustainability initiatives, objectives, measures and targets and how this might change over time. Then, a cross-case study can be conducted in order to compare and contrast the sustainability actions and practices in each SCL type. Future studies could also extend the analysis to later periods and to other countries or jurisdiction.

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# COULD MIND-STIMULI IMPROVE SALES APTITUDE?

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## ABSTRACT

*There just might have been an assumption that fundamental basic aptitude, appropriate college degrees, and sales training was enough to properly prepare a person for a sales career for either B2B or B2C marketing environments. Having spent years in sales and sales management for a few major U.S.-based corporations, I would have to conclude that base level preparation would likely not suffice. Success in sales could not have been considered mechanical, even though much of today's sales environment has been heavily supported with a plethora of electronic, machine-based devices. This author contends that emotional stimuli may represent the key factor for meeting both the domestic and global sales challenges.*

**Keywords:** *Sales, Sales Psychology.*

## INTRODUCTION

Such dramatic movement in the marketplace has stimulated firms and creative thinkers to gaze beyond today's economic woes. The posture of creative, visionaries has plat-formed in some of the most exciting firms the world has ever experienced. And, although innovation has been a world-wide phenomenon, the U.S. has garnered its share of first rate super corporate stars.

The concept of adaptability may have been greatly enhanced with the creativity and dynamically altering styles of management and marketing within some of today's best and brightest firms. Terms like down-sizing would seem to have no place within these dynamic organizations as labor resources have been 'performance-based sized,' based solely on those projects and programs needs and not on the basis of careers. Matrix management seems to have been taken to greater heights as it has incorporated more diverse talents. Creative think-tank sessions crop up through the day as opposed to have been formally scheduled. Even cubical office spaces have been designed for radical shifts in space based, in part, on the needs of more or less project communication. Your author recently visited a couple of these highly adaptable organizations, Nike and Tectonics Corporations, in and near Portland, Oregon and was just amazed as to the employee freedom and flexibility that existed within the two companies.

It would also seem that task-oriented thinking has gone bye-bye, or will soon go, as it has been replaced with prolific creative thinking environments, and not just at the top of the organization. Remembering back to the somewhat bizarre mentality of 3-M Corporation, who had the nerve to 'force' its employees to devote time to create something of their own fruition; it would seem that such creative-stimuli of the past has brought forth a platform for self-creativity or 'skunking' in many of today's top companies. It would have seemed almost unimaginable for firms to allow, if not demand, that their employees sacrifice some of their precious working hours to just sit back with a cup or two of coffee or tea and dream of a better product, a better service, or a better work environment, but that has recently been the up and coming trend in today's businesses. Those creative-minded firms have changed the way many of their employees think and do on a daily basis. But, in spite of those aforementioned mind-stimuli that have generated such a buzz in business communities across America, nothing has been said or done to consider the implications of such stimuli being offered to its sales persons.

## INNOVATION

It may be somewhat surprising to say that in today's society innovation has not been an easy trait to master. Apple, being number one of the world's most innovative companies followed by Twitter and Facebook, in the number two and three spot. These three companies have exemplified some of the innovative products and services in their respective industries. Twitter has fundamentally redefined communication, and Facebook with its 600+ million users have reflective one of the strongest future-oriented philosophy (The World's most Innovative Companies, 2011).

These firms have been leaders in a movement to resurrect innovation through technology and ingenuity. And, equally exciting has been the foreign start-up firms that mat very well dominant industries and markets 20 or 30 years from now.

The World's 50 Most Innovative Companies have been recognized for their excellence in being the best in their industries and applying the best skills to date (The World's most Innovative Companies). Applying innovation in the underlining philosophy of their vision and mission statements seems to have represented the model of program and policy excellence. In addition to working from a dynamically changing environment, these companies have realized that learning and re-learning has been a primary component of their successful track.

C. Mele described innovation as a complex phenomenon involving relationships among multiple actors at both the individual level and the organizational level as suppliers and customers seek to understand the expectations of the other party with a view to achieving mutual satisfaction (Mele. 2009). Innovation would create new streams of value that satisfy stakeholders and drive sustainable growth. In addition, value innovation, which is the relationship between value creation and innovation, was described in strategic terms as the creation of superior customer value with a view towards gaining a competitive advantage through rejuvenating the organization (Mele, p. 204). Moreover, this notion of value innovation goes beyond technical change in goods or services to have also included new ways of serving clients, offering value propositions to customers, co-creating value, new solutions, and new ways of networking competencies and resources. The role of creativity and learning play a significant role in the establishment of a culture of innovation.

Post and associates discussed the concept of capitalizing on thought-diversity to generate heighten levels of innovation. Post stated that knowledge, expertise, problem-solving approaches, and other resources that combined in novel ways to produce innovation (Post, De Lia, DiTomaso, Tirpak & Borwankar, 2009). On one hand, Post felt that there were different ways and approaches in dealing with problems within a team, which could help maintain multiple assumptions as the team considered the implications, issues and perturbations of the problem. This process led to having a higher number of options to choose from, and thus more alternatives can produce more innovative outcomes. In addition, there could have been obvious differences within the team members such as values, priorities, communication styles and incentives, which could highly influence the creative decision process (Post et al. 2009).

A global CEO study, conducted by the IBM Corporation, discussed how in order to stay successful the enterprise of the future will need to be hungry for change and disruptive by nature, innovative beyond customer imagination, globally integrated, and genuine. The study went on to write that companies cannot be simply generous in their corporate social responsibility efforts without addressing their employee implications of change, innovation, globalization, and corporate social responsibility. As such, organizations have had little hope for executing the strategies that CEO's have deemed critical to future success (IBM, 2008). Another aspect of the CEO study discussed the seven key steps to building an innovative environment, which were:

1. To develop a clear vision and an imperative to innovate;
2. Stamp out risk aversion;
3. focus on diversity;
4. Enable individuals to connect across the organization;
5. Increase the visibility of ideas and develop mechanisms for bringing them to fruition;
6. Reach beyond the organization's boundaries; and
7. Motivate individuals to innovate (IBM).

These steps required that innovation becomes an integral part of the organization's talent management agenda.

As one the institutional leaders in seemingly constant search for excellence, Google has maintained the internet's premier brand as well as the worlds' most potent free service. Technology executive, Eric Schmidt, has expanded Google's reach by anticipating the ways in which people would expand their use of internet applications. Google's ability to attract and engage top talent was the reason that made their success possible. The organization Schmidt

had helped shape depended on collaborative projects and free flow of information. Staff members devoted twenty percent of their time at work towards special projects of their own design- an inventive and effective policy that has been the core of innovation efforts. Schmidt has seen even more powerful digital assistants arising from cloud computing, markets morphing at an ever faster pace, as well as plenty of space for human creativity if organizations were willing to carve out a place for themselves (Manyika, 2008).

Google's extremely high success directly has correlated with innovation and by giving employees the innovative freedom, the company's potential would seem to have a continually rising future. Google has been another fascinating story with a platform for other companies, world-wide to follow, if not step beyond, their footsteps.

## LITERATURE REVIEW

The LITERATURE REVIEW has been presented in APPENDIX-1.

## ADAPTABILITY

The 21<sup>st</sup> century business world is all about risk and instability. The Reeves and Deimler article reported that becoming an adaptive competitor can be difficult, especially for B2B firms, because their hierarchical structures and fixed schedules lacked the diversity and flexibility needed for rapid learning and change. In general, large organizations' orientation has relied upon managing scale and efficiency. Since traditional approaches to strategic thinking assumed a relatively stable and predictable world, they were not able to have sustained a competitive advantage for this new era. Competitive advantage has arisen from the four organizational capabilities that promote rapid adaptation:

1. The ability to read and act on signals of change;
2. The ability to experiment rapidly and frequently—not only with products and services but also with business models, processes, and strategies;
3. The ability to manage complex and interconnected systems of multiple stakeholders; and
4. The ability to motivate employees and partners (Deimler & Reeves, 2011)

In spite of the structural challenges, adaptive companies have been learning how to incorporate dynamic business systems, while having designed strategies for networks without necessarily depending on strong control mechanisms. An interesting point made in the Reeves and Deimler study was the use of virtual environments to generate, test, and replicate a larger number of innovative ideas faster, at lower cost, and with less risk than the competition can. With the evolution of this approach, companies have increased their salespersons skills. As an example, more than 80 percent of P&G's new-business initiatives have made use of its growing virtual toolbox (Reeves, et.al., p. 138). Overall, firms needed to create environments that encouraged the knowledge flow, diversity, autonomy, risk taking, sharing, and flexibility on which adaptation has thrived.

There has been countless studies conducted on sales performance, however one aspect of sales performance that seems to have been too few that addressed adaptability. Porter and Inks' study determined that there has been an increased curiosity towards sales adaptation due to the relationship between adapting during the process of a sell and actually making the sale (Porter & Inks, 2000). That *cognitive selling paradigm*, which focused on linking selling behavior to the underlying knowledge structures of the individual, was first studied in the 1980s and the structure of the *cognitive selling paradigm* consisted of both a declarative and a procedural component. *Declarative knowledge* was the set of stored situational cues and facts (e.g., types of customers and selling situations), which allow the salesperson to recognize and categorize selling situations. On the other hand, *procedural knowledge* consisted of selling routines, actions, strategies, or heuristics that applied to different selling situations (e.g., the sequence of events in closing a sale) (Porter & Inks). Porter and Inks stressed the point that salespersons' skills and capabilities were capable of moderating their ability to adapt their selling strategy during a sales interaction (Porter et.al.). The results also support that attribution complexity impacts a salespersons' practice of adaptive selling.

It would seem that companies that wanted to promote the adaptation process must have been motivated and capable to have done so throughout their employees, particularly with their salespersons and sales management. Sufficient evidence has support the contention that salespersons needed to be motivated to strive for all the institutional benefits involved, as well as the company needing and willing to evolve to that level of integrating adaptability, while having welcomed change as a main factor towards its sales performance. Clearly the environmental atmosphere of a company that encourages the acceptance of change, adaptability, and cognitive thinking would ultimately aid in the success of its salespersons and its overall sales-to-revenue goals.

Keillor and associates discussed the relationship between advances in computer technologies and salespersons attitude and adaptation toward the technology. Technology has many advantages such as facilitating buyer-seller interactions, building stronger relationships by providing a forum for better identifying buyer needs, and allowing quick and easy customization of information targeted at individual customers (Keillor, Pettijohn & d'Amico, 2001).

The research further discusses how salespersons who can adapt to their environment were more likely to excel in their sales and that adapting, as a process of thinking, must also go along with the technology aspect of selling. In order for a person to have been able to adapt they would need to have been quite flexible, adjusting to the varying conditions of the client environment. The concluding remarks of the research argued that if a person was more willing to adapt to changes in technology, they would have been better contributor to the success of their sales team (Keillor, et.al. 2001). Unfortunately, the combination of limited time and knowledge may have resulted in limited use of either adaptive or customer-oriented selling. The ramification of time pressure would likely foil the creative mind-set of salespersons and therefore reduce their ability to have generated the more ideal client-to-sale scenario.

## CREATIVE THINKING

The word '**creativity**' covers a wide range of different skill sets. Creative skills have been needed to change concepts and perceptions into a form of material reality (Awang & Ramly, 2008). Without creativity, new and effective methods of conducting business as well as new and distinct products would have likely never been discovered. Employing the tools of creativity has enabled employees to think beyond their traditional paradigm, while being exposed to greater insights towards their firm's business model(s) and marketing concepts of the customers-to-product excellence relationship. Obviously, it would take open minded persons, utilizing creative thinking skills, to be able to consider a multitude of possible issues and solution alternatives towards offering the best possible marketing programs.

Creativity has allowed individuals to visualize something that is not physically present. When creativity has been applied to the business environment, it lets the salesperson transform the intangible into a tangible product or service. Businesses that lack creativity will likely have been left behind. Companies that continuously brought creative and innovative new products to the table were the ones that would gradually prosper in the future market (Williams, 2009).

The Williams article wrote about how others within the corporation perceived creative thinking in the workplace. It was important to understand that others that perceived creative and innovative ideas as a hot commodity also strived in the organization and became the supportive energy that fueled salesperson's creative focus. In net, creativity has been what drove the newest and breakthrough ideas, and opened up a world of possibilities.

According to a recent major study, conducted by IBM, more than 1,500 Chief Executive Officers (CEOs) worldwide had identified **creativity** as the No. 1 leadership competency for the future (Bendzsa, 2010). Today's business environment has clearly become vastly unpredictable and increasingly complex. The surveyed CEOs declared that industry transformation was the prime factor contributing to ambiguity. As such there was a distinct need to discover new innovative ways of managing an organization's structure, finances, people and strategy. The same CEOs were concerned about time and not having organizations focused on keeping up with the constant changes. Continuous transformations could have been overcome by having instilled a large dose of creativity throughout their respective organizations. Firms today truly need to re-invent themselves in order to have effectively managed their success. The majority of top performing organizations identified getting closer to customers as their most important strategic initiative over the next five years—using web, interactive and social media channels to rethink how they engage with

customers and citizens. The majority of CEOs from the United States also believed that '*global thinking*' was a key leadership quality and would have been very important for future competitiveness (Bendzsa). In that perspective, companies needed to develop new industry models and skill set in order to perform effectively both domestically and internationally. The differences in foreign markets structures have called for new, customizable set of strategies and tactics. It would seem that old methods did not bring an organization forward to success, as a firm would need to keep up with the integration of new selling techniques and adapt in an efficient manner to meet those constant changes.

A study conducted by James McGregor, as part of the US Chamber of Commerce, wrote about the plan China has initiated for innovation throughout its country for its future. In 2006, Chinese officials wrote a document stated in The National Medium- and Long-Term Plan (MLP) for the Development of Science and Technology, stated the plans for China to become the world's leader in innovation by no later than 2050 (McGregor, 2009). This was essentially a blueprint of the many policies that was implemented in order to globally become the best world innovators. China felt that they were behind in the world with innovation and felt there was no excuse for this stature in the world markets (McGregor, 2009). As such, China has now mandated creativity and innovation in its businesses. There still seems to have been differences within other countries of the world regarding forcing creativity on its citizens but it also seemed abundantly clear that the mind set of China may, none-the-less, achieve substantive results from such actions.

China, within its MLP, has enforced its will upon companies to become more innovated; however, in order for that to have happened, the country has offered hundreds of billions of dollars to companies to assist with that transition. As one would surmise, those plans have fostered worldwide business repercussions. The United States, it would seem, should devote more time and money toward innovation for their companies. The Premier of China at the time stated that only by using the power of science and technology would China, the massive ark, produce the immeasurable ability to allow nobody to stop their forward advances (McGregor). To some extent, such words could have been taken as a threat to the U.S. Certainly; this initiative has already affected many, if not most companies all over the world. China, as a whole, has been trying to do what only a few companies, not countries, were directed towards. Whereas many companies were just beginning to understand the importance of these aspects, China has actually required all companies to use innovation as a rule.

Martins and Terblanche focused upon the concept of how values, norms, and beliefs can play a role in creativity and innovation. Those factors could either support or negatively affect creativity and innovation, depending on how the factors influenced individual and group behavior (Martins & Terblanche, 2003). The research was conducted through a comprehensive model that engulfed all factors that an organizational culture could have had an influence on, and as a result determined which factors of organizational culture influenced the degree of creativity and innovation. Organizational culture seemed to have been a critical reason for the success of most organizations. Successful organizations have had the capacity to *absorb* innovation into the organizational culture and management processes. The organizational culture seems to have positioned itself at the heart of an organization's innovation. The basic elements of organizational culture (shared values, beliefs and behavior expected of members of an organization) influenced creativity and innovation in two ways:

1. The first way is learning the normal routines and functions of an organization, after which they were assumed if they believed creativity and innovative behavior was part of the way the organization operates; and
2. The second was basic values, assumptions and beliefs became enacted in established forms of behaviors and activity and were reflected as structures, policies, practices, management practices and procedures.

Those structures directly impacted creativity in the workplace, by having provided resource support in order to pursue the development of new ideas. That was important to know in the aspects of creativity and innovation of the current research project in terms of indentifying the variety of determinants of culture within an organization, which could either support or inhibit those two attributes.

## **WINNING & LOSING DEALS: PERSPECTIVE on DETERMINANTS of SALES FAILURES**

The last few years have experienced escalating importance attached to customer satisfaction, quality, market niches, value-added products, and strategic alliances. Yet, most professional sales teams have not made the internal

adjustments necessary to address and more effectively embrace those important shifts in preparation. Sales persons have not been fully prepared for the 21st Century. They seemed to have posed the knowledge it would take to be a successful sales person, however, they lacked skills sets necessary to build tactical alliance relationships as well as strategic alliance relationships, which have traditionally posed problems (Kahle, 2004).

For many organizations sales productivity has been directly related to how well the sales force understood the full range of solutions available for different markets. Salespeople needed to have felt confident about features and benefits, market positioning, competitive intelligence, pricing, and other product knowledge (Behrman, 2001). Salespersons must also to have been able to easily access and use tools such as reference stories, marketing collateral, and, as suggested by this author, mind-stimuli to maximize their sale abilities. An additional pitfall for sales persons has been fundamentally the inability to separate the selling and the negotiation stages of the dialogue with the customer. Such activity would result in getting trapped into a negotiation discussion before having reached an agreement - as a minimum in principle - that the customer saw the value of doing business with them (Staton, 2004).

According to one source, forty-three percent of salespeople did not meet their quota of sales, either on a quarterly or annual basis (Sales & Marketing Management, 2007, p. 16). That was a significantly large percentage, suggesting that many aspects of sales effectiveness must have remained as suspect factors. Friend, in his research, narrowed the sales failure issues into three topics-- price, adaptability, and relationship-potential (Friend, 2010, p. 107). Furthermore, past studies have shown that lack of adaptability has the highest effect on sales failures (Kahle, 2003; Bunn, Michele & Ben Shaw Ching-Liu, 1996; Schwepker & Good, 2004; Kahle, 2004; Cravens, 2004; Stokes, 2005; and Piercy & Lane, 2005). Friend went on the research adaptive selling- learning the needs and wants of a customer and gather information in order to develop unique sales offerings to fill customers' wants and needs (Grewal & Sharma, 1991). If the customer did not see the salesperson's will to adapt, that could very well generate a sales failure (Friend).

Ahearne and associates researched why some salespersons were able adapt better than others. The goal orientation--namely learning and performance orientations--were considered to have been key determinates of adaptation. Learning orientation, in fact, orients sales people to improve their abilities and master of the tasks they perform, whereas performance-orientation orients salespersons to achieve a positive evaluation of their current abilities and performance from their respective management staff. Lastly Ahearne concluded that that a salesperson's level of desire to achieve goals represented their level of adaption in situations or, in essence, the correlation between goals and adaptation- that if goals were achieved more often, possibly the salesperson would have had an enhanced opportunity of adapting to their workplace.

## METHODOLOGY

The research question for this project was, on the basis of existing research, have the 3 mind-stimulus factors of **innovation**, **adaptability**, and **creative thinking** been shown to offer beneficial value to U.S. employees, in general. If so, would these 3 factors represent valuable assets for salespersons take on for future their respective sales goals and aspirations?

Clearly, there was a need to design a survey to have been taken by America's salespersons. A multi-scaled questionnaire was developed that tested the below-mentioned hypotheses, while having incorporated the secondary research findings. Primary research, in the form of an online 7-point psychometric scaled questionnaire, was offered to currently employed salespersons and sales managers in the U.S. Lastly, statistical analysis was applied to the respondents' completed surveys, which included mean, variance, standard deviation, covariance, on-way ANOVA, and correlation coefficients, where appropriate.

The hypotheses were developed to include past research findings as well as new perspectives of the sales environment. Hypotheses were formulated in order to have tested the salespersons' perceived value of incorporating **innovation**, **adaptability**, and **creative thinking**.

The research Hypotheses utilized the Analytic Hierarchy Process (AHP), Simple Multiple Choice (SML) and ANOVA.

The multiple-choice method has been most widely used because of its ease for respondents to answer and its ease in identifying for the researcher the respondents' main concerns. Also multiple-choice has some formats that enhance a respondents' degree of freedom in answering questions. Being one of the more traditional methods, multiple choice, was very applicable due to its ease by participants and its researchers. SMC was beneficial because it more readily allowed researchers to identify main concerns of respondents. In SMC, participants must have chosen from a group of alternatives. From that respondent information, SMC distinguished the most important alternative for each participant. That prevented the respondent from expressing their preference concerning a selected alternative over the others.

When it came to the difference of the aggregated ranking of alternatives between the SMC and AHP, SMC implied aggregated plurality, while that elicited from the AHP suggests aggregated intensity. The focus is on the difference of the aggregated ranking of alternatives between the examined ratios of the SMC and the weight of each alternative produced from the AHP. Since both rankings reflect the entire trend involving each alternative of a population, in the end both are likely to produce similar results.

## **HYPOTHESES:**

### **INNOVATION-**

*H1: The more a salesperson is against change, the less he/she thinks innovation is important*

*H2: Among all three attributes, salespersons will find innovation the most important*

*H3: A company that has a structured environment (traditional) will lack employees with innovation skills*

*H4: Innovation is more likely to happen through creativity rather than analytical thinking*

*H5: The more authority a salespersons possesses the higher their probability of coming up with innovative ideas*

*H6: The setting of the organization impacts how innovative its salespersons are in their selling approaches.*

### **ADAPTABILITY**

**H7:** The more extensive a salespersons experience, the less relevant adaptability becomes to that person

**H8:** A salespersons fear of change heightens one's readiness when faced with different performance procedures

**H9:** Salespersons employed with larger firms will be more responsive to change than those employed by a smaller firm

**H10:** Salespersons employed by a smaller firm will have an easier time adapting to change than salespersons from a larger firm

**H11:** The higher a salesperson perceives the value of adaptability, the higher the increase in revenue.

### **CREATIVITY**

**H12:** Companies that have a more flexible atmosphere are more prone to creative thinking

**H13:** The higher the rank of a company the more creative thinking is valued

**H14:** Creativity can be taught

**H15:** Creativity can be motivated through incentives

**H16:** Having the accessibility of creative, communication tools increases the possibility of creative thinking

## RESEARCH ANALYSIS AND FINDINGS

### Limitations and Future Research

Research of this nature can never fully span the research requirements of a completely exhaustive focus because the subject matter of the minds has and will remain an ever evolving subject for neural research, psychoanalyst research, social scientist, and marketing researchers. None-the-less, this research project has at least touched upon important areas of three psychosomatic elements that could improve sales analysis, preparation and execution. The survey did not achieve the statistical significance desired but was able to infer its findings and meaningful information for practical application. There will always be a platform for future research in both the expansion of sales mental stimuli and the potential creation of totally new techniques that, within themselves may yield significant value for the sales and marketing teams of America and beyond.

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## APPENDIX-B QUESTIONNAIRE- **Could Mind-Stimuli Improve Sales Aptitude?**

This survey will analyze the application of 3 mind-stimuli elements for salespersons for America's marketing management practices. This survey is being administered by Dr. J.D. Williams, college professor. I thank you for participation in this survey. Your participation in this study is voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw, simply do not complete the survey. By completing the survey you are consenting to participate in the study and that you are 18 years of age or older. All information from this survey will be handled in a confidential manner, so no one will be able to identify you when results are reported. This questionnaire was reviewed and approved for distribution by K.U.'s I.R.B on August 6, 2012.

Please circle the number that best relates to your business situation.

### **Screening Questions**

1. Are you 18 years or older?
2. Are you currently working in the United States?
3. Are you currently employed as a salesperson, sales manager, or marketing/sales executive?
4. Are you working in an industrial, B2B sales capacity?

[Scaled response (Not at All, 2, 3, 4, 5, 6, To a Great Extent)]

### **Innovation**

- Q1:** Do you agree that the more a salesperson is against change, the less he/she thinks innovation is important?
- Q2:** Do you agree that a company that has a structured environment (traditional) will lack employees with **innovation** skills?
- Q3:** Do you agree that **innovation** is more likely to happen through creativity rather than analytical thinking?
- Q4:** Do you agree that the more authority a salespersons possesses, the higher their probability of coming up with **innovative** ideas?
- Q5:** Do you agree that the setting of the organization impacts how **innovative** its salespersons are in their selling approaches?

### **Adaptability**

- Q6:** Do you agree that the more extensive a salespersons experience, the less relevant **adaptability** becomes to that person?
- Q7:** Do you agree that a salespersons fear of change heightens one's readiness when faced with different performance procedures?
- Q8:** Do you agree that salespersons, employed with larger firms, will be more responsive to change than those employed by a smaller firm?
- Q9:** Do you agree that Salespersons employed by a smaller firm will have an easier time **adapting to change** than salespersons from a larger firm?
- Q10:** Do you agree that the higher a salesperson perceives the value of **adaptability**, the higher the likely increase in sales revenue?

### **Creativity**

- Q11:** Do you agree that companies that have a more flexible atmosphere are more prone to **creative thinking**?
- Q12:** Do you agree that the higher the rank of a company the more **creative thinking** is valued?
- Q13:** Do you agree that **creativity** can be taught?
- Q14:** Do you agree that **creativity** can be motivated through incentives?
- Q15:** Do you agree that having the accessibility of creative, communication tools increases the possibility of **creative thinking**?

### **Combining Innovation, Adaptation and Creativity**

- Q16:** Please rank the three attributes in terms of their perceived importance to salespersons (**innovation, adaptation, creativity**).
- Q17:** Do you feel that salespersons armed with **INNOVATION, ADPATATION** and **CREATIVITY** will likely excel in sales far better than those persons that have only one or two of the mind-stimuli skills?

Thank you so very much. Your involvement with this survey has been greatly appreciated. If you like, I would be pleased to offer you a copy of my findings once the paper has been published, which could take up to a year. If yes, the please leave me your email address:

\_\_\_\_\_.

# EMPLOYEE DEVELOPMENT, CUSTOMER SATISFACTION AND FINANCIAL PERFORMANCE IN A HIGH CONTACT SERVICE ENVIRONMENT IN PUERTO RICO

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## ABSTRACT

*The management of operations in the service sector presents different challenges than the manufacturing environment. Research in operations management needs to focus more on service than ever before. Guidelines should be developed to improve the work design, competitiveness, efficiency and effectiveness of organizations in the service sector. The study explores the idea that employee development may positively affect customer satisfaction and financial performance. It is based on previous studies and presents the Customer Contact Model and the Service Profit Chain as the theoretical background; which define the service environment and the relationship that results from the employees, customer satisfaction and financial performance respectively. The study was conducted in the commercial banking services area in Puerto Rico, specifically the Credit Unions. The information available for hypothesis testing was insufficient to explore all the factors considered in the study. However, for those available for testing it is interesting to find that the results suggest that there is evidence to relate customer satisfaction and revenue growth. We can conclude that in fact customer satisfaction translates in to revenue growth; most importantly, that the relationship is positive. Efforts to control customer satisfaction are important to control the variability that comes from the nature of service encounters.*

**Keywords:** *Employee Development, Customer Satisfaction, High Contact, Service Operations, Credit Unions.*

## 1. INTRODUCTION

In developed countries, the service business sector is consistently the largest. Currently, the service industry employs approximately 70% percent of the labor force in developed countries like the United States and Japan (Metters & Marucheck, 2007). We can only expect this proportion to grow in the future. The management of operations in the service sector is thus of ever increasing importance. On the other hand, it presents different challenges than operations performed in the manufacturing environment, which has been the traditional focus of the operations management literature. It is thus clear research in operations management needs to focus more on services than ever before. Guidelines should be developed to improve the work design, competitiveness, efficiency and effectiveness of organizations in the service sector. This is a natural consequence of the increased competition in this sector.

One of the main differences between the manufacturing and service industries is that the customer plays a much more active role in the service process. In order to achieve efficiency and effectiveness, controls in the variability of the customer satisfaction should be established, according to modern Quality Management Theory. Schneider and Bowen (1985) reported in their studies a close link between customer and employee satisfaction levels in the branches of a banking organization. After further study, they concluded that *"the degree to which the employees believe their work is facilitated yields the most consistent information about customer satisfaction"* (Heskett and Sasser, 1997). The purpose of this paper is to explore the idea of employee development as a means to control the variability in customer satisfaction. In this case, the focus is in the high contact service environment, as defined by the Customer Contact Model developed by Richard Chase and David Tansik (1983). In a high contact environment, the labor element is a critical component of the service delivery. Chase and Tansik argue that greater employee knowledge and skills are needed in high contact services, because uncertainty during the service delivery encounter creates a need for employees that can make continuous and multiple non-programmed decisions (Meyer, 2003).

High contact service industries typically involve activities in which service employees and customers have a close and direct interaction for a prolonged period (Chase, 1981). A high contact environment of services is characterized by longer communication time, intimacy of communication, and richness of the information exchanged (Kellog and

Chase, 1995). Through close contact, service employees and customers have ample opportunities to build up their ties and exchange information about purchase. This enhances the ability of service employees to deliver a high level of service quality and influence their customers' purchase decision, thus contributing to sales performance (Yee, Yeung and Cheng, 2008).

## 1.1. Background

Services in the Western World are a crucial slice of the economic pie. It is an unavoidable reality that has been neglected for many years. Since the industrial revolution, the main focus of research and teaching in the operation area has been manufacturing, when in fact, the manufacturing sector has never constituted a greater proportion of the US and other developed countries economies than the service sector. Manufacturing's share of Gross Domestic Product (GDP) peaked in 1953 near 30% and manufacturing employment as a share of nonfarm employment peaked near 35%. Now, the decline of manufacturing and the rise of services is a worldwide issue.

**Table 1:** *Percentage of services and manufacturing in Gross Domestic Product for selected countries*

Country		Services	Manufacturing
USA		79.2	19.6
	Puerto Rico	54	45
Asia			
	China	40.2	49.2
	Japan	72.1	26.4
S. America			
	Brazil	66	28.5
	Chile	44.7	50.7
	Peru	66	25.6
Russia		54.8	41.1

Source: *World Fact Book (2008)*

The service sector is dominant in the West. In the early 1970s just over 60 % of the US labor force was employed in services. Today the service sector accounts for more than 80% of US nonagricultural employment. That number is expected to jump to 86%, while manufacturing is expected to drop below 10% of the total Workforce by 2014 (Bureau of Labor Statistics, 2007).

Beyond employment numbers, the prestige and power of the manufacturing sector has also suffered. Service firms were not even listed in the Fortune 500 until the mid 1990s. Fortune magazine currently lists 242 service firms among the Fortune 500 (Metters and Maruchek, 2007).

In the academic level, studies on service operations are still limited. There are no formal textbooks on this subject. It is a fertile ground in which tools and theories can be created and developed for a better understanding and evaluation of the service encounter.

## 1.2. Objectives

Our study was conducted in the commercial banking services area in Puerto Rico, specifically the Credit Unions. There are 126 Credit Unions under the Puerto Rican regulatory corporation COSSEC. They maintain a tradition of a close contact relationship with their customers. The study is based on the research done by Susan Meyer Goldstein and published under the article "Employee development: An examination of service strategy in a high contact service environment". Her research was conducted on hospitals in the United States. As conjectured by Meyer, her findings may be generalized in other services areas, such as commercial banking. The banking industry, although not considered to be of purely high contact, presents similar combinations of levels of contact. The presentation of this study in the service sector in Puerto Rico aims to do the following:

- Further contribute to the development and creation of tools to effectively evaluate the investments in employee development and other critical factors in the service areas.
- Develop a profile of the current practices of employee development using as reference the following factors: Employee development as described by three underlying factors Work Systems, Staff Training and Development, Staff Well Being, Employee Outcomes and Customer Satisfaction. The service profit chain is the framework for the design.
- Compare the practices of the credit unions that have had an increase in their revenues against those that have had a decrease in revenues, by exploring the relationships between the factors.

## 2. LITERATURE REVIEW

### 2.1. Customer Contact Model

The Customer Contact Model is used as a tool to categorize different service environments. To make use of the model, it is important to have an understanding of its extent and structure. This model has been extensively used in service operations research because it is based on the characteristics of the service encounter, regardless of the industry.

The customer contact model is used in the research to describe the environment in which the service process takes place. The model, a structural one, intends to specify how to decouple and regroup organizational subunits in services in light of the unique influence that the physical presence of the customer has on the operation of the organization. Service systems should be viewed as falling along a continuum from high customer contact to low customer contact with the system during the creation of the service product. The presence of the customer is the dominant constraint on the efficiency of the system (Chase, 1983).

An important element of the model is its applicability in job design. Job Design is a concept that is integral to the service value chain; the customer contact model offers a framework to define job design in the service process. The model was formulated using three general concepts of organization design: protection of the technical core, organizational disaggregation, and selective decoupling of organizational units.

**Technical core** refers to the production processes component of the business. These processes are isolated to guarantee a level of quality and performance. **Disaggregation** is an idea that relates to the recognition that process occurs in different terms and that those different components should be evaluated and designed separately. (Chase, 1983) The disaggregation perspective leads into **decoupling**, which is the actual physical or organizational separation of activities. Some of the potential benefits of decoupling include: Matching each organizational unit to the task at hand, ease in objective setting, enhanced adaptation to localized changes, more effective use of productive facilities, and limiting the effects of disruptions or breakdowns to the unit of the organization where they occur (Chase, 1983).

The model holds that a service system potential operating efficiency is a function of the degree to which the customer is in direct contact with the service facility relative to the total service creation time for the customer:

$$\text{Potential Operating Efficiency} = f\left(1 - \frac{\text{customer contact time}}{\text{service creation time}}\right)$$

Within the context of this model, efficiency is defined as the ratio of outputs to inputs for a given service facility; it does not account for the customer utility functions or for organization wide production or marketing performance. Service facilities characterized by high customer contact (HC) are perceived as being inherently limited in their production efficiency because of the uncertainty that the client introduces to the service creation process (Chase & Tansik, 1983).

The common service systems can be grouped according to decreasing contact under three broad headings: pure services, mixed services and quasi-manufacturing. Pure services include those organizations whose production is

carried on in the presence of the customers; mixed services commonly involve a mix of face-to-face contact and variously coupled with back-office work; and quasi-manufacturing entails virtually no face-to-face contact (Chase & Tansik, 1983)

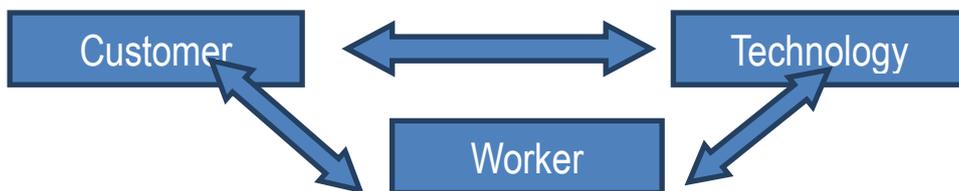
Chase presents various propositions to illustrate the number of organizational issues related to design and operation of services. These are used here as guides when studying the service environment in the credit union financial services organizations.

In terms of operating and control systems, Chase and Tansik present six propositions.

- *In high contact systems, capacity must be set to match peak demand; in low contact systems, storable output permits setting capacity at some average demand level.* In financial services, there is no such thing as inventory. Service production and delivery occur simultaneously; peak demand is defined by biweekly and monthly paydays, social security monthly paydays and period closings.
- *In high contact systems, production planning is inherently inexact,* which means that in low contact systems, production planning can exactly match planned production to resource availability but, in high contact systems, it is almost impossible to predict demand. These differences lead to uncertainty in the capacity determination and production planning. Although financial services have a set of products, the variability that results from the customer makes it difficult to design service specifications. When a customer asks for a loan, the employee or service provider takes into consideration many elements that vary from case to case and the success is not only determined by the resulting service product, but by the inherent characteristics of the customer.
- *In high contact systems, the service facility must be located near the customer; in low contact systems, the service facility may be located near the resources.* In financial institutions, the client and the service provider are located in close proximity.
- *In high contact systems, the service facility must be laid out to accommodate the customer's physical and psychological needs and expectations while, in low contact systems, the facility should be designed to maximize production.* The physical facilities of financial institutions are designed to accommodate the customer needs. Great effort is invested in making him or her comfortable. Attention is put into the colors, sitting area and overall design of where the service encounter occurs.

Related to the work design and workforce characteristics, there are two propositions.

- *High and low-contact jobs call for different sets of tasks, present the distinction drawn from the model between work done in the front office and work done in the back office.* In the front of the office we have the following three- way interaction among the primary elements of a work system:



**Figure 1:** Diagram of High Contact environment interaction

(Source: Richard B. & Chase, D. A. (Sep. 1983) *The customer contact model for organization design*, Management Science, pp. 1037-1051.)

The interaction described above in the diagram is the one found in the facilities of the financial institutions. In the back office we have two-way interactions:



**Figure 2:** Diagram of Low Contact environment interaction (Back Office)

From a work design standpoint, task uncertainty in the front office is greater than in the back office since in the latter there is only one sentient component – the worker, while in the former there are two – the worker and the customer. Such task uncertainty, in turn, suggests that skills required on the part of the worker are substantially different in high and low contact work and that it therefore makes sense to consider contact as a major contingency variable in the design of jobs (Chase & Tansik, 1983).

- *Because they directly represent the organization, high contact workers need interpersonal skills and knowledge of policies under which the firm operates.* Low contact workers generally deal with customer surrogates (e.g., invoices) and must have production skills. Thus a job specialization strategy takes place. People-oriented workers should be matched to people dominated tasks and thing-oriented workers to thing-dominated tasks.

The following table summarizes some of the effects of these traits on control system features:

**Table 2:** Summary of HC and LC traits

Control System Features	High Contact	Low Contact
Performance Standards	Subjective	Objective
Measurement of Deviations	Imprecise	Precise
Feedback Loop	Ill- Defined	Well-Defined
Corrective Action	Instantaneous	Deferred

## 2.2. Service Profit Chain

The Service Profit Chain is a model of firm performance that helps the manager focus on quantifiable factors that lead to customer satisfaction, as well as financial performance (Meyer, 2003). The service profit chain makes use of three key elements: customers, employees and investors. In this environment, we stress the importance of the interrelationship of these.

In the mid 1980s, James Heskett set forth a set of relationships, based on a number of observations, called strategic service vision. The vision comprised four important elements: (1) markets targeted on the basis of psychographic (how people think and act) as well as demographic factors, (2) service concepts, products, and entire businesses defined in terms of results produced for customers, all positioned in relation to the needs expressed by targeted customers and offerings of competitors, (3) operating strategies comprising organizations, controls, operating policies, and processes that “leverage” value to customers over costs to the offering organization, and (4) service delivery systems comprising bricks and mortar, information systems, and equipment that complement associated operating strategies (Heskett, 1997).

Heskett developed what is called the “cycle of capabilities”, which is an integral concept in the service profit chain. The philosophy behind the cycle of capability is that satisfied employees are loyal and productive employees. Their satisfaction stems, at least among best frontline employees, from their ability to deliver results to customers. In order to accomplish this end, they must have the capability to relate to customers, the latitude (within well-specified limits) to use their judgment in doing so, the training and technological support needed to do so, and appropriate recognition and rewards for doing so (Heskett, 1997).

The service profit chain thinking maintains that there are direct and strong relationships between profits; growth; customer loyalty; customer satisfaction; the value of goods and services delivered to customers; and employee capability, satisfaction loyalty and productivity.

According to Heskett, his studies suggested that the strongest relationships were those between: (1) profit and customer loyalty, (2) employee loyalty and customer loyalty, and (3) employee satisfaction and customer satisfaction. It was suggested that the relationships were self-reinforcing. That is, satisfied customers contributed to employee satisfaction and vice versa.

Authors suggest that, provided service profit chain concepts are carefully interpreted and adapted to an organization's specific situation, they are capable of delivering remarkable results (Gelade, 2005).

### 2.3. Employee Development

Because this paper is based on the published work of Meyer Goldstein, for research purposes the construct developed by her will be presented here. The Employee Development construct is multidimensional as defined by Schlesinger and Heskett's internal service quality. Since there are no published metrics for internal service quality, its domain is used to formulate measurement of the Employee Development construct used here. It represents a bundle of employee management issues and practices. The dimensions of this construct are similar to those in the Malcolm Baldrige National Quality Award Criteria category for Human Resource Development and Management which provides a useful framework for definition and measurement of the Employee Development construct. The Baldrige category includes three dimensions which mirror those addressed by Schlesinger and Heskett: (1) Work systems; (2) Staff education, training, and development; and (3) Staff well-being and satisfaction. Each dimension is described briefly below.

- *Work Systems* are the work and job designs that organizations establish for their employees. Jobs should be designed and managed to support organizational strategy and staff plans. Increasing worker flexibility and enhancing decision-making authority for employees help organizations improve their work systems. Compensation and recognition programs for employees are part of the work system.
- *Staff Training and Development* includes how these efforts are focused on accomplishing key organizational plans and addressing organizational needs. Building knowledge, skills, and capabilities are the focus of these efforts.
- *Staff Well-Being* is how the organization maintains an environment and climate that support the well-being and motivation of employees. Work environment includes employee safety and health, and work climate includes providing useful benefits to employees. Organizations should have systems in place to measure and evaluate staff satisfaction and turnover

Measurement items for the three dimensions of Employee Development are shown in the appendix. A complete discussion of validation and reliability for these items is reported in Goldstein and Schweikhart (2001).

Metrics for the Employee Outcomes construct focus on key desirable results of employee development practices and include employee satisfaction, employee turnover, labor/management relationships, and workforce productivity and efficiency. Measures of the Customer Satisfaction construct include measures of satisfaction and comparisons against competitors.

## 3. METHODOLOGY

The best method of analysis, structural equation modeling (SEM), was not adopted for this study due to the limitations in the size of the population, and thus the sample that could be reasonably obtained. In order for the SEM to be a viable model for analysis, more than 100 respondents were needed, which were not available for this research despite our best efforts. Collected data is thus analyzed using the Z test for differences in two-sample proportions.

We obtain the information necessary for our analysis via a questionnaire in which the responses to all the questions are in a Likert-type scale. We do not assume that we are dealing with an interval scale, but rather an ordinal scale. This is the main reason for our choice of hypothesis testing.

### 3.1. Frame and Sampling

The research for this paper is focused on deposit-type financial institutions. These are the most recognized intermediaries because most people use their services on a daily basis. Typically, deposit institutions issue a variety of checking and/or savings accounts and time deposits, and they use the funds to make consumer, business and

real estate loans (Kidwell, 2000). There are three types of deposit-type financial institutions: Commercial Banks, Thrift Institutions and Credit Unions. There are 15 commercial banks (FDIC insured) and 126 credit unions regulated and insured by the Public Corporation for the Supervision and Insurance of Credit Unions in Puerto Rico (COSSEC) in Puerto Rico (COSSEC Statistics). Our study focused on credit unions because they are non-profit organizations incorporated in Puerto Rico, and thus their financial information is readily available in the archives of the Department of State.

The study was conducted using the metrics presented in Meyer's research. They are intended to define the following variables: work system, staff training and development, staff well being, employee development, employee outcomes and customer satisfaction. Minor changes were made; basically substituting the term patient for client. The scales were compiled in a questionnaire that was distributed in English. Efforts were made to maintain the previously validated questionnaire intact, because the variables of study were tested in a similar service system (High Contact/ Combination) or environment. A pilot study could not be done with a new questionnaire, because the size of the population was small (126).

After reviewing the organizational structure of the credit unions, it was originally concluded that the best person to respond to the questions was the executive president. Efforts were made to contact the executive president, who in time reached for the assessment of the human resources managers, operational and/or services officers. When efforts to contact the presidents failed, the human resources managers and operations officers were contacted. It is assumed that each institution has standardized procedures and policies for employee development and evaluating employee and customer satisfaction. The questionnaires were distributed via electronic mail, personal visit, fax and/or regular mail. Of the 126 credit unions contacted only 48 (39% response factor) responded. This resulted in a change in the design and objectives of the study.

When it comes to our sampling plan, every institution belonging to the frame was approached for the interview, thus there is no randomness issue with sampling in the study. After collecting the data, the sample size was checked as adequate. Specifically, we need to ensure that we have at least five successes and five failures in each comparison group or that

$$\min[n_1p_1(1 - p_1), n_2p_2n_2(1 - p_2)] \geq 5. \text{ (Sullivan, 2008)}$$

Success has been defined as a score of six or seven (out of seven) in the Likert scale on the questions related to each factor.

Financial information was collected by visits to the archives of the Department of State in San Juan. The reports that were unavailable were obtained from the websites of the credit unions or by contacting the subjects, which later sent the reports either by fax, regular mail or electronic mail. Additional data was obtained by accessing the COSSEC website. Financial information gathered for four consecutive years, is used to determine the revenues' growth. Revenue growth is calculated as follows:

$$\frac{(2007 \text{ operating revenue} - 2004 \text{ operating revenues})}{2004 \text{ operating revenues}}$$

These years were selected because they were from which the most recent financial information was available.

### 3.2. Hypotheses

The hypotheses developed in Meyer's research were tested in the commercial banking services area, specifically in credit unions, in Puerto Rico. The service profit chain was used as the foundation of the study. The following hypotheses were tested:

- H<sub>1</sub>: *Employee Development is positively related to Employee Outcomes.*
- H<sub>2</sub>: *Employee Outcomes is positively related to Customer Satisfaction.*
- H<sub>3</sub>: *Customer Satisfaction is positively related to Revenue Growth.*

**H<sub>4</sub>:** *Employee Development is positively related to Customer Satisfaction.*

**H<sub>5</sub>:** *Employee Outcomes is positively related to Revenue Growth.*

### **3.3. Summary**

The sample obtained from the population was classified into two groups: institutions with an increase in revenue and those with a decrease in revenue. This permitted testing on the relations to revenue. The Z test for differences in two sample proportions was used to test the hypotheses. The samples were of 34 subjects for increasing and 14 for decreasing revenues. Each proportion sample was tested for adequacy to ensure the validity of the test.

### **3.4. Findings**

#### **3.4.1. Collected Data**

Information was collected on 48 of the 126 credit unions members of COSSEC. The distribution of the frequencies as a percentage for each question is presented below. The data is presented under each of the factors studied. For testing purposes, each one of the 48 respondents was classified by their revenue's trend for the past four years. Thirty-four presented an upward trend and fourteen showed declining revenues for 2004-2007.

Employee Development

### **3.5. Analysis**

#### **3.5.1. Work Systems**

In the questionnaire items that measured work systems, we found that 47.06 % of the companies with increasing revenues answered that they always tied compensations to their strategic goals and those with decreasing revenues showed a 28.57 % for the same question. A 44.12 % of the companies with increasing revenues stated that they always rewarded their employees for learning new skills compared to a 14.29% of those with falling revenues.

Furthermore, employees are always rewarded for learning new skills in 44.12% of the companies with revenue growth and 14.29% of the companies with decrease in revenue. Employees were motivated by improving job design in 41.17% of the credit unions with revenue growth always and 21.43% in the credit unions with declining revenues.

#### **3.5.2. Staff Training**

In the questionnaire items that measured staff training, we found that 47.06 % of the companies with increasing revenues stated that they always trained their employees in problem solving skills compared to a 21.43 % of the other group.

Of the data collected, 79.41 % of the credit unions with revenue growth stated that they always used training to build the capabilities of their staff. Of the companies with decreasing revenues 50 % also used training always. Of the growing companies, 47.06% always train their frontline employees on how to handle service failures (Question 7) and 42.86% of the credit unions which presented decreasing revenues share this practice. A 5.88% of growing organizations stated that they never evaluated the benefits of staff training compared to 0 % of companies with declining revenues.

#### **3.5.3. Staff Well Being**

In the questionnaire items that measured staff well being, we found that 42.86 % and 26.47 % of growing and declining companies respectively stated that they sometimes used the variety of methods in measuring employee satisfaction. For the companies with growing revenues, 44.12% stated that they always made sure that their employees received career development services; 35.71% for declining revenues credit unions.

### 3.5.4. Employee Outcomes

In the questionnaire items that measured employee outcomes, we found that 47.06% of organizations with growing revenue had high employee efficiency (in terms of cost and timeliness), compared to 28.57% of decreasing revenue organizations. Moreover, the worker turnover is low in 52.94% of organizations with growing revenue, compared with 42.86% of those with decreasing revenue.

### 3.5.5. Customer Satisfaction

In the questionnaire items that measured customer satisfaction, we found that 61.76% of revenue growing companies had the highest overall customer satisfaction, compared to 28.57% of those with decreasing revenue. Furthermore, 52.94% of the former had the highest chance of having return future visits, compared to 35.71% of the latter.

### 3.5.6. Results

As previously stated, this study was performed in order to test five different hypotheses. For H1, H2, and H4, there was not enough data to make a definitive conclusion on whether they were proven or not.

When it comes to H3, we found that, after testing for adequacy, a hypothesized relationship between Overall Satisfaction of Clients and increasing revenue, resulted in a p-value of 0.010, which is less than 0.05, which suggests that there is enough evidence to support the positive effect of customer satisfaction in revenue growth. On the other hand, when testing a hypothesized relationship between the number of clients that return for future visits, it results in a p-value of 0.388. The value is higher than 0.05, which suggests that there is not sufficient evidence to support a relationship of the number of clients returning for future visits with revenue growth.

When it comes to H5, we found that, after testing for adequacy, a hypothesized relationship between Employee Productivity and revenue growth resulted in a p-value of 0.388, which is larger than 0.05, suggesting that there is not sufficient evidence to support an effect of employee productivity in revenue growth.

## 4. CONCLUSIONS

One of the objectives of the study was to develop a profile of the current practices in employee development of a high contact environment in Puerto Rico. The study shows that a higher percentage of companies that presented growth in revenues have a tendency to focus more on the design of work systems. In terms of staff training, companies with rising revenues present more focus in training and building the capabilities of their employees. With these findings it can be concluded that the companies with growth in revenues have a better approach to employee development practices.

Regarding staff well being the percentage difference was lower between the two groups. It can be concluded that efforts are made to maintain the well being of the employees, at least from a managerial point of view regardless of the resulting financial performance. Thus it is not a determinant factor in the success or failure or the financial institution.

The information available for hypothesis testing was insufficient to explore all the factors considered in the study. However, for those available for testing it is interesting to find that the results suggest that there is evidence to relate customer satisfaction and revenue growth. We can conclude that in fact customer satisfaction translates in to revenue growth; most importantly, that the relationship is positive. Efforts to control customer satisfaction are important to control the variability that comes from the nature of service encounters.

### 4.1. Limitations

The limitations that our research had to face were as follows:

- When researching in services, probably the biggest challenge when starting is that there is no consensus on a general categorization or classification of services. There is a conflict as to whether to define services by

industry or process. Governmental statistics traditionally define services by industry: Whatever is not manufacturing or extraction of natural resources is considered services. This is the basis for the GDP figures (Mettters and Maruchek , 2007). This limited the possible areas of study. Recent studies have been directed toward specific service industries like healthcare, financial services and call centers.

Other limitations include:

- Research and theory about the service sector is limited and fairly recent. There is no significant body of knowledge. After reviewing what was available for me to work with I realized that the options were very few. At first the focus was on professional services, but the lack of research and the unavailability of statistical data limited the scope of the investigation.
- Lack of verifiable and trustworthy statistical data in Puerto Rico limited the possible subjects. The populations considered where the health care industry (hospitals), professional services (accounting, human resources, and law firms), and the commercial banking industry.
- In the commercial banking industry, banks were not considered, because the financial data available to the public is of the consolidated performance of the bank holding company and not specifically of the commercial banking service (deposits and loans).
- All 126 (COSSEC , Statistics, September 2008) active members of COSSEC, the regulatory agency of credit unions in Puerto Rico, were contacted either by phone or personal visit in multiple occasions from October 2008 until January 2009. Few responded and many were unwilling to participate in the study.
- The study was a conducted with a small sample. This resulted in a change in the statistical method originally intended to be used, which limits the scope of the results and its comparability with previous studies.

## 5. RECOMMENDATIONS FOR FUTURE STUDY

The theories presented here are very rich with information and lend themselves to design a variety of studies. In the process, a lot of questions and suggestions arise. The most important are presented below.

*Define the population using only the Customer Contact Model regardless of the industry. This maybe a better way of evaluating service operations.*

Much of the service theory I found criticized the fact that research in service was done using the industry to limit the focus of study. The customer contact model presents a better way of understanding and classifying services based on the nature and environment of the service encounter. To use this model as a way to limit the focus of study may be a better way to develop general tools for service operations.

*Future studies can be conducted using similar methods, but from the employee's viewpoint.*

This study presents the view of the managers. We always faced the question whether the employees would answer in the same way. Studies using the Service Profit Chain have been done from the employee's perspective.

*Develop methods that can be tested with smaller samples.*

It seems that the lack of response of the subjects is a common denominator in researches done recently here. The reasons may be very complex, including time constraints and other limitations. I guess hope for the best and prepare for the worst. Dealing with smaller samples may be more in sync with the environment here in Puerto Rico.

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# AN ORGANIZING STRUCTURE FOR PERSONAL INCOME TAX PLANNING UPDATED FOR THE 2012 TAX YEAR

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## ABSTRACT

*Personal income tax planning can be a difficult topic for financial planning practitioners and students who must keep abreast of frequent tax law changes and understand the impact of these changes on client planning outcomes. This paper provides an organizing structure for the study of income tax planning by categorizing and inventorying the tax-planning strategies available for the household. While describing the organizing structure, the paper also provides relevant information for the tax year 2012 and likely changes taking effect in 2013. The organizing structure presented in this paper will help financial planning students, educators, and advisors to understand the implications of particular strategies and to interpret the impact of new tax laws.*

**Keywords:** Certified Financial Planner™, Income Tax, Personal Financial Planning, Tax Planning, Tax Strategies.

## I. INTRODUCTION

Personal income tax planning is a key content area for financial planning practitioners who are working with clients. Planners must keep current with new tax laws, often learning new information that may soon become obsolete due to frequent tax law changes. Planners must also interpret the impact that these changes will have on client planning. Often, law changes impact limited areas of income taxation but may, on occasion, fundamentally change the structure of the tax system.

Income tax planning is a principal topic area for the Certified Financial Planner™ (CFP®) Certification Examination. Through administration of the exam, the CFP® Board seeks to ensure that its certificants are qualified to provide competent financial advice, including basic income tax planning. To register for the CFP® exam, a candidate must complete a series of courses, one of which includes income taxation. Before March, 2012, the CFP® Board dedicated approximately 17% of the certification exam to individual income tax planning questions. Beginning with the March 2012 Certification examination, the CFP® Board changed its approach to weighting the exam based on general domains representing steps in the financial planning process (CFP® Board, 2010). While it is difficult to anticipate how much of each certification exam will be devoted to each of the principal topic areas (investments, retirement planning, income taxation, and estate planning), there is no reason to anticipate a major departure from past practice.

Financial planning practitioners must assimilate the details of new legislation into their current understanding of income taxation. Changes in tax policy often spark changes to planning not only in the income tax area, but also in retirement, estate, and insurance planning. For example, advisors should expect increasing tax rates due to the expiration of the temporary tax cuts enacted by the Economic Growth and Tax Relief Reconciliation Act of 2001 and extended through the end of 2011 by the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010. Changes may impact the rate and type of retirement savings that may be optimal for clients, and cause the advisor to re-think appropriate tax strategies based on individual client characteristics. For example, clients who do not anticipate having a taxable estate may shift retirement savings to deferred accounts, while those who will be in danger of paying estate taxes may find the use of tax-free accumulation devices, such as Roth IRAs and 401(k)s, more attractive.

Financial planning practitioners also need to be aware of proposals calling for the overhaul of the income tax system. As partisan politics has risen to what appear to be new heights over the past few years, both sides of the political aisle are calling for major changes in the income tax system. Major changes can have far-reaching impact,

and may not only affect income tax planning choices but also influence choices made by clients in other areas of planning.

Understanding the impact of tax law changes can be particularly difficult when advisors or students do not begin with an organizing structure of knowledge. Learning theory suggests that for complex or difficult to organize information, educators should provide a structure or hierarchical model. This model should cluster information into categories and provide a pattern of relationships among categories. This organizing structure can help learners process information and commit that information to long-term memory. Further, the organizing structure can help learners assimilate new information into their current structure of knowledge (Gagne, Briggs & Wager, 2004).

This paper provides an organizing structure which categorizes and inventories income tax planning strategies available for the household. The structure presented in this paper can provide financial planning practitioners and students with a conceptual framework of relationships among various tax strategies and their financial impact. The structure can help financial advisors communicate income tax strategies and related tax savings to their clients. Finally, the structure may be helpful to consumers as they interpret the impact of income tax changes on their own financial plans.

The paper is organized as follows. In section II, the tax reporting knowledge necessary for understanding income tax planning is discussed. Section III presents income related strategies, while Section IV presents strategies related to expenses. In section V, tax strategies to reduce tax liabilities are described, and section VI offers concluding comments.

## **II. BACKGROUND**

Reviewing the income tax returns of clients can help the financial planning student learn about a client's financial situation. By reviewing income tax reporting forms, students can gather data for income statements and cash flow projections, identify tax strategies currently in place, identify past tax issues and problems, and even, in some cases, identify the client's money style and beliefs. The process of reviewing income tax returns, however, requires a look into the past rather than to the future, when the client's situation, as well as the tax environment, may be significantly different from that of the past.

Understanding a client's prior history by reviewing income tax returns alone does not lend itself to the development of an effective financial plan for the future. While past income tax returns provide valuable data, prospective tax strategies provide the value-added from the financial planning practitioner. These tax strategies are an essential part of the projections included in a comprehensive financial plan. For engagements of smaller scope, tax strategies can provide a source of savings available for risk management or goal funding purposes.

Personal financial planning textbooks typically begin their income tax discussions by presenting basic income tax reporting and calculation for the household. Presentation of strategies for the future tends to be arranged in an incomplete laundry list, rather than in an organized set of distinct categories. Further, the extent of tax savings available from utilizing each category or strategy is not immediately clear.

In this section, we will review the income tax structure used in the United States. As stated in the introduction, understanding this reporting structure is a necessary, but not sufficient, condition for understanding the impact of various tax strategies. The purpose of this review is to provide the vocabulary necessary for understanding the impact of various tax strategies for the future.

The income tax calculation begins with gross income. Gross income includes all income realized from any source during the tax year, except that income specifically excluded. With few exceptions, any accretion to wealth that is realized in a given year is considered income and is subject to income tax. Provided that a receipt is classified as income, it is includible in the tax formula as part of gross income unless it is specifically excluded by statutory or case law. Gross income consists of income from labor, income from investments, and income from other (personal) sources. Examples of the most common sources of income for each type are detailed in Appendix A.

After gross income, which does not include excluded (tax-exempt) income, is calculated, several adjustments are made in order to determine taxable income. From gross income, an initial set of deductions is subtracted, resulting in adjusted gross income (AGI). These deductions are referred to as “for AGI” or “above the line” deductions, because they are subtracted from Gross Income before arriving at AGI. From AGI, the greater of a standard deduction or Itemized deductions (often referred to as “from AGI” or “below the line” deductions) are subtracted, along with personal and dependency exemptions. The result is taxable income. To summarize the calculation:

	All gross income
Minus	<u>Exclusions</u>
Equals	Gross income
Minus	<u>Above the line deductions</u>
Equals	Adjusted gross income (AGI)
Minus	<u>Below the line deductions, personal and dependent exemptions</u>
Equals	Taxable income

Once taxable income is calculated, the tentative tax liability can be determined. Any available tax credits are then applied to offset the tax liability on a dollar-for-dollar basis. Any prepayments of expected income tax liability through salary withholding or estimated tax payments are considered credits in the income tax formula. To the extent that total credits do not exceed the tentative tax liability, an additional payment is necessary. If total credits do exceed the tentative tax liability, a refund may be generated.

Many personal financial planning texts proceed to a laundry list of tax strategies after a review of income tax reporting similar to the review in this section. The laundry list approach does not set the stage for a meaningful comparison of strategies and their impact on a client’s future tax situation. This foundation is presented in the following sections, which look at the five categories of tax strategies.

### III. INCOME-RELATED STRATEGIES

One way of reducing exposure to income tax is to reduce the starting point – gross income – in the income tax formula. In this section, strategies relating to reduction of gross income are presented. These strategies are grouped into the categories of excluded income and deferred income, each of which is described in detail in its respective section.

#### Exclude

Excluded income, also referred to as tax exempt income, is not included in gross income, and therefore is not subject to federal income taxation. Some, although not all, tax-exempt income is unreported. Partially excluded income and the excluded amount can depend either on dollar limits or income limits.

#### **Wholly Tax Exempt (Excluded) Income**

There are several examples of this category, consisting of items wholly excluded from taxable income and not reported. Perhaps the most common of these in a financial planning context include gifts and inheritances, life insurance death benefits received by reason of the death of the insured, and compensation received for military service while serving in a combat zone.

Compensation received for certain losses and expenses may also be excluded from gross income, and not reported on individual income tax returns. Examples include reimbursement for medical expenses actually incurred, disability income insurance benefits if the insurance was paid for with after tax dollars, government disability programs attributable to services in the armed forces, and workers’ compensation for workers or their survivors.

Some damage payments received through court awards and settlement agreements by a taxpayer are also excluded from gross income. Payments received for physical injury or sickness are fully excluded from gross income, while payments for emotional distress are fully taxable. To qualify as an exclusion from income, the

payments must also be non-punitive in nature unless the case pertains to a wrongful death case and the payment is 100% punitive.

Interest on certain municipal bonds is tax-exempt on the federal level. The bonds must be used for “public purposes” such as for financing highways, schools, or airports. Although tax-exempt, this interest is included in the provisional income calculation for social security taxability, potentially increasing the amount of social security subject to tax.

Interest on municipal bonds for uses other than public purposes has different tax consequences. For example, non-government purpose bonds, used to finance subsidized projects such as housing or student loans, generate tax-exempt interest for regular tax purposes. Interest on non-qualified private activity bonds, such as those that finance sports, parking, or conversion facilities are fully taxable.

The interest income from non-government purpose bonds mentioned above, which generate tax exempt interest for regular tax purposes, do generate interest subject to Alternative Minimum Tax (AMT). The AMT is a separate income tax system that was originally designed to prevent the taxpayer from reducing the tax liability below “reasonable” levels. AMT is an alternative, rather than additional, tax with its own structure of exemptions, phaseouts, and tax rates.

The Roth IRA, funded with after-tax money, generates earnings which are tax-exempt if certain conditions are met. Likewise, income from US savings bonds redeemed to finance “qualified higher education expenses” for the taxpayer, spouse, or a dependent is tax-exempt, subject to income limitations. Several other investment vehicles described in the deferral section, including life insurance, Coverdell savings accounts, and series EE government bonds generate deferred income which is eventually tax exempt if certain conditions are met.

### ***Partially Excluded Income***

Some income is only partially excluded, and the portion not excluded must be reported as gross income on the tax return. For example, some or all of social security payments received by a taxpayer may be excluded from gross income, depending on the taxpayer’s provisional income (AGI plus tax-exempt interest plus one half of the social security benefit received). Other income that is subject to limits includes long term care benefits received in excess of long-term care costs incurred, and employer provided child and dependent care costs if the plan is nondiscriminatory. Payments made by an employer for adoption and educational assistance are also excluded from gross income up to a limit, as are employer-paid premiums on up to \$50,000 of group term life insurance. Additionally, up to \$250,000 (for single individuals) or \$500,000 (for married individuals filing jointly) of the capital gain realized on the sale of a personal residence when ownership and use requirements are met is also excluded from gross income.

Planners can determine the savings derived from receiving excluded income by multiplying that amount by the marginal tax rate at which the taxpayer would otherwise incur tax. Savings calculations are summarized in Appendix B. Calculations are simplified to assume that the taxpayer remains in the same marginal tax rate after application of the strategy. If this is not the case and the reduction in gross income drops the taxpayer into a lower marginal tax rate, the calculation must be pro-rated for the two tax tiers. For example, suppose prior to a exclusion of income that would have otherwise been included, the taxpayer’s income has just increased from the 25% marginal tax rate by exceeding the threshold for the 28% tax bracket by \$250. The savings from a new deduction of \$1500 is based on the appropriate marginal tax rates,  $(250) (.28) + (1250) (.25)$ .

### **Defer**

Deferral of taxation on income results in immediate tax savings because the income deferred is not included in gross income. However, the earnings will be subject to income tax at some point in the future, so the tax savings associated with deferral is less valuable than the savings associated with exclusion. There are two benefits associated with deferral in addition to the immediate tax savings. First, accumulating funds in a tax-deferred account enables the taxpayer to accumulate funds on the government’s temporarily forgone tax revenue. Second, if deferred

income will become taxable during the taxpayer's retirement years, it is possible that the income will be realized when the taxpayer is in a lower marginal tax rate than he or she experienced during working years when the income was deferred. Tax deferral works best in periods of declining tax rates, but loses some of its benefit in periods of rising tax rates (where a taxpayer may defer at a low rate and then pay tax on the income at a higher tax rate in the future).

Tax policy permits some deferral of income primarily as an inducement for taxpayers to behave in a certain way. As such, tax deferral is often used to encourage savings for retirement or education. There are two categories of tax deferral. The first category covers the deferral of earned, ordinary income. The second category covers earnings on investments.

### ***Deferred Earned Income***

Employer sponsored retirement plans are the most common deferral devices in this category. The employee, the employer, or both, depending on the type of plan and the plan provisions, may make pre-tax contributions to the plan. Retirement plans come in many designs, including popular qualified plans such as 401(k)s, 403(b)s, and profit sharing plans. Non-qualified plans such as SEPs and SIMPLE IRAs sponsored by small employers also provide deferral of pre-tax earnings.

Some taxpayers may defer part of their income by funding private retirement vehicles, such as IRAs and annuities. Taxpayers who are not active participants in qualified plans, or who have AGI below certain levels can make a tax-deductible contribution to an IRA. Non-deductible IRAs, Roth IRAs, and private insurance company annuities are all funded with after-tax contributions, and do not provide tax deferral on the contributions made to the plan.

In an effort to discourage the deferral of too much income, tax law imposes contribution limits on all employer-sponsored and individual retirement account plans, even if the contributions are made on an after-tax basis and therefore do not qualify for income tax deferral. Annuity contracts issued by private insurance companies are not subject to contribution limits.

Deferred compensation is an executive benefit provided under a non-qualified employer sponsored plan. If a deferred compensation account is funded, then the compensation is taxable to the employee the first year that either rights to the income are not subject to a substantial risk of forfeiture, or when the employee can transfer rights to another party. Deferred compensation funded by a rabbi trust is effectively deferred if the trust is subject to claims of the employer's creditors and if the agreement does not require that a specific type of asset fund the trust.

Deferral of earned income with a deferred compensation executive compensation package can also be an effective deferral strategy, but only when this income is not constructively received. Constructive receipt implies that the taxpayer had the right, after the income was earned, to choose to take the income currently or to defer it. Constructive receipt also occurs when funds are permanently set aside in an account solely for the benefit of the taxpayer even if the taxpayer does not have the right to access those funds until some point in the future. An employee who benefits from deferred compensation is not deemed to have constructively received the compensation if control over the funds is subject to substantial limitations or restrictions.

Retirement plans, whether funded with pre-tax (i.e. tax deferred) or after-tax money, can provide ongoing tax savings. Earnings on qualified plans, on small employer non-qualified plans, and on IRAs and annuities are all tax deferred. The income earned in these accounts will be subject to income tax when withdrawals commence.

For many years, deferral of income under a tax-qualified employer sponsored retirement plan, or under a individual plan such as a traditional IRA, was unquestioned as to tax savings. The logic was that the worker would defer income during their working years and take distributions from the plan during the retirement years when the marginal tax rate would presumably be lower due to the lower income. Because tax rates are expected to increase in the future, income deferrers could ultimately pay a higher marginal tax rate on withdrawals of deferred funds

during retirement. Deferral cannot continue indefinitely awaiting a drop in rates due to the Required Minimum Distribution rules which obligate the taxpayer to begin withdrawal the year following attainment of age 70 ½.

### ***Deferred Investment Income***

Deferral of investment earnings also applies to cash value increases in permanent life insurance and annuities. These increases, referred to as inside build-up, are tax deferred and, in some instances, tax exempt. The cash-value increases in life insurance policies are deferred and become taxable if the policy is surrendered for a gain. However, if there is no gain on surrender of a life insurance policy, or if the policy pays a death benefit by reason of the death of the insured, the inside build-up is excluded from income and is therefore not subject to income tax. The inside build up in an annuity contract, unlike the situation with life insurance, is tax-deferred. When the beneficiary of the annuity receives payments, the payments in excess of their basis will be subject to income tax.

Like life insurance, the Coverdell education savings account generates tax deferred earnings which may end up becoming tax exempt. The account is funded with after-tax money (no tax deduction is available for contributions to the account), and provided that the funds in the account are used to pay for qualified educational expenses, the earnings on the Coverdell account will eventually be excluded from income and therefore not be taxable.

There are several other opportunities to defer income. For example, capital gains are not subject to tax until those gains are realized. Deferral also occurs when taxpayers take advantage of §1031 and §1035 exchanges of like kind property. Series EE Savings bonds provide owners the choice of deferring tax payment on the interest until the bond is redeemed, or paying tax on interest annually as it accrues. As described in an earlier section, income from these savings bonds redeemed for education is tax-exempt, subject to income limitations.

Planners can determine the savings derived from deferring income by multiplying that amount by the marginal tax rate at which the taxpayer would otherwise incur tax. However, unlike tax-exempt income, deferred income will eventually become taxable. The taxpayer risks that the deferred earnings will be taxable at some unknown rate in the future, which may be higher or lower than his current marginal tax rate.

## **IV. EXPENSE-RELATED STRATEGIES**

Unlike the income related strategies covered in Section III that focus on removing income items from gross income, expense-related strategies take advantage of deductions that reduce the amount of income ultimately subject to tax. Deductions are permitted by Congress to encourage individuals to engage in certain forms of consumption, and to reward taxpayers who dedicate their resources to productive uses that, in the long run, either permits Congress to collect taxes on higher levels of income or to avoid future expenses. For example a businessperson who makes investments today to generate more income in the future, or a taxpayer who purchases long-term care insurance and who will not have to rely on government assisted care through Medicaid.

### **Deduct**

Deductions are subtractions from income prior to taxation. As mentioned in the prior section, there are two types of deductions, above the line and below the line. In this section, we will begin with above the line deductions and their impact on AGI, then address below the line deductions and their benefits.

#### ***Above the Line Deductions***

Above-the-line (or "for AGI") deductions have traditionally included expenses associated with business or income producing activities. Examples of this category include expenses associated with business, rents, or royalties; losses from certain property transactions; certain employee or employer business expenses; certain educator expenses, and certain moving expenses.

While traditionally, above the line deductions have related to business expenses, in recent years there has been some drift from the general rule associating above the line deductions with income production. For example, one category of non-income producing above-the-line deductions includes deductions for income passed through to

another taxpayer. While these situations provide the payor with a tax deduction, the taxpayer receiving the payment must include that payment in their income, passing through the income to the ultimate recipient. Some examples include alimony paid to a former spouse, and payments received for jury duty service that are transferred to the taxpayer's employer. It may seem strange that the government feels sorry enough for a taxpayer making alimony payments that it permits that taxpayer to deduct those alimony payments from income. This rule, however, is motivated more by administrative convenience rather than tax policy, recognizing that it is easier to collect the tax from the taxpayer who winds up with the money.

Other above-the-line deductions appear to permit deductions for personal expenses, but upon closer examination these expenses, much like expenses associated with business or production of income, could generate more taxable income in the future. These above the line deductions provide incentives for particular behaviors that benefit society in the long-run, and all are subject to a dollar limit. Some examples include deductions for higher education expenses, interest on qualified student loans, contributions to Archer MSAs and Health Savings Accounts (HSAs). Congress views these deductions as a motivator to pursue educational goals or invest in their health, both activities which will enable the taxpayer to earn higher wages subject to future taxes, or to remain healthy enough to work longer and generate more taxable wages.

One last category of above-the-line deductions is designed to permit taxpayers to avoid tax on income that is not actually received. Taxpayers cashing in certificates of deposit before the due date are subject to early withdrawal penalties. Typically, banks impose a penalty on early withdrawal that effectively eliminates some or all of the interest credited on the deposit. During each year the taxpayer held the CD, however, the bank reported taxable interest to the IRS and sent the taxpayer a 1099-INT form so that interest would be reported and taxed when the tax return was filed. Even though the taxpayer reported and paid tax on interest income during the holding period of the CD, they did not receive the interest because interest on CDs is typically not paid until the CD matures. If a taxpayer cashes in a CD early, and the bank imposes a penalty that takes away part or all of the interest income, a corresponding above-the-line deduction is available to reverse out the reported interest that was included in the taxpayer's gross income.

Once AGI is determined, two further reductions are permitted before taxable income is calculated. Taxpayers are entitled to a personal exemption for themselves, their spouses, and each of their dependents. In addition, taxpayers can claim the greater of a standard deduction or itemized deductions. Itemized deductions are typically referred to as below-the-line deductions.

Personal and dependency *exemptions* are referred to as exemptions rather than deductions because they are not associated with any specific incurred expenses. Rather, a standard dollar amount (\$3800 in 2012) is deducted for the taxpayer, spouse if filing jointly, and each dependent. While personal and dependency exemptions are not labeled as deductions, by reducing AGI to arrive at taxable income they operate in the same manner as itemized or below-the-line deductions. Personal and dependency exemptions should not be confused with tax exempt income. Income that is exempt from tax is not deducted on the tax return; rather, it is never included in the taxpayer's gross income, although it may have to be reported and, in some cases, considered when determining how much income from other sources must be included on the tax return. Personal and dependency exemptions are subject to reduction when a taxpayer's AGI exceeds specified thresholds beginning in 2013.

Above the line deductions can provide tax savings in addition to the expected tax savings calculated by multiplying the amount of the deduction by the marginal tax rate. Because they reduce AGI, above the line deductions are more valuable than below the line deductions. The lower the AGI, the more likely the taxpayer's AGI will fall below a deduction phaseout threshold, permitting a greater deduction below the line, as will be described in the next section.

### ***Below the Line Deductions***

Below the line deductions consist of selected expenses that are typically personal in nature. A taxpayer is permitted to take the greater of a standard deduction, or the sum of itemized deductions before arriving at taxable income. The standard deduction is based on the taxpayer's filing status (single, married filing jointly, married filing

separately, or head of household) and is indexed annually. The standard deduction provides all households in a particular filing status with a minimum deduction, regardless of expenses incurred. A higher standard deduction is available for blind taxpayers and taxpayers age 65 or over. Beginning in 2013, standard deductions will begin to be phased out when AGI exceeds a specified limit.

Some itemized deductions are subject to an *expense floor*. Deductions subject to a floor are only deductible to the extent that they exceed a specified level of with AGI. Only the excess expenses beyond the floor are deductible. For example, medical and dental expenses are deductible to the extent that the total exceeds 10% of AGI (beginning in 2013, or 7.5% of AGI provided that the taxpayer will attain the age of 65 by 2016). These medical and dental expenses also include long term care premiums, which are subject to a dollar limit based on the age of the insured.

Job expenses and miscellaneous itemized deductions are subject to a floor equal to 2% of AGI. Included in this category are unreimbursed employee business expenses or expenses for income production; qualified home office expenses; unreimbursed employee transportation, travel, and entertainment (partial); union and professional dues; subscriptions, employment agency fees, work clothes and uniforms. Also included in this category are investment expenses, tax advice and preparation, and costs of a safe deposit box. These expenses are totaled, and the excess of 2% of AGI is an itemized deduction. Note that some expenses related to production of income are below-the-line deductions. While investment expenses generate income subject to tax, they cannot be claimed as above-the-line deductions.

Certain other itemized deductions are deductible from the *first dollar* of expense. These include state and local income, real estate, and personal property taxes; interest on investments and interest and points on qualified residences, and casualty and theft losses. Gifts to charity are deductible from the first dollar, but are subject to a *ceiling* limit. "Other miscellaneous deductions" include gambling losses to the extent of gambling gains and impairment related work expenses if the taxpayer is handicapped.

Beginning in 2013, up to 80% of itemized deductions may be phased out for taxpayers with AGIs exceeding a specified threshold. Once the taxpayer's AGI exceeds the annually adjusted threshold, the deductions are phased out based on the AGI. Unlike the personal exemption which can be fully phased out if the taxpayer's AGI is high enough, taxpayers are permitted to deduct a minimum of 20% of their itemized deductions regardless of their AGI. Phaseouts result in a loss of deduction and therefore increase taxable income.

Some deductions are not allowable when the taxpayer is subject to Alternative Minimum Tax (AMT), described earlier under Exempt Income. Calculation of taxable income for AMT purposes does not allow certain deductions, including the standard deduction, personal and dependency exemptions, and certain business expenses which may be above or below the line. The itemized deductions are still available in the AMT structure include medical expenses in excess of 10% of AGI, casualty losses, and charitable deductions.

As noted earlier, the taxpayer compares the standard deduction with the total of itemized deductions, and then deducts the higher of the two. Unlike the standard deduction, itemized deductions are based on actual expenses incurred. The value of itemizing deductions is the total itemized deductions in excess of the standard deduction, multiplied by the marginal tax rate.

## V. REDUCING TAX LIABILITY WITH TAX PLANNING

This section describes tax strategies related to lowering either the taxpayer's tax rate or the tax liability. Two ways of accomplishing this are to shift income or to take advantage of tax credits.

### Shift

Shifting is a strategy for lowering the marginal rate at which certain income is taxed. There are two primary categories of tax shifting. First, portfolio assets can be repositioned to investments that are taxed at a lower marginal rate. Second, assets can be shifted to family members in lower marginal tax brackets.

## Repositioning Assets

The first category of shifting is repositioning portfolio assets so that they generate earnings taxed at a lower marginal rate. The lower marginal rate may be some percent that is less than the marginal tax rate on ordinary income, or it may be zero percent. Income taxed at zero percent is referred to as tax-exempt income. This income differs from excluded income because the tax-exempt income is usually reported, and may be included in calculations for social security taxability or for the alternative minimum tax.

Shifting investment earnings to a lower marginal tax rate can be accomplished by repositioning assets to those that generate capital gains. Capital gains tax rates are lower than the marginal rates on ordinary income. Current law taxes capital gains at a maximum 15% rate (0% for taxpayers in the 15% or lower ordinary income tax bracket). Beginning on January 1, 2013, all capital gains (except gains resulting from sale of collectibles and unrecaptured §1250 depreciation) will be taxed at 20% (or the ordinary income tax rate of the taxpayer, if lower). Realized long-term gains on art and other collectibles are taxed at 28%, and unrecaptured §1250 depreciation is taxed at 25%.

Through the end of 2012, tax law encouraged shifting assets to dividend-paying stock. Dividend income on shares in domestic corporations and qualified foreign corporations are taxed at a maximum of 15% through the end of 2012 (0% for those in the 15% or lower tax bracket). Non-qualified dividend income is taxed at ordinary income rates. Beginning January 1, 2013, qualified dividends disappear, and all dividends will be taxed at ordinary tax rates. This pending law change may encourage investors to shift their holdings from dividend yielding stocks to stocks that provide returns in the form of long-term capital gains.

## Transferring Ownership of Income Generating Assets

The second category of income shifting involves transferring ownership of assets to family members with lower marginal tax rates. Once the transfer is complete, the new owner will be subject to tax on the income at their lower marginal tax rate. The application of this strategy, in practice, is rather limited because ownership of assets must actually be transferred, effectively gifting the assets to another family member. Giving up dominion and control of assets is often a difficult pill for many clients to swallow.

The most common use of this type of shifting involves making gifts to minor children. Shifting assets to children enables the household to take advantage the children's lower marginal rates. However, the dollar amount of income taxed at the lower rate is limited, resulting in a small dollar amount of savings, due to the imposition of the kiddie-tax rules. For example, in 2012, only the first \$1900 of unearned income is taxed at the child's marginal tax rate, with the excess taxed at the parents' highest marginal tax rate.

Titling under the Uniform Gifts to Minors Act (UGMA) is the simplest and most common method of transferring ownership and shifting income to children. When the child reaches the age of majority, however, he or she is the sole owner of the UGMA property, and has access to the property without restriction. Trusts can impose more limitations on access to the assets when the child reaches the age of majority, although design of the trust must effectively shift ownership or the assets will be taxed at the donor's marginal tax rate.

Gifts to parents or adult children in lower tax brackets can be effective when done in conjunction with estate planning strategies. Of course, other factors must be considered such as eligibility for social programs and the estate planning situation of the donee.

Shifting assets can provide limited tax relief on the earnings from income producing assets. However, because income shifting requires the taxpayer to make a completed gift, gift and estate planning implications may result. In practice, taxpayers ordinarily shift assets to children for their educational funding, and exceptions to the regular gift and estate tax rules apply when these funds are used for educational purposes. If funds are set aside for children on a regular basis, titling them under UGMA arrangements may provide some tax savings for the household.

The savings associated with shifting is based on the difference in marginal tax rates, calculated as the marginal tax rate before the shift minus the marginal tax rate after the shift. Of course, in the case shifting to tax-exempt income, the marginal tax rate after the shift equals zero.

## **Credit**

Tax credits amount to a dollar for dollar credit against the tax liability. Today, all tax credits are subject to income limitations, although that has not always been true in the past. Tax credits have traditionally been used as a quasi-social program to redistribute income, and may even create income for the individual. Credits have also served as an incentive to encourage certain behavior, although other tax strategies such as above the line deductions have also been used for this purpose.

### ***Credits for Income Redistribution***

Tax credits designed to achieve social purposes are typically structured to assist low-income households. There are two major types of the social program tax credits – refundable and non-refundable credits.

Refundable credits permit the taxpayer to receive a tax refund even if they had no tax liability and had not withheld any funds for the future payment of tax liability. The best example of this credit is the earned income credit, which is especially designed as an incentive for the working poor. Taxpayers must meet earned income, AGI, and investment income eligibility limits to qualify for this credit. In recent years, Congress has made the child tax credit, and the American Opportunity Credit (which is available during the first 4 years of post-secondary education) partially refundable for low-income taxpayers.

Most tax credits are non-refundable in that the credit can only offset income to the extent of the tax liability. These credits include credits for the elderly or disabled, the child tax credit, and the child and dependent care expense credit.

### ***Credits to Encourage Behavior***

Other tax credits are designed to encourage favorable behavior on the part of taxpayers. For example, education is encouraged with the American Opportunity and Lifetime Learning credits. Other tax credits cover qualified adoption expenses and energy-efficient improvements to residences and businesses. Finally, there are tax credits for retirement savings contributions made by lower income taxpayers.

Because tax credits are a dollar for dollar credit against the tax liability, tax credits are particularly valuable to the taxpayer. The credit offsets tax liability regardless of the source of that liability. Current tax law limits tax credits to those taxpayers within certain income limits.

## **VI. CONCLUSION**

This conceptual structure of income taxation is designed to help financial planners, clients, educators, and learners envision and organize tax-planning strategies. Further, the structure permits the planner or student to appreciate the tax savings available by engaging in each category of tax planning. A summary of tax savings calculations is included in Appendix B.

While tax laws change, the framework provides an organizing structure that has been very stable over time. This structure can be helpful for understanding similarities and differences among strategies, and for interpreting the impact of changes to the tax law.

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## **APPENDIX A: CATEGORIES OF INCOME**

### 1. Income from labor

- Wages, commissions, bonuses, tips
- Non-qualified deferred compensation
- Secured notes as payment for services
- Severance pay
- Back pay awards
- Certain fringe benefits such as company vehicles for personal use
- Cash gifts (or gifts easily converted to cash) from the employer
- Compensation for past employment
- Income for services such as tips, bonuses
- Partnership distributive shares
- Business income
- Funded deferred compensation plans (does not include rabbi trusts)
- Value of employer-provided life insurance coverage in excess of \$50,000 death benefit

### 2. Income from investments

- Interest other than tax-exempt interest
- Dividends
- Interest on insurance dividend accumulations
- Rent
- Proceeds in excess of basis at maturity or surrender of life insurance and annuities
- Gains from property transactions, both short and long term
- Previously deferred income no longer qualified for deferral

### 3. Income from other (personal) sources

- Alimony and separate maintenance agreements
- Pensions
- Unemployment compensation
- Social security taxable amount
- Royalties
- Discharge of debt owed

## **APPENDIX B: ORGANIZING STRUCTURE OF TAX STRATEGIES**

<b>Strategy</b>	<b>Savings</b>	<b>Notes</b>
I. Gross income related		
A. Exclude		
Wholly excluded	Excluded income x $MTR_0$	
Partially excluded	Excluded income x $MTR_0$	Subject to dollar or income limits
B. Defer		
Earned income	Deferred income x $MTR_0$	Taxable at withdrawal, risk $MTR_w > MTR_0$
Investment income	Deferred income x $MTR_0$	Taxable at withdrawal, risk $MTR_w > MTR_0$
2. Expense related		
A. Deduct above the line	Deduction x $MTR_0$	Reduces AGI, can lower deduction btl thresholds
B. Deduct below the line	Deduction x $MTR_0$	
Standard or itemized		Standard, MGIC subject to income phaseout
Personal, dependent exemptions		Subject to income phaseout, not deductible for AMT
3. Shift		
A. Type of investment	Earnings shifted x ( $MTR_0$ minus $MTR_1$ )	
B. Asset ownership	Earnings shifted x ( $MTR_0$ minus $MTR_1$ )	
4. Credit	Credit	Subject to limits and income phaseouts

Definition of variables:

**$MTR_0$**  Marginal tax rate for taxpayer, current year

**$MTR_1$**  Marginal tax rate for new investment or new asset owner, used when income has shifted

**$MTR_w$**  Marginal tax rate for taxpayer, year of withdrawal

Note: Calculation is simplified to assume no change in marginal tax rate has occurred due to implementation of the strategy. See section for Tax Exempt (Excluded) Income for further explanation.

# TECHNICAL ASPECTS AND PSYCHOLOGICAL STRESS OF FEDERAL GOVERNMENT CONTRACTING

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## ABSTRACT

*Government contracts are useful only if certain criteria are met. Contract Price Negotiations and Contract Delivery Schedule - these conditions are the source of a great deal of emotional strain for the government employee responsible for creating the contract. When an individual begins a career as a contract specialist, he or she becomes a guardian of the treasury, and inherits a duty to safeguard national funds. This is a tremendous responsibility, and most new contract specialists are unprepared for the stress and anxiety that accompanies the position. The newly hired individual soon realizes that this new realm of contract negotiations can be quite overwhelming. In an effort to relieve/reduce some of the psychological tension inherent in the field of government contracting, this article proposes some different aspects of government hiring for the position of contract specialist. What can be done to alleviate those natural fears that come with this field of expertise where the main objective is consensual agreement based on business acumen and knowledge? The more we know, the more confident our skills become. Sir Francis Bacon wrote, "Knowledge is Power." When contract specialists gain the requisite knowledge for creating government contracts, and develop the skills and personality traits conducive to negotiating contracts, they have the makings of a long-term worker who can perform their job duties with a minimum of anxiety and stress in the government organization.*

**Keywords:** Contracting, Federal, Government, Psychological, Stress, Technical.

## INTRODUCTION

Most federal government contracting procedures and practices are not considered newsworthy. The media highlights only those horror stories that point out the inequities of contracting personnel. The headlines might read "Government buys a \$250.00 ashtray for the HAWK Missile firing console" or "Contracting Officer is indicted for fraud in Defense Contracting". But the media fail to emphasize the depth of frustration, and psychological stress, or the job pressures that drive contracting personnel to commit such acts. Most of us are aware of the many statutes, regulations and court rulings published by the federal government, and we may be vaguely familiar with the policies, procedures and practices that govern federal contracting. However, we, as a society have very little insight as to what goes on behind the scenes at the negotiation table where Contracting personnel face the challenge of utilizing best business practices in order to obtain the best price from a private company with the greatest integrity who is willing to provide the highest quality product or service within the shortest timeframe.

Most anyone who has worked in that field will tell you that government contracting is not a bad career choice. According to Muse (2011) in a article featured in CNN Money, being a Contract Specialist is one of the top 20 jobs to get after leaving the military. The appeal to being a Contract Specialist is that it is considered to be a job that is high paying with low stress, but problems sometimes arise behind the scenes such as during contract negotiations that may cause stress to the employee. The sheer knowledge of knowing you are working with millions of taxpayers' dollars creates a certain amount of stress. Now factor in the possibility that your opponent is demanding, obstinate about their price, and negotiations are not proceeding as well as you would have liked. Now you have to return to your boss and answer some tough questions. The savvy contract negotiator realizes that this psychological stress can continue until some sort of agreement is reached, but what happens to the negotiator is not savvy? There is a definite stress level that comes if the employee does not possess the skill set that is necessary to be successful in the position. There are many Contract Specialists that are in the position because of the pay, benefits and/or schedule, not for the love of the work that they perform everyday. When this is the case, there may be a lack of skills and talents needed to perform the position effectively. Another issue to consider is that boredom and routine can cause stress for the employees. After awhile of doing the same thing over and over without major change or

career progression, stress levels start to escalate due to lack of simulation. These are some of the items that are overlooked when considering a position as a Contract Specialist. This paper will attempt to highlight some of the technical aspects and psychological stress of government contracting that begin with the selection of contracting personnel and continues throughout their career.

## Selection and Hiring Process

Contracting personnel are those persons responsible for acquiring services and products necessary for operations and maintenance of our armed forces and supporting civilian personnel. The acquisition of these products and services is accomplished via government contracting. Government contracts are somewhat different from business contracts. The main reason is because the government uses taxpayer funds to buy whatever it needs. The Contracting Series, General Schedule (GS) is entitled Contract and Procurement Series, GS-1102. The Series is further designated by grade, e.g. a GS-1102-09 is a contracting employee working at the Grade 9 level. For purposes of simplicity in this paper, contracting personnel will be referred to as Contract Specialists.

The basic qualifications of a Contract Specialist are 1) A bachelor's degree from an accredited educational institution, or 2) at least 24 hours in any combination of business oriented disciplines such as contracts, business management, marketing, law, accounting, finance, or economics. These requirements can be obtained within a business degree or in addition to any alternative degree. In addition to these required qualifications, Contract Specialists must 1) be able to read and interpret government publications and specifications, and have the ability to apply guidelines, 2) have knowledge of product characteristics and be able to identify established commercial sources of supply, 3) have some knowledge of business practices and economic conditions in order to obtain competitive prices, 4) be able to use mathematical computations to analyze prices, and 5) should be able to coordinate plans and cooperate with the requiring personnel in fulfilling the necessary requirements. The qualifications of a Contract Specialist point to the particular education, knowledge, skills and abilities required to perform the job duties. However; negotiators must also be able to "connect psychologically" with their opponents (O, The Oprah Magazine, June 2007). The government selection criteria include a laundry list of qualifications that are related to intelligence and emphasize education, but totally ignore the introspect that helps human beings interpret body language, and read facial expressions. There is no mention of emotional intelligence or the ability to withstand and tolerate psychological stress. Contract specialists must be able to temper strength and aggression with patience and compassion, and they absolutely should know how to avoid stress while trying to reach agreements at the bargaining table. Many Contract Specialists are totally unaware of these most important and necessary character traits when they report for duty.

When a Contract Specialist position is vacated, a job offer entitled "Job Vacancy Announcement" is posted, in periodicals, newspapers, magazines, and on bulletin boards that are available to the public; but the most popular posting is on the website entitled "USAjobs.gov". A general overview in the Announcement will list 1) the job title - "Contract Specialist", 2) the Department, - "National Aeronautical Space Administration", 3) the Agency, - "George C. Marshall Space Flight Center", and 4) a job announcement number. The Announcement will list a salary range; the time frame when the announcement will be open for accepting applications; the job series, grade, and step, e.g. GS-1102-09-5; and position information that tells candidates whether the vacancy is for a full-time, part-time, or temporary position. The Job Announcement also lists any potential for promotion, and tells the candidates how many jobs at that particular location are available. Federal government job announcements also list other pertinent data such as 1) specific steps that candidates must use in applying for the vacancy, 2) basic qualifications and how candidates will be evaluated for the vacancy, 3) job duties, 4) benefits, 5) a point of contact in case the candidates have questions, and 6) other information or conditions of employment such as citizenship, required travel, or mandatory training. Applicants must be United States citizens, and male applicants born after 31 December 1959, must provide proof that they are exempt from the Selective Service or certify that they have registered. In addition to the required application, job candidates might be asked to prepare a resume of not more than six pages, and candidates are generally not allowed to complete the application process if their resume is too long or is not original. Once the resume is complete, candidates may need to complete additional screening questions. They might be asked to provide academic transcripts or proof of veterans' preference. At the end of the Job Vacancy

Announcement, candidates are given additional contact information, and selection process information is also provided.

When the time period for the Job Vacancy Announcement expires, applications and resumes for a particular Contract Specialist job vacancy are reviewed and ranked by an automated Staffing and Recruitment system according to basic qualifications, education, grade point average, additional training, general experience, and specific purchasing experience. Applications are ranked according to qualifications and special considerations, and those candidates deemed to be highly qualified are then referred to a selecting official. Applications from individuals with veterans' preferences are placed at the top of the list and these candidates will be considered and selected ahead of any others. Those highly qualified candidates are contacted for interviews based on the judgment of the selecting official, and where the position is located.

If the list of highly qualified candidates is extensive, the candidates might be interviewed by telephone as a further screening process, and those remaining candidates are interviewed in person. The contract specialist selection and hiring process is very lengthy and complicated, but the government puts no emphasis on the type of personality that must accompany the contract specialist occupation. In the world of psychology there are, "A personalities", and "B personalities." "An A personality is defined as, excessive, ambitious, aggressive, driven, impatient, and they have a need for control. They focus on quantity over quality and have an unrealistic sense of urgency." While the "B personality is the other side of the spectrum, is very relaxed, opened minded, rarely becoming hostile, and forgiving" (Krepps-Hirsh, & Kise, 2006). The perfect solution would be to hire a person with the strength of an A personality, and the ease and patience of a B personality. Since there is no perfect solution, the contract specialist hiring process needs to include these same standards while recruiting the best of both personality types.

Depending on the number of vacancies, applicants are selected based on the outcome of the final interview but the selection process does not end there. In performance of defense contracting duties, Contract Specialists need access to restricted information therefore, all Contract Specialists must be able to obtain a security clearance if they have not been previously cleared and currently hold the required security clearance. There are three types of clearances 1) confidential, 2) secret, and 3) top secret and a Contract Specialist is generally cleared at the secret level; however the level of clearance that will eventually be granted, depends upon the need to gain a clearance and the value of the employee. The clearance process also fails to emphasize the psychological aspects of government contracting. Perhaps the potential candidate has any number of undesirable personality traits - is wishy-washy, is a bully, or even worse – is someone who fears negotiations.

Potential government contractors can be demanding, stubborn, tenacious about their price, causing negotiations to go on for weeks, possibly towards a stalemate, unless one party or the other gives in, or continuously makes large concessions. Frustration sets in when the contract specialist has to apply stratagems that are not an innate part of his or her personality. Generally when frustration occurs it is because the contract specialist is unprepared. In addition to intensive training, preparation requires research, planning and rehearsing before reaching the bargaining table. Without preparation, the contract specialist soon becomes overwhelmed, anxious, and stressed, especially when the opponent begins to apply pressure for reaching a hasty agreement (Yates, Bereznicki-Korol & Clarke, 2008). Psychologically speaking the more the pressure rises, the more the anxiety builds and the stress levels can seem unbearable. Returning to your boss to explain why agreement has not been reached increases the level of anxiety.

## **Emotional and Physical Symptoms of Anxiety and Stress**

Anxiety is a quagmire of emotions, at first you believe that you are only frustrated with the situation, however; in time you find you cannot eat and if you do the food does not settle well. Irritability is an affliction, you do not dare to release on your boss so you take it home and release on the people closest to you. They will still be there after the emotional explosion and your job is not in jeopardy. Let us conclude that the feelings of being tense and jumpy only get worse as the debates of the contract settlement continue. "Being able to recognize common stress symptoms can help you develop mechanisms for managing them. Stress that's left unchecked can contribute to health problems such as high blood pressure, heart disease, obesity and diabetes." (Bauer, 2010) Now add more

pressure, what if the government wants this product or contract “Yesterday”? More pressure and even more stress, the characteristics of the individual can make or break the contract settlement. At this point strength is needed, yet a cool level head has to be in place. If the contractor feels they have the upper hand, then everything can be at stake. Finding ways to deal with the pressure is a skill that contract specialists must master for both professional and personal reasons. With security clearance in hand, Contract Specialists begin to perform defense contracting job duties that basically include (1) development of acquisition strategies; (2) planning requirements; (3) solicitation, evaluation, negotiation, and contract award; (4) contract modifications; (5) evaluation of cost/price proposals; (6) contract administration; and (6) contract termination.

Due to anxiety and stress, contract specialists suffer from many health issues due to the functions necessary to perform the job. Some of the health issues include: carpal tunnel, aching backs as well as other musculoskeletal related illnesses. They also suffer from fatigue and stress related disorders from increased workloads and long hours that cause them to be overtired and overwhelmed. There have been many cases where individuals develop such illnesses as hypertension, diabetes, heart disease, alcoholism, ulcers, psychosomatic illnesses, etc. When these conditions exist among military personnel, special dispensation is provided accordingly. No special provisions are made for contract specialists who develop stress related conditions as they progress through their careers. This is an issue that needs to be addressed as there are laws that protect and accommodate the needs of the employees that are not being honored. By not honoring these laws the government could be opening the opportunity for legal action in the future.

### Popular Personality Tests

At present no personality tests are given to contract specialist during the application process. This is something that might need to change. By giving personality tests to the contract specialists many issues could be eliminated such as job fit and job stress. “The Meyers Briggs personality test is used by 89% of Fortune 100 companies, and is taken by over 2.5 million Americans every year.”(Quank, 2009) The Meyers Briggs personality tests have been associated with the military since 1939. It came into existence through the writings of Carl Jung and Isabel Meyer-Briggs. Since WWII the Myers-Briggs test has been used to place people in occupations that would enhance their comfort zones. The first test published was in 1962, it also is utilized throughout the world measuring personality types. According to Barron (1998), the results of the Myers-Briggs test are broken down into four personality stages. The stages are as follows:

Extraversion	Introversion
Sensing	Intuition
Thinking	Feeling
Judging	Perceiving

Each stage is broken down into two opposites to create one of 16 combinations. The combinations are as follows:

ISTJ	ISTP	ESTP	ESTJ
ISFJ	ISFP	ESFP	ESFJ
INFJ	INFP	ENFP	ENFJ
INTJ	INTP	ENTP	ENTJ

This type of personality test categorizes people by the way they react to life situations, or interface with other people. This test or some other personality assessment test could save the government millions of dollars by providing some insight as to the strength and weaknesses of a personality and could be positioned along the spectrum of contracting. Those who do not work well with the public could be tasked with supporting documentation behind the scenes, while people with exuberant personalities and charisma could be assigned to the negotiations of those million dollar contracts.

The Minnesota Multiphasic Personality Inventory (MMPI) is currently one of the most used personality tests for employment. In the 1930's two psychologists Dr. Hathaway and Dr. McKinley developed this test while working at the University of Minnesota. The results are measured in 10 clinical subscales. The subscales are as follows:

- Scale 1:** Hypochondriasis
- Scale 2:** Depression
- Scale 3:** Hysteria
- Scale 4:** Psychopathic Deviate
- Scale 5:** Masculinity–Femininity
- Scale 6:** Paranoia
- Scale 7:** Psychasthenia
- Scale 8:** Schizophrenia
- Scale 9:** Hypomania
- Scale 0:** Social Introversion

“The MMPI is the most researched test of personality in existence. The test is often used in custody disputes, criminal defenses, and the effectiveness of treatment programs including substance abuse programs.” (Pope, Seelen & Butcher, 2006) This could be used as an alternative personality test to help contract specialists see where they fall along the spectrum, and whether or not they are in the right fit position. Using these tests in the correct way, would be a great way to collect valuable data that could be used to improve the work functions and skills of the contract specialist.

## CONCLUSION

In spite of the time and effort put forth by utilizing the government selection criteria, no consideration is even given to personality traits such as competitiveness, greed, over zealousness, the ability to confront adversarial opponents who have opposing objectives, or the tremendous insurmountable stress that might be compared to that of an airport controller's sleep deprivation.

There have been many cases where individuals develop stress related illnesses after working as a contract specialist, such as high blood pressure, diabetes, heart disease, alcoholism, etc. When these conditions exist among military personnel, special dispensation is provided accordingly. No special provisions are made for contract specialists who develop stress related conditions as they progress through their careers.

Since the federal government does not support work related stress and illnesses that exist among civilian personnel, millions of dollars could be saved by testing the personality of individuals before placing them on a career path for which they are not suited. Government training is expensive, especially for the Contract Specialist. They may train one month in Texas and then one week in Washington DC, and another six weeks in Kansas. And one more personality weakness that bears mention is that some employees may become nervous and stressed out when they are directed to travel or stay away from their homes for weeks at a time. An established personality test given to future employees could eliminate costly dropouts, and workers who cannot live up to the requirements of their job.

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# MORE ABOUT THE DECREASE IN THE VELOCITY OF MONEY IN THE UNITED STATES: SOME POTENTIAL CAUSES AND POLICY IMPLICATIONS

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## ABSTRACT

*The decrease in the velocity of money in the United States has been noted by Hansen (2009), Darda and Keene (2011), Hartman (2011), and likely others. The current study extends Hartman (2011) by further discussing possible causes for the decrease in M1 velocity and by simulating orthogonalized impulse-response functions to illustrate the possible impact of decreases in interest rates on velocity and decreases in real GDP on velocity. In the United States, velocity refers to the number of times per year, on average, that a U.S. dollar trades in a nominal GDP transaction. (Burton and Lombra, 2006, p. 516) But why are dollars on average being traded fewer times? The recent financial crisis, recession, slow recovery, and low interest rates are discussed as factors that could have contributed to the decrease in M1 velocity. Hartman (2011) considers the change in velocity as a function of the present and past federal funds rates, lagged values of the change in real GDP, and lagged values of the change in velocity. The current study adds the U.S. Treasury ten-year note interest rate as a potential explanatory variable for velocity. A regression somewhat similar to regressions in Hartman (2011) suggests that the ten-year rate could have a statistically significant impact on velocity, helping to explain its inclusion in econometric analysis in the present paper. The present study estimates VAR and VEC models and simulates orthogonalized impulse-response functions from the models. The findings of the current study include that, over a twenty quarter period, velocity tends to be greater following innovations in the federal funds rate and the ten-year rate. Findings also include that, in three of four models considered, innovations in the real GDP growth rate are associated with an increase in velocity. Thus, lower interest rates and slower real GDP growth or decreases in real GDP could be at least partially responsible for the decrease in velocity. A positive error in velocity is associated with higher real GDP growth and a lower ten-year rate in most, if not all, quarters in most, if not all, of the models considered. A positive velocity error is associated with generally lower federal funds rates in two models considered and an overall slight decrease in the federal funds rate by the end of the sample period in one of the other two models. The findings support the Keynesian perspective of velocity as in Mishkin (2004, p. 523) in that an increase in interest rates is followed by an increase in velocity in the models considered. However, the estimated responsiveness of velocity to interest rates may be relatively small, which could be consistent with the findings of Friedman (1956) as discussed in Mishkin (2004, p.531). Given the decrease in velocity which reduces the effectiveness of monetary policy, additional fiscal policy could be considered by policymakers as a possible means for increasing real GDP. Future work could improve the econometric analysis, consider a shorter sample period to see if the responsiveness of M1 velocity to interest rate errors and real GDP errors has increased, consider a velocity function where velocity is a function of the money supply, consider results from other orderings of errors, further interpret the results from the orthogonalized impulse-response functions, and study what happened to money velocity in other economies with very low interest rates.*

**Keywords:** Macroeconomics, Velocity of Money, Equation of Exchange, Quantity Theory of Money, Monetary Policy, Fiscal Policy, Great Recession.

## INTRODUCTION

### Background

The state of the U.S. economy will likely continue to be the subject of concern if following the Great Recession (as described by Wiseman (2012) and others) real GDP continues growing at a slow rate (or starts decreasing again) and unemployment rates remain relatively high. One factor likely related to the recent macroeconomic performance in the U.S. is the declining velocity of money. Hansen (2009) mentioned the decrease in money velocity. Darda and Keene (2011) also talked about the decline in money velocity on Surveillance Midday on the Bloomberg News

channel. In light of these references, Hartman (2011) also considered the decrease in velocity. Income velocity in the United States (hereafter called velocity) refers to the per-period average number of times that a U.S. dollar trades in a transaction that is counted as a part of nominal GDP, or the total spending on the goods and services counted as a part of GDP. Transactions velocity in the U.S., on the other hand, is the per-period average number of times that a dollar is traded in all spending, not just GDP spending. For more on velocity, the reader may consult Dornbusch, Fischer, and Startz (2008, p. 386) and Mishkin (2004, p. 518). The reader can find more information about nominal and real GDP in Dornbusch, Fischer, and Startz (2008, pp. 36-9). As Mishkin (2004, p. 518) and others note, velocity can be calculated from the equation of exchange as nominal GDP divided by the money supply.

The current study extends Hartman (2011) to note that velocity has continued to decrease and to investigate further the relationship between the decline in the velocity of money in the recent U.S. recession and the slow recovery. The current study also addresses the impact of interest rates on velocity and the impact of velocity on interest rates.

Burton and Lombra (2006, p. 28) and others note that M1 is the narrowest measure of the money supply in the U.S., consisting of publicly-held currency (presumably including coins), travelers' checks, and funds in checking accounts with unrestricted check-writing privileges (as long as the account has sufficient funds). According to data from *economagic.com*, the velocity of M1 in the United States, after trending upward much, if not most, of the time (with at least one notable exception) for more than forty years, decreased from approximately 10.4 times per year in the fourth quarter of 2007 to approximately 6.9 times per year in the second quarter of 2012. Although the present study focuses on M1 velocity, the reader may wish to note that the velocity of M2, a broader monetary aggregate, has also decreased. Data from *economagic.com* show that within the sample period, M2 velocity reached a maximum of roughly 2.14 in the third quarter of 1997 and has trended downward. In the fourth quarter of 2007, when M1 velocity was at its peak (at least in the sample period) M2 velocity was approximately 1.92 but has declined to roughly 1.58 in the second quarter of 2012 and is at its minimum within the sample period, which begins with the first quarter of 1959. What are some of the possible causes of the decline in M1 velocity? What could policymakers consider to stimulate real GDP growth in light of the decline in income velocity?

Mishkin (2004, p. 518) and many others discuss the equation of exchange, which equates the money supply multiplied by the velocity of money with the price level times real GDP. From the equation of exchange and the definition of velocity, the reader can see that if the money supply increases by a much larger percentage than nominal GDP, then the velocity of money clearly must decrease. Recent data illustrate this point. Based on data from *economagic.com* and the author's calculations, the velocity of M1 decreased by approximately 33 per cent from the fourth quarter of 2007 through the second quarter of 2012. Over that same time period, nominal GDP increased, but by only approximately 9.5 per cent. From the second quarter of 2009 (the local minimum for nominal GDP) through the second quarter of 2012, nominal GDP increased by roughly 12.4 per cent. Based on the definition of nominal GDP in Krugman and Wells (2009, p. 190) and elsewhere, nominal GDP equals real GDP multiplied by the GDP deflator divided by 100. Real GDP increased by roughly 1.8 per cent from the fourth quarter of 2007 through the second quarter of 2010, and the GDP deflator increased by roughly 7.6 per cent over that time period. From the depth of the recession (the second quarter of 2009) to the most recent quarter (the second quarter of 2012), real GDP increased by roughly 6.8 per cent. Between December 2007 and June 2012, the M1 money supply increased approximately 64.1 per cent, while nominal GDP increased by only roughly 9.5 per cent, as noted above.

### **Some Potential Causes and Ramifications of the Decrease in M1 Velocity**

Why is nominal GDP not growing nearly as rapidly as the M1 money supply and thus implying a decline in velocity? Could the decrease in M1 velocity be explained in part by a reduction in real GDP? Could the decline in M1 velocity be explained in part by falling interest rates, which could, in turn, be due in part to a relatively rapid increase in the money supply? (Mishkin, 2004, pp. 109-10) and others discuss an inverse relationship between money supply and interest rates, all other things equal.) Does the decline in velocity imply contraction or slower growth in real GDP and lower interest rates in the future? Better understanding the decline in U.S. M1 velocity could depend on an improved understanding of some of the causes of the recent U.S. financial crisis, subsequent recession, and sluggish recovery.

Mishkin (2004, pp. 520-1) notes that when real GDP decreases, velocity may increase at a slower rate or decrease (or at least implicitly not change). When velocity decreases as it has most quarters in the U.S. since fourth quarter of 2007, dollars are being spent in nominal GDP transactions fewer times per year than before. Obviously, this limits the ability of expansionary monetary policy to increase real GDP. As Posner (2011) observes, when velocity decreases, a greater money supply does not necessarily increase real GDP. As someone once noted to the author of the current study, the recent decline in M1 velocity roughly coincided with the start of the recent U.S. financial crisis. Baumol and Blinder (2012, p. 268) state that the crisis began in 2007.

According to Steve Liesman (2012) on CNBC's Squawk on the Street on September 14, 2012, at least some economists suggest that the reason why U.S. monetary policy to this point has not spurred faster growth is due to a lack of credibility about the future course of monetary policy (although if the memory of the author is correct, the comments of Liesman did not explicitly deal with the decline in M1 velocity). But could more factors contribute to the diminished effectiveness of monetary policy?

Paul Wiseman (2012) of the Associated Press compares in an August 16, 2012 Atlanta Journal Constitution article the current U.S. recovery with other U.S. recoveries that lasted at least three years after World War II, finding that the current recovery is the slowest by most metrics. According to the Wiseman (2012) article, Peter Diamond (recipient of a Nobel Prize) at least implicitly attributes much of the responsibility for the recession and slow recovery to problems in the housing market, which Diamond thinks will take a while to solve. Baumol and Blinder (2012, p. 294) attribute the recent U.S. recession to consequences of the bursting of a bubble in housing and the financial crisis, such as less access to credit, loss of confidence, loss of wealth, and less demand for new houses. The financial crisis could have been in part due to a permissive regulatory environment and dubious decision-making by households and firms, as per Baumol and Blinder (2012, p. 293). Further, John Taylor (2012) on CNBC's Squawk Box and others discussed low interest rates in the previous decade as contributing to the crisis.

Because of an abundance of houses constructed in last decade, the Wiseman (2012) article notes that home construction has increased at a much slower rate during the current recovery than the average increase of the other recoveries considered. The Wiseman (2012) article notes that problems in the European Union could have reduced confidence in the United States and elsewhere. Data in the Wiseman (2012) article suggest that slightly less than half of the jobs lost in the most recent U.S. recession have been recovered and that real pay has decreased slightly in the current recovery.

Taken together, these factors help explain the sluggish increase in consumption noted by Wiseman (2012) in the current recovery. With fewer jobs, a decrease in real pay for those working, and less access to credit in the economy; consumers in the aggregate may not be able to afford to purchase as much as they would otherwise. Data in a recent article written by Martin Crutsinger (2012) of the Associated Press in an August 15, 2012 Atlanta Journal Constitution article indicate that retail sales declined in April, May, and June of 2012, although they increased in July 2012, according to the Commerce Department. The Wiseman (2012) article points out that, according to Carl Weinberg, people in the U.S. economy had incurred excessive debt in the past, and that deleveraging, in the view of Weinberg, is dampening the recovery. The pessimism mentioned in the Wiseman (2012) article could have also led to a reduction in consumption and a decrease in business investment in physical capital, two important parts of real GDP.

## **A Liquidity Trap? And Policy Implications?**

Mason (2008), Krugman (2011) and others have recently described the U.S. economy as being in a liquidity trap. In a liquidity trap, interest rates are extremely low. In this environment, the theory of a liquidity trap holds that dollars newly added to the money supply are held and not spent. Thus, the dollars added to the money supply would fail to stimulate spending and thereby would fail to cause either real GDP or price levels to increase. This could help explain why relatively large increases in the money supply have failed to spur anything even close to an equal increase in spending. Hartman (2010) suggests that the U.S. economy may be in a situation close to a liquidity trap but not actually in a liquidity trap. Thus, additions to the money supply could lead to increases in real GDP, according to Hartman (2010), but the effectiveness of monetary policy would be diminished. The reader may consult

Gärtner and Jung (2011), Dornbusch, Fischer, and Startz (2008, pp. 253-5, 259-61), Krugman and Wells (2009, pp. 463-5, 476) for additional background on liquidity traps.

Some macroeconomic theory predicts that when interest rates reach some low level, fiscal policy (or the use of taxes and government spending) is at its greatest effectiveness compared with monetary policy (which uses money supply and interest rates). (Dornbusch, Fischer, and Startz, 2008, pp. 253, 259-61) Expansionary fiscal policies, tax reductions and increases in government spending, both lead to greater budget deficits, all other things equal. In a normal economy, larger budget deficits cause interest rates to rise. Higher interest rates, in turn, discourage investment in physical capital by firms (and possibly also consumption by households) through a process called crowding out, thus reducing the increase in real GDP associated with expansionary fiscal policy, as discussed in Dornbusch, Fischer, and Startz (2008, pp. 259-61). But in a liquidity trap, according to Dornbusch, Fischer, and Startz (2008, p. 261) greater government spending (and probably implicitly greater budget deficits) fail to cause an increase in interest rates. Thus, expansionary fiscal policy has the greatest impact compared with monetary policy. The federal budget deficit is unlikely to crowd out a significant amount of economic activity in the U.S. today with unemployment rates relatively high and real GDP likely below potential. The reader may consult Dornbusch, Fischer, and Startz (2008, pp. 260-3) for further information on crowding out.

One of the reasons why the U.S. economy may be experiencing a muted recovery is that recently, when factoring in state and local government spending to federal spending, total government spending may have started to decrease. Total government investment and spending, according to Wiseman (2012), decreased by 4.5 per cent from the second quarter of 2009 through the second quarter of 2012. Textbook macroeconomic analysis (for example, Dornbusch, Fischer, and Startz (2008, pp. 98-9, 104, 110) predicts that, all other things equal, an increase in government purchases (in most cases) leads to an increase in real GDP in the economy, at least in the short term. Likewise, a decrease in government purchases would lead to a decrease in real GDP at least in the short term, all other things equal. The reader should realize that total government expenditures include items such as social security payments that are not counted in either government purchases or GDP. (Dornbusch, Fischer, and Startz, 2008, pp. 27-8) Mark Thoma (2011) points out that Ben Bernanke expressed concern that local government and state government budget cuts could slow down the U.S. economy.

Part of the importance of the decrease in velocity could be showing the diminished effectiveness of monetary policy in stimulating growth in real GDP. Policymakers could consider increases in government expenditures and tax reductions, both fiscal policies, to increase the likelihood of increasing real GDP at a more rapid rate. Does it make sense for policymakers to give up on fiscal policy just because federal spending in the United States has failed to spur increases in real GDP as large as desired, particularly if total government spending began to decline before the current recovery started to weaken?

Both of the forms of expansionary fiscal policies would lead to greater budget deficits, all other things equal. Thus, policymakers need to balance the benefits of likely faster increases in real GDP against the cost of greater budget deficits. Could policymakers realize that at the present in the U.S. economy, one of the costs of budget deficits, crowding out, is likely much less than during a more normal economic environment? According to Mark Thoma (2011), Federal Reserve Chairman Benjamin Bernanke discussed in Congressional testimony boundaries for the effectiveness of monetary policy and called for fiscal policy to aid in stimulating the economy. In terms of his own ideas, Thoma (2011) expressed concern that reducing the federal budget deficit could exacerbate the lack of employment.

Some economic theory predicts that an improved combination of fiscal policy and monetary policy will improve the likelihood of being able to increase real GDP. Additional expansionary fiscal policies could stimulate further spending and have related wealth effects. If the economy is not in a complete liquidity trap, further increases in the money supply can continue to increase real GDP, at least in the short term, and reduce the cost of budget deficits by keeping interest rates low. Based in part on material in Baumol and Blinder (2012, pp. 217-9), of the three expansionary fiscal policies (tax reductions, increasing government purchases on items counted toward real GDP such as national defense and roads, and government transfer payments not counted directly toward real GDP such

as social security payments), increasing government purchases may be particularly important in increasing real GDP at the present time. Given that M1 velocity has decreased substantially in the U.S. in recent years, an increase in government purchases ensures that dollars are spent at least once on goods counted as part of real GDP rather than winding up being saved, which can happen with either an increase in government transfer payments or tax reductions.

## **Fiscal and Monetary Policy in the Near Future**

On September 13, 2012, Hampton Pearson (2012) relayed on CNBC's Fast Money Halftime Report the Federal Reserve's announced plans to engage in Quantitative Easing III (QEIII), where a Quantitative Easing consists of the Federal Reserve buying longer-term assets. (Typical open-market operations of the Federal Reserve normally involve the Federal Reserve purchasing and selling U.S. Treasury bills, which have a short term to maturity. See Baumol and Blinder (2012, p. 271) for more.) Soon before the announcement on the Fast Money Halftime Report, William (Bill) Gross (2012) and others discussed the likelihood of QEIII on CNBC's Fast Money Halftime Report on September 13, 2012. According to Gross' (2012) response to a question on the Fast Money Halftime Report about the goals of QEIII, the goals of QEIII would be (a) increasing asset prices and (b) stimulating real GDP growth and employment growth, although Gross was uncertain about the impact. If the velocity of money continues to decrease at a sufficient rate, the main benefit of QEIII could be possibly reducing long-term interest rates to reduce the interest burden of federal budget deficits. What impact will QEIII have on the velocity of M1?

Unless compromise is reached, according to Dixon and Younglai (2012) and others, a fiscal cliff of roughly \$600 billion combined of increases in taxes and reductions in government spending will commence in 2013. Dixon and Younglai (2012) note that Benjamin Bernanke, Chairman of the Federal Reserve, expressed doubt over whether monetary policy could counteract the potentially forthcoming reductions in government spending and tax increases. Although Bernanke may not have explicitly addressed it, what would happen to velocity if the \$600 billion combination of increased taxes and cuts in government spending occurs? With this introductory information in mind, attention now turns to a short literature review.

## **BRIEF LITERATURE REVIEW**

In the classical school of macroeconomic thought, Mishkin (2004, pp. 518-20) states that over short time horizons, velocity was approximately constant. According to Mishkin (2006, p. 523), in the Keynesian school of macroeconomic thought, velocity depends positively on interest rates. Burton and Lombra (2006, pp. 516-7) note that in the monetarist school of thought, the quantity theory of money is interpreted to mean that velocity is predictable.

According to Dornbusch, Fischer, and Startz (2008, p. 386), an inverse relationship between money demand and velocity exists. Burton and Lombra (2006, p. 516) list Milton Friedman as a monetarist and note that Friedman won a Nobel Prize for economics. Mishkin (2004, p. 529) notes that Milton Friedman (1956) specified a real money demand function where the quantity of money in real terms demand depended on the expected return of money versus other assets (for example, bonds and stocks), permanent income, and other factors. However, Mishkin (2004, p. 531) notes that in the work of Friedman (1956), the quantity of real money demanded depended mainly on permanent income.

The velocity of money continues to be a topic of study. More recent studies of velocity include Duczynski (n.d.), Omer (2010), Kollintzas, Konstantakopoulou, and Tsionas (2011), and Biefang-Frisancho Mariscal and Howells (2012). Duczynski (n.d.) finds that interest rates may have exerted a positive influence on velocity in some countries considered. Omer (2010) specifies a velocity equation based in part on Friedman (1956) and offers findings including that, out of three monetary aggregates in Pakistan considered, interest rates influence velocity for only one aggregate. Findings of Kollintzas, Konstantakopoulou, and Tsionas (2011) include that velocity and nominal interest rates vary positively with real GDP. Biefang-Frisancho Mariscal and Howells (2012) note a downward trend in velocity in many economies and propose that it could be because money is demanded for total transactions, not just nominal GDP transactions, and that total transactions growth exceeds nominal GDP growth. Nobel laureate

Christopher Sims (2012), in an overview of developments in econometric analysis of monetary policy over several decades, mentions the quantity theory of money, which deals with money velocity. With these earlier studies in mind, attention now turns to econometric analysis.

## ECONOMETRIC ANALYSIS

### Data

The data for regressions in this study were found on [economagic.com](http://economagic.com) as of September 1, 2012 unless noted otherwise. The study uses seasonally adjusted real GDP data measured in billions of chained 2005 dollars and at an annualized rate. Velocity and nominal GDP data are also reported on a seasonally adjusted, annualized basis, but neither the effective federal funds rate nor the ten-year constant maturity U.S. Treasury interest rate is seasonally adjusted. To convert the monthly federal funds rate and the monthly U.S. Treasury note rate to quarterly data, the study uses the average of the three months of data for the quarter. The Bureau of Economic Analysis compiles data on real GDP, nominal GDP, and the GDP deflator. The Federal Reserve compiles data on the federal funds rate and velocity. The ten-year U.S. Treasury interest rate may be compiled by either the Treasury or the Federal Reserve.

The ten-year U.S. Treasury interest rate is added to the potential explanatory variables from the regressions in Hartman (2011) for two main reasons. First, a regression in Table 1 in the Appendix somewhat similar to some of the regressions in Hartman (2011) finds that the change in the ten-year rate from one period earlier could be statistically significant in explaining the change in velocity in the current period despite the inclusion of other explanatory variables. Some important differences in the regression in Table 1 in the current study versus those in Hartman (2011) are that the current equation adds the ten-year rate, it has only two lags, it has all time-series variables in first difference form (rather than the federal funds rate in levels), and it includes not only the contemporaneous federal funds rate variable (in first difference form) but also the contemporaneous values of the percentage change in real GDP and the change in the ten-year rate. (All of the time series variables could be statistically significant either contemporaneously or in lagged form or both in explaining the change in velocity.) Second, the inclusion of another variable such as the ten year rate could reduce the problem of serial correlation in the errors. The reader can refer to Hamilton (1994, pp. 225-7) for additional information about serial correlation. Also, according to Hamilton (1994, p. 1), Goldfeld (1973) specified a money demand function with two interest rates.

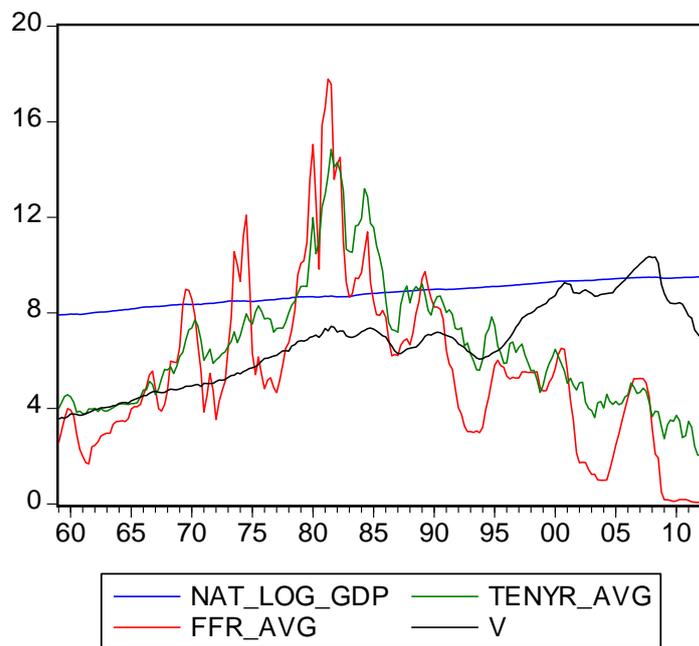
**Table 1:** Ordinary Least Squares Regression with the Change in Velocity ( $D_V$ ) as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D_TENYR	0.019700	0.013382	1.472159	0.1426
D_TENYR(-1)	0.034308	0.013789	2.488097	0.0137
D_TENYR(-2)	-0.007457	0.014041	-0.531060	0.5960
D_FFR	0.004833	0.007585	0.637245	0.5247
D_FFR(-1)	0.018425	0.007340	2.510312	0.0129
D_FFR(-2)	0.003866	0.007335	0.527061	0.5987
PCT_GDP	0.016527	0.001805	9.154810	0.0000
PCT_GDP(-1)	-0.007123	0.002062	-3.454670	0.0007
PCT_GDP(-2)	-0.003770	0.002084	-1.809271	0.0719
D_V(-1)	0.446698	0.069748	6.404441	0.0000
D_V(-2)	0.229558	0.066158	3.469849	0.0006
C	-0.011313	0.009194	-1.230452	0.2200
<i>R-squared</i>	0.634102			
<i>Adjusted R-squared</i>	0.613877			
<i>Akaike info criterion</i>	-2.225331			

Out of one through six lags, the equation with two lags minimized the AIC. Thus, results from that equation are in Table 1 above.

Phillips-Perron (1988) unit root tests (results not included here) find that using the default options in EViews (version 5) software, real GDP, the velocity of M1, and the two interest rate variables exhibit a unit root, regardless of the assumptions made about whether the test equation has a constant or a trend. Knowledge of the value of the variable with a unit root today provides useful information for forecasting future values of that variable *ad infinitum*, as is the author's understanding of Hamilton (1994, pp. 438-41). Does it make sense to assume that knowledge of the federal funds rate or the ten-year U.S. bond rate today would provide helpful information for forecasting those variables fifty or one hundred years into the future? Given the uncertainty about whether either the federal funds rate or the ten-year U.S. bond rate has a unit root and the finding that the federal funds rate is *perhaps* somewhat close to being  $I(0)$  at the ten per cent level in Phillips-Perron (1988) unit root tests, the study will estimate vector autoregression (VAR) models with the two interest rates in level form (but the real GDP variable and the velocity variable transformed to be stationary or  $I(0)$ ) and also vector error correction (VEC) models with all of the variables in differenced form (except in the cointegrating equation).

To make the results easier to interpret, the VAR models use the annualized percentage change in real GDP, while the VEC model uses the natural log of real GDP multiplied by 400. Thus, in the VEC model, the natural log of real GDP multiplied by 400 is  $I(1)$ , or non-stationary, with a unit root but in first difference form it is  $I(0)$ , or stationary, and is approximately equal to the annualized percentage change in real GDP. (For all quarters in the sample period except one, the difference between the percentage change in real GDP (times four to annualize) and 400 times the natural log difference of real GDP is less than 0.15 percentage points (and less than 0.015 percentage points in approximately half of the quarters). In the one quarter where the difference between the two real GDP variables is greater than 0.15 percentage points, it was approximately 0.3 percentage points.) Figure 1 displays the natural log of real GDP (but not 400 multiplied by the first difference in the natural log of real GDP), the average federal funds rate in each quarter, and the average ten-year rate in each quarter, and the velocity of M1 in each quarter.



**Figure 1:** The Natural Log of Real GDP, The Quarterly Average Federal Funds Rate, The Quarterly Average Ten-Year U.S. Treasury Note Rate, and the Velocity of M1 1959 q1 through 2012 q2

## Methodology

Due to limitations, the reader should view results as an illustration, not as a proof. This study will use orthogonalized impulse-response functions simulated from vector autoregression models and vector error correction models. Given the possibility of cointegration, the current study may be more similar to Omer (2010) than to Duczynski (n.d.).

The goal will be to investigate if changes in economic variables (such as real GDP growth and interest rates) precede changes in the velocity of money, and how changes in velocity may impact real GDP and interest rates.

Orthogonalization is necessary because knowledge of the estimated error term of one variable in a period may provide useful information about the size of the error term of another variable in the model within the same period. For additional introductory information about VAR models, the reader may refer to Hamilton (1994, pp.257-61). The reader may also refer to Sims (2012) for earlier references. Hamilton (1994, pp. 318-23) has more information about orthogonalized impulse-response functions. The reader may also find further introductory information about VEC models in Hamilton (1994, pp. 580-1).

If all of the variables have a unit root (or are  $I(1)$ ), a possibility exists that the variables may be cointegrated. Early references for cointegration include Engle and Granger (1987). This study uses the Johansen (1991 and 1995) method of cointegration testing as in EViews software. If the variables in the model are cointegrated, then a vector error correction (VEC) model would be appropriate where the time series variables on the left side and the right side of the equations, except for the cointegrating equation which appears in each equation, are in first difference form and are  $I(0)$ . The first difference of each variable is a function of lagged first differences of each of the time-series variables in the model (with each lagged difference multiplied by an estimated coefficient) and the cointegrating equation. The cointegrating equation has the value of each time series variable (not in differenced form) from one period before the time period for the variables on the left side of the equation. Each variable in the cointegrating equation is multiplied by a coefficient, and the same cointegrating equation is used in the equation for each variable, but it is multiplied by a coefficient that is likely to differ between the equations for each variable.

## Different Models

The models assume that the equation for each variable has the same number of lagged values for each time-series variable in the model. This study uses the number of lags (out of one through twelve lags) minimizing the Akaike Information Criterion (AIC) as provided by EViews. For the VAR models, the use of six lags produces the minimum AIC statistic, while in the VEC models, the use of five lags minimizes the AIC.

Given the uncertainty of the author regarding the stationarity of interest rates, particularly the federal funds rate, this study will consider orthogonalized impulse-response functions from VAR regressions in which neither the federal funds rate nor the ten-year interest rate is assumed to have a unit root (and are thus  $I(0)$ ) and also from a VEC regression where both the federal funds rate and the ten-year rate are assumed to have unit roots (and are thus  $I(1)$ ). The VAR models use the interest rate variable values in non-differenced level form given the assumed stationarity, while the VEC models (except for the cointegrating equation) use the interest rate variables, the velocity of money, and the natural log of real GDP multiplied by 400 in first difference form to make the variables stationary (assuming they are not stationary if they are not differenced). Regarding the models assuming that neither the federal funds rate nor the ten-year rate has a unit root, one VAR regression assumes a constant but no trend in the VAR equations, while another VAR assumes both a constant and a time trend. In the latter case, in results not included here, the t-statistics associated with the time trend terms in two of the four equations indicate that the trend could be statistically significant in those equations.

Related to the use of VEC models, Table 2 in the Appendix shows cointegration test results from EViews software. EViews uses the Johansen (1991 and 1995) method of cointegration testing. The critical values at the five per cent level and the probabilities associated with the test statistics are from MacKinnon, Haug, and Michelis (1999). EViews offers results of the trace test for cointegration and the maximum eigenvalue test for cointegration, T and ME, respectively, in Table 2. The approach to test for cointegration in EViews is first to test the null hypothesis of zero cointegrating equations between the variables. Then, if the null hypothesis is rejected, the test is repeated for at most one cointegration equation. The test is repeated, each time adding an additional cointegrating equation to the test, until either the null hypothesis is no longer rejected or until a further trial would test for more cointegrating equations than the number of time series variables in the model.

**Table 2:** *Cointegration Tests**Constant But No Trend in Cointegrating Equation*

<b>Number of Coit. Eqns.</b>	<b>Test</b>	<b>Test Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.</b>
Zero	T	53.96288	47.85613	0.0120
<=1	T	24.40731	29.79707	0.1838
Zero	ME	29.55557	27.58434	0.0276
<=1	ME	16.39586	21.13162	0.2026

*Constant and Trend in Cointegrating Equation*

<b>Number of Coit. Eqns.</b>	<b>Test Test</b>	<b>0.05 Statistic</b>	<b>Critical Value</b>	<b>Prob.</b>
Zero	T	64.71772	63.87610	0.0424
<=1	T	35.16145	42.91525	0.2385
Zero	ME	29.55627	32.11832	0.0996
<=1	ME	17.70133	25.82321	0.4004

As noted above, the study uses the Johansen (1991 and 1995) method of cointegration testing. The five per cent critical values and probabilities associated with the test statistics in Table 2 above are from MacKinnon, Haug, and Michelis (1999).

The study does not consider impulse-response functions from a VEC model with a time trend in the cointegrating equation. The reason is that the trace test and the maximum eigenvalue test yield conflicting results at the five per cent level over whether the variables are cointegrated in the VEC model with a time trend in the cointegrating equation. Both the trace test and the maximum eigenvalue test find one cointegrating equation at the five per cent level in the VEC model with a constant but no time trend in the cointegrating equation.

When error terms for two variables in a VAR model or a VEC model are contemporaneously correlated as they are in this study, an orthogonalization procedure is necessary before performing impulse-response analysis. The correlation of the error terms implies that knowledge of the error term in a period for one variable provides information that is helpful in forecasting the value of the error term for another variable in the model within the same period. The reader may see Hamilton (1994, pp. 318-23) for additional information.

The orthogonalization procedure involves ordering the error terms where the error term in a period for a variable listed earlier in the ordering can impact the value of a variable later in the ordering within the same period. On the other hand, the error term for a variable later in the ordering cannot impact the value of a variable listed earlier in the ordering until the next period.

In the VAR models and one of the two VEC models in this study, the ordering of errors is the GDP variable, the federal funds rate variable, the ten-year U.S. Treasury rate variable, and the M1 velocity variable. This ordering implies that an error for the GDP variable in a period can impact the errors of the federal funds rate variable, the ten-year rate variable, and the M1 velocity variable within the same period, but the error terms for the interest rate variables and the velocity variable in a period cannot impact the error for the GDP variable until the next period. The reasoning behind this ordering is that the error for real GDP can impact the average federal funds rate which can fluctuate within a target range as noted in Burton and Lombra (2006, pp. 615-6) and the ten-year rate within the same period. As the economy expands, people compete for scarce funds, bidding up interest rates. The GDP error can also impact velocity within the same period, reflecting the assumption that an increase in economic activity spurs spending. However, the error for the federal funds rate cannot impact real GDP until the next period, reflecting the assumption that monetary policy impacts real GDP with a delay or a lag, as discussed in Dornbusch, Fischer, and Startz (2008, p. 422). To the extent that the ten-year rate reflects monetary policy, the same reasoning holds. The error for velocity in a period does not impact GDP until the following period. Higher velocity in a period does not

necessarily imply higher real GDP in the same period. An error to velocity could be due to higher price levels or falling money supply, assuming price levels, real GDP, and nominal GDP are constant.

As Hamilton (1994, p. 322) and others note, the results of impulse response functions can be sensitive to the ordering of errors. Thus, another VEC model has the ordering with the velocity variable first, followed by the ten-year rate variable, then the federal funds rate variable, and finally the GDP variable. This alternate ordering serves to provide a comparison with the earlier ordering.

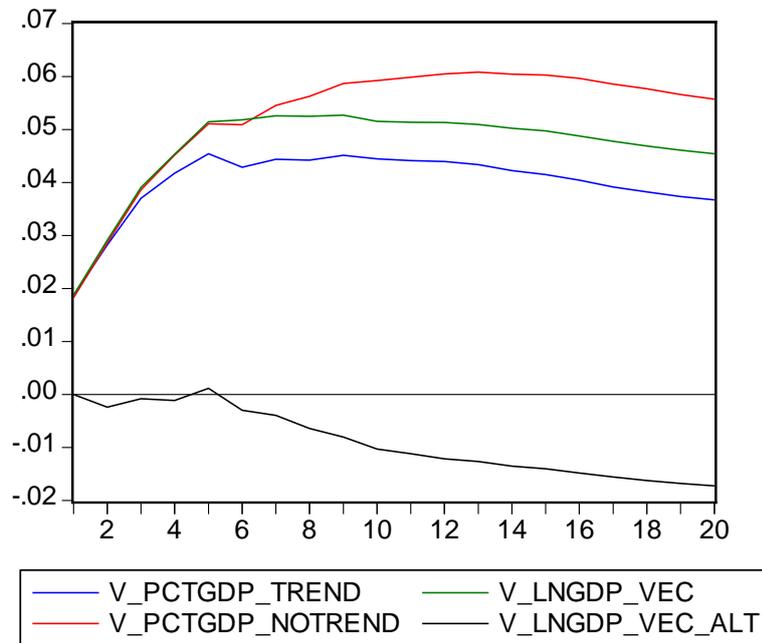
## Tentative Results

The author's understanding is that orthogonalized impulse-response functions can be rescaled. For more, see Hamilton (1994, p. 318-9). EViews offers Cholesky-decomposed orthogonalized impulse-response functions where the impulses are one-standard-deviation innovations calculated from the variance-covariance matrix of residuals. The impulses in the current study are degrees of freedom adjusted and are orthogonalized. For comparing responses from different models, these innovations are re-scaled to one-unit innovations. More specifically, the innovations are rescaled to a one percentage point error to real GDP, a one percentage point error in the federal funds rate, a one percentage point error to the ten-year U.S. Treasury note rate, and a one-time-per-year increase in M1 velocity.

In the orthogonalized impulse-response functions to follow, the name of each variable first lists the name of the time-series variable responding, followed by the name of the variable to which an impulse is imposed, followed in turn by the model in which the simulation occurred. The four models are referred to as TREND for the VAR model with a time trend, NOTREND for the VAR model without a time trend, VEC for the vector error correction model with the ordering the change in the natural log of real GDP, the change in the federal funds rate, the change in the ten-year rate, and the change in velocity (the main ordering also used in the VAR models except with the interest rate variables in levels and the annualized percentage change in real GDP rather than the change in the natural log of real GDP): and VEC\_ALT for the VEC model with the alternate ordering. For example, in Figure 2, V\_PCTGDP\_TREND refers to the orthogonalized-impulse-response function from the VAR model with a time trend showing the response of M1 velocity associated with a one-percentage-point shock to PCTGDP, the annualized percentage change in real GDP. Likewise, in Figure 6, LNGDP\_V\_VEC\_ALT refers to the orthogonalized impulse-response function in the VEC model with the alternate ordering showing the response of the natural log of real GDP to a one-time-per-year shock to velocity. The present study focuses on the response of velocity to shocks in velocity and shocks in other variables and on the response of other variables to velocity shocks.

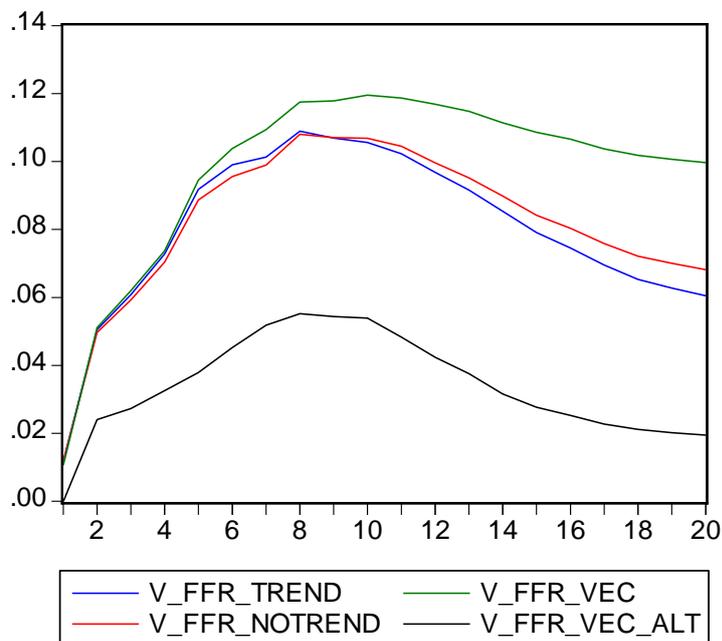
In light of the point made by Hamilton (1994, p. 319), orthogonalized impulse-response functions do not prove causality. Thus, the reader should interpret the results accordingly.

Figure 2 shows the accumulated response of M1 velocity in the four different models following a one percentage point innovation in the GDP variable. In both of the VAR models and in the VEC model with the ordering LNGDP, FFR, TENYR, and V (the main ordering); the responses of M1 velocity preceded by a one-percentage-point error in the GDP variable are similar. In each of those three models, velocity increases initially by roughly 0.02 times per year. After increasing to maximum values, the response of velocity begins to decline before the end of the simulation but in each of these three cases winds up being between 0.036 times per year greater (in the VAR model with a trend term in each equation) and 0.056 times per year greater (in the VAR model without a trend term in each equation). In the VEC model with the alternate ordering, velocity would be lower in most quarters in the simulation period than it would have been without a shock to the GDP variable. By the twentieth quarter, M1 velocity would be roughly 0.017 times per year lower.



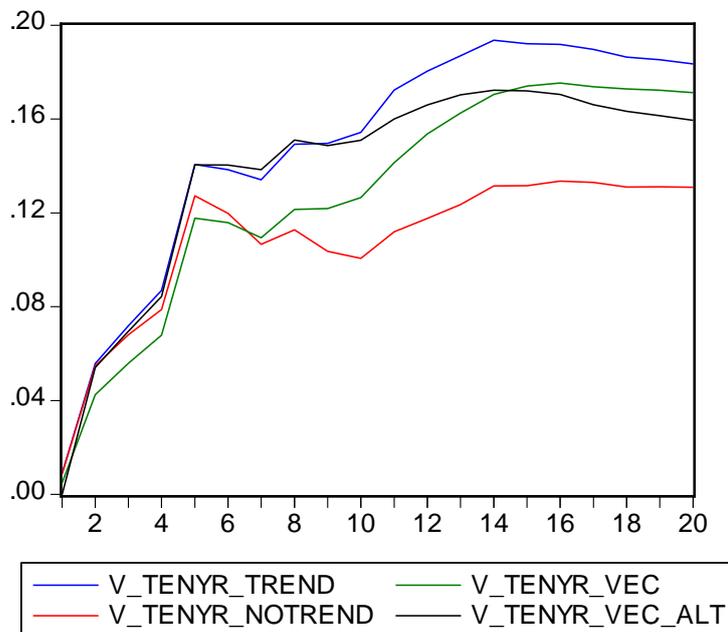
**Figure 2:** Orthogonalized Impulse-Response Functions Accumulated Responses of Velocity Following a Positive One Percentage Point Error in the GDP Variable Rescaled from Cholesky Factorized One-Standard-Deviation Errors

In Figure 3, the reader can see the response of M1 velocity associated with a one-percentage-point innovation to the federal funds rate. The responses of velocity are greater than zero in all cases except for the first quarter in the alternate ordering of the VEC model, where by assumption velocity cannot respond to a shock to the federal funds rate until the next quarter. The responses in the VEC model with the alternate ordering are noticeably smaller than those in the other three models. The response of velocity reaches a peak in the eighth quarter of the simulation in both of the VAR models (approximately 0.109 in the VAR model with the trend in each equation and 0.108 in the VAR model without a trend in each equation) and roughly 0.055 in the VEC model with the alternate ordering. In the VEC model that does not have the alternate ordering; the response of V reaches a maximum of nearly 0.12 in the tenth quarter in the simulation.



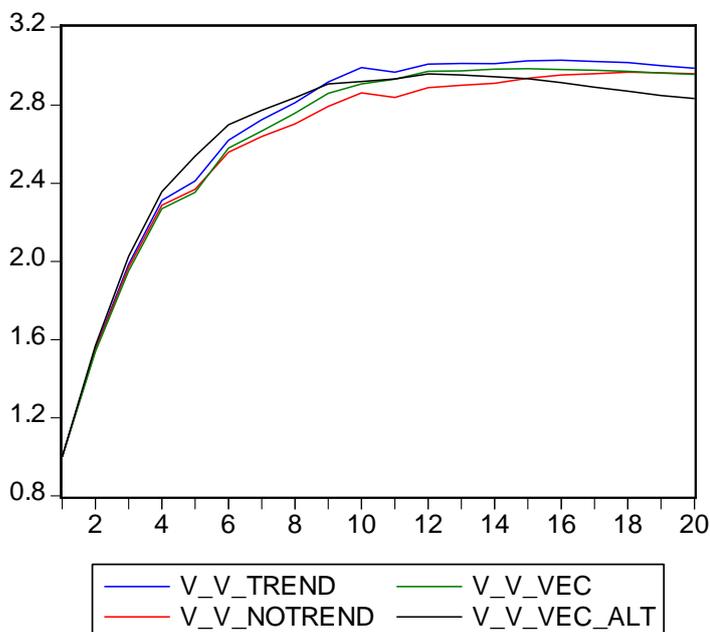
**Figure 3:** Orthogonalized Impulse-Response Functions Accumulated Responses of Velocity Following a Positive One Percentage Point Error in the Federal Funds Rate Rescaled from Cholesky Factorized One-Standard-Deviation Errors.

The responses in Figure 4 of velocity in the four models following a one percentage point innovation in the ten-year U.S. Treasury note interest rate appear fairly similar, particularly for the first few quarters in the simulation period. In the twentieth quarter, all of the responses are between 0.130 times per year greater (in the VAR model without estimated trends) and 0.185 (in the VAR model with estimated trends). After the first quarter, the response of velocity in the VEC model with the main ordering is greater than the response in the VEC model with the alternate ordering until the fourteenth quarter.



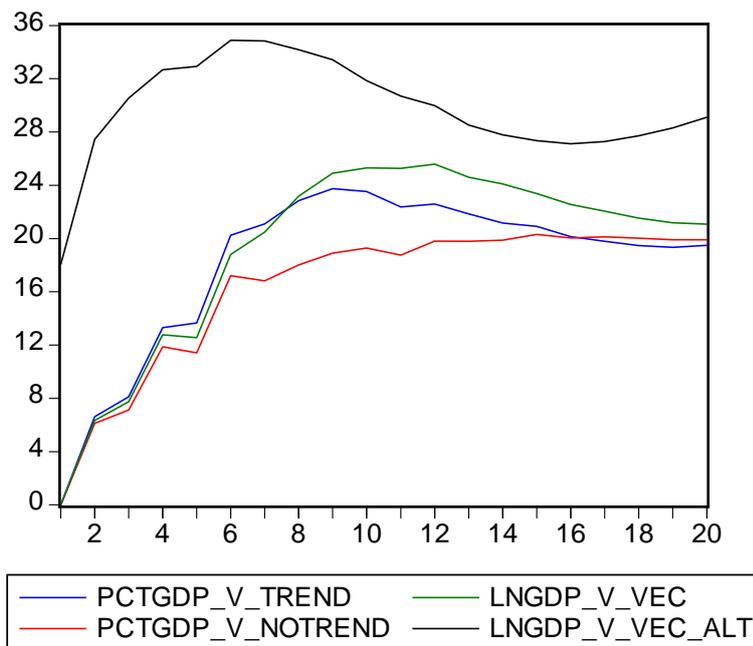
**Figure 4:** Orthogonalized Impulse-Response Functions Accumulated Responses of Velocity Following a Positive One Percentage Point Error in the Ten-Year Rate Rescaled from Cholesky Factorized One-Standard-Deviation Errors

Figure 5 illustrates the response of velocity in the four models associated with an error in velocity. The responses appear very similar. In all four cases, a shock to velocity of one time per year is followed by velocity being between 2.8 and 3.0 times per year greater in the twentieth period of the simulation.



**Figure 5:** Orthogonalized Impulse-Response Functions Accumulated Responses of Velocity Following a Positive One Percentage Point Error in Velocity Rescaled from Cholesky Factorized One-Standard-Deviation Errors

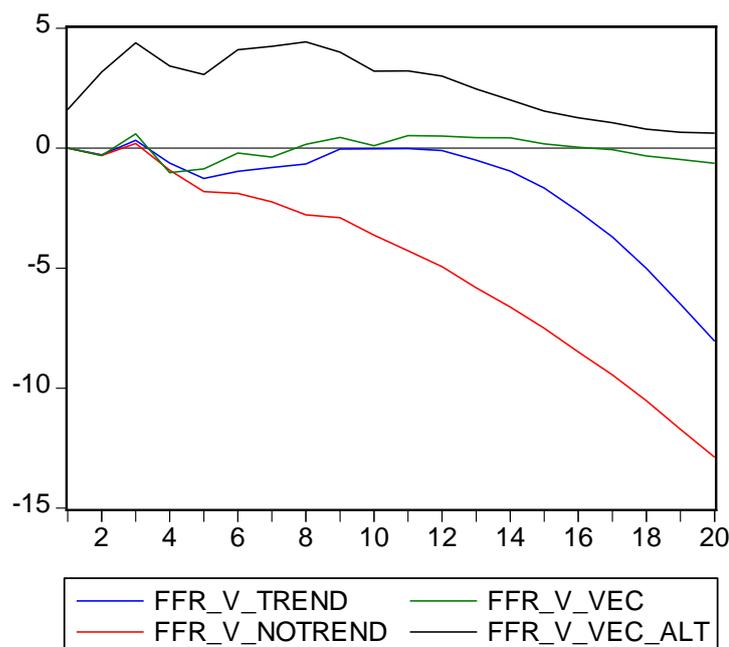
Figure 6 shows the responses of the real GDP variable following a one-time-per-year error in velocity in the four models. The response of real GDP growth in the VEC model with the alternate ordering appears noticeably larger than in the other three models in most quarters. In the VAR model with trend terms, real GDP would be a maximum of nearly 23.75 per cent greater than without the shock to velocity and would be approximately 19.5 per cent greater by the twentieth quarter. In the VAR model without trends, real GDP would reach a maximum of roughly 20.3 per cent greater, and the peak would occur later in the simulation period. At the end of the simulation period, real GDP would be roughly 19.9 per cent greater than without the velocity error in the VAR model without trends. In the VEC model with the main ordering, real GDP would reach a peak of roughly 25 per cent greater than without the velocity innovation and would remain more than 21 per cent greater through the end of the simulation period. In the VEC model with the alternate ordering, real GDP reaches a maximum of nearly 35 per cent greater than it would have been without the velocity innovation and is at least 27 per cent greater in every quarter starting with the second quarter.



**Figure 6:** Orthogonalized Impulse-Response Functions Accumulated Responses of the GDP Variable Following a Positive One Percentage Point Error in Velocity Rescaled from Cholesky Factorized One-Standard-Deviation Errors

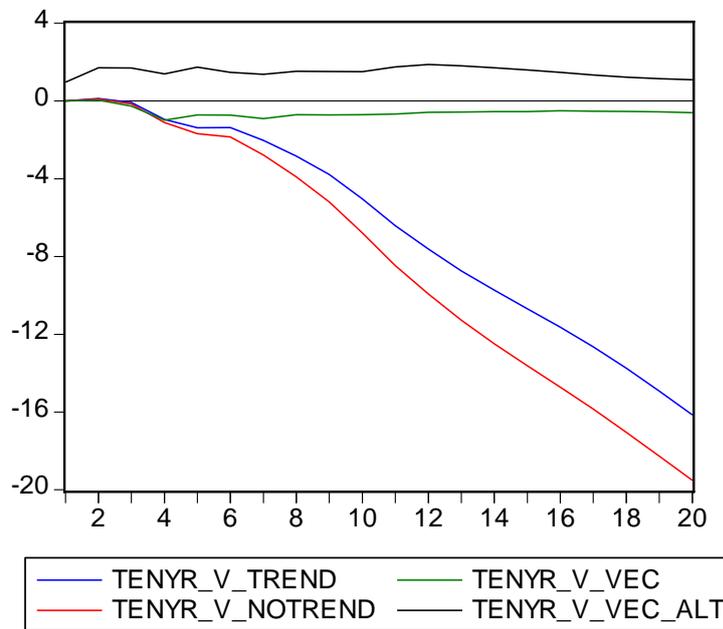
In Figure 7, the reader can find the response of the federal funds rate assuming a one-time-per-year error in velocity. As is the case in Figure 6 where the response of the GDP variable following the velocity shock was clearly greater in the alternate-ordering VEC model than in the other three models, the response of the federal funds rate associated with the velocity innovation is greater in the alternate ordering VEC model compared with the responses in the other models in Figure 7. In the VEC model with the alternate ordering, the response of the federal funds rate to the velocity shock is positive in every quarter in the simulation period, reaching a maximum of approximately 4.4 percentage points greater in the eighth quarter than the federal funds rate would have been without the increase in velocity. In the twentieth quarter, the federal funds rate would have been approximately 0.63 percentage points greater than it would have been without the shock to velocity. In the VAR models, the federal funds rate would be lower in most quarters than it would have been otherwise without the one time per year error in velocity. In the VAR model with time trends, in the twentieth quarter, the federal funds rate would be approximately eight percentage points less than it would have been without the error in velocity, while in the VAR model without the time trends, the federal funds rate would have been approximately 12.9 percentage points less than without the velocity error in the twentieth quarter. Both of these results from the VAR models in Figure 7 are minima within the simulation period. The results for the response of the federal funds rate to a velocity shock from the VEC model with the main ordering seem to fall in most quarters between the no trend VAR response, the smallest of the four in most quarters, and the alternate ordering VEC model, the largest of the four in each quarter. The main ordering VEC model response of the

federal funds rate in Figure 7 appears to fluctuate around zero reaching a minimum of roughly -1.0 per cent in the fourth quarter just one quarter after reaching a maximum of approximately 0.6 in the third quarter.



**Figure 7:** Orthogonalized Impulse-Response Functions Accumulated Responses of the Federal Funds Rate Following a Positive One Percentage Point Error in Velocity Rescaled from Cholesky Factorized One-Standard-Deviation Errors

The reader can find the impulse-response functions from the four models for the responses of the ten-year U.S. Treasury note interest rate following a velocity innovation in Figure 8. In the alternate ordering VEC model, the response of the ten-year rate is greater than it would have been otherwise without the velocity innovation in each quarter in the simulation. In the VEC model with the main ordering and in the two VAR models, the ten-year rate is less than it would have been without the velocity shock in almost every quarter of the simulation. With the alternate ordering VEC model, the ten-year rate would reach a maximum in the twelfth quarter of nearly 1.88 percentage points greater than it would have been without the positive one-time-per-year error in velocity, and in the twentieth quarter, it would be roughly 1.1 percentage points greater. In the VEC model with the main ordering, the ten-year rate would reach a minimum of nearly 1 percentage point less in the fourth quarter and would be roughly 0.60 percentage points less in the twentieth quarter. The VAR models produce much larger decreases in the ten-year rate in response to a positive one-time-per-year error in velocity. By the twentieth quarter, the ten-year rate in the VAR model with trend terms would be roughly 16.1 percentage points lower than without the velocity shock, while it would be approximately 19.5 percentage points lower in the VAR model without trends. Again, the main-ordering VEC model appears to be in the middle and perhaps gives the most reasonable results.



**Figure 8:** Orthogonalized Impulse-Response Functions Accumulated Responses of the Ten-Year Interest Rate Following a Positive One Percentage Point Error in Velocity Rescaled from Cholesky Factorized One-Standard-Deviation Errors

In summary, positive errors in the real GDP growth rate, the federal funds rate, and the ten-year U.S. Treasury note interest rate are associated with increases in velocity in most, if not all, of the models considered. Likewise, a positive error in velocity is followed by higher real GDP growth but lower U.S. ten-year note interest-rate values in most, if not all periods in most, if not all of the models considered. Regarding the federal funds rate, a positive velocity error is followed by a lower federal funds rate in most quarters in the two VAR models and in nine of the twenty quarters in the main-ordering VEC model. Thus, the recent recession in the U.S. followed by sluggish real GDP growth, combined with falling interest rates, could have contributed to the recent M1 velocity decrease in the United States. Further, the decrease in velocity could possibly help in explaining the recession and slow recovery.

Could the VEC model with the regular ordering be the best of the four models considered? The response of velocity associated with real GDP and federal funds rate shocks in the alternate-ordering VEC model could possibly be excessively less than the responses from the other models. The alternate-ordering VEC model responses of real GDP growth, the federal funds rate, and the ten-year rate following a velocity error may possibly be too much larger than the responses from the other models. Also, are the responses in the VAR models of the federal funds rate and the ten-year rate following a velocity innovation plausible given large decreases toward the end of the sample period? Thus, the results from the main-ordering VEC model may be the most reasonable. However, more work remains. Future work could consider results with different orderings of errors.

Are the results from the orthogonalized impulse-response functions perhaps in a sense between the Keynesian and monetarist perspectives of velocity, where increases in interest rates precede increases in velocity in the orthogonalized impulse-response functions, but the magnitude of the response is relatively small? Although a one-percentage-point error in either interest rate in this study is associated with an increase in velocity, the largest cumulative increase in velocity is less than 0.20 times per year. Impulse-response functions assume the same responsiveness over the sample period. However, Hartman (2011) finds that the correlation of velocity and the federal funds rate may have increased in the last ten-to-fifteen years. Future work could perform impulse-response analysis over a shorter time period to see if the responsiveness of M1 velocity to errors in the real GDP growth rate, the federal funds rate, and the ten-year rate have increased in recent years near the end of the sample period.

### Limitations

The reader should interpret the results with caution. According to Hamilton (1994, p. 319), impulse-response functions do *not* necessarily offer proof that an impulse to one variable *causes* the response in the simulated

impulse-response function. Thus, the study has attempted to suggest that the innovations are associated with or followed by responses illustrated in Figures 2 through 8 rather than stating that the responses are caused by the impulses. Further, serial correlation among the errors as discussed by Hamilton (1994, pp. 225-7) could be a problem with the models, although the study has made an effort to reduce serial correlation through the inclusion of the ten-year rate and the attempt to include sufficient lags. The author is still not clear on the stationarity of the interest rate variables, particularly the federal funds rate, and this has led to uncertainty about which model is the best, although in many cases, the impulse-response functions are somewhat similar in either three of the four models or in all four models. Moreover, further work may be required in studying the residuals from the models estimated by EViews. Additionally, an omitted variables problem may exist, and the reader should remember that the study has observations from fewer than 220 quarters. Given these potential limitations, the study emphasizes that it offers tentative illustrative results.

## CONCLUSION

This study has extended Hartman (2011) to note that the velocity of money has further declined and to discuss further possible causes of and implications of the decline in M1 velocity. The present study has also used orthogonalized impulse-response analysis to offer illustrations about the possible impact of interest rates and real GDP growth on velocity and how velocity may possibly impact other variables.

Future work could improve the econometric analysis such as verifying whether the VEC model is the best model, making improvements to whichever model is the best of the ones considered, and continuing the interpretation of the orthogonalized impulse-response function results. Further, perhaps a velocity function could be specified where velocity is a function of the money supply and perhaps other variables. Additional work could also investigate the velocity of money in Japan approximately over the last two decades, another economy that at times had very low interest rates. (Dornbusch, Fischer, and Startz, 2008, pp. 254-5) In light of the decline of the velocity of M1, policymakers could think more about the potential usefulness of fiscal policy in increasing real GDP growth and employment.

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## INTEGRITY AND ETHICS IN LEADERSHIP

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### ABSTRACT

*This paper explores the competencies that comprise a leader, specifically focusing on one's beliefs, values, morals, integrity and ethics. These are not results-based but rather character-based competencies, and while one might think there should be plenty of good people who can lead, we see one failure after another in corporations and government, chosen for their credited accomplishments, or their rhetoric, or even their appearance. There has even been a push in the last decade to elect public officials based on their values instead of issues, and this has caught fire as people have sickened of corruption in leadership, but unfortunately they can't select their bosses this way. Kerr (1988) offers his own "Ten Commandments of Executive Integrity" which aren't as stringent as the Biblical commandments but hold leaders accountable to the highest achievable standards; with this list, leaders can reflect on them and assess themselves daily. How does an organization place value in an employee's integrity and ability to act ethically and morally within the confines of the establishments in which they do business? Resource-based goal theory posits that an organization's principal source of competitive advantage is to make the maximum use of internal resources (Northouse, 2004) especially intangible assets (Pfau & Kay, 2004) whose value should be measured in lieu of focusing on bottom line profits. Studies consistently show integrity to be a key intangible asset, as it transcends to walking the talk, making sound decisions, upholding organizational values, behaving responsibly and morally, and having a positive reputation. Thus the immeasurable assets are also the most valuable, and can be found in the best leaders.*

**Keywords:** *Integrity, Ethics, Leadership, Goal Theory.*

### INTEGRITY

A leader is one of the most critical components in business, yet leadership today goes beyond the boardroom addressing beliefs, values, morals, integrity, and ethics. These competencies are measured by the leader's followers in a particular situation or context, without whom, the leader would cease to exist. Unfortunately, the competencies that have positive attributes can become intolerable, if the leader is or becomes corrupted. Corrupt leadership practices have been the demise of prominent organizations such as the Druyin Case in the federal government (Frederickson, 2005). Ciulla (1995) posited that debates over the definition of leadership are actually debates over what researchers believe constitutes good leadership (p.5).

Fisher (1999) wrote, "What is a leader? The paradox is that most professionals cannot lead and don't want to follow" (p.222). Good leadership is critical if an organization expects to be successful. General Colin Powell (2005) states, "Perpetual optimism is a force multiplier." (p.13). He suggests that he would take the unrealistic aspirations of an [optimistic leader] any day because that individual leader believes that he or she can get things done with integrity. Good leadership requires belief in oneself and the ability to influence the individuals that surround him or her. The traits that help distinguish a leader include, but are not limited to: honesty, integrity, and competency. Yet, it has been found that these same positive traits are often the ones that lead distinguished leaders to corruption. Evaluating normative leadership theories helps in understanding how integrity plays a role in developing good leadership (Miller, 2004).

Defining characteristics of integrity includes self-governance according to chosen standards, responsible conduct, values, and ideas of doing right (Paine, 1994, p. 113). Each of these characteristics helps in fostering strategies for ethics management. Stepping back into history, one might posit where the search for integrity begins. The Bible offers the Ten Commandments as a reference for moral guidance (The Holy Bible, 1982). Interestingly enough, is any person able to keep the commandments? According to Watson (2000), no mere man, since the fall of Adam, is able to keep the commandments of God, but breaks them in thought, word, and deed on a daily basis. So, if Adam

who was made in God's image fell from grace, how can organizations expect leaders to maintain pureness and integrity in his or her actions in a world filled with corruption? Kerr (1988) offers the Ten Commandments of Executive Integrity:

1. *Tell the truth.* Communicate fully, honestly, and openly. Give reasons and justifications for decisions reached and actions taken. Absent full and honest communication, people cannot exercise their fundamental right of free consent.
2. Obey the law.
3. *Reduce ambiguity.* Clarify organizational values and priorities and individual rights and obligations.
4. *Show concern for others.* Obey the Golden Rule, which means treating people as you would have them treat you. Be faithful to the concept of universality, which suggests that artificial rank and status differentials should be minimized. Be faithful both to the principle of utilitarianism, requiring those actions that bring the greatest good for the greatest number, and to the principle that all people have certain fundamental rights that cannot be denied.
5. *Accept responsibility for the growth and nurturing of subordinates.* Respect people's unique characteristics. Allow organization members to function as distinct, whole entities. Adhere to the most biased canon of medical ethics: *Primum non nocere* (above all, do not do harm).
6. *Practice participation, not paternalism.* This suggests not only giving reasons and justifications for decisions but also communicating these decisions to subordinates before they become binding and irreversible.
7. *Provide freedom from corrupting influences.* It is necessary to protect organization members not only from overt demands that they act unethically but also from cultures and reward systems that subtly discourage integrity. Respect people's right to freedom of conscience.
8. *Always act.* When you have the resources to act integrously, or when someone requires your help, integrity requires that you take appropriate action.
9. *Provide consistency across cases.* If one person's problem is handled in a certain manner, all people with that problem should be treated in the same way.
10. Provide consistency between values and actions, between theories espoused and theories in use. To act otherwise is to be a hypocrite. (Kerr, p. 127)

Moral integrity and spiritual integrity are but one. Moral integrity, cleanses the person, and spiritual integrity cleanses the soul. However, the realization exists that executive integrity is something that requires nurturing and growth (Kerr, 1988). Like a seed, executive integrity, requires critical reflection on the actions a leader is taking, and the choices being made. A good leader must maintain a path that is worthy of his or her position (Kerr, 1988). Given the choice, a good leader must maintain integrity to ensure the well-being of all with whom he or she comes in contact (Kerr, 1988).

## RESOURCE BASED GOAL THEORY AND ETHICS

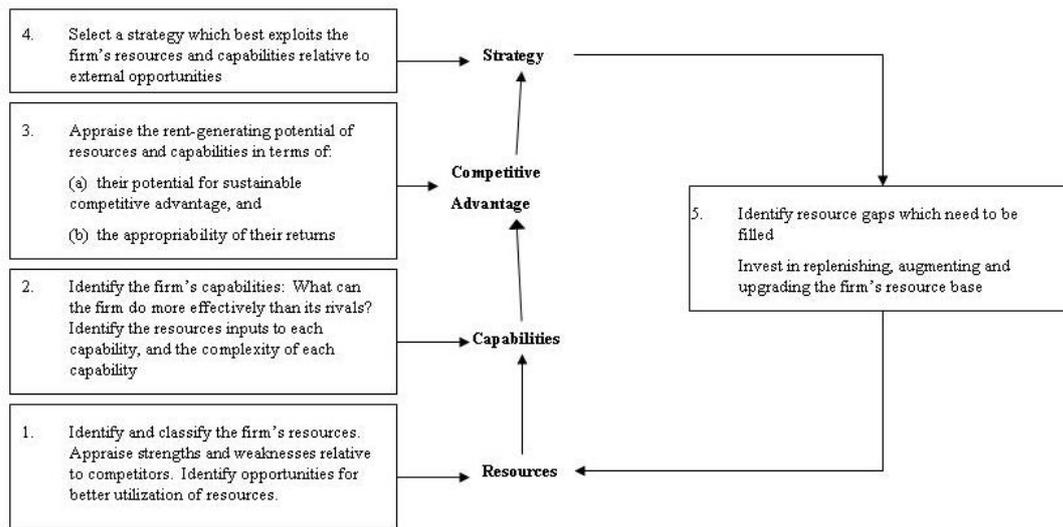
Strategy has been defined as "the match an organization makes between its internal resources and skills...and the opportunities and risks created by its external environment" (Grant, 1991). This statement emphasizes that the resource based theory of competitive advantage is critical if contemporary organizations wish to maintain a strategic position within the marketplace ensuring the survivability and growth of the organization (Grant, 1991). Today's marketplace is evolving as more modes of communication emerge, globalization increases, and competition for market share increases both domestically and internationally (Grant, 1991). The United States business strategy is evolving, yet corrupt leadership practices have been the demise of prominent organizations such as Enron. Scandals in the federal government have required leadership within organizations to regard ethics and integrity as morals that must permeate the entire organization and its resources to ensure the success and viability of the organization (Grant, 1991). To ensure the execution of resource based theory, an organization must integrate its internal resources with outside forces to create opportunities and to ensure market share (Grant, 1991). Therefore, it is critical to understand the importance of ethics and integrity as it relates to resource based theory as a source of competitive advantage in a contemporary organization (Grant, 1991).

Early in the 20<sup>th</sup> century, Frederick Taylor introduced the rational goal theory. Although this theory is not identified as such, its theoretical foundation can be interpreted as the groundwork for strategic organizational planning (Petrick & Quinn, 2000). This theory concentrates on the employee's role, setting goals, taking initiative, ensuring that the employee is able to maximize his or her effectiveness through increased efficiency and maximum productivity (Petrick & Quinn, 2000). Therefore, Taylor's theory can be critiqued as the employment of individuals as an internal asset that can be exercised as a strategic asset of an organization (Petrick & Quinn, 2000). Following Taylor, the internal process theory developed by Max Weber and Henri Fayol focused on information resources management, that is, the efficiency of processes and procedures within an organization to maximize its strategic advantage (Hofstede, 1994). These researchers distinguished that employees were internal assets and sources of competitive advantage (Carey, 1967). Succeeding Weber and Fayol, the human relations theory was made famous by Elton Mayo and the Hawthorne studies. These studies assessed the value of internal resources as a source of competitive advantage. The Hawthorne studies focused on internal flexibility, personnel responsibilities, mentor relationships, communication, and participation in team building (Petrick & Quinn, 2000). The result of the studies illustrated that employees work more efficiently and effectively when they are appreciated, consequently increasing productivity, reducing costs and ensuring that the organization maintains a competitive advantage. As a final point, in later part of the 20<sup>th</sup> century, Paul Lawrence and Jay Lorsch focused on external flexibility. Their theory is called the open systems theory emphasizing the role of learning within the organization, the power of creativity, political adaptation, and networking (Lawrence & Lorsch, 1967). Each of the above mentioned researchers and theories speak to internal resources as a source of competitive advantage within organizations, something that is difficult to measure, but critical to the overall success of the organization (Petrick & Quinn, 2000).

When comparing and contrasting the different theoretical foundations, it is important to realize that an extreme view on any one of these theories can distort management's judgment in practice. Petrick & Quinn (2000) posit that overemphasis on the director and producer roles, in line with the rational goal theory, will upset individuals and destroy unity (Petrick & Quinn, 2000). Overemphasis on the coordinator and monitor roles, in line with the internal process theory, will inhibit progress and overlook potential (Petrick & Quinn, 2000). Consequently, overemphasis on mentor and facilitator roles, in line with human relations theory, will destroy productivity and relinquish decision making capabilities (Petrick & Quinn, 2000). Finally, overemphasis on broker and innovator roles, in line with open systems theory, upsets the flow and squanders energy (Petrick & Quinn, 2000). Similar to the garbage in, garbage out theory, the way people manage internal assets of an organization commits them to different ethical theories (Petrick & Quinn, 2000). Therefore, with the understanding that human beings are multifaceted, being both rational and irrational, individuals may require multiple managerial styles. Consequently, assessing ethics and integrity as it relates to resource based theory as a source of competitive advantage in a contemporary organization is necessary (Petrick & Quinn, 2000).

One of the seminal works supporting resource based strategy was written by Edith Penrose entitled, "Research on the Business Firm Limits to the Growth and Size of Firms". Penrose (1955) focused on the firm's position when new managerial positions were taken and how those changes impacted the firm, albeit, initially these personnel and their contributions were intangible because the end result was illusive, yet as time passed the skills and efficiencies of management increased, along with a specialization in services allowing the firm to maintain a competitive advantage (Penrose, 1955). As the resource based theory of competitive advantage has regained popularity over the past two decades, Grant (1991) has developed a visual model to illustrate the resource based theory of competitive advantage. Grant's model reveals the notion of how organizations must use internal resources to maintain and sustain competitive advantage. His argument is that there are two premises for long term strategy: internal resources and resources and capabilities as the primary source of profit for the firm (Grant, 1991). After analyzing the model, there are two items that are not discussed; these items include intangible assets and long term strategic advantage through the use of resource based theory (Grant, 1991).

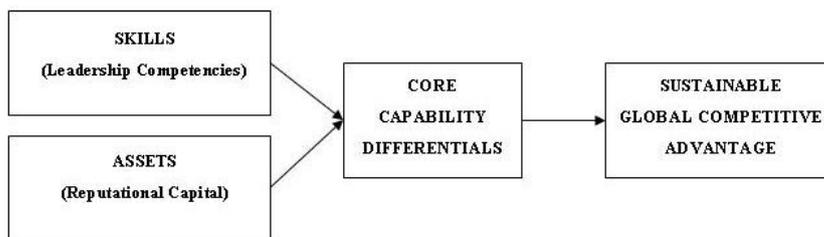
**Resource based theory of competitive advantage**



**Figure 2:** Grant, 1991

In an attempt to capitalize on those components that from Grant's model, Petrick, Scherer, Brodzinski, Quinn, & Ainina (1999) discuss the contribution of intangible assets that are critical to the sustained competitive advantage of organizations in the 21<sup>st</sup> century. The strategic resource model these researchers developed is illustrated below.

**Strategic Resource Model of Sustainable Global Competitive Advantage**



**Figure 3:** Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999

This model reflects Grant's original five step model but takes it further to incorporate the processes that are coupled in order to manage integrity as an intangible resource and successfully sustain the competitive advantage of contemporary organizations. Petrick et al. (1999) bring intangible resources to the forefront of their discussion by emphasizing that reputation is inherent in an organization as a strategic intangible asset.

Throughout history, barriers to entry into a market were primarily recognized as tangible assets: plants, technology, and raw materials. Today, those tangible assets are not enough to be successful in a global economy. Moving away from domestic markets into international markets, most theorists would agree that knowledge, patents, intellectual property, reputation, and human capital are the greatest most efficient, effective assets that a firm can develop. Ethics and integrity, therefore, are the most important intangible assets when dealing with human capital and the success of contemporary organizations (Rothwell, 2005).

The American Heritage Dictionary (1983) defines ethics as the study of the general nature of morals and of specific moral choices or a principle of right or good conduct or a body of such principles. On the other hand, integrity is defined as strict personal honesty and independence. Dealing with contemporary organizations, individuals may not believe that their actions will make a difference (Ernst & Young, 2006). A Baby Boomer, for example, may believe that his or her responsibilities are not large enough to affect the whole organization. The Baby Boomer could argue that it is management's responsibility to make the necessary changes to ensure that the organization maintains

integrity (Toossi, 2004). Management may argue that the organization provides compliance training regarding the importance of ethics and integrity, but the steps taken afterward are up to the employee (Welbourne, 2006). It is imperative that the contemporary organizations align themselves with the processes of moral awareness. Within a contemporary organization, ethics and integrity are the foundations upon which the business will succeed or fail, and it is the process of moral awareness that helps boomers make the necessary changes to ensure the integrity of the organization (Welbourne & Van Kuttner). There are four theories of ethics as they relate to the contemporary organization. According to Petrick & Quinn (2000), these theories include: teleological, deontological, virtues, and contextual ethics. Teleological ethics incorporates the outcome of the situation (Alder, 1998). Deontological ethics regards ethics as a duty. Virtues ethics involves the character of the individuals. Contextual ethics incorporates systems improvements within the contemporary organization. Individuals left up to their own free will, typically act in ways that contribute to their personal well-being. Leaders must ensure that they incorporate each of the ethical constructs described above to ensure that moral awareness and integrity exists throughout the organization (Alder, 1998).

The foundations of moral awareness for individual employees should be to do an act as if no one was watching (Paine, 1994). That is to say, do the task for the right reasons and in an ethical manner. However, businesses today have been less than successful in being ethical and possessing integrity (Homer, 2006). Recently the media has had a field day with the executives of Enron, Mr. Lay and Mr. Schilling, illustrating how individuals left up to their own free will can justify their rationale given the situation, rather than maintaining the integrity of the organization. Leaders of Enron and others are supposed to represent the core values, ethics and integrity that penetrate the organization from the top down (Homer, 2006). Ethics and integrity are intangible assets whose value far exceeds the tangible assets that can be measured. In order to make changes, employees need to evaluate their environment and understand that ethics training is not just a check in the box; rather it is a change in one's personal and professional growth (Clark & Leonard, 1998). An organization's most valuable asset, which ensures competitive strength and a strategic advantage, is the excellent reputation of the people within the organization. Anything from an employee's mishandling of a situation to the overall disregard for integrity will harm the current business, as well as, future prospects for that organization. It is critical that employees understand that an improper judgment or action cannot be justified (Clark & Leonard, 1998). Unethical tactics are wrong and do not make good business sense. Individuals often believe that ethical behavior is only for those at the top of the organization, that their actions are irrelevant. Unfortunately, this ignorance causes trouble for organizations and individuals' reputations alike (Paine, 1994). Everyone who works for an organization has an ethical and implicit responsibility to act in accordance with company policies and procedures, whether dealing with people, property or buying and selling services (Paine, 1994). Again, the media has illustrated that contemporary organizations are not taking ethics seriously. This misuse of trust by leaders, results in loss of jobs, pensions destroyed, and organizational and personal reputations ruined. Ethics and integrity must be at the forefront of Boomer's thoughts and behaviors, as it is critical to the success of an organization that employees maintain self-discipline when pursuing organizational activities (Paine, 1994).

Badaracco & Ellsworth (1991) discuss this very concept of integrity and the role it plays in leading an organization to excellence. The value mapping begins with the executives who run the organization and illustrates that the executives are successful because of their consistency of moral aptitude. Integrity is not only an intangible asset; it is a philosophy that must be identifiable in the leader's actions, attitude, and personal beliefs in responding to the daily operations of business (p. 47).

The word integrity, as mentioned previously, is defined as a sense of moral soundness and is inherent in successful leadership (p. 47). Badaracco & Ellsworth (1991) accidentally arrived at a place in their research where integrity and ethics were found to be intangible assets carried forward by the executives of respective organizations. The executives interviewed had realistic visions and employed a key strategy called integrity. This vision of ensuring integrity throughout the organization is achieved through a leader's consistent behavior including his or her attitudes, beliefs, and values (p. 49). Although, like leadership, one type of consistency isn't applicable to all situations, yet certain attitudes and beliefs will assist leadership and management in arriving at better outcomes that would otherwise cease to exist if those attitudes and beliefs were disregarded (p. 49).

Concomitantly, Petrick and Quinn (2001) discuss integrity as an intangible strategic asset. The capacity for integrity within an organization assures that the stakeholders develop a repeatable process of moral awareness, deliberation, character, and conduct that displays unbiased judgment, enhances moral development and creates a supportive atmosphere in which individuals are able to make sound moral decisions. Process, judgment, development, and system are the dimension to understand the aptitude of integrity in contemporary organizations (Petrick J.A. & Quinn, 2001). Each of these dimensions is a key ingredient in an organization's foundation and herein lie the challenges that leadership and management struggle dealing with on a day to day basis.

Walking the talk is critical with leaders who have high integrity. Leaders who have high integrity are able to feel the pulse of the organization. Leaders who feel the pulse are able to respond more efficiently and effectively to the concerns of their stakeholders. In addition, the trust that the stakeholders feel from these leaders creates a positive reputation for the organization. The reputation is built on sound decisions, solid support systems, and a unity of purpose. These organizations and their leadership are able to face moral complexities and irresponsible decision making head on as they are grounded in their beliefs and values that are consistent with the organizations values, they walk the talk (Paine, 1994). Those that do not walk the talk corrode the reputation of the organization. In daily activities, leaders who lack integrity, also lack consistency in their behavior, are manipulative in achieving goals and giving direction, and distort decisions and judgments to suit their personal interests, thereby ensuring that the organization will be at a strategic disadvantage within its industry (Paine, 1994). Petrick and Quinn (2001) posited that the majority of practicing business leaders in most countries, most of the time, are not held accountable for dysfunctional moral, social, and environmental performance. These organizations that lack ethical leadership run the day to day operations dealing with the bureaucracy as necessary and dealing only with the moral and ethical dilemmas that are convenient to his or her person, not necessarily dealing with the integrity of the situation or getting to the foundation of the issues that need to be addressed (p.331).

Leaders are able to successfully deal with integrity issues when employing with the four dimensions: process, judgment, development, and system (Petrick J.A. & Quinn, 2001). Leaders are enabled to address the complexities of situations within the organization without having to rely on only one component or dimension (p.335). However, in dealing with these complexities leaders are challenged to balance the integrity and ethics within the organization, personal leadership demands, and the economic development of the organization (Petrick J.A. & Quinn, 2001). Successful leaders must lead by example, ensuring integrity within the organization. Successful leaders employ various ethical theories and dimensions to put into action the appropriate policy and procedures to ensure that the organization achieves good results, following the policies and procedures, while motivating employees to do the right things, and building an environment that ensures morality and values. Ethical theories can be isolated, yet employing all theories ensures that leaders are able to analyze and handle moral situations well. Although this exceeds the suggestions of Badaracco Jr. & Ellsworth (1991), this view is consistent with their hypothesis that leadership philosophies are instrumental in leading an organization with integrity and handling the ethical and moral dilemmas that are presented in day to day circumstances (p. 46).

Ethics and integrity will impact an organization's competitive advantage and must be managed carefully within contemporary organizations (Petrick J.A. & Quinn, 2001). Laying the groundwork for the long range strategic plan of the organization, leaders must incorporate the tangible assets: facilities, equipment, cash, as well as, intangible assets: human capital, knowledge management, reputational capital, and integrity (p. 332). If the leaders neglect these fundamental components, there will be an intrinsic flaw in their long term strategic plan (p. 332).

The vision of good leaders, those with integrity, is to inspire their employees with a vision (Goleman, 1998). This vision allows individual employees to go beyond what is expected in day to day operations and stretch into the territory where new ideas are developed and tested to generate new theory, products, and a new way of being (Goleman, 1998). This process begins with hiring an employee who has good character, one whose values mirror that of the organization (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999). Reviewing resumes only addresses the skills and competencies of an individual, whereas, activities, like Eagle Scouts, reflects an individual's character (p. 63). Intangible assets are critical because they work to build up an organizations reputation, leading to reputation capital espoused by organizations through brand recognition. A company is only as strong as its weakest employee.

As mentioned previously, with the tales of Enron and the U.S. Government, it is vital to uphold the reputation of an organization because the success of the company is tied to that reputation and brand recognition. Investors on Wall-Street are interested in the overall structure of the organization, but if they cannot trust the reputation of the firm, the money investors want to spend will go to companies whose reputation is trustworthy rather than an organization that is unethical (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999). Any ethical shortcoming whether it involves ensuring that numbers are right or that a product gets to market, despite inherent flaws – those activities will ruin an organization's reputation and ultimately hurt the bottom line. An intangible asset, like reputation, is a key component ensuring the success or failure of an industry (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999).

For business leaders and their organizations, judgment integrity means being held accountable for a positive outcome by following the rules, ensuring the employees are motivated, and building an internal and external environment whose values are in harmony. Judgment integrity deals with the economic complexity of generating wealth for stakeholders and meet individual requirements and expectations regarding financial performance (Petrick J.A. & Quinn, 2001).

Towards the end of the Cold War a narrow view of capitalism emerged and led to the evasion of moral accountability (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999). Business leaders are no longer dealing with national issues; rather they are dealing with international issues (p. 65). The consequences of companies going global involve the intangible asset, morals (p.66). Petrick and Quinn (2001) posit that globalization is a race to the moral bottom that includes remuneration, working conditions and societal living that goes to the most desperate culture. The economic conditions of the locations chosen to compete globally affect many components not only within the organization, but throughout the world including the environment, quality of work, and much more. Yet, the accountability of this type of economic capitalism can be catastrophic if not developed with a moral awareness for all the parties involved.

Therefore, global strategic leadership must invest in the intangible asset of reputation on behalf of the organization and leverage those assets for sustained competitive advantage. Reputation capital, as an intangible asset, increases the viability of the organization at the firm and industry level through brand recognition (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999). If implemented well, an organization's strategy can include getting the brand name out to places it did not previously exist and build a positive reputation both domestically and internationally (p. 61). Once the brand exists, it is critical that the organization ensures that the products are of the highest quality and the services provided are top-notch. Finally, the organization must continue to be innovative and secure the trust of the stakeholders at all levels of the industry (p. 63). Unfortunately, during the .com era, corporations like Enron, swiftly moved to take advantage of financial windfalls and in doing so destroyed financial practices, employee stability, and morale, thereby creating social degeneration as a result of ethical lapses in judgment integrity, and diminishing organizational reputations as intangible assets and adversely affecting the competitive advantage (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999).

Consequently, intangible assets are becoming more significant as organizations complete globally. Petrick et al. (1999) posit the idea that as the speed of comparable tangible asset acquisition accelerates and the pace of imitation quickens, corporations that want to sustain competitive advantage need to protect, exploit, and enhance their intangible internal assets. Sustaining the competitive advantage requires protecting the corporation's reputation and enhancing it for all stakeholders including stockholders, employees, and the community. Corporations and their leadership need to achieve and sustain reputations for trustworthiness through ethical behaviors, instilling integrity into the ethos of the organization. The leaders who are able to accomplish this have a style that enhances performance by achieving profitability, productivity, efficiency, positive morale, adaptability and innovation (Petrick, Scherer, Brodzinski, Quinn, & Ainina, 1999). This type of leadership can be defined as stewardship, leading the whole organization towards sustainable development in ensuring long term socioeconomic, biological and ecological development.

## CONCLUSION AND FUTURE RESEARCH

Businesses have accepted the resource-based theory of competitive advantage over the past several decades (Pfau & Kay, 2004). Researchers have validated the premise of resource-based theory maintaining that an organization's principal source of competitive advantage is to make the maximum use of internal resources (Northouse, 2004). The research demonstrates that tangible assets are not the only factor organizations should consider in their long-range strategic plans (Pfau & Kay, 2004). Rather, intangible assets have a significant amount of value in ensuring that an organization has a strategic advantage. The problem seems to arise in the ability to measure intangible assets (Pfau & Kay, 2004). How does an organization place value in an employee's integrity and ability to act ethically and morally within the confines of the establishments in which they do business? The recognition of this value incorporated into intangible assets is called into question as the board of directors and various stakeholders of contemporary organizations try to measure the value in lieu of focusing on bottom line profits for the organizations. Globalization only exacerbates the problem as contemporary organizations try to expand their market share and in doing so succumb to the moral degradation that occurs when doing business in different countries, with different cultures. As this trend continues, the resource-based theory as a source of competitive advantage becomes vital as a practical method to employ in achieving bottom line results and a competitive advantage within the industry that chooses to take advantage of using internal resources, especially in light of the Boomer Tsunami. There needs to be additional research done in obtaining measurement for intangible resources, specifically Baby Boomers, within industry and doing so will help increase the stakeholders awareness of the advantages of ensuring ethics and integrity as an ethos within their respective contemporary organizations (Welbourne, 2006).

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## EVALUATING EXPORT MARKET DESTINATIONS

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### ABSTRACT

*Operations managers of companies interested in increasing production, sales, and income, should consider exporting. International trade of goods and services as a percentage of world gross domestic products (GDP) increased from approximately 12.1 percent in 1960 to 30 percent in 2010 (World Bank, 2011). Although Puerto Rico has extensive experience trading with the USA and its territories, its experience in other markets is more limited. The research goal is to help managers and export promotion agencies determine in which countries they should aim for their export activities. In this research, we tested the relationship of Puerto Rico's export and importing country GDP and country risk (OCR). The methodology is divided in two tests. First, is the filter one of the Decision Support Model (DSM), an international market selection method, used in other countries, such as, Belgium and South Africa (L. Cuyvers, De Pelsmacker, Rayp, & Roozen, 1995). Second, we performed two single regression models of Puerto Rico's exports (PRX) as the dependent variable and importing country GDP (OGDP) and importing country risk (OCR) as independent variables. The results did not support PRX's significant linear relationship with OGDP, but it supported the positive relationship with OCR. Forty five countries passed the DSM first filter. Of these, Puerto Rico exported to 39 of them. We conclude that Puerto Rico's managers and export promotion government officials should evaluate the use of its limited resources in the selection of countries with more income and stability.*

**Keywords:** *International Market Selection, Export Market Destination, Decision Support Model, Export, Regression Model, Puerto Rico.*

### INTRODUCTION

Exporting occurs when a country sells domestically made goods and services to someone in another country (Flynn, 2005). Companies benefit from exporting by adding additional sources of revenue besides their local market, improving the use of production facilities, diversifying their market, extending product life cycle, and improving products and services to international market standards (Suranovic, 2010). The exporting country also benefits from increased production, employment, tax revenues, and gross domestic product (GDP).

New export opportunities generate increase production of goods and services which in turn positively affect the country GDP. Increase globalization World exports as a percentage of world gross domestic product (GDP) increased from approximately 12.1 percent in 1960 to 30 percent in 2010 (World Bank, 2011). Although this number shows a substantially steady growth, there have been some periods of decline, with the most drastic occurring in 2009. Nonetheless, an R-Squared of 0.9371 indicates that world exports of goods and services have been in line with world GDP. Therefore, it highlights the growing importance of exports to a country's GDP.

Since exporting is beneficial to so many stakeholders, particularly to the exporting country, the questions companies and public policy officials should focus on are what goods and services to export and where to export them. This research focuses on the second question. Individual, organizational, and country variables help determine export market destination. At an individual level, the managers' experience in exporting is a key variable to determine where to export. At an organizational level, firm's strategy and structure are key variables (Grøgaard Birgitte, 2011). At a country-level, the key variables are generally divided into foreign market demand, such as GDP, consumption patterns, and barriers such as country risk, tariff barriers, exchange rate (Green & Allaway, 1985; Malhotra & Papadopoulos, 2007; Papadopoulos, Chen, & Thomas, 2002; Pearson, Viviers, Cuyvers, & Naudé, 2010; Russow & Okoroafo, 1996)

Operations managers and export promotion government officials face international competition and limited resources. Also in common, they have a key question: Are we exporting to the right countries? This question is not limited to currently exporting firms. For a firm contemplating its first international venture, the right international market selection is a key decision. Operations managers and export promotion government officials in Puerto Rico (P.R.) face the same questions, but in a limited and decreasing domestic market (US Census, 2011) and with an economic recession (Calero, 2011).

## Objectives and Research Questions

The research questions objectives are:

1. Are exporting companies in Puerto Rico exporting to countries with the highest GDP and least country risk?
2. Are current trade partners the best choices?

## LITERATURE REVIEW

The Theory of Comparative Advantage, Smith's Pure Exchange Model of Trade, the Factor Mobility and Income Distribution, and the Heckscher-Ohlin's Factor Proportion Model all agree that a country benefits from its export activities (Suranovic, 2010). There are several factors that influence a country to export its products, one of them being the growth of the GDP of the country (Ahmad, 2001). Exports contribute not only to the improvement of the trade deficit figures, but also to development and enhancement of unique domestic economic competencies (Albaum, Strandkov, & Duerr, 2002).

Agosin (2009) studied the growth and diversification of exports on emerging economies. Among his findings, he saw a positive correlation between increased exports and economic development. He also stated that countries that have a diversified export trade will show a greater growth than those countries in which such diversification is limited. Creating a diversified export trade could lead to the production of a new good or, by taking advantage of a good that the country already produces, producing to meet the increasing demand of other countries for that product. It is all about having options and taking advantage of the best opportunities. An example of this is the wine in Chile. In this country, they had produced this good since the seventeenth century, but they started to increase the production in order to export it in the mid-1980s and meet the demand of other countries. The key point was to identify opportunities and to diversify the options for the exporting country because a greater diversification provided a strong incentive for investment. International trade literature indicates that the market entry decision of exporting countries is based on importing country characteristics, proximity, national cultural distance, trade agreement between countries, previous trade experience, importer GDP and importer country risk.

The international market selection method can be classified into two categories: the qualitative approaches, which are based on perceptions, and the quantitative approaches that are based on existing data. The quantitative methods can be divided into market grouping and market estimation. The market grouping approach divides and groups the countries based on similarities on social, economic and political indicators. Demand levels are usually not taken into account (Sakarya, Eckman, & Hyllegard, 2007, p. 212). The market estimation method evaluates foreign markets on the basis of several criteria that measures aggregate market potential and attractiveness (Papadopoulos et al., 2002, p. 41; Sakarya et al., 2007, p. 212). The criteria used on these methods are wealth, size, growth, competition, and access indicators (Sakarya et al., 2007, p. 212). The limitation of these models included lack of product specificity, assuming that the environment was constant and that data was available. Examples of the market estimation models at a country level are: Green and Allaway's shift-share model, Russow and Okoroafo's global screening model, Papadopoulos et al.'s trade-off model, the ITC multiple criteria method, assessment of export opportunities in emerging markets model, and Cuyvers' decision support model. These models are categorized as country level models which observed the markets in a macro-level perspective (L. Cuyvers et al., 1995; Freudenberg & Paulmier, 2005; Green & Allaway, 1985; Papadopoulos et al., 2002; Russow & Okoroafo, 1996). These models can identify country/product opportunities in order to concentrate their resources on the outcomes of these models.

The Green and Allaway's shift-share model identify and compares the growth on the market share for a period of time (Green & Allaway, 1985). This model compares the current growth with the expected growth, which is called net shift. The data used for this analysis is the imports of the countries that are taken under consideration for the products that will be analyzed. The product and country combination is obtained for each country. This product and country combination is then analyzed to consider the opportunities. Among the limitations found for this model, one that stands out is the fact that it identifies relative opportunities, but not realistic opportunities.

The Russow and Okoroafo's global screening model used the international business theory and market screening to classify their variables into three criteria. These were: measure of size and growth, factors of production and economic development (Russow & Okoroafo, 1996). This model used the criteria mentioned above to evaluate the product. It also divided the countries on clusters of similar markets. These clusters would have potential demand for the product and would be categorized into high, medium and low potential market. The limitation of this model is that it is a particularly extensive process, and the data may not be available.

The purpose of the trade-off model presented by Papadopoulos *et al* is to identify the potential demand and the trade barriers of the countries in order to make effective decisions. Among the variables identified for the demand potential were: apparent consumption, import penetration, origin advantages and market similarity. Variables for the trade barriers were tariff barriers, nontariff barriers, geographic distance and exchange rate. The limitations identified for this model were lack of direct conversion schemes between the trade coding systems, as well as unavailability, unreliability and aging of data for some countries (Papadopoulos et al., 2002, p. 184).

The ITC multiple criteria method measures the current export performance of the exporting country, domestic supply capacity and the characteristics of the international environment for developing countries whose goal is to diversify their exports (Freudenberg & Paulmier, 2005). One of the limitations of this model is that it concentrates on the product demand for the world, not for countries in particular.

The assessment of export opportunities in emerging markets is the model used to identify opportunities in future emerging markets. This model took under consideration long-term market potential, identifying business prospects and predicting potential profits. By the 2007, Sakarya introduced other variables such as cultural distance, competitiveness of the industry and customer receptiveness to the model (Sakarya et al., 2007). Having a very specific model could be a positive thing, but in this case being too specific could be a limitation since the data required to perform this analysis may not be available for each of the countries.

The decision support model (DSM) created by Cuyvers was used on 1995 in Belgium to find realistic export opportunities (L. Cuyvers et al., 1995). This model used 4 filters to identify realistic export opportunities. The first filter used as criteria the Country risk and the GDP of all the countries. The objective of this filter was to eliminate all the countries that had high country risk and low GDP, and obtain the most viable markets to export. The second filter consisted of identifying market potential of the country and a products combination. The purpose of this filter was to obtain countries with demand potential. The third filter used trade restrictions and market concentration to screen the options that were successful on the second filter. The fourth filter used as variables the market importance and the market size and growth. The results from the DSM approach affect the export promotion in a positive aspect, since its outcomes are realistic opportunities, not only on the destinations of the exports, but also on the products that a particular country should export. The decision on where to export should not be supported by the outcomes of that model alone.

## METHODOLOGY

The first step was to determine the current behavior of P.R.'s exports for a period of ten years. Then, we studied the current situation regarding where Puerto Rico was exporting its products. Information regarding Puerto Rico's goods exports, importer country GDP and importer country risk. A simple regression analysis was first used and then the first filter of the decisional support model was used to obtain new international opportunities of where to export. The results from the decisional support model were compared to the countries that Puerto Rico was exporting to, in order to analyze the existing approach when it came to exporting products.

## Hypothesis

**H1:** There is a linear relationship between the countries to which Puerto Rico exports and GDP.

**H2:** There is a linear relationship between the countries to which Puerto Rico exports and country risk.

**H3:** Puerto Rico is currently exporting its products to countries with low country risk and high GDP.

**H4:** Puerto Rico exports products to countries with high country risks.

## Data Description

On the first stage of this study, we perform a descriptive analysis to study the trends of the exports of products from Puerto Rico for a period of time of nine years. The study covers export transactions from 2000 to 2009. The main reason for using the period is that nine years is enough time to establish a trend. The first stage used the international export transactions from P.R. for the period of 2000 to 2009 in US dollars to all countries, except the United States. The data was obtained at the United States of America (U.S.A.) Census Bureau. The U.S. Trade Online, a paid service of the U.S.A. Census Bureau, provides information of products exported, industries that export, and export recipient countries (USA Trade Online, 2011).

After analyzing the behavior of exports, we used the first filter of the DSM approach to figure out to which countries it would be more viable to export Puerto Rico's products. For this filter, we considered commercial risk and political risks for all the countries of which data could be found. The data was obtained from the Office Du Ducreire ("Country risks | Office du Ducreire," n.d.). The political and commercial risk had to be transformed in order to apply the first part of the filter. The political risk was obtained in a scale from 1 to 7. In order to use a uniform variable for both commercial and political risk, the data was transformed to a scale from 1 to 10. The political risk was multiplied by the 1.43 value to obtain values for the desired scale. The commercial risk was in a scale from A to C. In this case, we assigned a value of 3.33 for A, 6.67 for B and 10 for C. The commercial and political risks used were from 2009, the year with most recent data found at the time of this research. The other variables used were the GDP per capita and the GDP growth for the countries analyzed ("GDP ranking | Data," 2011).

## Operationalization of variables

There were several variables used in this study. In table 1, we illustrate each of the variables and from where they were obtained.

**Table 1:** Operationalization of Variables

Variable	Description	Source
Puerto Rican Export ( $x_{nij}$ )	Number of transactions between PR and the rest of the world	Planning Board
Country risk	These risks include political risk, exchange rate risk, economic risk, sovereign risk and transfer risk, which is the risk of capital being locked up or frozen by government action (def. came from Office Du Ducreire). Average of Commercial risk and political risk	Office Du Ducreire, Belgium
Commercial Risk	Financial risk assumed by a seller when extending credit without any collateral or recourse	Office Du Ducreire, Belgium
Political Risk	Risk that investments return could suffer as a result of political changes or instability in a country	Office Du Ducreire, Belgium
GDP	Is the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports	World Bank
GDP per capita	GDP per capita is gross domestic product divided by midyear population.	World Bank
GDP growth	Annual percentage growth rate of GDP at market prices based on constant local currency.	World Bank
$X_{pt}$	Is the average value for the indicator in the research	$\sum X / n$
CV	Critical value	$CV = X_{pt} - \alpha\sigma_{x,t}$ Eq(1)
A	This value would be chosen between 0 to 1 by increments 0.001	
$\sigma_{x,t}$	Is the standard deviation value for the indicator in the research	

## Sample Size

Two different approaches were used utilizing different sample sizes. For the first simple regression analysis, 163 countries were used, whether P.R. exported to them or not. For the second simple regression, the only countries considered were those to which P.R. exported their goods in 2009. The sample size in this case was of 105 countries. It is pertinent to note that 21 countries were classified as outliers and were not used on these models. For the DSM approach, the sample size used was of 240 countries.

## Simple Regression Model Analysis

The Regression analysis is often used to identify the correlation between a dependent variable with an independent variable. In this case, the variables under consideration are export as the dependent variable (Y) and the Country risks and GDP as the independent variables (X). In this case, the formula will be:

$$Y = B_0 + B_1X_{1i} + E_i \quad \text{Eq (2)}$$

Where:

- Y= dependent variable
- $B_0$ = Y intercept for population
- $B_1$  = slope for population
- $X_{1i}$ = independent variable
- $E_{1i}$ = random error

The t test for the slope will identify if there is a significant relationship between the dependent variable and the independent variables. The Hypotheses were:

- $H_0$ :**  $B_1=0$ : This means that there is no linear relationship between the dependent variable (in this case the exports) and the independent variable, which is the country risk or GDP.
- $H_1$ :**  $B_1 \neq 0$ : This means that there is a linear relationship between the dependent variable exports and at least one of the independent variables country risk or GDP.

To reject or not reject the  $H_0$ , t calculated  $t_c$  and t from the table  $t_t$  are compared. If  $t_c$  is greater than or equal to  $t_t$  or if the p-value is less than alpha, then  $H_0$  is rejected, and it could be concluded that there is a significant linear relationship between the dependent variable and the independent variable.

## Decisional Support Model

After analyzing the actual situation of Puerto Rico's exports, a Decisional support model (DSM) was performed. A DSM is a tool for the selection of countries or products where opportunities for successful exports could occur. This framework consists of four filters in which every country or product available is exposed in order to obtain a realistic and successful opportunity to export. The benefit of the DSM tool is that this country/product combination will pass through four filters, which would eliminate all the combinations that are not viable opportunities for the country. For the purpose of this study, we used the first filter of the model.

### Filter One

This filter consists of examining the country risk ratings. Country risk contains the political and commercial risk of the country. The country risk was the average of the commercial and political risk. As mentioned above, commercial risk and political risk values had to be transformed in order to get the average to calculate the country risk. The political risk was rated on a scale from 1 to 7, 1 being the lowest and 7 being the highest rating. Therefore, if a country had a rating of 1 it would have low political risk. If a country had a rating of 7, it would have high political risk. The commercial risk scale is different from the political risk. This scale is from A to C. If a country has a commercial risk of A, it will be considered a low commercial risk. B is a medium risk and C is high commercial risk. Since these scales are different, they were converted in order to obtain the country risk. The political risks data for short term

and medium/long term ratings needed to be transformed in order to be used. For this reason, this rating was multiplied by 1.43 to get a homogeneous scale. The new scale would vary from 1.43 to 10.00.

In order to calculate the country risk, the commercial risk needed to be a numeric value. For this reason, this variable needed to be transformed as well, it was assigned a numeric value for A, in this case 3.33, for B, which is 6.67, and for C, which is now 9.9. After the transformation, the outcome was that both of the variables had similar scales thus the country risk was needed to be determined. Therefore, the country risk is the average between the short term, medium long-term political risk and the commercial risk. After this risk is obtained for each country, the formula for the critical value is as follows:

$$CV = X_{pt} - \alpha \sigma_{x,t} \quad \text{Eq (3)}$$

Where:

$X_{pt}$  - is the average value for the indicator in the research

$\alpha$  - this value would be chosen between 0 to 1 by increments 0.001

$\sigma_{x,t}$  - is the standard deviation value for the indicator in the research

Alpha would be a value between 0.001 and 1 in increments of 0.01. The value of alpha applied for each equation was different, since each part of the filter was different. For the first part of the filter was calculated the critical value and was compared with the country risk of each country. After obtaining the list of the countries, then comes phase two of the filter, where it was used the GDP per capita, and the GDP of the countries obtained on the first filter for a period of three years. The critical value was calculated again with the GDP data. After obtaining the critical value, it was compared with the GDP for each country for the period stated. The country will pass the filter if the GDP is greater than the critical value. From the first filter, it was obtained the countries that were the most viable options to export. Then, were compared to the countries that Puerto Rico was exporting its products in order to analyze if Puerto Rico was exporting to those viable options.

## RESEARCH RESULTS AND ANALYSIS

### Descriptive Statistics

For the country risk data set, the mean was calculated, which was 6.07 for the 240 countries. This parameter represents the central tendency of the data set. The mean is commonly used when all values have equivalent roles. Taking under consideration that the mean could be affected by extremes values, in this case, the country risk of Afghanistan, which was the only country with a country risk of 10.0, the median was calculated. The median was of 5.99, which was almost 6.00 and very close to the mean value. With this measure, it could be determined that half of the values are smaller or equal to 5.99 and that the other half of the country risk values were larger or equal to 5.99. Another parameter considered to describe the data was the mode, which is the value that repeats most frequently. For the country risk, the mode was 3.17, which meant that the country risk rank repeated the most was 3.17. Another aspect was the variation and the shape of data, which was obtained with the range, variance and standard deviation. The range was of 7.95, which falls into the category of high country risks. The standard deviation for the country risk is 2.41, which means that the risks are clustering within 2.41 around the mean of 6.07.

### Simple Regression Model Analysis

#### *Simple regression model for all the countries*

First, results from the simple regression analysis are discussed. For this analysis, all countries were taken into consideration. In the first case, the relationship between the exports and country risk was analyzed. The determination coefficient ( $R^2$ ) measures that 5.91% of the variation of exports is explained by the country risk. The p-value obtained was of 0.001754. Since it was less than the alpha of 0.05,  $H_0$  is rejected at a 5% level of confidence. It could be concluded that there is a significant linear relationship between the exports and the country risk. In the second case, the relationship between the exports and GDP was analyzed. The determination coefficient ( $R^2$ ) measures that 0.088% of the variation in exports is explained by the GDP. Since the p-value is 0.707, which is greater than the alpha of 0.05, then  $H_0$  is not rejected at a 5% level of confidence. It could be concluded that there

is not sufficient evidence to determine that there is a linear relationship between exports and GDP. Table 2 summarizes the results.

**Table 2:** Simple regression analysis for all countries

Variables	R <sup>2</sup>	P-value	Decision
Exports vs. Country Risk	5.91%	0.0017	H <sub>0</sub> is rejected
Exports vs. GDP	0.088%	0.707	H <sub>0</sub> is not rejected

$$\text{Estimated exports} = 9848711.6 - 929792.51 \text{country risk} \quad \text{Eq (4)}$$

$$\text{Estimated exports} = 3471707 + 11.11 \text{ GDP} \quad \text{Eq (5)}$$

### Simple regression for countries that P.R. exports to

In the second stage of this analysis, the relationship between the exports and GDP for countries that P.R exports was analyzed. In the first case, the relationship between the exports and country risk was analyzed. The determination coefficient (R<sup>2</sup>) measures that 4.70% of the variation of exports is explained by the country risk. The p-value obtained was of 0.026. Since it was less than the alpha of 0.05, H<sub>0</sub> is rejected at a 5% level of confidence. It could be concluded that there is a significant linear relationship between the exports and the country risk. In the second case, the relationship between the exports and GDP was analyzed. The determination coefficient (R<sup>2</sup>) measures that 0.34% of the variation in exports is explained by the GDP. Since the p-value is 0.55, which is greater than the alpha of 0.05, then H<sub>0</sub> is not rejected at a 5% level of confidence. It could be concluded that there is not sufficient evidence to determine that there is a linear relationship between exports and GDP. Table 3 summarizes the results.

**Table 3:** Simple regression analysis for countries P.R. exports to

Variables	R <sup>2</sup>	P-value	Decision
Exports vs. Country Risk	4.70%	0.026	H <sub>0</sub> is rejected
Exports vs. GDP	0.34%	0.55	H <sub>0</sub> is not rejected

$$\text{Estimated exports} = 11651624 - 961773 \text{ Country risk} \quad \text{Eq (6)}$$

$$\text{Estimated exports} = 5167891 + 37.67 \text{ GDP} \quad \text{Eq (7)}$$

### Results of filter 1: Country risk

Filter 1 of the DSM approach takes under consideration the country risk. The approach was applied to 240 countries, since for these countries we found the data on political risk and commercial risk in the Office Du DuCroire. The Office Du DuCroire provided enough information for the computation of country risk. As mentioned above, these values were transformed in order to calculate the country risk, which in this case represented the average of the political risk and commercial risk. After the country risk was obtained, in order to get the cut-off value or critical value, the average of the countries' risk, the standard deviation and the alpha value of 0.001 were calculated.

The average of the transformed data was 6.07, the standard deviation was 2.41, and the alpha was of 0.001. This alpha value was used since, after the probe process, the result was not significant for the country risk portion of this part of the filter. The critical value obtained was 6.07. This value was compared to the country risk of the 240 countries. The 6.07 represents a low political risk of approximately 3.5 of the scale of 1 to 7 and commercial risk of B which is a medium parameter of the scale of A to C.

Out of the countries that Puerto Rico currently exports to, the lowest country risk found was 2.05. This low country risk shows that these countries are politically and commercially stable, and also have the capability of maintaining satisfactory relationships with other countries. These factors are particularly attractive to potential investors and are good opportunities to export P.R.'s products. When a country has a favorable country risk, it is considered an attractive prospect of investment and favorable to the country that is considering export because these countries do not have political and commercial negative factors that could significantly affect the export country. Countries such as Sweden, Japan, China, and Germany have a country risk of 2.05, which is favorable. A strong government structure and financial status provide a confident argument that supports the will to have relationships with those parties. This parameter should not be the only ones considered before exporting. A country also needs to evaluate the options available and the country risk is only one of the valuable parameters to do so. Table 4 shows the countries with lower risk.

Countries such as Cuba, Venezuela and Haiti had the highest country risk with a 9.46 rating. We would not want those countries owing to P.R., nor would we want to invest resources and efforts trying to get these countries to invest in Puerto Rico. For example, Afghanistan has a country risk of 10.01, which means that the country is not politically or economically stable. P.R.'s decision to invest resources to build a relationship with this country would be of substantial risk, so it should to be analyzed whether the investment is feasible.

**Table 4:** Countries with the lowest risk

Countries with the Lowest Risk			
Country	Country Risk	Country	Country Risk
Austria	2.05	Liechtenstein	2.05
Cyprus (Greek) (South)	2.05	Luxembourg	2.05
Czech Republic	2.05	Malta	2.05
Finland	2.05	New Zealand	2.05
Germany	2.05	Singapore	2.05
Hong Kong (China)	2.05	Sweden	2.05
Japan	2.05	Switzerland	2.05
Korea (South)	2.05	Taiwan	2.05

Appendix 1 provides a list of the countries that Puerto Rico has exported to and is currently exporting to. From the analysis performed in this study, a total of 39 were found to be successful on the first part of the filter and 26 were not successful. Currently, P.R. is exporting to countries with high risk. The appendix also shows the countries to which P.R. is currently exporting with their respective country risk. Is Puerto Rico directing its efforts to export to the correct places? The results of the first phase of the filter are not enough to determine the answer to this question because there is another very important variable to consider, the GDP. From the 26 countries that were eliminated, P.R. made export transaction with 13 of them in 2009. Examples of these countries were Argentina, Dominican Republic, Nicaragua, Syria and Venezuela. After this analysis, these countries were no longer considered on the next filter, since they failed the country risk filter. One of the limitations of this study is countries that were not successful on the first portion of the study were not considered on the second portion of this analysis. If a country failed, it was eliminated because of their high risk, which did not give the opportunity to be considered in the second portion, even though it could have had an opportunity of being successful in GDP per capita and GDP filter.

### **Results of Filter 2: GDP and GDP per Capita**

For the second phase, the filter used the GDP per capita and the GDP of the countries. The GDP per capita indicates the standard living of the countries. The GDP also measures the national accounts and economic shape of a country. For this phase, the data of 81 countries out of the 121 that passed the first part of the filter was used. We specifically used the GDP per capita for 2007, 2008 and 2009. As stated before, the average of GDP for the countries, the standard deviation and an alpha value for each of years was calculated in order to obtain the critical value. Tables 5 and 6 show critical values of GDP per capita and GDP. The value used as alpha was 0.296. This

value was selected because a greater value would have resulted in a constant behavior once critical value calculated. A critical value was calculated for 2007, 2008 and 2009 years, and then it was compared with the GDP per capita for the corresponding years. If this critical value was greater than the GDP per capita, then the country was eliminated. Of the 81 countries considered, 40 countries were successful on this filter for two years or more. Six additional countries were also added to this list mainly because they were successful on the GDP filter but had not been selected with the GDP per capita analysis. Countries such as Canada, France, and Germany, among other that were successful on the final stage of the filter, are great prospects to build relationship and to make further analysis on the feasibility of exporting P.R. products. This analysis helps us determine that is feasible to invest more to expand the trade with those countries.

**Table 5:** Critical Values GDP per Capita

Critical Values GDP per Capita (\$)			
Parameters	2007	2008	2009
Average	29674	32495	28491
Standard deviation	30786	33564	31076
Alpha	0.296	0.296	0.296
CV	20561	22560	19293

**Table 6:** Critical Values GDP (in millions \$)

Critical Values GDP (in millions \$)			
Parameters	2007	2008	2009
Average	6.3186E+11	7.1465E+11	7.6083E+11
Standard deviation	1.7383E+12	1.8485E+12	1.9251E+12
Alpha	0.1	0.1	0.1
CV	4.5803E+11	5.298E+11	5.6832E+11

After obtaining the results of the filter, countries were compared to the current export situation. Countries such as Mexico and Canada were successful on the DSM filter, and P.R. is currently exporting to them, which is a positive result, since P.R. is a territory of the United States and the NAFTA agreement is applicable to this scenario. Emerging markets such as Brazil, China, and India were also successful on the filter, and P.R. currently exports there (Pearson, et al., 2010).

**Table 7:** Countries that Puerto Rico exports to currently and were successful on Filter 1 of the DSM approach

Countries that P.R. currently exports to, and passed filter 1			
Australia	Finland	Japan	Singapore
Austria	France	Korea	Slovenia
Bahrain	Germany	Mexico	Spain
Belgium	Greece	Netherlands	Sweden
Bermuda	Hong Kong SAR, China	New Zealand	Switzerland
Brazil	India	Norway	United Arab Emirates
Canada	Ireland	Portugal	United Kingdom
Cyprus	Israel	Qatar	
Denmark	Italy	Russian Federation	

Out of the 45 countries obtained from the first filter of the DSM approach, P.R. was exporting to 34 of them (see table 7). The other 11 countries were opportunities obtained by this model that have not been taken into consideration by P.R. The government should perform more in depth analysis of Puerto Rico exports to see which

option is more feasible taking under consideration country risk and GDP. They must determine whether export to countries such as Australia, Austria, Finland and the markets of the other countries shown in table 9 or to concentrate the efforts on the countries that P.R. is currently exporting to.

## CONCLUSION, LIMITATION AND RECOMENDATIONS

### Conclusion

Since this field has not been studied in depth in P.R, it is greatly recommended to start focusing in it. Puerto Rico has increased its exports over the last ten years, but it was in 2009 that was observed how the international exports surpassed the international imports, which resulted in a positive trade balance for P.R. This trend continued in 2010. Besides the United States, Puerto Rico has been exporting most of its goods to Germany and Netherlands.

Observing the results obtained from the regression model, it seems that for now it has taken into consideration the country risk of the countries when the export decision in Puerto Rico has been made. Nonetheless, there are other factors that should be taken into consideration, since in the regression analysis for country risk, there was a coefficient of determination around 5%, which meant that there were other factors that affect the exports. A relationship between exports and importer country GDP was not supported with the simple regression analysis model, although several studies concluded the contrary. Puerto Rico should look into markets where country risk is low, and GDP is high. After performing the first filter of the DSM approach, it could be observed that out of the 200 countries that P.R was currently exporting their products to, 34 countries were successful on the DSM approach. Among the successful countries on the first filter from the DSM were destinations such as Brazil, India and China. These were identified as the upcoming power countries in the world in the *Identifying export opportunities for South Africa in the southern engines: A DSM approach* article (Pearson et al., 2010). On the other hand, it also exports to the countries that have greater country risk and lower GDP, such as Afghanistan, Cambodia and Iraq. New opportunities were identified with the DSM. These included countries such as Andorra, Faeroe Island, Greenland, Iceland, Kuwait, Liechtenstein, Luxemburg, Macao SAR, China, San Marino and Monaco. With this, it could be determined that there is no direction on the destination of P.R.'s exports or the exporters were willing to take on the risk and export to these countries that were not feasible markets.

Since the field on Puerto Rico exports has not been studied in depth it is advisable to develop a research track and promote the creation of an export promotion policy focused on the international market selection. An example of this is how the Belgian government export promotion institution to obtain realistic opportunities used the DSM approach. They deployed resources to those opportunities and were successful (Steenkamp, E., Rossouw, R., Viviers, W., & Cuyvers, L., 2009). The results from a model such as the DSM approach help managers determine where it is more feasible and optimal to export their products. This will also help the operation managers from the companies take the correct decisions when it comes to the production and specification of the product. It is pertinent to note, though, that even though models like these are useful, the decisions should not be based on models like this alone.

### Limitations

All research has its limitations, and this one is not an exception. The DSM is a complicated model created by Ludo Cuyvers that has previously been used to study countries such as Thailand, Belgium and South Africa (L. Cuyvers et al., 1995; L. Cuyvers, Viviers, & Steenkamp, 2011; Ludo Cuyvers, 2004; Pearson et al., 2010; Steenkamp, Rossouw, Viviers, & Cuyvers, 2009). Its main complication is the amount of data required for each filter. Although at the beginning of the research process the author wanted to use all filters, lack of available data limited the research scope. Even with this scope limitation, the study provides an valuable contribution to operation managers and export promotion public officials that are in charge of determining which countries to start evaluating and on which countries they should focus their organizations' limited resources. Although export of services is an important sector in international trade and industry in Puerto Rico's GDP, information is not easily available. For this study, services exported were not used because export of service statistics are not standardized (Suranovic, 2010). Every model used is substantially different thus providing different results. Another limitation is that the DSM approach has to be updated every year, since it is particularly important to have the current GDP and country risk so the results are accurate. For example, Greece turned out to be one of the countries that were successful on the filter, but currently

Greece has some political and financial struggles, which means that it is not a feasible opportunity. This study used data from 2009, which was the most recent data available at the time.

## Recommendations and Future Studies

In the course of this research, there were found some areas of opportunities on this field. First of all, research should be performed by government entities, such as Puerto Rico Trade, Planning Board, or private firms, to study the trade field in Puerto Rico. This would be beneficial because there would be concrete data supporting the exporting decisions without these being arbitrary. Similarly, educational programs should be established to help and direct exporters so these businesses can make correct decisions when it comes to exporting their products to other countries. Also, P.R. trade data should be more readily available and easy to access so that more studies can be made on this field. Finally, create a system that promotes export in an intelligent and coherent way that is supported by studies and findings of the feasibility of trade with the countries. These initiatives would help improve the quality in the export process which eventually will lead to optimize the economic growth. While performing this research, it was found that there had not been many studies that investigated Puerto Rican trade. This may be primarily due to the complexity of the topic. Further studies may include: (1) Completing the 3 filters of the DSM approach; (2) Analyzing countries that P.R. exports to and distances to different countries; (3) Studying the correlation between exports and distances to different countries. Studies in this field will help improve the export activity in Puerto Rico by providing additional insight on other factors that could have an effect on the decisions made by Puerto Rico exporters. Since this field has not been fully studied this research was a starting point to better comprehend the export activity in Puerto Rico and open doors to other related studies.

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**APPENDIX****Countries that Puerto Rico is currently exporting their goods with the country risk ratings**

Countries PR currently exports	Country Risk successful filter 1	Country Risk not successful filter 1	Last transactions	
Albania		8.04		2009
Anguilla		8.52		2002
Antigua and Barbuda		8.52		2009
Argentina		8.51		2009
Aruba	4.1		2009	
Bahamas	4.58		2006	
Barbados	5.08		2009	
Belgium	3.17		2008	
Brazil	5.69		2008	
British Virgin Islands	4.11		2009	
Burundi		9.46		2007
Canada	3.17		2009	
Chile	2.52		2009	
China People's Rep (Mainland)	4.74		2009	
Colombia	5.68		2006	
Costa Rica	4.58		2008	
Cuba		9.46		2004
Dominica		8.04		2009
Dominican Republic		6.46		2009
East Timor		8.99		2001
Ecuador		8.98		2007
France	3.17		2009	
Georgia		7.56		2002
Germany	2.05		2009	
Greece	4.28		2009	
Grenada		8.04		2009
Guadeloupe	3.63		2008	
Guatemala		6.62		2007
Guyana		7.56		2004
Haiti		9.46		2009
Honduras		8.04		2004
Hong Kong	2.05		2002	
Indonesia		6.15		2005
Israel	3.94		2008	
Italy	4.28		2009	
Jamaica		7.56		2007
Japan	2.05		2009	
Kenya		8.04		2001
Korea Rep ( south Korea)	2.05		2004	
Kuwait	4.11		2001	
Malaysia	2.52		2008	
Mexico	5.21		2009	
Montserrat		7.40		2009
Namibia	4.1		2009	
Netherland Antil EXC Aruba	5.51		2009	
Netherlands	3.7		2009	
Nicaragua		8.51		2009
Niger		8.51		2007
Panama	4.58		2009	
Peru	4.1		2005	
Philippines	4.57		2000	
Russia	5.69		2004	
Saint Kitts and Nevis		8.04		2009
Saint Lucia		8.51		2009
Saint Vincent and Grenadines		8.05		2009
Singapore	2.05		2004	
Slovenia	4.28		2005	
South Africa	5.05		2006	
Spain	3.17		2009	
Sweden	2.05		2004	
Switzerland	2.05		2007	
Syria		8.98		2004
Thailand	4.58		2001	
Trinidad and Tobago	3.63		2009	
Turks and Caicos islands	4.11		2006	
United Kingdom of Great Britain	3.17		2009	
Venezuela		8.98		2009
<b>Total</b>	<b>39</b>	<b>26</b>		

# SALES ENGINEERS IMPACT ON NEW PRODUCT DEVELOPMENT

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## ABSTRACT

*Most engineers have dabbled in design work, and many have focused upon the analytics behind the designs, but many have spent their time unfulfilled and unsatisfied in their position. Fortunately, there have existed a multitude of alternatives for the willing, for those of strong character, and especially for those persons with strong manufacturing experience. One of the more lucrative, yet equally challenging opportunities has been sales engineering, a position that demands hard work, dedication, and consultative communication with an equally savvy client-base. This study has examined the contribution and value that sales engineers have offered, particularly when directly connected to the new product development process. The connection between sales engineers' abilities to have helped design, taught, coached, and sold new and/or recently developed products have long been ignored.*

**Keywords:** *Engineering Sales & New Product Development.*

## PURPOSE

The purpose of this study was to analyze the distinct role of sales engineers coming out of manufacturing and their professional selling impact towards the new product development process. This study has developed an understand the relationship between sales engineers, with previous manufacturing experience, as well as linked the selling and servicing of the entire new product development process.

## INTRODUCTION

Businesses have been growing faster than ever through successful NPD processes. Some examples of world leaders in their industries were Hewlett-Packard, Motorola and Honda. Companies such as the three mentioned recognized the challenge of using the best industry practices and incorporated these into their NPD processes. Studies have shown that successfully implementing best practices into the NPD processes companies could expect higher success rates in their NPD programs, became market leaders in their industries and had higher than average financial success from NPD (Strokosz, 2002). The challenge was to understand what these best practices were and then successfully implementing those skill sets and programs. The differentiation between 'The Best' and 'The Rest' was based not on how many projects the company had in their pipelines or how fast they were delivered to the market, but how well the projects were defined and executed (Strokosz) The multifunctional nature of new product development coupled with the desire for parallel processing would mean that a team approach was mandatory in order to have won at the new product game (Strokosz). Refer to **Table 1** for an abbreviated look at manufacturing in the key states of the United States and then begin to realize the potential broad-based impact of sales engineers.

**Table 1: Manufacturing in American Key Sectors, as of 2007**

	<u>Number of Establishments</u>	<u>Value of Shipments (\$1000)</u>	<u>Value of Shipment (% of U.S.)</u>	<u>Value of Shipment (per capita)</u>	<u>Annual Payroll (\$1000)</u>	<u>Number of Paid Employees</u>
United States	332,536	5,319,456,312	100.00	17,639	613,768,568	13,395,670
Texas	21,115	593,541,502	11.16	24,899	42,835,696	893,842
California	44,296	491,372,092	9.24	13,564	71,247,252	1,448,485
Ohio	16,237	295,890,890	5.56	25,683	35,485,469	760,267
Illinois	15,704	257,760,713	4.85	20,170	31,715,855	663,586
Pennsylvania	15,406	234,840,418	4.41	18,753	29,432,993	650,804
Michigan	13,675	234,455,768	4.41	23,327	29,910,293	581,739
Indiana	9,015	221,877,814	4.17	34,963	24,474,736	536,907
North Carolina	10,150	205,867,299	3.87	22,712	19,589,810	506,013
Louisiana	3,442	205,054,723	3.85	46,858	7,564,510	148,080
Wisconsin	9,659	163,563,195	3.07	29,200	21,850,295	487,573
New York	18,629	162,720,173	3.06	8,378	24,268,000	533,835
Georgia	8,699	144,280,774	2.71	15,134	16,128,116	411,158
Tennessee	6,752	140,447,760	2.64	22,752	15,165,567	369,165
Kentucky	4,165	119,105,421	2.24	27,983	10,773,228	247,096
New Jersey	9,250	116,608,094	2.19	13,502	16,399,320	310,606

Naics31-33 manufacturing. *Industry statistics sampler*. Retrieved April, 24, 2012, from <http://www.census.gov/econ/industry/geo/g31-33.htm>.

The new product development (NPD) process has been a complex and, at times, tedious multistage process. The process traditional began with the idea generation phase focused the construction of a product that would have met, if not exceeded the clients' need. Specific requirements, sometimes actually haven been defined by customers and with the on-going close communication and support of the engineering design team. In the second phase, it would likely have been the case that even the manufacturing of the product was under close scrutiny of the design engineers. The third phase would have been the prototype product being offered to specific clients as either alpha or beta testing, again under the close supervision of the both the manufacturing representative and the lead engineer. The fourth and final phase was when the product was launched to the market. Interesting, this final phase may or may have the direct involvement of the engineering staff. Yet, more and more companies have realized that their sales success may have been enhanced, if not substantially improved, if the selling effort were well supported, possibly even direct by design engineers or lead engineers.

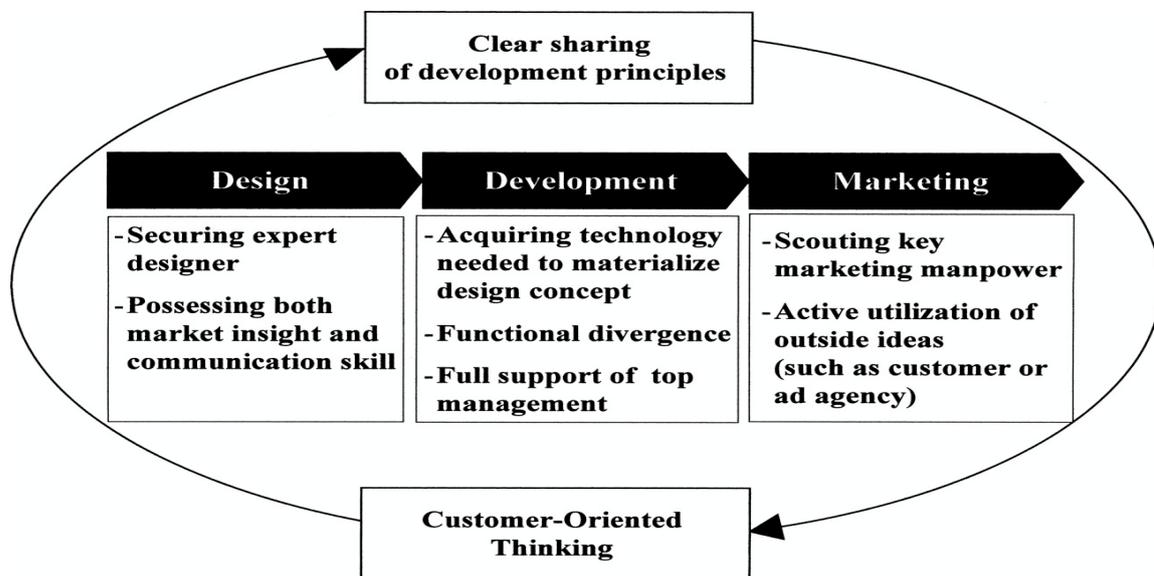
Manufacturing representatives can often debate strategies of the availability of required resources, along with considerations of the existing production mix. Manufacturing perspective could prompt questions about features that have little product performance impact, but that may have significant manufacturability impact. Along with customer feedback, such manufacturing considerations should have been employed in the prioritization of specific product options. View **Table-2** for a snap shot of NDP success characteristics.

**Table-2: Top Ten Drivers for New Product Success**

1-	Dedicated R & D (Firm strategy characteristics)
2-	Technological Sophistication (Product characteristics)
3-	Launch Proficiency (Firm process characteristics)
4-	Market Potential (Market characteristics)
5-	Structured Approach (Firm strategy characteristics)
6-	Senior Management Support (Firm process characteristics)
7-	Cross-functional Communication (Firm process characteristics)
8-	Cross-functional Integration (Firm process characteristics)
9-	Likelihood of Competitive Response (Market characteristics)
10-	Competitive Response Intensity (Market characteristics)

Vijayan, K., & Suresh, J. (2011). *The variables that influence new product success*. *Advances in Management*, 3(10), 26-32.

Marketers and manufacturer integration however seemingly beneficial on the surface, have often times fallen short of needed goals and objectives due to the difficulty of cross functional technical communication. What might look good from the marketer’s standpoint would cost significant more time and funds to manufacture. Of course the opposite would also be true, yet, in many situations, neither side would have been able to resolve the issues because of the communication gap. Even if both sides had somehow come to an agreement on the product design, the actual manufacturing may meet neither time-to-delivery, nor cost-to-price requirements of the marketing department. The logical resolution, if available, would have likely been the support of the design or lead engineer who has learned to communicated to and from both sides of the table. **Chart 1** presents the development principles of today’s manufacturers:



**Chart 1:** Manufacturing Development Principles

Jang, S., Yoon, Y., Lee, I., & Kim, J. (2009). Design-oriented new product development. *Research Technology Management*, 36-46.

Sales engineers have been either classically trained engineers (mechanical, electrical, software, etc.) or individuals that have amassed highly proficient technical skills (Black, 1979; Greenwald & Milbery, 2001), the resource was difficult to duplicate given the technical background required and the product-specific knowledge that was unique to a firm. Information effectiveness has been defined as the value of available information for working with and gaining commitment from customers (Hunter & Perrault, 2006). For salespeople to be successful, they needed to be able to convert large amounts of available data into information that could be used efficiently toward developing solutions that balance sales objectives, customer needs, and technical requirements (Hunter et.al.).

Sales engineers would need to have been able to work across different business functions, and interact with many different individuals along the NPD process. Sales engineers would have had to develop the job skills that required not only significant hard work ethics but also the knowledge requirement of exceptional human intervention (Levy, 2009). According to Dr. Levy in his research, ...there has been nothing more satisfying than seeing the product you designed used in the real world, and being able to teach and coach about this product (Levy). In some cases, highly motivated and skilled engineers have transferred their careers from manufacturing to sales engineering, which combined exceptional product technical knowledge with effective people skills. These uniquely skilled persons remain licensed and qualified engineers, but now capable of assisting in product design needs to specific customer requirements, while additional understanding the intricate details and complexity of the product fundamentals, features and functions. Manufacturing companies with skilled sales engineering staff would have been able to effectively source market information, improve product acceptance, &/or learn what new features might be needed (Levy). With all of the seemingly beneficial value of incorporating sales engineers into the industrial fray, of course, the two most important questions would likely have been: 1) Would have been worth the higher cost to utilize these persons in a selling function; and 2) what add-value benefit would the customers experience... enough to have made it worthwhile? Consider the information provided in **TABLE-3**, which designed a general profile of sales engineers for this present job market era.

**Table 3: Sales Engineers Typical Job Profile**

<b>Skill Sets</b>
<ul style="list-style-type: none"> <li>* Performing and writing validations of products, processes, and equipment in accordance with FDA and ISO guidelines</li> <li>* Designing, executing, and analyzing experiments based on statistical techniques</li> <li>* Developing, troubleshooting, and refining medical-device manufacturing processes and equipment</li> <li>* Conceptualizing and instituting improvements to medical products and their manufacturability</li> <li>* Evaluating proposed improvements to processes and products based on analyses of regulatory requirements, product-quality needs, ergonomics, safety, environmental requirements, and economics</li> <li>* Driving efficient scale-up of manufacturing processes</li> <li>* Developing and carrying out performance tests on devices to characterize and document their safety</li> <li>* Designing, building, and testing prototypes</li> <li>* Documenting work via reports, technology notebooks, and design file entries</li> <li>* Modeling the effects of the physiological environment on medical devices</li> <li>* Writing procedures and training and assisting technical associates</li> </ul>
<b>Required Job Qualifications</b>
<ul style="list-style-type: none"> <li>* Bachelor's degree in science or engineering, OR at least 5 years' experience in an engineering capacity in the medical-device or pharmaceutical industry</li> <li>* Solid knowledge of engineering fundamentals and ability to apply this knowledge to manufacturing and product design</li> <li>* Knowledge of the fundamentals of statistics</li> <li>* Working understanding of GMP and ISO 9000 requirements</li> <li>* A work style of hands-on involvement with all phases of projects</li> <li>* Demonstrated ability to prioritize, initiate, and drive projects to completion</li> <li>* Ability to work effectively in team situations as well as independently</li> <li>* Demonstrated excellent written and oral communication and presentation skills</li> <li>* Ability to network and interact effectively with a broad range of associates spanning varied disciplines and responsibilities</li> </ul>

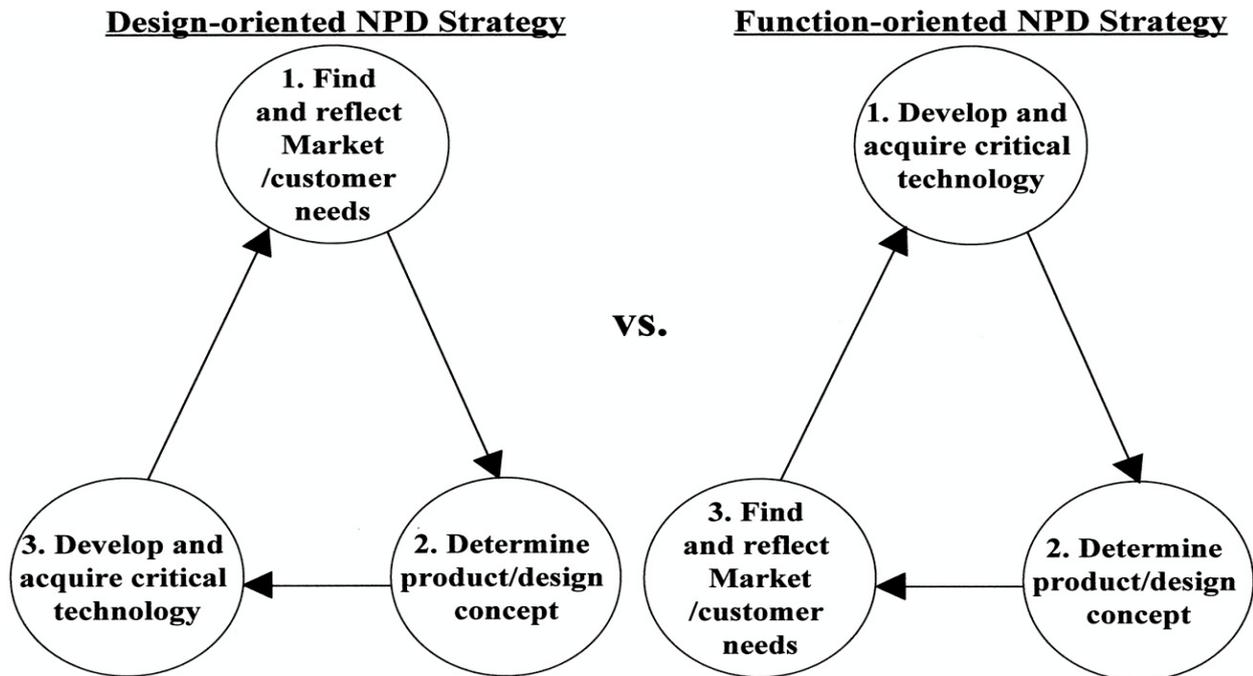
## FROM DESIGN ENGINEERING TO SALES ENGINEERING

Engineering has been defined as a design-based systematic intelligent process by which designers' generated, evaluated specify concepts for devices, systems, or processes whose form and function achieved clients' objectives &/or users' need(s), while having satisfied a specified set of technical constraints (Dym, 2005). Sales engineers specifically have coached and taught clients on how to use these devices or systems. The steps performed in a design problem have included:

- ✓ Defining the problem,
- ✓ Gathering relevant information,
- ✓ Generating multiple solutions,
- ✓ Analyzing and testing the solutions, and finally,
- ✓ Implementing the solution (Kindi, 2010).

However, these steps were not universal for all types of engineering. The engineering design process have been summarized in two steps: (1) determine all possible design options; and (2) select the best one, considering alternatives and potential modification factors (Hazelrigg, 1998). Determining the necessary task and decision based design has been absolutely crucial in engineering. Decision-based design (DBD) was an approach towards engineering design that recognized the substantial role that decisions played in the design along with other engineering activities, largely characterized by ambiguity, uncertainty, risk, and trade-offs (Kindi). Through the rigorous application of mathematical principles, DBD has sought to improve the degree to which these activities were performed and taught as rational, self-consistent processes (Chen, 2006). Sales engineers work with the production, engineering, or research and development departments of their companies, or with independent sales firms, to determine how products and services could be designed or modified to suit customers' needs. They also may advise customers on how best to use the products or services provided (Wilson & Hunt, 2011).

**Chart-2** has shown the design oriented and function oriented NPD strategies:



**Chart 2:**      *Designed & Function Oriented NPD Strategies*

*Jang, S., Yoon, Y., Lee, I., & Kim, J. (2009). Design-oriented new product development. Research Technology Management, 36-46*

Engineers must have been able to have dealt with different resources, time management, product & marketing strategies, as well as having been able to have made the correct decision(s). Engineers have made many decisions related to various aspects of engineering design, such as manufacturing methods, materials, cost, quality and maintainability, and rigorous testing processes (Kindi). As such engineers, specifically sales engineers that coach and teach clients, with previous manufacturing knowledge would have been great assets in NPD decision making programs. It was clearly recognized that ‘uncertainty’ was one of the constant challenge in engineering. Fortunately, many studies have implemented various methods to incorporate uncertainty into the design decision-making process, such as utility theory and probabilistic design (Thurston, 1990); (Hazelrigg, 1998, 2003); (Fernández et. al. 2001); ( Scott, 2004); ( Aughenbaugh & Paredis, 2006); ( Abbas & Matheson, 2005).

The aggressive nature of competition in today’s markets has made manufacturing and product development a central point of interest, and the most benefit goes to companies that were able to efficiently introduce products (price & performance) into the market (Kindi, 2010). Past literature in manufacturing decisions has distinguished between manufacturing strategic decision categories and structural or infrastructural classifications (Hayes & Wheelwright, 1985). This also hinted that prior manufacturing knowledge could have potentially led individuals, such as sales engineers, to not clearly have seen the big picture in the NPD. The product development (PD) process has been generally sequence in constructs, including all the essential tasks that a firm must have performed to develop, manufacture and sell its product(s) (Ulrich & Eppinger, 2004). These tasks included:

- Marketing research (in which customer needs were identified and product attributes specified);
- System design (which included product architecture definition, subsystem identification and interfaces);
- Engineering design (also referred to as detailed design, including fully specified product dimensions, tolerances, and materials);
- Prototyping (which includes product validation and testing);
- Manufacturing planning (which includes process design for ramp-up and full production); and
- A large number of suppliers (supply chain design) (Kindi).

Individuals from manufacturing would have been considered great candidates for sales engineers because of their knowledge of the product from the manufacturing processes. These individuals would bring considerable knowledge, skills, and improvements to the sales engineering departments. Combine these assets with the perseverance, self-motivation, and outgoing personality you have the full package of a successful sales engineer

(Levy, 2009). Sales engineers have tended to employ selling techniques that were different from those used by most other sales workers. They generally have employed a “consultative” style; that have focused on the client’s problem and shown how it could have been solved or mitigated with their product or service. This selling style has, in general, differed from the ‘*benefits and features*’ method, whereby the salesperson described the product and left the customer to decide how it would have been useful (Wilson & Hunt, 2011).

Marketing capability was critical to a technical product’s success (Dutta et al., 1999). Therefore, product knowledge was critical to the sales engineer’s effectiveness. Since sales engineers were either classically trained engineers (mechanical, electrical, software, etc.) or individuals that had amassed highly proficient technical skills (Black, 1979); (Greenwald & Milbery, 2001), the resource was difficult to duplicate given the technical background required and the product-specific knowledge that was unique to a firm.

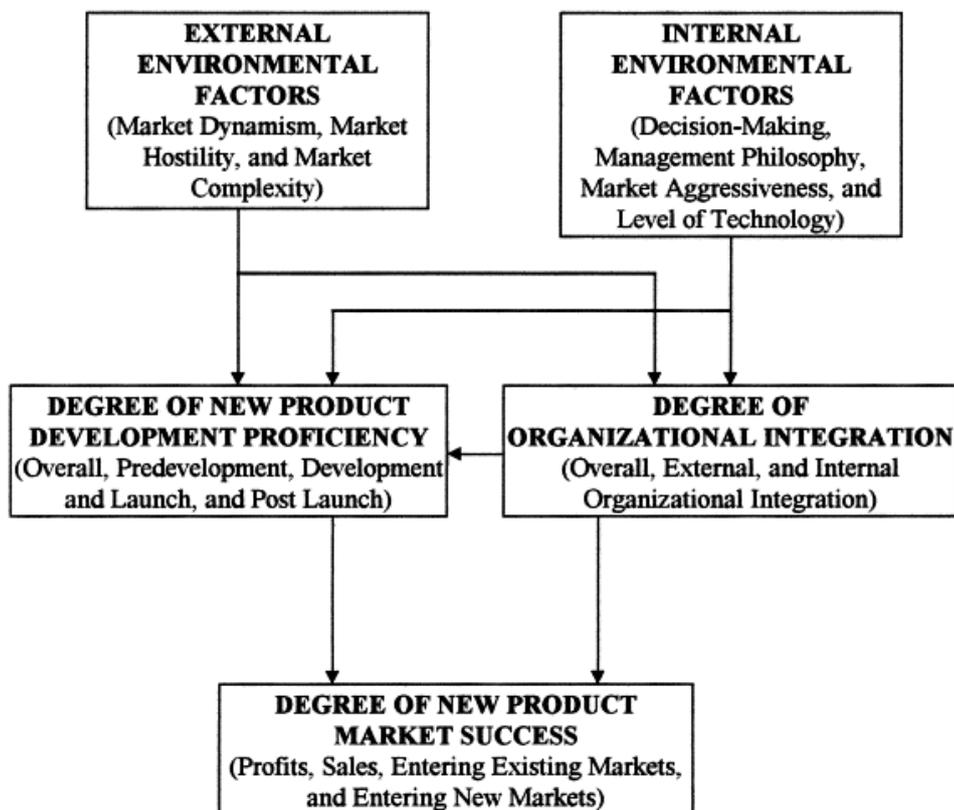
## NEW PRODUCT DEVELOPMENT AND SALES ENGINEERING

It was deemed vital to have understood terms and concepts that would have helped determine the impact of sales engineers on NPD. Productivity in NPD was simply measured as output over input (Cooper & Edgett, 2008). Most measurement methods for NPD were to employ forms of financial metrics (Rogers, 2005). The reason financial metrics were common was that mature companies needed organic growth in the range of 4% to 6% each year to maintain a good level of market capitalization (Huston & Sakkab, 2006). The need to have provided year over year growth drove companies to come up with new strategies while having added more skilled individuals to the process. There were many factors that contributed to NPD productivity (Lettice, 2006). The measures were compiled into six dimensions:

- Stakeholder contributions,
- Invention,
- Operating context,
- Exploitation, Reuse, and
- NPD productivity (Lettice).

It was important to approach new product development in a “structured manner because these are more successful than those with an ad-hoc approach, and emphasizing early stages, have a higher chance of success than those not doing so (Wheelwright & Clark, 1992).

Concurrent engineering has referred to a development process where the product and manufacturing processes are developed at the same time (Boyle, Kumar, & Kumar, 2005). New product development has referred to a controlled formal process of product development that assured every aspect of a project was completed (Samra, 2008). NPD tollgate process was a generic term for the method of product development that defines specific deliverables in each stage of the new product development process (Cooper & Edgett, 2008). The voice of the customer was a process of capturing customer requirements and included them in a new product development (Alam, 2005). Team member experience was the background of each team member including functional diversity, competence diversity, team member familiarity, understanding of customers, understanding of competitors, and understanding of technology (Haon, Gotteland, & Fornerino, 2008) and (Haon, 2008). NPD productivity has been the performance of a new product measured as a function of the effort required to develop the product (Cooper et.al.). There were many issues that affect NPD productivity, and it was necessary to have understood in grappling with the impact of those issues that had on firms’ overall performance and return on investment. **CHART-3** has presented the impact of organizational integration and product development proficiency on market success:



**Chart 3:** *The impact of organizational integration & product development proficiency on market success*

Millson, M. R., Wilemon, D. (2001). *The impact of organizational integration and product development proficiency on market success. Industrial marketing management, vol.31, pp.1-23.*

The main function of business including NPD, was to have maximized return on investment; therefore it was important to have understood the specific relationships that could have made NPD more productive (Erhardt & Brigham, 2006); (Holmes, 2011). Unfortunately, productivity in NPD has been declining over the past few years (Cooper et.al.). The productivity decline has been important to a business because NPD productivity has greatly affected the profitability of the firm. For management to have improved productivity, it would have been necessary to have understood the factors that contributed to NPD productivity (Cooper & Kleinschmid, 2007); (Holmes, 2011). No definitive research has been found that provided specific results that might have been used by managers to improve NPD efficiency in their organization. It was of the utmost importance to determine new strategies; new ways that could have assisted in improve productivity as well as the overall process of product development.

A study conducted in 2011, offered new thought on the issues and suggested valuable information towards the determination of whether sales engineers, with manufacturing background, could offer a positive impact on the NPD and assist companies to have determined which necessary changes would need to have been made (J. Holmes, 2011). According to the study, an issue that was often cited in NPD was the lack of manufacturing engagement early in the process (Seven principles of innovation: A lack of focus, 2007). Appropriate management of cross functional teams should have mitigated the issue of manufacturing engagement. Boeing Company developed a C-17 aircraft using a team that included production, planning, design engineering, information systems, and planning (Robbins & Judge, 2007). Concurrent engineering, which incorporated product and design of manufacturing, includes the use of cross functional teams to facilitate both the manufacturing and design disciplines (Boyle, 2005). A key success factor in NPD productivity for Boeing was having team member experienced and cross functional team designs.

## LITERATURE REVIEW

Presented in **APPENDIX-A**

## METHODOLOGY

Research statement: An empirical study designed and focused upon sales engineers, commonly previous manufacturing knowledge/background, which was qualified to assist in applying new product(s) to the customers' requirements through technological knowledge-based communication skill sets.

The study has directed its attention towards the impact of these sales engineers have on NPD within a manufacturing setting located within the United States. The fundamental research questions were: 1- Do sales engineers coming out of manufacturing have a positive impact on the new product development process; 2- Do sales engineers coming out of manufacturing cause conflict with other engineers, and individuals involved; and 3- To what extent do sales engineers influence the new product development process? The hypotheses for this project were:

## HYPOTHESES

### **Sales Engineers-**

- H1. Sales engineers coming out of manufacturing do have a positive impact on the new product development process*
- H2. Sales engineers coming out of manufacturing would smooth out the communication process and simplify the understanding with other engineers, and other individuals involved in NPD.*
- H3. Sales engineers can highly influence the new product development process.*

### **Sales Engineering versus Traditional Sales Persons**

- H4a. Which typology would be best in terms of customer technical support?*
- H4b. Which typology would be best during on-going general customer support?*
- H4c. Which typology would be best for client training for a new product?*
- H4d. Which typology would offer more technical support in NPD?*
- H4e. Which typology would be best at offering customer sensitivity support regarding NPD?*
- H4f. Which typology would be best at critical decision making on NPD projects?*
- H4g. Which typology would be best during idea creation in NPD?*
- H4h. Sales engineer's impact on concept of new product development?*
- H4i. Sales engineer's impact during predevelopment NPD stage?*
- H4j. Which typology would be best during the marketing product life cycle?*
- H4k. Which typology would be best during NPD market opportunity?*
- H4l. Which typology would you trust the most?*
- H4m. Which typology would be best on cost saving during NPD?*
- H4n. Which typology would be best working together with marketers?*
- H4o. Which typology would be best working together with R&D?*

### **New Product Development (NPD)**

**H5a.** One of the most important assets of businesses would be its NEW PRODUCT DEVELOPMENT.

**H5b.** SALES ENGINEERS would be able to sustain that life-blood of NEW PRODUCT DEVELOPMENT.

**H5c.** SALES ENGINEERS employed in such capacities with your firm.

- Working in the capacity of designing new products.
- Working the capacity of liaison.
- Matrix management between R&D and manufacturing.
- Working in the capacity of liaison between marketing and manufacturing.
- Working in the capacity of liaison between manufacturing and clientele

An in-depth survey was created from the Hypotheses and presented to clients of manufacturing firms to determine their perspectives on the use and value of sales engineers.

## **RESEARCH LIMITATIONS AND FUTURE RESEARCH**

### **ANALYSIS, RESULTS AND FINDINGS**

Will be provided upon completion of the research.

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## APPENDIX-A: LITERATURE REVIEW

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## **APPENDIX-B SURVEY**

This survey will analyze the ethical practices of sales engineers in the United States. This survey is being administered by Dr. J.D. Williams, college professor and three student researchers from Kutztown University. We thank you for participation in this survey. Your participation in this study is voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw, simply do not complete the survey. By completing the survey you are consenting to participate in the study and that you are 18 years of age or older. All information from this survey will be handled in a confidential manner, so no one will be able to identify you when results are reported. This questionnaire was reviewed and approved for distribution by K.U.'s I.R.B on \_\_\_\_\_.

Please check the number that best relates to your business situation.

### **Screening Questions**

- SC-1. Are you at least 18 years of age?
- SC-2. Are you presently working for a business within the U.S.?
- SC-3. Are you aware, in general terms, of the functions and responsibilities of a SALES ENGINEER?
- SC-4. Are you aware of the relationship of SALES ENGINEEERS in NEW PRODUCT DEVELOPMENT and CUSTOMER SALES?

[The role of a sales engineer (commonly called manufacturing reps) is defined as being complex with many different components that go into their work. A sales engineer's work consists of: participating in product formation and development, assist in presale technical support, attend trade shows and conferences, make sales calls, proposals, and post sales follow up visits.]

### **Sales Engineering (SE) versus Traditional Sales Persons (TSP) Questions**

#### **1. Which typology would be best in terms of customer technical support?**

TPS    2        3        4        5        6        SE

#### **2. Which typology would be best during on-going general customer support?**

TPS    2        3        4        5        6        SE

#### **3. Which typology would be best for client training for a new product?**

TPS    2        3        4        5        6        SE

#### **4. Which typology would offer more technical support in NPD?**

TPS    2        3        4        5        6        SE

#### **5. Which typology would be best at offering customer sensitivity support regarding NPD?**

TPS    2        3        4        5        6        SE

#### **6. Which typology would be best at critical decision making on NPD projects?**

TPS    2        3        4        5        6        SE

#### **7. Which typology would best during idea creation in NPD?**

TPS    2        3        4        5        6        SE

#### **8. Sales engineer's impact on concept of new product development?**

TPS    2        3        4        5        6        SE

#### **9. Sales engineer's impact during predevelopment NPD stage?**

TPS    2        3        4        5        6        SE

#### **10. Which typology would be best during the marketing product life cycle?**

TPS    2        3        4        5        6        SE

#### **11. Which typology would be best during NPD market opportunity?**

TPS    2        3        4        5        6        SE

**12. Which typology would you trust the most?**

TPS    2        3        4        5        6        SE

**13. Which typology would be best on cost saving during NPD?**

TPS    2        3        4        5        6        SE

**14. Which typology would be best working together with marketers?**

TPS    2        3        4        5        6        SE

**15. Which typology would be best working together with R&D?**

TPS    2        3        4        5        6        SE

**New Product Development (NPD) Questions**

The survey authors recognize that the life-blood of organizations is its people's vision, creativity, and managerial processes. Yet it can be said that the assets of firms are its product, process, vertical-integrated marketing relations, and its clientele.

[Scaled Response (Not at all 2 3 4 5 6 To a Great Extent)]

**16. Would you feel that one of the most important assets of businesses would be its NEW PRODUCT DEVELOPMENT?**

**17. Do you believe that SALES ENGINEERS would be able to sustain that life-blood of NEW PRODUCT DEVELOPMENT?**

**18. Do you have SALES ENGINEERS employed in such capacities with your firm?**

- a) Working in the capacity of designing new products?
- b) Working the capacity of liaison or matrix management between R&D and manufacturing?
- c) Working in the capacity of liaison between marketing and manufacturing?
- d) Working in the capacity of liaison between manufacturing and clientele?

**19. Thank you very much for completing this questionnaire. As an appreciation for your support, we plan to offer you a copy of our manuscript, when published. OPTIONAL: Please present your email address below, if you wish a copy of our manuscript**

\_\_\_\_\_.

# THE RELATIONSHIP BETWEEN THE TYPE OF ENDORSER AND PATIENTS' ATTITUDES AND BEHAVIORS IN DIRECT TO CONSUMER ADVERTISEMENT

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## ABSTRACT

*Spending on direct-to-consumer advertisement of prescription drugs has grown exponentially in the last two decades, Celebrities, experts and consumers were used to endorse drugs in some of the most successful ads designed to convince the public to request the product. In this study, patients at an allergy clinic were exposed one of 4 random ads for a fictitious prescription allergy medication, each with a different type of endorser. Patients were surveyed on their attitude toward the drug in the ad, their likelihood of asking the doctor for more information about the drug in the ad, and their likelihood of asking the doctor to prescribe the drug in the ad. Findings revealed no significance differences in responses toward the prescription allergy medication print ad based on endorser type and therefore did not confirm the theory of endorser effectiveness; however, the lack of difference in responses should make marketers rethink how they spend their money, for if high-priced celebrities are no more effective than ordinary consumers, their value may be overrated.*

**Keywords:** Endorsements, Direct-To-Consumer, Advertisements, DTCA, Prescription Drugs.

## RESEARCH OBJECTIVES

The purpose of this study is to identify whether there were differences in responses toward a prescription drug ad based on endorser type. While there have been many studies that have evaluated the effectiveness of different types of endorsers on different types of products, none of them have specifically evaluated if such a difference existed when using an ad that promoted a prescription drug. As more and more pharmaceutical companies use different types of endorsers, it is imperative to understand how consumers react to them, and if it is worth the cost to pay for celebrities or experts to help sell prescription drugs

## METHODOLOGY

The study identified whether there was a difference in responses toward a prescription drug ad based on endorser type. The independent variables were the different types of endorsers (expert, celebrity, and typical consumer) and the control group. The dependent variables were attitudes toward the ad, attitudes toward the allergy drug in the ad, intentions to ask a doctor for more information about the advertised allergy drug, and intentions to ask a doctor to prescribe the advertised allergy drug. The research questions investigated are: (1) Is there a relationship between the type of endorsement used in a prescription drug ad and ones attitudes toward the ads? (2) Is there a relationship between the type of endorsement used in a prescription drug ad and ones attitude toward the advertised drug? (3) Is there a relationship between the type of endorsement used in a prescription drug ad and ones likelihood of asking their physician for more information about the drug in the ad? (4) Is there a relationship between the type of endorsement used in the prescription drug ad and ones likelihood of asking their physician to prescribe the drug in ad?

The target population of this study was adult patients of an allergy and asthma clinic in the southern U.S. where most patients visited for their regular allergy check up or for regular allergy shots. As allergies are the 6th most chronic disease in the U.S. affecting 1 out of 2 Americans, the sampling frame was likely to include a diverse group of patients from different age brackets, ethnicities, educational backgrounds and genders. Also, allergies are one of the few afflictions that people are not embarrassed to discuss, as they don't carry stereotypes, so the likelihood for dishonest responses is minimal. And lastly, allergy patients are known to constantly look for better ways to treat their lifelong affliction, so reading an ad for a new drug would not be unusual.

As there were four different ads (one with a celebrity endorsement, one with an expert endorsement, one with a typical consumer and one without an endorsement), a stack of ads were placed in the waiting room throughout the data collection period, alternating between the four ads (with every 4th ad repeating). Thus patients were randomly assigned to each of the four groups. As adult patients walked into the clinic (no children were considered), the receptionist screened out those who were there for a check-up or a shot and directed them to speak with the researcher for possible participation in a study regarding allergy medication. Once approved, the researcher directed the patient to take and read an ad from the stack. A total of 203 patients participated (approximately 51 per ad), and each patient was asked to complete a survey prior to or following their allergy shot / check-up. The survey was anonymous and asked no medical or personal questions. In order to capture genuine attitudes toward prescription ads, the patients were not told that the ads were fictitious until after the survey was completed. The design of the ad emulated Jarvik's Lipitor ad, making it appear professional and real with detailed content. While the drug name SEIGRELLA (allergies spelled backwards) was stated in the ad, no company name was used. The celebrity endorser used in the ads was Tom Selleck, chosen because of his reputation for being attractive, familiar, trusting and non-controversial, and the fact that he was known well to many generations. The expert endorser used was a middle-aged Caucasian male model with a lab coat, chosen to mirror the typical physician and typical endorser, while the typical consumer was that same male model casually dressed.

The study used a modified version of a survey developed by Dr. Hershey Friedman, the founder of the theory of endorser effectiveness. The survey used a series of questions that evaluated the three components of an effective advertisement: "cognitive, affective, and conative" (Lavidge & Steiner, 1961, p. 61). In the cognitive stage, consumers first learn about the product, in the affective stage, consumers use emotion to evaluate the product, and in the conative stage, consumers take action to purchase the product (Lavidge & Steiner, 1961). In his survey, Friedman (1977) followed Lavidge and Steiner's (1961) advice and measured the cognitive stage with such items as knowledgeable, believability, and informative. For the affective stage, Friedman evaluated the respondents' overall attitude toward the ad and the product. Finally, for the conative stage, Friedman measured the respondent's intentions to purchase the products.

## ANALYSIS AND RESULTS

Hypothesis 1) The respondent's rating of how _____ the prescription allergy drug ad is	<u>p-value</u>
independent of the type of endorser in the ad.	
1a) interesting	0.499
1b) effective	0.171
1c) informative	0.988
1d) believable	0.523
1e) clear	0.141

Hypothesis 1 was not rejected for any of the independent variables. There is insufficient evidence that the type of endorser used in a prescription drug ad results in the ad being more or less interesting, effective, informative, believable or clear.

Hypothesis 2: A respondent's attitude toward the advertised drug is independent of the type of endorser in the ad.

### Chi Square Test of Independence

		Attitude toward Seigrella			
		Negative	Neutral	Positive	Total
Type of endorser	Expert	4	26	21	51
	Typical	10	25	16	51
	Celebrity	12	21	17	50
	None	15	19	17	51
		41	91	71	203

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.540	6	0.201

With a p-value of .201 which is greater than .05, the null hypothesis is not rejected. There is insufficient evidence to conclude that a respondent's attitude toward the advertised drug was dependent on the type of endorser in the ad.

Hypothesis 3: A respondent's likelihood of asking physicians for more information about the advertised drug is independent of the type of endorser in the ad.

**Chi Square Test of Independence**

		Likely to ask Doctor for info			
		Negative	Neutral	Positive	Total
<b>Type of endorser</b>	Expert	18	10	23	<b>51</b>
	Typical	25	9	17	<b>51</b>
	Celebrity	22	9	19	<b>50</b>
	None	27	5	19	<b>51</b>
		<b>92</b>	<b>33</b>	<b>78</b>	<b>203</b>

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.125	6	0.528

With a p-value of .528 which is greater than .05, the null hypothesis is not rejected. There is insufficient evidence to conclude that a respondent's likelihood of asking physicians for more information about the advertised drug was dependent on the type of endorser in the ad.

Hypothesis 4: A respondent's likelihood of asking physicians to prescribe the advertised drug is independent of the type of endorser in the ad.

**Chi Square Test of Independence**

		Likely to ask Doctor for info			
		Negative	Neutral	Positive	Total
<b>Type of endorser</b>	Expert	22	19	10	51
	Typical	27	14	10	51
	Celebrity	28	13	9	50
	None	29	12	10	51
		106	58	39	203

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.715	6	0.715

With a p-value of .715 which is greater than .05, the null hypothesis is not rejected. There is insufficient evidence to conclude that a respondent's likelihood of asking physicians to prescribe the advertised drug type of endorser in the ad.

## **CONCLUSION AND FUTURE RESEARCH**

Dr. Hershey Friedman (1977) found that the most effective endorser to use for products that carry high physical, performance, and/or financial risks is an expert endorser, the most effective endorser to use for products that carry high social, psychological or both risks is a celebrity endorser, and the best endorser to use for products that are low in all risks is a typical consumer. Lipscomb (1985) did find experts (physicians and pharmacists) to be the best endorsers for over-the-counter medications. As it is a recent phenomenon that prescription drugs are being advertised on television, telling consumers to ask their doctors for a prescription, there was no prior research in this specific area. Based on Lipscomb and Friedman's combined findings, it was hypothesized that the expert would be the most effective endorser for a prescription drug.

So what do these findings mean? It could well mean great news to the pharmaceutical industry when developing print ad campaigns. The use of celebrities in the pharmaceutical industry is on the rise (Neff, 2002). There is no dollar amount that reveals the total amount of money that pharmaceutical companies spend on celebrity or expert endorsers; there are, however, general statistics that show close to 25% of ads feature a celebrity (Erdogan, 1999), which cost companies millions of dollars (Lee & Thorson, 2008). The astronomical cost of celebrity and expert endorsers in direct-to-consumer advertisements (DTCA) was evident in Jarvik's endorsement of Lipitor, where Pfizer paid Jarvik close to \$1.35 million for a 2-year-contract (Hirsh, 2008). Since the study did not find any significant differences between the respondents' answers and the different endorser groups, pharmaceutical companies can save millions of dollars by hiring a typical consumer endorser, instead of a celebrity or an expert endorser for print advertisement campaigns. In fact, according to the findings in the study, pharmaceutical companies do not even have to use endorsers. The amount of money saved can go to research and development.

Another interpretation to the findings has to do with the type of respondents that made up the sample size. The study was conducted in an allergy clinic, where 86.8% of the respondents were allergy shot patients, and only 13.2% visited the clinic for their allergy check-up appointments. Thus, the majority of respondents suffered from severe allergies and took their allergy shots on a weekly or bi-weekly basis. They were aware of the different allergy drugs and were heavily involved in their own treatments. In addition, the allergy shot patients had time to closely analyze the ads, including the content. This is because they were required to wait in the waiting room for 20 minutes after taking their shots. These two characteristics, being highly involved in the product and having time to evaluate the ad closely, could explain why no significant difference was found between the different endorser groups. Perhaps given the time to study an ad puts the message / content as the focal point instead of who is endorsing the product. According to the Elaboration Likelihood Model (ELM), there are two routes to persuasion: the central route and the peripheral route (Petty & Cacioppo, 1983). In the central route, one evaluates an ad based on its content and the merit of the message. People use the central route when the topic is important to them, when they understand the content in the message, and when they have time to process the information. In the peripheral route, one evaluates an ad based on external cues. In some cases, the external cues are related to the endorsers' characteristics (e.g., credibility, attractiveness, likeability, etc.) (Petty et al., 1981). People use the peripheral route when the topic is not important to them, when they do not understand the content in the message, and when they do not have time to process the information (Petty & Cacioppo, 1983). Thus the findings appear to have supported ELM by showing that there was no significance difference between the four different groups of allergy patients based on endorser type. Perhaps the celebrity or expert would have been more effective on a television ad since viewers do not have time to process the message beyond the peripheral route. There may also be a distrust regarding celebrities in general (especially given how they speak out on political and social issues, often alienating their fans) or unknown experts in lab coats (given how it was discovered that Pfizer used an unlicensed physician for their Lipitor ads).

Despite not finding any significant differences in responses by endorser type, there are clearly significant findings. Prescription drug companies must reassess how they advertise their products to patients, perhaps trusting the

patients to make smart decisions if given enough information, and thus spending money on educating instead of luring. Even if their ads were to successfully get patients to “ask their doctors”, there is no assurance that the doctors will prescribe the drug, but an informed patient can ask the right questions and not make unnecessary visits to doctors in the hope of finding a miracle cure.

Future research could delve into how people would respond if not in a controlled environment without distractions. Additionally, one should test the different endorser types across different mediums. Also, would a DTCA work differently for life-threatening illnesses such as cancer, where patients might be more desperate to try anything? Clearly this study can open the door to a wealth of knowledge in a industry that is always on the battleground for drug manufacturers, physicians, consumers and politicians.

## **REFERENCES**

Provided upon request

# WHAT TO DO WHEN A SALESPERSON FAILS?

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## ABSTRACT

*There was never a time or situation so troubling as when this author, as a business-to-business sales/marketing manager, experienced the failure of a salesperson in not having achieved his/her target objects, or client contact resolutions, or, worst of all, having not meet annual sales quotas of either client satisfaction, new client relations, new product sales requirements, or overall financial goals to the company and to themselves. The emotional trauma in the sales office was a thick as an early evening San Francisco fog. Of course as one may surmise, your author was certainly not the only sales manager that faced this horrific event nor must it be said that such situations would likely occur both now and in the future. Strange as it may seem, very little attention has been focused in the issue of failing in selling.*

**Keywords:** *Salesperson Failure Analysis & Sales Management Support.*

## RESEARCH PURPOSE

This research project has set forth the task of determining the means and methods of dealing with the failures of salespersons. This study has offered means and methods of support-based solutions to address this troubling concern. Essentially, the perspective taken was to study and design effective sales manager's training programs and motivational techniques to have positively affected a salesperson after a failed sales experience.

## INTRODUCTION

Not too long ago, Dr. Michael H. Morris co-authored a research project focused upon salesperson failures, their determinants and outcomes (Morris, LaForge & Allen 1994). It was a quality research project but failed to address the aspects of resolution that would:

- For those individuals deemed worth keeping in the firm, having re-focused the mind of the salesperson towards the brighter future with the firm;
- For those individuals deemed margin retention, having assisted the person in recognizing his or her career options; and
- For those individuals deemed not worth salvaging, having established a mutually-agreeable track towards their resignation.

Sales managers have had a substantial impact on the way that a salesperson would respond to and have recovered from failed sales experiences. Failure has been a natural part of a sales environment and, sooner or later, most every salesperson will have experienced some type of sales professional failures as it has been the nature of the business. Since failure have been inevitable, it was important to evaluate the impact a sales manager has on his or her sales force before and after a failed sales experience. In order to determine how a sales manager can influence a salesperson it was important to understand the factors that contribute to a salesperson failing in the first place. According to Ingram and co-authors, the six most significant factors have been:

1. Poor listening skills,
2. Failure to concentrate on top priorities,
3. A lack of sufficient effort,
4. Inability to determine customer needs,
5. Lack of planning for sales presentations; and
6. Inadequate product/service knowledge (Ingram, Schwepker & Hutson 1992).

It was determined that the best way to understand these sales challenges prior to offering solutions and recommendations was to offer a discussion-based Literature Review, which has been presented next.

## **ANNOTATED LITERATURE REVIEW**

Ingram, Schwepker Jr., and Hutson found that through proper training and motivation a salesperson could become a better listener, more accurately determine customer needs, and concentrate more effectively on top priorities. Their research determined that sales managers can, “avoid costly failures” by effectively training and motivating their sales force in the areas that most significantly contribute to a failed sales experience. Ingram and co-authors also stated that if a salesperson received proper training and motivation before entering a sales situation, they will be, “better equipped to perform and subsequently less likely to fail (Ingram, Schwepke & Hutson 1992).”

This implies that the salesperson is ultimately responsible for a failure, however, other research has indicated that the sales manager should hold themselves more responsible based on their training and motivational techniques. In his research, Alan J. Dubinsky “advances the position that salesperson failure, despite the situation, rests ultimately with the sales management team (Dubinsky, 1999).” Since the sales manager is ultimately responsible for the way salespeople are trained and motivated, he or she must also claim some responsibility for the failure. This may be especially true in cases where the failure occurred due to a salesperson’s lack of knowledge about different sales situations.

Alan J. Dubinsky also stated sales managers believe that the major reasons for failure are a salesperson’s “lack of initiative, ambition, or enthusiasm (Dubinsky).” This leads to the need for research to discover the impact a manager’s motivational techniques have on the sales force. Not only should managers recognize the importance for motivating a salesperson following a failure, but that a significant way to motivate salespeople is for a manager to be more tolerant of failure and to take more responsibility (Morris, LaForge & Allen, 1994).

According to Morris, LaForge, and Allen their study found that the profession of sales has a “strong success orientation” and that this affects the way managers have dealt with failure. Their research also found that managers should use failure as a way to motivate and train salespeople in order to learn from failure and avoid similar situations in the future (Morris, et.al. 1994). They stated that sales managers need to improve the ways they train, motivate, and recruit sales people. However, there has not been a significant amount of research done on the way that training and motivation affect the way a sales person responds to and recovers from a failure.

For our research, it is necessary to understand and properly define training. Alan J. Dubinsky wrote that, “training is an organizational attempt to compress the kinds of learning that one gains through experience into a relatively short period of time (Dubinsky).” Sales managers can directly influence a salesperson’s response to a failure and their behavior following a failure by providing proper training in key areas that lead to successful sales. Ingram, Schwepker and Hutson also concluded in their research that through proper training and motivation a salesperson can not only fail less frequently, but also recover faster and more effectively from a failure (Ingram, Schwepker & Hutson, 1992).

Motivation has also been described as the way a manager uses feedback, incentives, or rewards to increase the initiative and drive of a salesperson. It was important for the managers to first understand the types of motivation that have had the greatest impact as well as the understanding that personality differences led to preferences for different types of motivation (Dubinsky). Dubinsky found in his study that it was important for managers to have realized that a “one size fits all” motivational approach would not work and that different people needed to be motivated in different ways (Dubinsky). There was a need to determine the affect a manager’s motivational techniques had on the way a salesperson recovered from a failed experience. Motivation has been clearly recognized as an important factor in the way a salesperson responded to a failure. There was a lack of empirical research for the specific impact various elements of motivation would have on the ways salespersons might recover and even avoid future emotional failures, at least the emotional devastation tied to sales failures.

## SALES FAILURE ASSESSMENT

A significant amount of research has been done concerning sales force performance but the issue of failing in financial selling has been overlooked. What would have been needed to concentrated on was the following:

- The nature of failing itself,
- The nature of selling,
- How they interrelate, and
- If anyone in particular is to blame for the failure.

The definition of failure has been somewhat situational, depending on the person or territory involved, the state of the economy, timeframe, or any number of other circumstances (Morris, LaForge & Allen, 1994). Research has recognized that selling was a social situation where two or more people come together for the specific goal of exchanging need for a service value (Fine & Schumamm, 1992). As most have been familiar, salesperson performance has been a evaluated behavior, relative to organizational goals and objectives (Morris, LaForge & Allen 1994). Furthermore, the personality of a salesperson has influenced the buyer's decision (Blades 1998); (Kahle, 2008). Even the best top salespeople have imperfect personality traits, not un-common with most senior executives facing challenging and very stressful jobs (Kahle, 2008); (Rasmusson, 1999). Although their personality may be flawed, top salespeople get the job done by:

- Being to utilize their past success traits,
- Being able to think on their feet,
- Reading their clients, and
- Knowing when and how to seal the deal. (Deeter-Schmelz, 2007)

When a salesperson fails in his or her job, which person would have held the responsibility for that failure, the salesperson or the salesperson's manager or possibly someone at even a higher level? Research determined that there was always need to have established the responsible persons for the failed sales experiences in order to prevent or reduce future failures (Morris, LaForge & Allen 1994). Beasty (2007) and Jolson (1999) concluded if managers feel they do not understand the big picture, their incompetence may result in the sales' force failing under that manager's direction. It was also the case in the past that salespeople felt responsible at times for failures of the company due to their low position within an organization and the lack of communication from the highest ranks within sales and marketing (DeConinck 1992).

## POTENTIAL ISSUES WITH RELATIONSHIPS

A key factor for a successful sales force has been a respectful relationship between the sales manager and the salespeople. Additionally, that respect should have been brought forth even further to approach a 'caring relationship' when referring to the salesperson and their distinctly unique bonds with their respective consumer (Siguaw, 1994); (Rich, 1997); (Jones, 1979); and (Smith, 1999). Even though the connection between the consumer and the salesperson, and the relationship of the sales manager and the salesperson were different, both were needed to have been present when a sales team was trying to achieve greatness.

A sales team that was lacking either of the above-mentioned relationship would likely experience problems. These problems may have been traced to the beginning of a sales force when the sales manager first trained new salespersons (L'herisson, 1981); (Pincus, 2009); and (Lambert). In the article, *Teaching Salespeople to Fail*, the author explained that when sales managers trained their new salespeople with appalling character, overly abundant arrogance and/or poor information content, it was quite likely that those salespeople were on a path towards failure. Furthermore, the managers would have been confused about why the salespersons were not performing as they had expected and would then, in total ignorance and oblivious to the true reason why, figure salespersons lacked the talent to execute the sales potential. This could finally lead to the termination of a salesperson or even unethical behaviors by a salesperson (Weeks, 1992); (Morris, 1994); and (Dubinsky). Usually, unethical actions contributed to

the fear of failing. People understand that if they may not or cannot perform up to the potential, they would recognize that their time at this company would soon become extinct. Consequently, the salesperson was left with two options: either vanish or use unethical practices to accommodate for their lack of knowledge given to them by their sales manager. Rarely has it been the case that un-ethical behavior in sales occurred without some levels of misgiving and or out-in-out conflict with their respective management.

## THE LOST VALUE OF TRAINING

Training programs in sales organizations has tended to been in response to organizational change, internal problems, or external pressure (Dubinsky); (Greco, 2007). The questions of, how much training or how effective was training for sales people, has not been sufficiently analyzed nor the impending consequences. Sales people would logically respect their sales managers more when they had received effective training from their sales managers. The most effective sales trainer has credibility in the eyes of the sales team (Lambert, 2008); (Jones, 1979).

Training by sales managers would also help salespeople and their failed sales experiences. A recent meta- analysis of empirical studies indicated that, though no single predictor by itself explained a great amount of the variation in performance, the relative ability to do so was higher for "those characteristics which were '*influenceable*' through increased training and experience or more effective company policies and procedures (Curchill, 1985); (Tompson, 2000); and (Mowem, 1985). Johnston, Hair, and Boles (1989) contributed poor training to the top reasons why salespersons fail (Morris 1994). Though it was evident that salespersons learned from failed sales situations, it was more beneficial than anything they were taught how to manage through those tough times and, equally important, return stronger and more effective from those losses (Misra, 2004). Clearly, what the managers have trained and taught their sales force was important in the recovery of sales people after a failed sales experience (Jones, 1979) and (Anderson, 1985). From far too many a managers' naive perspective, there was only a lack of skilled workers who could be trained to succeed in complex sales jobs, and not the reality that these were persons of different emotional stamina and comfort-bases that needed human support training, particularly in times of great stress and failure (Ingraham, 1992). Emotional management should have played a major role in the training and preparation of salespeople. Therefore, it has and should be the responsibility of the sales manager to mentally and emotionally prepare their salespeople. (Schweingruber, & Berns, 2010)

To have developed this highly skilled sales force, sales training must have been increasingly strategically focused (Attia, 2005); (Lambert, 2010). In order to have the most effective sales force possible, managers needed to have offered specialized training to their salespeople over the length and breadth of their specific sales cycles (Lippman, 1986). There were too many ways managers were not properly training their sales force. It could have been that sales trainers were failing by having only taught their sales people successful selling methods focused only on having given applicable information about the selling products or services and not about how to manage oneself to high and low times through the sales cycle (Rackham, 1990) and (Michel, 1999).

## MANAGERS' ROLES AND IMPACT OF SALES RECOVERY

Sales managers have overseen their sales people's performance, progressions, and declines. Control between supervisors and the sales force has been imperative when motivating, educating, and training. Empirical research has found that, in general, all managers must carefully match controls-in-use with desired results. Activity and capability control have had different effects and drawn a sharp distinction between two types of behavior control (Challagalla & Shervani, 2009). There has been a common conception how sales trainers were failing to teach their sales people successful selling methods. Sales managers may not have even given applicable information about the products or services the salesperson was to sell selling (L'herisson & Laura, 1981). Research provided by sales managers and experienced salespeople came to terms with management not taking responsibility in accepting blame for salespeople's failures. It would seem that it was the distinct effort of sales management to avoid self blame and to create a scenario that, more often than not, placed the cause of failure on the salespeople's own attitudinal variables (Jolsin, 2001).

Some of sales manager's hardest struggles have been finding ways of controlling their salespeople's performance, particularly when things have begun to go wrong. There were two types of performance; 1- outcome based and 2- behavior based performance. A study was conducted in which the empirical data looked at the impact incentives and manager involvement had on sales performance. It was found that managers have had a significant impact on their salespersons' behavior and they're overall sales outcomes (Rajagopal, 2008). It was important that sales managers trained and motivated salespersons, and acknowledged that the sales managers should have taken the blame, or at least shared the blame, after a failed sales experience. This, of course would have mentally help the salesperson(s) to overcome failed sales experience(s) (Dubinsky). Managers have trained their sales staff based on various sales cycles. In order to have the most effective sales force possible, managers need to train their salespeople for their specific sales cycle (Lippman, Allen J, 1986). Research was conducted in order to predict different sales statistics for the 1990's. Most notably it predicted the trends that would be found in training salespeople and how his would develop into better techniques for managing a sales staff (Rackham, Neil, and John Wilson, 1990). Furthermore, sales manager's risky decisions or misleading the salespersons in terms of internal support, could have led to a salesperson's failure. As such, the failed sales experience was mostly the fault of the management team, which led their sales people going in the wrong direction for the wrong reasons (Dubinsky, Jolson, Anderson & Mehta, 2001).

The sales framework can also have been related to sales manager's role-modeling behaviors positively or negatively. Findings have shown that salesperson's perception of their managers' role-modeling behavior related positively to trust in the sales managers (Rich, 1997). There was an influence of individual differences on both the attribution process and the relationship between attribution and the behavioral intentions of sales representatives following a sales failure (Dixon, & Schertzer, 2005). Sales management should have articulated and emphasized the influence that sales managers have on various job-related responses of sales personnel, such as job satisfaction, motivation, and performance (Yammarino, Jolson, & Spangler, 1995). Justifiably, a few brave and just companies have their employees learn the history of their company, particularly its successes, failures and the complaints it received. The new salespersons were also advised to provide clients with information about a product based on what they believe and value. Particular emphasis has been given to honor in selling, which according to the author began with respect and honesty with one's self. These managerial implementations may have been a direct result associated with whether a salesperson would have succeeded or failed (Farneti, David 1996).

## METHODOLOGY

**Research Statement:** This research was to have explained how sales management's training, motivation, and blame directly affect how salespeople react to a failed sales experience.

In order to test the hypotheses, a random sample of salespeople from American companies involved in business-to-business and business-to-consumer sales &/or sales management were drawn. Since sales failures tend to occur most within the first 5 years of one's sales experience (Dixon 2003), sales neophytes with 5 or less years of experience were focused upon in comparisons with more senior salespersons. A sample size of 100+ was obtained. A survey was developed and structured based upon a multi- scaled structure. Respondents were asked to indicate their level of agreement or disagreement in regards to questions of failed sales experiences, manager's motivational techniques, and managers training.

### Hypotheses:

**HO:** *That there are no mitigating sales person resolutions for a failed sale.*

**HA:** *That there exist logical and sensible methods for reducing the sales person's psychological impact on failed sales.*

### Recovery

**H1:** *The more time a sales manager spends motivating a sales person after a failure, the quicker the sales person will recover.*

**H2:** *The more effective and consistent training a salesperson receives prior to a failed sales experience the quicker a recovery will occur.*

**H3:** *A manager sharing the blame for a failed sales experience will result in a quicker recovery for the salesperson.*

### **The Blame**

**H4:** *The majority of salesperson will place the blame of failure fatigue and burnout on the lack of proper training from sales managers and sales trainers.*

**H5:** *The majority of salesperson will place the blame of failure fatigue and burnout on the lack of support motivation from sales managers.*

**H6:** *The majority of sales managers would likely place failed sales fatigue and burnout on the salespersons rather than themselves.*

### **Training**

**H7:** *The more effective training a salesperson receives from a sales manager or sales trainer, the better understanding a sales person will have about a failed sales experience.*

**H8:** *The more consistent training a salesperson receives from a sales manager or sales trainer, the more the salesperson could manage through a failed sales experience.*

### **Motivation**

**H9:** *The more effective motivation a sales manager gives to a salesperson that just failed the better the salesperson will be able to manage through the stressful situation.*

**H10:** *Sales Manager's on-going support and effective communication will help the sales person to professionally resolve and rationalize what went wrong in a failed sales experience.*

## **LIMITATIONS AND FUTURE RESEARCH**

Although an empirical test to determine the validity of the project was designed for this project, questions may still linger as to what else can be done to better insure a stronger human grit was either pre-determined or more rigorously developed in and for the salespersons to more effectively manage through the ups and downs of professional selling. Pre-screening tests have been implemented to improve sales selection criteria, but unfortunately, failure fatigue and burnout still occurs and on a rampant scale.

Future research efforts should focus attention on other aspects of sales failure research, such as the moral aspects obligations and toward management responsibilities as well as addressing ethical conduct of the sales process, indicated earlier in this paper. In fact, the whole area of sales and sales management needs to be up-dated with further investigation into all avenues of the process to include client perceptions as well as the overall impact of sales failures on the entire organization. When one considers the sheer number of sales failures in America's businesses, the fundamental question still remains, why are there still so many human losses associated with these failures?

# MY PERSONAL TAKE ON BUSINESS ETHICS

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## ABSTRACT

*The sign in our office reads "You can expect volunteers to treat you in a courteous and professional manner. In return, volunteers expect you to treat them with courtesy as well." It reminds me each day to follow the Golden Rule. In this paper, I will share some of my personal observations on doing the right thing, and being fair, and giving others the same respect that we want for ourselves. This is especially important in the business sector. The moral standards that cause us to be fair and to do the right thing are called ethics. I have traveled extensively throughout the world and have had the opportunity to view personal and business ethics first hand. I will begin with a discussion of personal ethics since these become the foundation for business ethics. I will then highlight ethical standards in some of the different countries, including the United States, where I have lived or visited; and wherever possible, I will list some of the policies and practices that have been implemented to overcome negative press resulting from the absence of high ethical standards. I will discuss not only large business ethics but also the personal ethics of average citizens, particularly during the tax season. I will conclude this paper with reasons why some companies find it more profitable to apply flexible ethical standards. Throughout this paper, the words ethics and morals will be used interchangeably.*

## INTRODUCTION

When we think of Ethics, we tend to think of corporations like Enron that misrepresented earnings and enriched itself at the expense of stakeholders (employees, shareholders, suppliers, customers, etc.); and made headlines in the year 2000 for being unethical. And in 2012, Lockheed Martin admitted that it had violated the False Claims Act by inappropriately allocating subcontractor costs to a defense contract. The news media enjoys highlighting the downfall of these powerful companies, and the public seems to be more entertained by these sensational news accounts; so much so, that the "good deed" stories, like the historical boat lift of more than half a million civilians from the island of Manhattan on 9/11, are not widely published. Why do we, as a society, seem to be more interested in scoundrels and swindlers, when there are many among us who have high ethical standards – those who hardly ever have problems with making decisions because they first address the question – "Is this morally the right thing to do? Perhaps, it is because the "do-gooders" are just doing what is expected and only the unexpected is deemed newsworthy. And are large companies the only entities guilty of such misconduct, or can the same be said of other members of the stakeholder group?

## Origin of Personal Ethics

What are Ethics and what is it that drives human beings to do the right thing? Ethics are a set of beliefs about right and wrong, fair and unfair, good and bad. Ethics deal with individual character and with moral standards that govern our conduct. Ethics enable us to distinguish between right and wrong and to make the right choices. Where do our Ethics and Moral Standards come from? They are formed by our upbringing, by the behavior of those around us, by the standards of our culture, and by our own experiences, etc. Moral standards that we develop early in life pretty much define who we are and how we act, especially when no one is looking.

## Guiding Principles

When we were children, our parents taught us two guiding principles: First, the Golden Rule – "Do unto others as you would have them do unto you." This means that we should treat others the same way that we want to be treated. The second principle was "Let your conscience be your guide." As we accepted the moral instructions of our parents and other family members, we developed a conscience to help guide us through moral decision-making. Our conscience was designed to make us feel guilty if we didn't follow our principles. But just how reliable a guide is conscience, and how difficult is it to follow the golden rule? It might not be a good idea to follow one's conscience in

all cases. What if we planned to act in such a way that could benefit someone but harm someone else – what should we do? Our parents would say, “Follow your conscience” – but which way? And following the “Golden Rule” can be awfully tiring if we perceive ourselves as being fair in a lopsided society where unfairness seems to rule the day.

## **Consciences and Business**

So we grow up trying to follow the golden rule and trying to use our conscience as a moral guide, hoping that by the time we reach adulthood, our value system will be well developed. We know the difference between right and wrong and we make a concentrated effort to do the right thing. But how easy is that? And what do we do with our conscience and how do we apply our ethics when we enter the business world? Are organizations also driven by conscience?

## **BUSINESS ETHICS**

In the world of business there are managers, employees, customers, producers, suppliers, investors, teachers, students, and community leaders with their own individual codes of ethics, and if some ethical standards are low, or if some company officials don't adhere to their personal code, it becomes very difficult to practice business ethics, and even more difficult to require others within the organization to follow any ethical policies or business codes of conduct.

## **Ethical Standards**

Business ethics are the application of right and wrong, good and bad in a business setting. But why do businesses need ethics? Are businesses really expected to be charitable, be socially responsible, make ethical decisions, obey society's laws, and still somehow earn profits?

Good business ethics should be a major factor in any successful business, but in some industries, ethics and business are mutually exclusive terms especially if management believes that being ethically or morally responsible might possibly have a negative impact on profitability. What if a business planned to act in such a way that it would benefit its investors but harm the consumers? In a situation where the ethical standards within an organization are low or non-existent, profit could take precedence over customer safety as it did in the tobacco industry where producers were aware that nicotine was addictive and even manipulated the nicotine level in cigarettes to make them more addictive. Tobacco producers were willing to harm the consumers who used their product in their quest for increased profit margins. Was or is this ethical?

## **World Ethics**

I have traveled extensively in my lifetime and have found that there are marked differences in ethics around the world. I was fortunate to be able to establish a residence in some of the countries to which I traveled, but I have also traveled as a tourist. Tourism is a profitable business and in some countries, the best jobs are in the Tourist industry. Many tourists are oblivious and naïve to the pitfalls of unethical business people especially in poorer areas of the world. Sometimes, shopkeepers treat customers unethically because of resentment. They see tourists as a reminder of the life of which they often dream but probably will never have. In most countries, tourists are given special treatment and have access to beaches and hotels that the native citizens are not allowed to use.

## **Caribbean Ethics**

Businesses in most Caribbean nations are centered on tourism. Merchants are so desperate to make sales that ethics for the most part, are largely ignored, and honesty is practically non-existent. Merchants give the impression that they are barely able to eke out a living, and their sales pitch is designed to appeal to the emotions of the “wealthy” tourists. They also know that tourists travel great distances to vacation in their countries for short periods of time and have very little recourse if they are defrauded. Even if those same tourists are fortunate enough to return to areas where unethical sales were made, the chances of finding those same shopkeepers are very slim because more than likely, the merchants will have closed their shops and moved to different areas. Of course, the

culture of these Caribe nations probably supports this lack of ethics. Cruise ships steer passengers to selected shops that are certified as being reputable only when the shops agree to pay a stipend back to the ships. Some entrepreneurs are victims of extortionists who roam the small cities, collecting “taxes” from merchants for protection.

Those shopkeepers who refuse to pay may be killed, or their shops may be burglarized or vandalized. And even those not impacted by extortionists are required to relinquish a portion of profits to the government for use in the building or improving tourist sites in order to obtain repeat business.

## **Deutch Ethics**

I had the privilege of residing in Germany (Deutschland) and traveling in the Netherlands over a period of about five years. Germany is an old-world European culture far removed from the rigors and extortion of the Caribbean. The German economy was basically shaped by a war many years ago. The war left very few resources and much anxiety in their society about rebuilding their country and getting government approval on necessary business documents within an acceptable timeframe.

### ***Origins of Deutch Ethics***

The post-war conditions fostered a practice whereby small amounts of money were paid to government officials to expedite approval of documents and to avoid long delays that tended to occur if payment was not made. Such transactions were commonplace and considered acceptable especially by lower income officials who used such payments to supplement their income. These payments were illegal and unethical. This practice slowly evolved into an arrangement where such payments could be accepted under certain conditions provided the payments were reported and were legally approved by an organization’s attorneys. In today’s society, these payments are strictly forbidden in most European countries, but gifts and the value or extent of gift-giving can still cast a shadow of doubt as to whether companies and merchants are practicing ethics or working under obligatory circumstances.

### ***Fallout from Lowering Ethical Standards***

Based on these past business practices, German merchants and corporations have received much adverse publicity similar to the immorality and collapse of Enron, and the involvement of auditors, attorneys and congress people in the United States. After the exposure of blackmail, bribery, price distortions and data scandals in 2008, German corporate officials began to realize that corrupt companies lost more than earnings. Being unethical resulted in damaged reputations, the loss of integrity and the loss of trust from employees, suppliers, consultants, and customers.

### ***Solutions to Overcome Negative Press***

To overcome this negative publicity, German entrepreneurs now realize that they need to prepare and implement ethical standards and programs. Therefore, bribery is now highly publicized as a criminal offense and violators are prosecuted. The new motto is “Clean business is good business”.

## **Middle Eastern Ethics**

When I traveled to Middle Eastern countries such as Saudi Arabia, ethics was definitely not taking a back seat in the business world. Arabians live in a religious-based country where the Holy Quran (the teachings of which set a standard that distinguishes between what is lawful and unlawful in earning profits) promotes a moral code of ethics. Shopkeepers and companies can enjoy complete freedom in maximizing profits, provided that the code of conduct prescribed for that particular profession is respected. The Quran also prohibits anything that is considered morally wrong or socially unacceptable, which links ethics to social responsibility and removes the ethical dilemma aspect from business decision-making.

## **Mexican Ethics**

To the south of the United States border, ethics are a seldom-discussed topic. Being ethical simply means, “staying under the radar” so to speak, which translates into trying not to attract the attention of law enforcement while

maximizing profit. Public relations image is important but ethics are viewed as a hindrance to more important goals. In addition to this “hindrance-view”, the ethical standards of many organizations are inconsistent. Shopkeepers might require their employees to be honest with respect to company goals, but on-the-other-hand, might look the other way if their employees cheat customers. Companies sometimes find that their employees’ personal ethical standards exceed company standards, which causes employees with high ethical standards to become easily dissatisfied and search for other employment. Discrimination is also a widespread unethical practice in Mexico although it is widely rejected throughout the business world. Want ads in Mexico still describe “good looks” as a basic qualification, in addition to age, and gender. They justify this sexism and ageism with excuses such as “customers prefer to interact with young people” or “we prefer males to females because men have no problem going on travel.” If I learned only one thing during my travels south of the border, it is that Mexican business owners and shopkeepers need to concentrate heavily on preparing codes of conduct and dealing with discrimination.

## **Far Eastern Ethics**

The Economist Newspaper Limited (2001) posted an article entitled “Japanese Business Ethics, Blow Whistles While You Work.” Many times, when an employee’s ethical standards exceed those of their company, that employee attempts to highlight or draw attention to a business practice that is unsafe or harmful to society by “blowing the whistle.” While whistleblowing is encouraged in the Far East, it is frowned upon in the United States. In many (United States) U.S. companies, the first reaction to whistleblowing is to fire the responsible employee.

### ***Whistle-Blowing***

Whistle-blowing usually involves an employee calling attention to negligence or dangers that threaten the public interest. It is a practice whereby an employee voluntarily releases information to the public about the illegal or immoral behavior of an organization. Whistleblowing is a form of free speech, which is a right that is protected by the U.S. Constitution. But under what conditions can employees exercise this right against an employer? It takes moral courage to stand up for what you believe in and to stand up for those who are unable to stand up for themselves. Whistleblowing generally has a negative impact on a company and is very expensive to defend. Why then, would Far Eastern businesses encourage such actions?

### ***Origins of Far Eastern Ethics***

Japanese businesses are built on a very strict culture that promises lifetime employment in return for unwavering loyalty. In the past, Japanese employees seldom spoke out freely for fear of offending their company or their co-workers. Employees would never consider questioning a decision made by upper management.

### ***Results of Not Speaking up***

For the past ten years or so, the media has highlighted poor ethical standards of Japanese businesses. Japanese companies came under fire for not only covering up defects in the electronics and automobile industries, but for employee discrimination as well. Their excuse – in an attempt to survive a long-term economic downturn, they became more concerned with earning profits than with ethical standards. Negative press, surrounding this absence of ethics, struck at the core of an image conscious society, which resulted in loss of reputation and consequently loss of profits as shareholders sold shares, and even filed lawsuits. Managers in Japanese companies came to realize that these policies and procedures created a work environment where employees, for fear of being labeled disloyal, covered up unsafe or unsavory practices that should have been highlighted.

### ***Attempts to Overcome Negative Press***

Some of the larger Japanese companies are attempting to overcome this economic setback by developing codes of conduct, dealing with discrimination, and establishing systems whereby employees can be free to speak up and voice their concerns without fear of reprisal. This new policy also forbids punishment of whistle blowers and the employees’ identity must not be revealed.

## **American Ethics**

According to Cebue Commerce (n.d.), U.S. firms are distancing themselves from the term ethics, and using terms that they consider more appropriate for international business such as business practices or business integrity. Somehow, the term business integrity doesn't seem to have the same impact as the term business ethics. Business ethics not only define good organizational behavior and the responsibility to do the right thing, it demands that companies be socially responsible, e.g. protecting the environment. This concept also carries with it, the responsibility for creating ethics programs, incorporating ethical values into mission statements, setting up training sessions, obtaining feedback, providing rewards for good ethical behavior or punishment for ethical misconduct, etc. Ethical firms also operate within the prescribed laws and regulations. But the ethical standards of an organization are only as good as the ethics of the individuals who make up that organization. At the beginning of this paper, the Enron scandal was discussed. In the U.S., even the best mission statements and the best training cannot prevent ethics breaches when employees are pressured to compromise their individual standards. And sometimes, that greedy quest for the almighty dollar leads individuals to shun their values and make inappropriate decisions. In 2009, Ethisphere (2011) compiled a list of 99 Most Ethical Companies but before the ink on the page was dry, several individuals began to challenge the methods of selection, even to the point of branding Ethisphere (2011) as unethical for including organizations on the list who were deemed to be unethical. In my opinion, two business practices really separate U.S. business ethics from the rest of the globe 1) Bribery is illegal whether a firm is engaged in business within the continental United States or on foreign shores, and 2) most U.S. firms realize the importance of conducting ethics training sessions to increase employee awareness of the benefits of high ethical standards.

## **Consumer Ethics**

During the tax season, ethics are at the forefront of my mind because I supervise a small group of volunteers who work in a tax preparation office from the end of January until mid April. There are six volunteers assigned to my team – two retired college professors, a retired public school teacher, two retired federal employees and a caregiver – all are extremely ethical. The volunteers have their own personal ethics that guide their actions as they take on the responsibility of preparing tax returns, and the level of the positions or status within the organization doesn't necessarily denote the degree of job responsibility – some volunteers compile records, some greet customers, some crunch numbers and prepare the actual returns, but all are responsible for safeguarding the customer's personal and financial information.

Company policy requires that all volunteers pass a Standards of Conduct (Ethics) test in addition to three to five other competency levels of tax law and procedure, to ensure that when the tax office opens for the current season, all employees are certified and qualified to prepare accurate tax returns, that they understand and can apply the tax laws, and that they recognize their moral responsibility to treat all customers fairly.

## **Pressure to Compromise**

Some tax clients enter a tax office with one thought in mind – to pressure the tax preparer in order to maximize the amount to be refunded. Many tax clients attempt to use fraudulent data in order to maximize their refund. Many become angry when they learn that their refund will be a small amount, and they advise that they would rather seek out a paid tax preparer in order to get a larger refund. Many taxpayers refuse to accept their tax liability so they just don't pay the amounts that they owe the government. Some believe that the Internal Revenue Service refunds more money to those who have more children, so clients try to lend their children to their friends at tax time for use in obtaining larger refunds. Some clients attempt to claim nieces and nephews as dependents in order to maximize their refund. Ex-husbands and ex-wives practice "one-upmanship" in a rush to claim children as dependents – children for whom they haven't provided any support since the divorce. Some customers resort to identity theft by using social security numbers of their friends, and sometimes of people who are deceased. Most believe that filing a tax return is a good way to get "free" money from the government. Most are unethical.

### *Bowing To Pressure*

Taxpayers are not the only ones who behave unethically; Tax Preparers also fail to make the right decisions. Two unscrupulous volunteers at an out-of-state site ignored their training, including the required ethical standards, and were suspended within two weeks of the season opening, for preparing fraudulent tax returns. And research indicates that the Internal Revenue Service (IRS) is watching Tax Preparers more closely. In 2011, the IRS performed a survey on paid tax Preparers and instituted some new requirements based on the absence of government oversight to ensure that Tax Preparers possess the knowledge and expertise necessary to properly prepare tax returns. The survey also culminated in the creation of requirements for professional education for paid preparers, and the application of IRS ethical rules. These actions provide a way for the IRS to be able to discipline those tax preparers who engage in scandalous conduct or breach the ethical standards. What causes such a breach of ethics? Why do people knowingly make a choice to do what is wrong? Could it be defiance, ignorance, or perhaps greed?

### **Work Ethics**

No ethics discussion would be complete without some mention of work ethics. A work ethic emphasizes the belief that hard work pays off in the end. My personal take on ethics is that today's young people don't believe their efforts will pay off, so they're less interested in work. A "Me First" attitude is being developed, and loyalty to employers is declining. Young energetic, creative people see jobs as meaningless, unfulfilling tasks, and therefore "spin their wheels," so-to-speak, until they put in their eight hours and can leave their workplace and do something they really enjoy. Researchers say Americans place work eighth in importance. What does that say about loyalty to employers, dedication to work, or the quality of work performance? To me, it pretty much means that most people in the workforce perform their tasks at a level that is just enough to get by without any thought as to how their mediocre performance impacts their co-workers, or the company's profit margin.

### **Conduct in the Workplace**

Work ethics not only cover the way in which we prepare our work product, it also covers how we conduct ourselves as we interface with business partners or co-workers who depend on our honesty and integrity. Work ethics depend largely on an individual's character. Employees decide what principles guide their personal lives, but employers set the ethical standards in the workplace. During the time that I was employed by the Federal Government as a Contracting Officer, the lapses in workplace ethics by government employees were rampant.

- Taking credit for other employees' work
- Calling in sick and later being seen at the Mall
- Arriving two hours late to work and asking co-workers to cover the time
- Taking office supplies home
- Using government equipment such as long distance phone lines for personal use
- Falsifying expense reports
- Engaging in affairs with married co-workers

And the list goes on and on. All employees understood that salaries were paid with taxpayer dollars and each would have been first in line to complain about public funds being wasted by the Federal Government, yet some felt no obligation to provide full measure for the salaries being paid. And some evidently did not hear that nagging voice of conscience that tells us we're taking advantage of a situation by doing something that is unethical.

What causes this breach in work ethics? Has it existed in the workplace all along in some small measure or can this dissatisfaction with work be attributed to a sense of entitlement that appears to be evident among today's younger citizens. Should employers shoulder part of the responsibility for poor workplace ethics? If so, perhaps one solution would be for top management to institute stronger measures, develop codes of ethics, raise the bar so-to-speak, in an effort to strengthen moral standards. Parents, church and community leaders, and teachers could do the same.

A Strayer University Adjunct Professor being interviewed by a news reporter for an article in a business magazine advised that she always strived to do better “and reach another goal.” She said “It’s really work ethic and not (waiting) for someone to give something to you.” She said, “You work hard.”

## **CONDUCT ON COLLEGE CAMPUSES**

The breach in work ethics unfortunately has spilled over into Academia. A 2012 news article in the Huntsville Times reports that 125 Harvard University undergraduates are being investigated for cheating that took place earlier this year on a final exam. It seems that these students, taking a course in Government, specifically “Introduction to Congress”, took the path of least resistance and compromised their ethics on a take-home exam. These students chose to disregard the importance of honesty and integrity and decided, instead, to do just enough to get by. They might also have believed that they were entitled to a good grade without putting forth the effort necessary to earn it. The news article was non-specific as to how the cheating was actually accomplished, but hinted that the students might have used electronic technology to compromise their moral standards, which brings up the question, “Is technology creating a lackadaisical attitude in people who grew up in this Internet Age?” Smart phones, computers, or some other electronic device have become an extension of every student’s hand, from Kindergarten through College. Technology has become an umbilical cord that connects us to the world. It is slowly causing an erosion of social skills because it has changed the way that people relate and communicate with each other.

How can a Professor prevent students from using technology on a take-home exam? For that matter, how can a Professor prevent the use of technology on-campus during an exam? What values were important to those particular students when they decided to cheat on an exam? Did they consider how they might feel if their names appeared in news articles? Did they consider how their parents or loved ones might feel after hearing those allegations of cheating? Did they understand that they had betrayed the trust of those who assumed them to be honest and trustworthy? And while we focus on this news article, should we consider whether or not this incident is confined to Harvard, to the United States, or is this problem more widespread? Is technology fueling the “me-first” posture and a mindset that assumes cheating on an examination is the right thing to do? These same students could someday become members of Congress, leaders of our nation, and what did they learn in their “Introduction to Congress” course – that hard work and noses to the grindstone aren’t always necessary, that sometimes it’s easier and faster to share answers or to use someone else’s thoughts and ideas.

So why do students cheat, and why do employees feel that hard work doesn’t pay off? Is it because they find no satisfaction in work? Perhaps they never had a chance to pursue their dreams. Whenever, I get a captive audience of young people, I tell them to follow their passion, because the greatest job they can ever hope to work at is something they love to do. They might not become wealthy, but sometimes, just working at something you love can bring more satisfaction and peace of mind than money can ever bring. There was an article in the newspaper about a 40-year old man who by all outward appearances is successful. He is a teacher, with a wife and family, and by his own admission, “has done well over the years,” but he has always wanted to work in law enforcement and he can’t let go of that dream. He defines himself as unfulfilled. If everyone were fortunate enough to earn a living by working at his or her dream job or in some sector of the economy that they are passionate about, perhaps society as a whole would benefit by increased productivity and a renewed enthusiasm in the workplace.

## **CONCLUSION**

In addition to my observations of ethics in the business world, I am also a small producer, vendor/dealer in the business sector. In my spare time, I manage a small porcelain doll hobby. High ethical standards, plus attention to detail and quality helped to make this venture a success. My customers count on me to treat them fairly. That’s probably easier said than done when it comes to larger companies. My personal take on ethics in large corporations is that perhaps one might view ethics in the context of the ebb and flow of the ocean. At high tide, when there are only a few hiccups in the business cycle, the organizational code of ethics becomes a guidepost leading managers through the most difficult situations where ethical decisions can be made without compromising profit. But at low tide, when the economy is in a downward spiral, and necessary tradeoffs create ethical dilemmas, high ethical standards are usually placed on the back burner and profit margin becomes the driving force. Sometimes managers

within an organization are committed to making ethical decisions, and sometimes they make decisions with their fingers crossed, their eyes closed, and a hope that no one is watching. Ethics is a two-way street. Organizations, consumers, shareholders, employees, suppliers, producers, teachers, students and tax preparers, all have a responsibility to be honest, respectful, and fair when conducting business as well as in their personal lives. The sign in our office reads "You can expect volunteers to treat you in a courteous and professional manner. In return, volunteers expect you to treat them with courtesy as well." So maybe our parents had it right all along – that we should "Do unto others as we would have them do unto us."

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# ETHICS: A SEEMINGLY INSURMOUNTABLE CHALLENGE FOR MARKETING RESEARCH FIRMS

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## ABSTRACT

*It was once said that the misgivings of mankind have been centered around, “mistruths, lies, damn lies, and statistics.” Number crunching, statistical estimations, and probability explorations have been the mainstay of marketing research firms as they have attempted to offer the highest levels of empirical validations for their research studies. In fact, marketing research actions and exploits have delved into literally all aspects of the behavior of marketing, to include institutional strategies, mission & vision statements, development & performance of institutions’ marketing mix elements, viral marketing programs and social marketing on both a domestic & world-wide spans. And, in some ways, certainly based upon the gross revenue of publically traded marketing research firms, the industry has experienced resounding success. Yet, for many institutions that employed marketing research services, there seems to have been a lingering shadow that there may be some unethical ‘hanky-panky’ going on within the marketing researcher’s data, or analysis, or prognosis, and/or predictions. As such, it would suggest that one of the most plaguing issues still facing marketing research firms and their clients has been holding true to a myriad of ethical standards.*

**Keywords:** *Marketing Research Ethical Codes, Honesty & Ethics Standards.*

## RESEARCH PURPOSE

This research project has attempted to delve into some of the most critical ethical dilemmas that America’s marketing research firms have confronted over recent years. This study also aims to seek means and methods of offering comprehensive support-based solutions to address this plaguing concern. It appears that some of the nagging ethical concerns have been centered on the following areas: culture of ethics, internal systems and ethics/compliance/regulatory programs, as well as, reputation track records in ethical performance.

## INTRODUCTION

The shear global impact of marketing research firms on societies has been quite amazing. Below, in **Table 1**, has been presented a list of the most popular topics related to marketing research global activities and market research functions:

**Table 1:** Marketing Research Topics & Functions

Advertising Research	Education Research	Mail Surveys	Pure research
Agriculture	Entertainment Industry	Mall Intercepts	Research Industry
Auto Industry	Ethnic Research	Market Studies	Retail Industry
Brainstorming Research	Ethnographic Research	Media/Communication Research	Sampling
Brand/Image Research	Taste Tests Research	Moderators	Secondary Research
Business/Product Development	Financial Industry	Mystery Shopping	Software
Business/Product Development	Focus Groups	Name Development	Statistical Analysis
Business/Product Development	Health Care	Non-Profits	Survey Development
Business-To-Business Research	Hi-Tech Industry	Online Research	Telecommunications Industry
Competitive Intelligence	Housing/Construction	One-on-One Interviews	Telephone Interviewing
Concept Research	Industrial Research	Package Research	Travel/Leisure
Consumer Research	Interactive Electronic Group Research	Research Panels	Travel/Leisure
Customer Satisfaction	International Research	Political Polling	Training
Data Collection Field Services	Interviewing	Product Research	Utilities
Data Processing	Legal Research	Promotion Research	Government Studies
Demographics	Lifecycle/Lifestyle Research	Public Opinion/Social	Sensory Research

It would have been fair to say that marketing research has offered broad-based marketing coverage, if not extensive focus on much of the public and business communities. And, considering the myriad of tasking responsibilities, it has been quite obvious that marketing research truly maintains a wide variety of exciting and complex careers. The next table, **Table 2**, has presented the top marketing research firms along with their respective country-origins and revenue profiles:

**Table 2:** Top Global Marketing Research Firms

Rank: 2006	Rank: 2005	Marketing Research Firms	Parent Country	Research-only full-time employees	Global research revenue (U.S. \$, in millions)
1	1	The Nielsen Co.	U.S.	39,517	\$3,696.0
2	3	IMS Health Inc.	U.S.	7,400	1,958.6
3	2	Taylor Nelson Sofres plc	U.K.	14,570	1,851.1
4	5	The Kantar Group*	U.K.	6,900	1,401.4
5	4	GfK AG	Germany	7,900	1,397.3
6	6	Ipsos Group SA	France	6,503	1,077.0
7	8	Synovate	U.K.	5,726	739.6
8	7	IRI	U.S.	3,600	665.0
9	9	Westat Inc.	U.S.	1,906	425.8
10	10	Arbitron Inc.	U.S.	1,045	329.3
11	11	INTAGE Inc.**	Japan	1,558	264.8
12	14	J.D. Power and Associates*	U.S.	840	232.6
13	12	The NPD Group Inc.	U.S.	1,106	216.8
14	13	Harris Interactive Inc.	U.S.	757	216.4
15	16	Maritz Research	U.S.	950	186.9

When making purchase decisions, consumers and customers, particularly those in developed countries, are placing more importance on the social responsibility of firms. Social responsibility perceptions affect the image of brands and firms, the propensity of consumers and customers to buy brands, services and patronize retailers, and the financial performance of firms (Luo & Bhattacharya, 2006).

Leaders must operate from a foundation of high morality and ethical discipline in the organization at all times. They must personally act in accordance with productive values and beliefs, and they must teach others to do the same. They must establish and promote the culture. With the awareness of culture in today's organizations, and its strong impact on employee behavior, leaders in organizations can create a culture that supports strong moral and ethical behavior. Over the years, there has been a growing concern in the way many organizations have chosen to do business. With many scandals that have drawn public and media attention to many organizations for participating in illegal and unethical behavior, organizational ethics has developed as a professional and academic discipline to address some of these concerns (Madu, 2011). Organizations are now being challenged to be more accountable to their stakeholders and not just their shareholders, and this has made organizations begin to examine the relationship between management and their boards of directors.

The consequences of unethical culture and culture that is insensitive and indifferent to ethical considerations can be serious and far reaching for an organization. Organizations can be entangled in a web of legal proceedings. Equally important is the damage an ethical lapse can cause an organization's reputation and relationships. The struggle to regain customer trust and market share has witnessed the exit of many organizations with such errors of ethical judgment (Madu).

With millions, if not billions of dollars at stake in today's complex marketplace, it would seem that marketing studies would need to reflect the utmost depth, detail and meaningful empirical analysis possible. Marketing research firms have traditionally been charged with the primary goal of delivery just that to its world-wide client base. Most of the research studies have focused upon consumer groups, their purchasing behavior, desires, wants, needs and whims. Ethical marketing practices and principles have been core building blocks in establishing trust, which helped to build long-term marketing relationships. In addition, the boundary- spanning nature of marketing research has presented many of the ethical issues faced in business today.

As one would surmise, marketing ethics not only requires an attempt to make ethical decisions, but also to avoid the unintended consequences of marketing activities. This requires consideration of key stakeholders and their relevant interests (Fry & Polonsky, 2004). In fact, there has been evolving concern that research organizations must focus on not just their customers, but also the important communities and groups that hold the firm accountable for its actions. A new emerging logic of marketing would be that it has existed to provide both social and economic processes, including a network of relationships that have provided skills and knowledge to all stakeholders (Vargo & Lusch, 2004). As such, organizations have been asked to prevent and control misconduct by having implemented ethical compliance programs. Ethics has brought many rewards to marketing organizations that have nurtured it, but managing ethics requires activity and attention on several levels—complying with the law, setting ethical standards, and dealing with the complex decisions related to trade-offs between the bottom line and ethical conduct (Ferrell, 2008). Stakeholder orientation in marketing goes beyond markets, competitors, and channel members to understanding and addressing all stakeholder demands. As a result, organizations are now under pressure to demonstrate initiatives that take a balanced perspective on stakeholder interests (Maignan, Ferrell, and Ferrell, 2005).

Over 50 years ago DiWarren Twedt stated that marketing research was still enough of an art so that it was unlikely that any two practitioners, faced with the same problem, would proceed exactly alike. But the general principles of scientific method applied to marketing problems were quite well understood and practiced. The stage has been reached where the term 'marketing research' has certain specific connotations of method, technique, interpretation and use, as well as a fairly well defined set of professional standards. But deviation from these standards at this period of time has become a source of increasing concern to those who depend upon marketing research as a vital source of dependable information about the market (Twedt, 1963).

Based upon modern day research on the subject, it would not be incorrect to say that marketing research has been widely recognized as the most ethically challenging business in marketing (Lund, 2001). Ethical questions have been often raised in marketing research due to varying behavioral expectations and moral responsibilities of researchers, who interact with respondents to collect data and report findings to their clients. A study in 2003 revealed that 87% of corporate respondents questioned the integrity of market research and stated that they would like to have seen an increased articulated set of research ethics (Thomas, 2003). In fact, the duties and obligations of the researcher (or fieldworker), client, and respondent were usually dictated by acceptable societal norms, which represented codes of ethical behavior, highlighting what members of a society ought to do under given circumstances (Zikmund, 2003). For that matter, the dominant philosophical perspective of researchers has often been viewed as duty-based deontology (Murphy et al. 2005). Certain ethical behavior would have been normally expected from researchers when they deal with subjects. In fact, an ethical issue has been often raised when a researcher believes he/she has the right to ask questions on consumer income or spending patterns, while a respondent feels threatened by such questions, thus does not respond, or even refuses to participate in the whole survey (Alsmadi, 2008). A review of common factors of marketing ethical challenges and the tension that they have presented has been offered next in **Table 3**.

**Table 3: Resolving Ethical Tension**

Inherent tension within current marketing theory	Ethical issues arising from tension	Relevant shift in dominant logic	How shift in dominant logic reduces tension
Tensions between firm & consumers. Consumer autonomy versus marketing effectiveness. For marketing to be effective, consumers need to respond to it in the way the marketer intended, but at times this can violate consumer autonomy.	Misleading advertising, deceptive pricing, fear appeals	Role of customer. From recipient of goods to co-producer of service ("doing to" to "doing with")	Highlighting the collaborative dimension of marketing underscores the counter-productive nature of any effort to deceive or pressure the consumer
Consumer choice vs. consumer protection. Consumers should be free to make their own decisions, but consumers are not always capable of acting in their own best interests.	Vulnerable consumers, addictive products, promotion of materialism	Primary unit of exchange. From exchanging for goods to exchanging to acquire the benefits of specialized competences	Focusing on the benefits provided rather than on products leads firms to take responsibility for the benefit
Customer satisfaction vs. incremental revenues. Additional effort by the firm to ensure satisfaction of existing customers comes at the expense of efforts spent generating new revenues.	Product safety, hidden changes in product quality, high pressure sales techniques	Firm–customer interaction. From customers acted upon to create transactions to customers as active participants in relational exchanges and co-creation	Recognition of the social and legal obligations of relationship reduces this tension
Consumer participation vs. total system efficiency. Mass marketing is more efficient, but passivity is detrimental to consumer physical and mental development	Consumer anomie, consumer manipulation, consumer fraud	Role of goods. From end products passively consumed to transmitters of embedded knowledge actively engaged with	The focus on consumer engagement means that it is no longer acceptable to view consumers as merely passive participants
Consumer welfare vs. price discrimination. Price discrimination leads to increased price dispersion, which allegedly harms consumer welfare.	Predatory pricing, brand imagery, high–low pricing	Determination and meaning of value. From value determined by the producer to value perceived and determined by the consumer	Since consumers decide the value, it is easier to take into account other benefits beyond just low prices (such as innovation and choice)
Tensions between firm & other stakeholders. Employee satisfaction vs. cost control. Satisfied employees lead to satisfied customers & therefore to increased profits, but satisfying employees can be costly, reducing profits Supplier collaboration vs. short-term profit.	Layoffs, pension plan reductions, health and safety violations	Source of economic growth. From ownership of operand resources to right to future use of operand resources	A clearer understanding that the firm's wealth lies in the skills and knowledge of its employees serves as an incentive to maintain employee satisfaction
Collaborative supplier relationships can enhance business results, but the drive for short-term profits encourages putting pressure on suppliers	Cheating, margin squeezing, uncompensated service	Firm–customer interaction. From trade partners acted upon to enable transactions to trade partners as active participants in relational exchanges & co-production	Recognition of the inherent value of supplier relationships militates against the temptation to cheat

Abela, A. V. & Murphy, P. E. (2008).

O.C. Ferrell discussed a new emerging logic of marketing has been that ethical codes and standards have existed to provide both social and economic processes, including a network of relationships, which have provided skills and

knowledge to all stakeholders. Recent regulatory changes that have required boards of directors to be responsible for oversight on all ethics issues within an organization have elevated the importance of marketing ethics. Clearly, marketing ethics would now be integral component of organizational responsibility (Ferrell).

A body of legal constraints on research activities seems to be developing relatively unnoticed. Action taken at the national, state, and municipal levels to control interviewing practices has been concomitant with the public interest in ethics and personal privacy.

Obtaining consumer opinions through organized marketing research has been essential to modern marketing. But that has implied fairness to consumers, and to have not abused their confidence. The Marketing Research Code of Ethics approved by the American Marketing Association (AMA) has spelled out minimum ethical standards for marketing researchers. The AMA Central Office and its legal counsel set up six major guideposts as it proceeded toward a recommended code: 1) Honesty; 2) Responsibility; 3) Fairness 4); Respect 5); Transparency and 6) Citizenship. It was hoped that such guidelines would help all marketers as well as marketing research firms to hold to a minimum of those standards while conducting their research, analysis and presentation of their findings to their respective clientele. The AMA code of ethics guidelines for marketing research firms has been updated multiple times and now reflects the extended research focus of many firms that have attempted to delve even more closely into the lives and habits of consumers. The AMA guidelines have been stated in **Table 4**.

**Table 4:** *AMA Marketing Research Guidelines*

**Honesty** – to be forthright in dealings with customers and stakeholders. To this end, we will:

- Strive to be truthful in all situations and at all times.
- Offer products of value that do what we claim in our communications.
- Stand behind our products if they fail to deliver their claimed benefits.
- Honor our explicit and implicit commitments and promises.

**Responsibility** – to accept the consequences of our marketing decisions and strategies. To this end, we will:

- Strive to serve the needs of customers.
- Avoid using coercion with all stakeholders.
- Acknowledge the social obligations to stakeholders that come with increased marketing and economic power.
- Recognize our special commitments to vulnerable market segments such as children, seniors, the economically impoverished, market illiterates and others who may be substantially disadvantaged.
- Consider environmental stewardship in our decision-making.

**Fairness** – to balance justly the needs of the buyer with the interests of the seller. To this end, we will:

- Represent products in a clear way in selling, advertising and other forms of communication; this includes the avoidance of false, misleading and deceptive promotion.
- Reject manipulations and sales tactics that harm customer trust.
- Refuse to engage in price fixing, predatory pricing, price gouging or “bait-and-switch” tactics.
- Avoid knowing participation in conflicts of interest.
- Seek to protect the private information of customers, employees and partners.

**Respect** – to acknowledge the basic human dignity of all stakeholders. To this end, we will:

- Value individual differences and avoid stereotyping customers or depicting demographic groups (e.g., gender, race, sexual orientation) in a negative or dehumanizing way.
- Listen to the needs of customers and make all reasonable efforts to monitor and improve their satisfaction on an ongoing basis.
- Make every effort to understand and respectfully treat buyers, suppliers, intermediaries and distributors from all cultures.
- Acknowledge the contributions of others, such as consultants, employees and coworkers, to marketing endeavors.
- Treat everyone, including our competitors, as we would wish to be treated.

**Transparency** – to create a spirit of openness in marketing operations. To this end, we will:

- Strive to communicate clearly with all constituencies.
- Accept constructive criticism from customers and other stakeholders.
- Explain and take appropriate action regarding significant product or service risks, component substitutions or other foreseeable eventualities that could affect customers or their perception of the purchase decision.
- Disclose list prices and terms of financing as well as available price deals and adjustments.

**Citizenship** – to fulfill the economic, legal, philanthropic and societal responsibilities that serve stakeholders. To this end, we will:

- Strive to protect the ecological environment in the execution of marketing campaigns.
- Give back to the community through volunteerism and charitable donations.
- Contribute to the overall betterment of marketing and its reputation.
- Urge supply chain members to ensure that trade is fair for all participants, including producers in developing countries (AMA, 2012).

The AMA adopted much of the ESOMAR ethics code. ESOMAR has stood for European Society for Opinion and Marketing Research and had developed another ethics code. The ESOMAR model was implemented in the revision of the AMA's code.

The Marketing Research Association has formulated its own code of ethical behavior into a sixty-three element digest, too long for this paper, but the essence of the document was encapsulated into the following six distinct principles:

- Conduct research in an honest and ethical manner
- Instill confidence in research to encourage public cooperation
- Instill confidence that research is done in a professional and fair manner
- To provide members with guidelines that lead to research being conducted in accordance with scientific, statistical and proven practical methods
- Carry out every research project in accordance with the Code
- Respect the general public and its rights (Marketing Research Association, 2012)

A 2011 research project by Ethisphere, focused upon the criteria to which it based its evaluation of the world's top ethical companies. Of most importance was the Ethisphere's Ethic Quotient (EQ), which focused on five attributes:

1. Ethics and compliance program (25%);
2. Reputation, leadership, and innovation (20%);
3. Governance (10%);
4. Corporate citizenship and responsibility (25%); and
5. Culture of ethics (20%).

Essentially, Ethisphere provided weighted attributes of its EQ in regards to how important it was in the makeup of a modeled ethical company. The specific companies awarded by Ethisphere in 2011 would not necessarily be of much value to this research project, particularly since no marketing research was identified, but the precise attributes may hold a key towards evaluating the most ethical marketing research firms in America.

A research project conducted by Vitell and Singhapakdi, investigated three main aspects that would influence ethics within a research firm and its client base. Those aspects were: 1) organizational commitment, 2) job satisfaction, and 3) esprit de corps. The two authors defined esprit de corps as the extent to which there is evidence of a team spirit within the organization. In terms of job satisfaction, it was fragmented into four distinct functional ranges: 1) satisfaction with compensation, 2) top management policies and programs, 3) promotions policies and actions, and 4) coworkers work ethics and efforts. This article defined organizational commitment as committed individuals that tended to identify with the objectives and goals of their firms along while wanting to remain with their organizations. The findings of this article found that all three aspects researched were positively correlated with both implicit and explicit ethical institutionalization. In addition, the terms **socialization** and **relativism** were discussed in this article- **socialization** being the process by which a person learns the values, norms and behaviors of the company and **relativism** defined as the extent to which an individual tends to reject the notion that absolute moral principles exist. These two terms would deal specifically with the internal ethics compliance programs and the culture of ethics within the company (Vitell & Singhapakdi, 2008).

Weaver and Trevino studied whether a compliance or value based orientation worked best within a company, which would have applied to marketing research firms. The two authors wrote, "Formal ethics and legal compliance programs are now common among larger American businesses (Weaver & Trevino, 1999)." Examples of these compliances were formal policies and ethics codes. This had become a vital portion of how companies had functioned. It was also discovered that ethics programs could emphasize values through counseling, or could emphasize legal compliance, as well as control and discipline. The authors' argued that programs emphasizing values, counseling, and responsible conduct were likely to have more desirable and long-lasting impacts than programs founded on rule-compliance. Some of the compliance programs were oriented towards punishments while

others were more focused on the human and institutional values as well as the potential for employees to actually commit to a set of ethics rather than just blindly follow them (Weaver, et.al.). This article was important to the present research because it had given credence to the compliance variable. Compliance orientation has been an important component in the ethics quotient, possibly even more so than the remaining variables in verifying and validating an institution's ethical climate.

Vittell and Hidalgo examined the effect of corporate and ethical values and enforcement of a code of ethics on perception of the role of ethics in the overall success of the firm. It discusses the impact of organizational commitment, ethical idealism and relativism. The article claimed that there was an increasing concern from the general public regarding ethical issues in business, especially in the U.S., and that many organizations have tried to control the problems by institutionalizing ethics. Such organizations have created new ethics programs such as ethics ombudsmen and ethics committees. Vittell and Hidalgo's claim was that ethics codes and ethical culture leads to a greater perceived importance of ethical issues among employees and ultimately to more ethical decision making.

The significance of this work was that it displayed that ethical values did have a significant positive effect on the "ethics as a long term priority" dimension (Vittell & Hidalgo, 2006). This has suggested that enforcement of a code of ethics was critical for firms to employ.

Fukukawa, Balmer and Gray took a specific look into corporate identity and the basis for corporate social responsibility and how they both connected back to ethics. In terms of ethical identity of a corporation, the research project researched four distinct aspects: (1) foundations, triggers and motives, (2) Management, (3) action and communication and (4) image and stakeholder perception. The researchers found that foundations triggered and motivated the integration and emergence of ethical identity, which was always initiated by one of three forces: 1) the altruistic beliefs of a leader; 2) strategic alternatives as gaining a competitive advantage in global competition; and 3) external forces which would be any change in the societal norms (Fukukawa, Balmer & Gray, 2007).

Fukukawa's findings on the management of a corporation determined that managers would need to have implemented change which involved establishing goals, policies and procedures, delegate tasks and responsibilities. In addition, managers should have installed monitoring and review methods. Their continuing research on action and communication dealt with the company's actions in alignment of its identity or public relations. The last effort of Fukukawa's findings revealed that image and stakeholder perceptions were based upon perceptions, due their ability to guide behavior and the creation of a corporate image and the maintenance of negative images were all significantly important concerns for ethical corporations (Fukukawa, et. al.).

## **AMERICA'S MARKETING RESEARCH FIRMS FACING an ETHICAL QUAGMIRE**

Without question, marketing research firms in the U.S. have prospered and now sit atop Corporate America as one the leading industries. Marketing research firms have delved into some of the most secretive and sensitive aspects of the marketplace, including its own clientele. Consider the following example from Sparks and Hunt: A marketing researcher working on a project for a new client needs background information on competitive trends in the client's industry and contact an advertising executive friend who formerly had the account of the client's chief competitor. For some marketing researchers, seeking information about a client's competitive situation from someone who acquires that information "in confidence" would represent a violation of professional ethics. For others, seeking information from such a source would be viewed simply as making the best use of all available information resources. Indeed, some researchers might view failing to use available sources of information as a violation of the duty to do the best job for their current clients (Sparks & Hunt, 1998)... a dilemma, possibly so, but clearly there existed ethical content issues. There have existed a myriad of ethical challenges facing marketers conducting research, some obvious and blatantly conducted, while others, like the proceeding example were more subtle and not as easy to determine either prior or post of occurrence.

A study, conducted to understand the level of ethical behavior of marketing research managers, determined through the results of its survey, confirmed that a gap existed between personal beliefs about ideal/ethical behavior and

perceptions of current industry practice. According to the researchers, the results were compatible with the findings of other research studies who had investigated the attitudes of marketing researchers toward ethical practices. Key to this study was the realization that for virtually every one of those previous nineteen studies individual researchers disapproved of them yet perceived them to be common-place within the marketing research industry. The discrepancy between personal approval and perceptions of industry practice implies that individuals perceive themselves to have higher ethical standards than their colleagues in the field marketing research (Laroche, McGown, & Rainville, 1986).

In another part of Laroche’s study it was revealed that many of the researchers studied approved of unethical practices involving the protection of respondents more than they did of unethical practices involving clients. As Laroche commented in the concluding remarks, such action was highly disturbing (Laroche, et.al.). One may feel a bit uneasy after having read the Laroche study, particularly when one realized that 75 American marketing research managers and executives completed the study in 1985 or 1986. Consider below **Table 5’s** review of ethical sensitivity of marketing research firms:

**Table 5:** *Marketing Researcher Ethical Sensitivity by J.A. Sparks & S.D. Hunt (Sample Characteristics)*

<b>Marketing Research Practitioners (n=188)</b>					
	<b>Number</b>	<b>Percentage</b>		<b>Number</b>	<b>Percentage</b>
<b>Gender (n =185)</b>			<b>Firm Size (n= 188)</b>		
Female	92	50	10 or fewer	38	20
Male	93	50	11 to 100	41	22
			101-1000	42	22
			1001-5000	24	13
			5000 & greater	25	13
<b>Respondent Education</b>			<b>Type of Firm (n= 188)</b>		
Total Undergraduate	182	97	Marketing Research Dept.	94	50
Marketing	29	15	Marketing Research Firm	74	39
Other Business	47	25	Advertising Agency	9	2
Non-business	106	56	Other	11	6
Total Master’s	115	61	<b>Firm Code of Ethics? (n = 186)</b>		
MBA’s	84	45	Yes	49	63
Non-business	31	16	No	87	47
Total Doctorate	27	14	Don’t know	21	11
Marketing	3	2			
Other business	1	1			
Non-business	23	12			
<b>Job Title (n= 183)</b>			<b>(If yes, vigorously enforced (n= 78)</b>		
CEO, President, Owner	45	24	Yes	49	63
Vice President	27	14	No	17	22
Manager, Director	76	41	Don’t know	12	15
<b>Average age (n =183)</b>	42 years of age		(Sparks & Hunt, April, 1998)		

The table above presents some rather startling research findings in that mature persons working in the marketing research industry revealed that 47% of the firms do not have their own ethics code and 22% of the respondents pointed out that the firm’s ethics code were not vigorously enforced. In essence, a bit of the ‘wild-wild-west’ seems to be in play with various marketing research firms and with unbridled ethical activity.

Historically, business practices in the proverbial ethical grey area seldom have been left to the privacy of industry self-regulation. Industry groups, such as the Marketing Research Association, the Market Research Institute, and the Council of American Survey Research Organizations (CASRO), typically have been unable to take decisive, actionable stands on controversial activities (Frey & Kinnear, 1979).

The Privacy Act of 1974 recognized the individual's right of privacy and established the Privacy Protection Study Commission to have determined the applicability of the act towards private research and data collection

organizations. The Commission concluded that policy in this area must have the following objectives: 1) to minimize intrusiveness; 2) to maximize fairness; and 3) to create legitimate and enforceable expectations of confidentiality (Marketing News, 1977). If the 162 recommendations of the Commission are acted upon favorably by Congress, marketing research practices could change drastically (Frey, et.al.). The aforementioned information has suggested that without immediate recognition of determining ways and means of halting such violations, the law may intercede over once ethical standards and covenants.

Because of industry inaction, the FTC's lack of strong interest in this area, and the absence of strong penalties, 'sugging' (a British term for any plan, scheme or ruse as a door-opener to gain admission into a prospect's home, office or other establishment, which misrepresents the true status and mission of the person making the call) remains a commonplace occurrence. The risk to legitimate marketing researchers is twofold. First, potential respondents may become uncooperative with legitimate researchers if they have been 'sugged' or even if they have successfully resisted a 'sugging' attempt. Response rates will fall and the costs of interviewing will rise. Second, at some point the outcry over 'sugging' may attract enough political attention to generate specific legislation. Potentially this legislation could prohibit legitimate activities beyond 'sugging'. The increasing number of municipalities requiring permits and/ or licenses for door-to-door solicitation of commercial and charitable organizations could easily extend their laws to cover interviewing (Frey, et.al.). Once the legislative mechanism has directed to this issue on a worldwide scale, one would wonder if marketing researchers in the U.S. would be able to contain the legislative momentum. The sheer numbers of legal cases against marketing research firms, such as Metromedia Inc. (USFTC 1971a); Crowell- Collier /Macmillan in California; a cease and desist order issued against A. C. Nielsen, Inc. in 1963; Opinion Research in a public opinion study on the Consumer Protection Agency (Advertising Age, 1975), and many others in the U.S., would all-within-themselves suggest widespread focused address on the ethical/legal dilemmas facing marketing research firms.

## METHODOLOGY

A major thrust of this paper was to determine how the Ethics Quotient (EQ) directly corresponds to marketing research firms within the United States. The variables that will be tested were: a. Culture of Ethics; b. Internal Systems & Ethics/Compliance Program; and c. Reputation Track Record. When dealing with U.S. marketing research firms it was felt that the Ethics Quotient (EQ) corresponded, either negatively or positively, towards the ethical criteria, values, and believes of marketing research houses. Secondary data proved quite valuable in understanding the various terms and background of ethical compliance programs as well as offering past testimonials of both success and failure activities. It was felt that an up-to-date perspective on ethics should be obtained from customers of marketing research firms.

### **Questionnaire Procedures and Data Collection**

A multi-scaled survey (see **APPENDIX**) was prepared, from the Hypotheses, in an attempt to better understand the potential ethical challenges that marketing research firms have been facing.

### **Hypotheses:**

1. To what extent do America's marketing research firms' managers and employees possess strong moral codes?
2. Do marketing researchers consider the Ethics Quotient to remain as a good measurement of what makes an ethical company?
  - Ethics & compliance program (25%);
  - Reputation, leadership, & innovation (20%);
  - Governance (10%);
  - Corporate citizenship & responsibility (25%); and
  - Culture of ethics (20%).

6. What have been the most significant attributes of the ethics quotient as perceived by clientele of marketing research firms?
7. To what extent have ethics and compliance programs been considered valuable?
8. To what extent has reputation, leadership, and change management considered to have been vital characteristics of an ethical marketing research firm?
9. To what extent has corporate governance been seen as a vital characteristic of an ethical marketing research firm?
10. To what extent should AMA's Code of Ethics have assisted marketing research firms' ethical programs?
11. What should have been the primary methods of maintaining assurances and compliances within a marketing research firm?

## **FUTURE RESEARCH**

Future research efforts should focus attention on other aspects of ethical research, such as researchers' moral obligations toward the community and their sponsoring organizations as well as addressing ethical conduct in other aspects of the research process, indicated earlier in this paper. In fact, the whole area of ethics in marketing research needs further investigation. When one considers the sheer number of ethical codes for America's businesses and its marketers, the fundamental question still remains, why are there still so many ethics violations?

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## **APPENDIX - QUESTIONNAIRE**

This survey will analyze the ethical practices of marketing research firms in the United States. This survey is being administered by Dr. J.D. Williams, college professor and Kristen Maehrer, both from Kutztown University. We thank you for participation in this survey. Your participation in this study is voluntary and you may withdraw at any time without negative consequences. If you wish to withdraw, simply do not complete the survey. By completing the survey you are consenting to participate in the study and that you are 18 years of age or older. All information from this survey will be handled in a confidential manner, so no one will be able to identify you when results are reported. This questionnaire was reviewed and approved for distribution by K.U.'s I.R.B on **May 8<sup>th</sup>, 2012**.

Please check the number that best relates to your business situation.

### **SCREENING QUESTIONS**

**SC-1.** Are you at least 18 years of age?

**SC-2.** Are you presently working for a business within the U.S.?

**SC-3.** Are you aware, in general terms, of the functions and responsibilities of **MARKETING RESEARCH FIRMS**?

**SC-4.** Are you aware of any **MARKETING RESEARCH FIRM(S)** doing business with your firm?

GENERAL ETHICS KNOWLEDGE (Scaled responses are 1-7: 'Not at all' being 1 and 'To a great Extent' being 7)

1. Do you consider **ETHICS** an important aspect of doing business in America?
2. Do you feel that one's moral standards should equal or exceed their company's **CODE of ETHICS**?
3. To what extent do you agree that **ETHICAL STANDARDS** begins at the highest levels of the firm?
4. Would you trust a firm who's **ETHICAL STANDARDS** was considered to be/have been suspect?

MARKETING RESEARCH FIRMS and **ETHICAL STANDARDS** (Scaled responses are 1-7: 'Not at all' being 1 and 'To a great Extent' being 7)

1. Considering **MARKETING RESEARCH FIRMS** research conduct, do you feel that their **ETHICS** should be very strong?
2. To what extent do America's **MARKETING RESEARCH FIRMS' MANAGERS** possess strong moral codes of conduct?
3. To what extent do America's **MARKETING RESEARCH FIRMS' EMPLOYEES** possess strong moral codes of conduct?
4. Would you consider **MARKETING RESEARCH FIRMS' ETHICS QUOTIENT**, in terms of the following aspect..... to have been well practiced?

- a. **ETHICS & COMPLIANCE PROGRAMS**
- b. **REPUTATION, LEADERSHIP & INNOVATION**
- c. **CORPORATE GOVERNANCE**
- d. **CORPORATE CITIZENRY & RESPONSIBILITIES**
- e. **CORPORATE CULTURE of ETHICS**

1. To what extent has reputation, leadership, and change management considered to have been vital characteristics of an ethical marketing research firm?
2. To what extent should American Marketing Association's Code of Ethics have assisted marketing research firms' ethical programs?
3. To what extent should the following items represent the primary methods of maintaining assurances and compliances within a marketing research firm [**1) Honesty; 2) Responsibility; 3) Fairness 4); Respect 5); Transparency and 6) Citizenship**]?
4. Thank you very much for completing this questionnaire. As an appreciation for your support, we plan to offer you a copy of our manuscript, when published. **OPTIONAL:** Please present your email address below, if you wish a copy of our manuscript \_\_\_\_\_.

# THE RELATIONSHIP BETWEEN CUSTOMER INCENTIVES AND CUSTOMER SERVICE SCORING

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## ABSTRACT

*In today's fierce markets, organizations will find new ways to retain the loyalty of customers. Organizations desire to increase their customer services and they will often do this through a customer reward program. These organizations will monitor the results and try to find new and better ways to keep their customers happy. An idea to make customers happy and therefore retain them is by offering an incentive such as cash, gift cards, or products; the idea is that these organizations will be able to use incentives to make customers feel as though they are needed and desire to come back for additional purchases. In this study, customers in one of 4 stores of a chain encounter varying levels of incentives (from none to a \$250 gift card drawing), and randomly some are asked to participate in a phone survey regarding their in-store experience. The two research questions investigated are: (1) Can customer satisfaction scores be increased by adding an additional incentive? If so, does one incentive impact customer service scores more than another incentive? (2) Is there a difference in the mean daily calls during periods of no incentives versus when there is an incentive? The results of the study illustrate that any incentive, including a candy bar, appeared to have a significant influence on participation in the phone survey and the overall positive response given.*

**Keywords:** *Customer Satisfaction, Incentives.*

## INTRODUCTION

In progress

## RESEARCH OBJECTIVES

The purpose of this study is to understand if an organization can increase their customer service by introducing a stimulant to make the customer feel as though they are experiencing better customer service. This study was conducted at a Fortune 500 organization in which customer incentives are frequently offered and customers are asked to call a hotline to grade the store in three categories. The scoring will determine the impact of each incentive on customer satisfaction which would help business leaders determine if incentives are worth the price.

## METHODOLOGY

The organization in this study offers a reward program in order to help improve customer service and overall profits. In each store, a computer randomly selects a customer upon checkout to call a toll-free number, which leads the customer to conduct a survey based on the customer service they received that day. In order to entice customers to place the phone call, the organization enters every customer who calls and takes the survey in a drawing to win \$1,000. All of this is accomplished through an automated system at the corporate level, and the stores have no control over who will win the drawing. At the store level, there is nothing to entice customers to call, nor do they attempt to offer incentives to their customers in order to increase levels of customer service scores. The automated system randomly selects approximately 1,500 customers per month (about 50 per day); on average 20% of those customers actually place the call and score the store on their customer satisfaction experience, answering three yes/no questions: (1) Was the store clean and neat? (2) Was the checkout process efficient and hassle free? (3) Was the staff friendly and courteous?

For this experimental study, in order to isolate the effects of different marketing strategies, the control store did not offer any incentives to their customers. All four stores are from the same corporation, located within a two-mile

radius, and each store serves the same type of clientele. The other three stores changed one factor in order to determine if there is a significant difference in customer satisfaction scores; the incentives offered by the three stores were (1) a free candy bar, (2) a chance to win a \$25 gift card in a drawing, and (3) a chance to win a \$250 gift card in a drawing. This study took place over a one-month period. By analyzing the difference in customer satisfaction scores across the four stores, the effects, if any, of each incentive could be isolated and analyzed. Since the stores are regionally close, and under the same regional manager, and have had similar customer satisfaction scores in the past, any effects from the economy should be negligible.

The two research questions investigated are (1) Can scores be increased by adding an additional incentive? If so, does one incentive impact customer service scores more than another incentive? (2) Is there a difference in the mean daily calls during periods of no incentives versus when there is an incentive? The sample within this research will be any of the customers who come within any of these four retail stores. The randomly selected sample will be given a receipt with a toll-free number on it explaining that if they participate in the survey, then they will be entered into a drawing to win \$1,000.

## ANALYSIS AND RESULTS

**Hypothesis 1:** *The customer's attitude toward the store's cleanliness is independent of the incentive used.*

### Chi Square Test of Independence

		Clean		Total
		Yes	No	
Incentive used	None	171	828	999
	Candy	182	1826	2008
	\$25 card	197	1586	1783
	\$250 card	154	1545	1699
Total		704	5785	6489

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	52.867	3	0.0000

With a p-value of .0000 which is less than .05, the null hypothesis is rejected. It can be concluded that a customer's attitude toward store cleanliness depends on the incentive offered. Respondents surveyed for the store with the Candy Bar and the store with a \$250 Gift Card Incentive were significantly more likely to report the store as clean (both at 91%) than were respondents at the store with no incentive (83%).

**Hypothesis 2:** *The customer's attitude toward the store's checkout process being efficient is independent of the incentive used.*

### Chi Square Test of Independence

		Efficient checkout		Total
		Yes	No	
Incentive used	None	151	848	999
	Candy	101	1907	2008
	\$25 card	90	1693	1783
	\$250 card	103	1596	1699
Total		445	6044	6489

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	127.978	3	0.0000

With a p-value of .0000 which is less than .05, the null hypothesis is rejected. It can be concluded that a customer's attitude toward the efficiency of the checkout process store cleanliness depends on the incentive offered. 84% of the respondents surveyed from the control store without incentives reported a fast checkout, as compared with the 94-95% scores given to the three stores with incentives.

**Hypothesis 3:** *The customer's attitude toward the store's staff being friendly and courteous is independent of the incentive used.*

**Chi Square Test of Independence**

		Friendly personnel		Total
		Yes	No	
Incentive used	None	171	828	999
	Candy	40	1968	2008
	\$25 card	62	1721	1783
	\$250 card	68	1631	1699
Total		341	6148	6489

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	341.941	3	0.0000

With a p-value of .0000 which is less than .05, the null hypothesis is rejected. It can be concluded that a customer's attitude toward the store's staff being friendly and courteous depends on the incentive offered. 83% of the respondents surveyed from the control store without incentives reported the staff positively, as compared to the 96% entered in a gift card drawing and the 98% who received a candy bar.

**Hypothesis 4:** *There is no difference in the mean daily calls of customers as a function of the incentive used by the store. This hypothesis was tested using a two-factor analysis of variance.*

Source	SS	df	MS	F	Sig.
Corrected model	75105.031	7	10729.29	788.016	.000
Intercept	412887.004	1	412887.004	30324.609	.000
Incentive	6535.013	3	2178.338	159.989	.000
Year	52552.504	1	52552.504	3859.734	.000
Store * Year	16017.513	3	5339.171	392.137	.000
Error	2940.964	216	13.616		
Total	490933.000	224			
Corrected Total	78045.996	223			

With a p-value of .0000 which is less than .05, the null hypothesis for the interaction of the store incentive vs. year is rejected (note that the presence of interaction supersedes significant differences in individual variables). The amount of increase in survey respondents from one year to the next was different for some stores than for others. For the control store without incentive, there was no significant increase in the frequency of survey respondents; for the three stores with incentives, there were significant and substantive increases in the frequency of survey respondents.

**CONCLUSION AND FUTURE RESEARCH**

The results of the hypothesis tests showed that incentives ranging from a token candy bar given immediately to an opportunity to win \$250 all resulted in increased participation and scores by customers, whether evaluating store cleanliness, checkout efficiency or staff courtesy. While the original intent of the incentives was to induce increased participation and not to bias shopper evaluations, and it proved successful, the results showed that customer satisfaction was impacted too. Whether it was that the more satisfied customers were more likely to call or that the

incentive actually made customers happier is not known for certain, but the evidence appears strongly in favor of customers feeling more positive about their experience when incentives are present, which is good news for business leaders. It is especially good news when the value of the incentive doesn't appear to be important, but just that one exists. In no way can loyalty be determined by this study, as there is no assurance the customers returned, but it is a good possibility that should be evaluated further. The use of a voluntary phone call has inherent problems in most cases, as customers don't wish to invest their time wastefully, and something done in the store might be more fruitful, but past studies have shown low participation in those methods too.

The principal "limitation" of this field experiment design is that the prevailing incentive of a \$1,000 drawing remained in force throughout the trial period. Shopper behavior was reinforced not just by the three levels of the incentive independent variable but by the continuing operation of a thousand-dollar drawing. Granted, it is open to debate whether a large incentive with low odds of winning is more compelling than a more modest incentive with provision for more winners. The chain can determine for itself whether there is incremental participation value to the three incentives tried if the data were changed to become a percentage of each store's traffic that had been invited by having their attention called to the marking on their receipts. As it is, the comparison with control-store headcounts creates the impression that participation improves but not the prospects of favorable feedback.

To be more confident about eliciting the same participation rate even at lower incentive levels, the chain should consider running a longer field trial where the \$1,000 incentive is officially discontinued and where actual performance on the three key indicators is also logged on a continuing basis for analysis as the true independent variable. Also, a longer sampling series bears the triple virtues of evening out seasonality, reflecting the variety of competitive store chain promotions.

## **REFERENCES**

In progress

# MARKET-DRIVEN FIRMS: IS ITS HIGH ENERGY TOO MUCH FOR ITS EMPLOYEES?

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## ABSTRACT

*Without question, market-driven firms have been afforded a tremendous occasion to dynamically adjust to marketplace changes and to better determine niche opportunities along the way. The marketing dynamics have necessitated these types of businesses to flex its market muscle when and where their respective business model determined a justifiable investment was deemed appropriate. Yet, in spite of active and adjusting movement, those driven firms have had to endure tremendous burdens and costs of resource shift to meet those market offerings and to have effectively competed against other challengers. The resource shifts for most market-driven firms were not just plant, equipment and other production materials, but it's all precious human capital. From down-sizing to the more current performance-based sizing, those human resources were hired, fired, re-trained, re-trenched and re-grouped to meet the all-to-fleeting market needs. For some persons, it has represented a wonderful ride of exciting marketing activity, yet for others; it may have been a nightmare of challenges. This research project has delved into many of the psychological challenges of working for market-driven firm.*

**Keywords:** *Marketing Driven Firms, Psychology.*

## PURPOSE

This study aims to shed light on the psychological and emotional implications on employees from the changes and fluctuations of market-driven firms in the marketing industry. Market-driven firms are thought to be the fastest adapting firms in the marketing industry due to their nature and yet they are relatively new to marketing research and no research has been done on how the nature of such firms, that is, constantly changing and adapting to the market, cause psychological and emotional implications to their employees. The research has been broken up into two parts: 1- the study has investigated the framework and structure of a market driven firm to understand the changes and fluctuations that occur within these kinds of firms; and 2- the study has focused upon what these changes in the workplace affects employees emotionally and psychologically. After reviewing these two sections the study has attempted to understand the implications of the changes that took place in typical market-driven firms in terms of the the psychological and emotional aspects forces on their respective.

## INTRODUCTION

An article written by Vorhies and Harker conducted an investigation into Market-Driven firms and defined them as a complex bundles of skills and collective learning, exercised through organizational processes that ensured superior coordination of functional activities (Day, 1994; Kumar, Chen, Simpson, 2009). As such, a key task for market-driven firms was to have identified those capabilities that were to have provided a strong competitive advantage. The capability identification process was not a simple operation since the capabilities needed to have met a number of challenging criteria, to include rare-, complex-, and tacit-based in structure (Johnson & Scholes, 1999). The article determined that any firm that had aspired to be market-driven, needed to have had a formidable advantage that the competitors did not have or would have found hard to emulate.

What have been the distinct characteristics of a market-driven firm?

- Offering superior solutions and experiences,
- Focusing on superior customer value,
- Converting satisfaction to loyalty,
- Energizing and retaining employees,

- Anticipating competitors' moves,
- Viewing marketing as an investment not a cost, and
- Nurturing and leveraging brands as assets (Day, 1998).

Kohli and associates defined a market-driven orientation to have been the process by which firms acquired, processed, and disseminated customer and competitor information throughout the organization and act upon this information in the market (Kohli & Jaworski, 1990). This definition addressed the fact that the orientation was indeed heavily employee based, thusly having verified the concern of the implications of change over employee's psychological and emotional health due to the changes in a market-driven firm, from which would have obtained its competitive advantage within a constant shift of market orientation by having adapted to such changes as a flex-based organization.

Richardson and Rothstein wrote, "A number of successful companies appeared to approach markets in ways not explained by traditional conceptualizations of method of operation. Starbucks, Southwest Airlines, IKEA, Swatch, Amazon.com, Dell, and FedEx represented cases in point (Richardson, Rothstein, 2008). Due to the somewhat passiveness of market driven firms, the importance of efficiency of change and smoothness of change in an organizational level has made extremely important when compared to market driving firms but there are also lesser risk involved at a higher cost. Accordingly, all of those aforementioned have extended their respective method of operation constructs to have included two distinct approaches, which the authors label 'market-driven' and 'market-driving' (Jaworski, Kohli & Sahay, 2000).

Cravens' research brought to light some key issues of marketing dynamics for the 21<sup>st</sup> century. According to Cravens, there have been potential planning threats and convoluted implementation factors in marketing. Cravens determined that a market-driven firm in this new era, which focused on the market, which in hand was very competitive and had strategies for the implementations, would likely fair better than other corporate structures. The key characteristics of market-driven strategies have been:

- Developing a shared vision about the market and how it is expected to change in the future,
- Selecting avenues for developing superior value to customers,
- Positioning the organization and its brands in the marketplace using distinctive competencies,
- Recognizing the potential value of collaborative relationships with customers, suppliers, distribution channel members, internal functions, and even competitors, and
- Reinventing organizational designs to implement and manage future strategies (Cravens, Greenly, Piercy & Slater, 1997).

Within the key characteristics there were challenges of implementation, even for the market-driven firms. For market-driven strategies that could have been used for the implementations process were:

- Shifting from a marketing to market-driven strategy perspective,
- Leveraging modularity to facilitate implementation,
- Recognizing the new economies of information, and
- Adopting new concepts of strategic performance measurement (Cravens, et.al.).

Strategy and how it has been measured was important to address in terms of the psychological and emotional implementations for market-driven firms and due to the potential heightened stress. When something could potentially go wrong or change, it was necessary to have a sound and sensible strategy ready to fix the situation, if not for the purpose of have gotten back on track (Dewe & Guest, 1990). Strategies that offered additional helpful support for stress management, caused by those market-driven changes, was needed but not always implemented, in part, due to the speed of changes and adjustments that the firms needed to perform in making ready for those fleeting market niche opportunities.

Marketing capabilities have been developed via learning processes when the firm's employees repeatedly have applied their knowledge to solving the firm's marketing problems. In this respect, both adaptive and generative learning processes may have been used at various times (Day; Slater & Narver, 1995). An important aspect of developing marketing capabilities has been the ways in which knowledge was integrated. Thus, marketing capabilities could have been thought of as integrative processes by which knowledge-based resources and tangible resources came together to create valuable outputs. As marketing personnel repeatedly undertake marketing tasks, complex patterns of coordination between people, and between people and other resources occurs (Grant 1991; 1996). These coordinated patterns of behavior were often quite consistent, yet remain dynamic and could have changed as the firm's needs change (Grant, 1991). Ergo, market-driven firms could emerge into the marketplace as a more natural growth process. One of the hallmarks of capabilities development was learning through repetition (Prahalad & Hamel, 1990; Sinkula, 1994). By having brought people and resources together in repeated efforts, firms developed the processes upon which capabilities were based. When value-adding, functional-level capabilities were integrated across functional lines and were deployed across multiple product-markets to deliver competitive advantage, then a core capability had developed (Grant 1996). Such amalgamation foster the normal and somewhat expected formulation of market-driven firms.

Market-driven marketing capabilities were therefore re-defined as integrative processes designed to apply the collective knowledge, skills, and resources of the firm to the market-related needs of the business, enabling the business to add value to its goods and services and meet competitive demands (Day 1994). Since marketing processes were often firm specific, unique marketing capabilities were developed as individuals combine their particular knowledge and skills with other intangible and tangible resources available to them. Market-driven firms could have been expected to evolve similarly, but not necessarily in identical marketing capabilities. This has helped prevent these value-adding capabilities from being easily imitated by competitors and also prevented easy substitution of one capability for another. This also prevented those capabilities from being easily transferred between competitors. As a result, those capabilities were able to form the basis for sustainable competitive advantage (Grant, 1991 & 1996).

There have been essentially six initiatives that provided a road map to guide market-driven processes:

1. **Demonstrate leadership commitment.** There was a leader who owns and champions the change, which was investing time and resources and had created a sense of urgency.
2. **Understand the need for change.** Key implementers have known what it has meant to be market-driven, knew what changes needed to be made and saw how the change initiative would benefit them and the business.
3. **Mobilize commitment at all levels.** Those responsible for the change program had experienced and credibility, and knew how to mobilize a coalition of supporters and overcome resistance.
4. **Shape the vision.** All employees knew what they were trying to accomplish. They understood how superior value was be created and saw what they had to do differently.
5. **Align structures, systems and incentives.** There was a credible plan for coordinating structures, systems and incentives. Key implementers had the resources they needed for doing their work.
6. **Sustain the change.** Those responsible for the change program knew how to get started and ensured an early win. They had a plan for keeping attention focused on the change, and benchmarks for measuring progress (Day, 2000).

A research project offered by Weerawardena, examined the role of market focused learning capability and marketing capability in innovation-based competitive strategy on sustainable competitive advantage. The findings indicated that entrepreneurship was an important factor in sustained competitive advantage (SCA) and while market-focused learning capability led to higher degrees of innovation, marketing capability enables SCA. Innovation and entrepreneurship was what was growing rapidly, where the adaption of these in the market-driven environment and the effects on the firm's performance (Weerawardena, 2003). That research project contributed to the competitive strategy theory by refining and testing measures of entrepreneurship, market-driven capabilities, organizational innovation, and sustained competitive advantage (SCA), explored the links among these constructs.

Entrepreneurial firms, similar to market-driven firms, pursued innovation-based competitive strategy built and nurtured distinctive capabilities in market-focused learning and marketing. Market-focused learning led to organizational innovation, which supported the view that markets were a key source of idea generation in the innovation process.

Market-driven firms excelled at finding attractive markets, determining customer needs, and developing goods and services to meet those needs (Day 1990). By having developed market information and focused it around strategic actions, these market-driven firms were predicted to be better at introducing new products to the market and would have generated larger numbers of successful new products than their competition (Slater & Narver, 1994). That meant that while market-driven firms may not have been the most innovative firm in their industry (as measured by patents, etc.), they would have excelled at adapting technologies to meet both current and future customer needs. Thus, those dynamic firms often exhibited the adaptive characteristics of the first stage innovator and commercializer (Miles & Snow 1978). Having built a market-focused, customer-needs centered product development capability, these firms were expected to stay in touch with current and potential customer needs and competitor moves better than more internally focused firms and, as a result, they were expected to be more adaptable and perform better than less market-driven rivals (Day 1990). **Tables 1-4** below present the relative value of such effort:

**Table 1:** Business Strategy Confirmatory Factor Analysis

Constructs and Items	Parameter	Standardised Coefficient	t-Value
<b>Business Strategy CFA</b>			
<i>Differentiation</i>	$\alpha = 0.81$		
Provide unique products or services?	$\lambda_{x_{11}}$	0.71	7.08
Offer higher quality prods/svcs than your competitors?	$\lambda_{x_{12}}$	0.39	3.51
Offer innovative products and services?	$\lambda_{x_{13}}$	0.73	7.39
Offer highly differentiated products and services?	$\lambda_{x_{14}}$	0.88	9.48
Offer products and/or services with distinctly different features from those of competing products?	$\lambda_{x_{15}}$	0.75	7.62
<i>Cost Advantage</i>	$\alpha = 0.61$		
Be the lowest cost provider in your industry?	$\lambda_{x_{21}}$	0.99	13.11
Provide your customers with the lowest prices among your major competitors?	$\lambda_{x_{22}}$	0.57	5.68
Emphasize efficiency?	$\lambda_{x_{23}}$	0.22	2.07
Strive for high volume to spread costs?	$\lambda_{x_{24}}$	0.32	3.03
<i>Product-Market Scope</i>	$\alpha = 0.76$		
Offering more products and/or services than your competitors?	$\lambda_{x_{31}}$	0.80	8.08
Offering a broader range of products/services than competitors?	$\lambda_{x_{32}}$	0.89	9.31
Offering a more limited line of products/services than competitors (RS)?	$\lambda_{x_{33}}$	0.38	3.35
Serving more market segments than your competitors?	$\lambda_{x_{34}}$	0.67	6.50

Note:  $\chi^2 = 69.83, 63 df.$

CFI = 0.98

Interfactor Correlations and t-Values:

Cost—Diff. (-0.20, -1.79);

Scope—Diff. (0.39, 3.57); and

Scope—Cost (0.08, 0.69)

Tables 2-4 will be provided by authors upon request.

**Table 5**  
**MANOVA Results, Cluster Means and Comparisons: Strategy and Market Orientation**

Variable	Cluster 1 Market-Driven (N=43)	Cluster 2 Non-Market-Driven (N=44)	t-Value	Comparison
Differentiation	5.90	5.42	2.41	1 > 2
Cost Advantage	4.62	4.34	1.11	N.S.
Product-Market Scope	4.70	4.36	1.32	N.S.
Intelligence Generation	5.92	4.86	6.66	1 > 2
Intelligence Dissemination	6.10	5.01	5.74	1 > 2
Responsiveness	5.96	4.62	10.66	1 > 2
<i>MANOVA Test Results</i>	<i>Value</i>	<i>F, d.f.</i>		<i>P-Value</i>
Wilks' Lambda	0.39	20.92, 6, 80		0.0001

**Table 8**  
**MANOVA Results, Cluster Means and Comparisons: Marketing Capabilities**

Variable	Cluster 1 Market-Driven	Cluster 2 Non-Market-Driven	t-Value	Comparison
Market Research Capabilities	5.23	4.06	5.55	1 > 2
Pricing Capabilities	4.73	4.06	3.24	1 > 2
Product Development Capabilities	5.00	4.28	3.37	1 > 2
Channels/Distribution Capabilities	5.13	4.26	3.51	1 > 2
Promotion Capabilities	4.81	4.06	3.30	1 > 2
Marketing Management/Planning Capabilities	5.52	4.18	6.80	1 > 2
<i>MANOVA Test Results</i>	<i>Value</i>	<i>F, d.f.</i>		<i>P-Value</i>
Wilks' Lambda	0.59	9.43, 6, 80		0.0001

**Table 9**  
**MANOVA Results, Performance Differences By Cluster**

Variable	Cluster 1 Market-Driven	Cluster 2 Non-Market-Driven	t-Value	Comparison
Growth	5.26	4.79	2.18	1 > 2
Profitability	5.43	4.70	3.13	1 > 2
Customer Satisfaction	5.59	5.01	3.08	1 > 2
Adaptability	4.90	4.14	3.92	1 > 2
<i>MANOVA Test Results</i>	<i>Value</i>	<i>F, d.f.</i>		<i>P-Value</i>
Wilks' Lambda	0.81	4.67, 4, 82		0.0019

Day's article in 1998 shed some light on what it has been some of the fallacies in being a market-driven firm. The first aspect was a discussion of three main traps that successful companies could fall into when it came to being market-driven:

- First being the self-centered trap, which was a company who many have been market-driven at one time but didn't realize, until they encountered trouble, that they have lost their focus.

- The second trap is the customer compelled trap - when a company fundamentally misunderstood the concept and failed to exercise discipline in their strategy: instead of a clear focus, the energies of the organization are diluted by the uncoordinated efforts of different parts of the organization.
- And lastly the skeptical trap was, when a company who doubts the advisability of being led by customer and put their faith in superior judgment and technology as the key to a long-run competitive advantage.

## **EMPLOYEE ADAPTATION to the DYNAMICS of a MARKET-DRIVEN FIRM: CAUSE, CONSEQUENCES and OUTCOMES**

To meet the demands of a 24/7 market-driven firm's global business environment, there was a need to have generated increasing pressure on its employees to work longer, to have been available to clients and customers, and to have done more with less. Current business and popular media have been filled with stories about longer work hours, increased workload, and shorter vacations (Burrus & Richman, 2004; Casey, 2005; Galinsky, Bond, Kim, Backon, Brownfield, & Sakai, 2004). Yet, within the constructs of many market-driven firms, such evidence may have most profoundly the case or cases of investigation and analysis.

Today's work environment has been driven primarily by economic and shareholder pressures to continue to improve the bottom line. Large-scale organizational change, whether in the form of mergers, acquisitions, restructuring, or downsizing has been a widespread feature of today's unstable work environment (Robinson & Griffiths, 2005). Although change has been shown to adversely affect an individual's well-being and productivity, research at the individual level on how people adapt to change was not as prominent as macro-level research on organization change (Wanberg & Banas, 2000). Wanberg et. al. determined that change acceptance and a positive view of organization changes was positively related to job satisfaction in their study. Schweiger and DeNisi found that employees who perceived higher stress and perceived uncertainty during a two plant mergers reported lower levels of job satisfaction and lower levels of performance (Schweiger & DeNisi, 1991).

Change has occurred at such an accelerated rate in today's U.S. economy. It has been imperative for market-driven firms to have responded to these dynamic markets through having employees to adequately cope within these energetic markets. The J.D. Parent study was designed to better understand the reactions of employee when such dramatic change occurs at their work place. It was hypothesized that individuals reporting higher levels of the above variables would also report higher levels of adaptability. This study also introduced the notion of thriving (functioning at a higher level after a change) to the empirical research on organizational changes and tested the hypothesis that better adaptors would perceive better work outcomes in the form of higher job satisfaction and perceived performance and lower absenteeism and intentions to quit the organization (Parent, 2006).

Parent also described the following for each of the responses to change:

- "Succumb – Does not survive the change; does not function after the change;
- Crashes and burns;
- Survive – survives the change; functions at a lower level than before the change;
- Resilient – Survives the change; functions at the same level as before the change; and
- Thrive – survives the change; functions at a higher level than before the change (Parent)."

The *thriving* employee has been pertinent to a market-driven firm as he or she has functioned at higher and higher levels as each change occurs. Through strict screenings and interview processes, market-driven firms should have been to hire the right employees, or at least have weeded out the none-effective personnel.

That it has been so critically important to progress and prosper through market fluctuations has offered multiple advantages and disadvantages for market-driven firms. For example, job satisfaction, organization commitment and extrinsic career opportunities were shown to have a positive relationship with how well an individual copes with change (Judge, Thorensen, Pucik, & Welbourne, 1999). Those persons that could not cope to the short-term dynamics may not have been the appropriate employees for the long-haul. As such, the marketplace and company

dynamics assisted in weeding out those capable of managing through the business movements and those that couldn't make the grade. This study related to the aforementioned work as it examined individual differences as well as the firms' fluctuations affecting employee's response.

Carver (1998) and O'Leary & Icovics (1995), asserted that there were four potential responses to change/trauma. These four responses were: 1- to succumb, 2- to survive, 3- to be resilient, and 4- to thrive. Most studies of individuals coping or adapting to organization changes to date have not included the concept of *thriving*. Most refer to the idea of coping as a return to only the previous state or work level. In this dissertation, Parent advanced the notion that there existed an array of adaptive responses, including not only the idea of coping with change, but the idea of *thriving* on change (Parent, 2006), or it could have also been stated that individuals would need to align their work ethics to the firms they were employed with, for better or worse.

Researchers have concluded that general attitudes toward change, change acceptance, and positive views of organizational change were positively related to job satisfaction. London (1983) pointed out that there was growing empirical support for the importance of resiliency in the workforce. He found that organizations that fostered resilience and thriving in their employees had more motivated employees. It followed that a motivated employee would have been less likely to voluntarily exit the organization (Wanberg & Banas (2000). Results from a study by Realin, indicated that individuals who adapted better to change (revivers and thrivers) were more satisfied with their jobs, having been less likely to leave and report less of a decrease in their performance. This finding supported both theory and empirical research on how work related outcomes were affected by persons' ability to adapt to change (Raelin, 1984). The result of the above-mentioned studies was to essentially confirm that market-driven firms, in spite of their torrential movements and changes, none-the-less, can sustain and even highly motivate its employees.

Niessen, Swarowsky and Leiz, sought to explore two mediators of the potential age-adaptation relationships: adaptive self-efficacy and job experience. The paper investigated how the changes at work could affect the employees and the environment. While looking at the four aspects, the research detailed: 1- perceived fit; 2- task performance before and after change; 3- self-efficacy; and 4- job experience. Perceived demand-ability fit, was subdivided into three parts: 1- perceived fit, 2- subjective fit, and 3- objective fit. Perceived fit referred to individual's direct assessment of the compatibility between person and environment, whereas subjective fit referred to the indirect assessment through the comparison of person and environment variables reported by the same individual. Objective fit is assessed by comparing person and environment variables as reported by different sources. The authors determined that the skills of adaptation were needed when a firm was changing. Those with the capabilities of adaptation and learning proved their assumption wrong. The adaptive self-efficacy was ones belief that he/she can master new task demands when the firm changes. When an employee felt as if he/she couldn't manage the new task, they might have felt that their skills, knowledge, and abilities were deficient. Finally the article investigated the job experience, determined a key finding of the research, which revealed that employees, which were subjected to the same tasks every day became uniformed, in the sense that that was all they knew, and that their ability to adapt to the changes that had occurred at their firm and placed them in a rather lethargic state of mind (Niessen, Swarowsk &, Leiz, 2010). So, in a more real sense, activity, particularly which had been generated by a market-driven firm, would have at least stimulate mental and physical activity.

Froman's research study focused upon psychological stressors in the workplace, a common occurrence in market-driven firms, and aimed to look at how such working stress could cause fear and uncertainty in employees Forman posed three questions towards those situations stress-based situations:

1. What impact are these stressors having on the day-to-day lives of people in the workplace?
2. What role do concepts of positive psychology have in helping people to not only cope more effectively, but open their hearts and minds to move forward with newfound confidence, resilience, determination, hope, and vision for a better future?
3. How can workers and their organizations create a more positive and proactive work- place that bridges economic and human goals?

Of course, 'hope' could have been the essential ingredient in nurturing the human spirit as it would have provided the market-driven employees with emotional strength. As noted by Fredrickson, "Deep within the core of hope is the belief that things can change. No matter how awful or uncertain they are at the moment, things can turn out better. Possibilities exist. Hope sustains you. It keeps you from collapsing into despair. It motivates you to tap into your own capabilities and inventiveness to turn things around. It inspires you to plan for a better future (Fredrickson, 2009)."

Another contributing element to manage stress would have been the concept of 'hardiness', defined as "a combination of attitudes that provided the courage and motivation to do the hard, strategic work of turning stressful circumstances from potential disasters into growth opportunities (Maddi, 2006)." The link between hardiness and self-determining capacities was clearly suggested when considering, for example, the role that courage might play in ones' ability to sustain themselves through difficult times, be it in the workplace or in other environments, particularly when support is lacking. In a recent study that added even more thought on some of those concepts was found that changes in job design and other organizational processes that provided people with jobs that they found inherently satisfying, resulted in effective and forward-thinking work behaviors (Isen and Reeve, 2005).

There have been other studies conducted on work-family conflict, work-family integration, work-life interaction and work life balance. This study focused on the multidirectional interaction of work and home life. The research strategy included the investigation of multiple cases within a uniform setting to reach the research objectives. There were themes that were also found along with the strategies to have a positive work-life balance. The positive managing work-life themes were Personal aspects such as family characteristics, characteristics inherent to the job and characteristics inherent to the organization, positive personality, and positive outlook on life, embracing change, and open to learning from others. Also successful strategies and themes were focused through planning, prioritizing, organizing, task lists, and delegating and setting business and personal goals and timelines to reach. By fulfilling these strategies, it would have helped to create an easier way to have a work-life balance.

Participants repeatedly mentioned that the organizational culture does not support a work-life balance and does not reward and reinforce behaviors that would lead to better work-life balance. The repetitiveness of employees mentioning no support from their companies and managers to help balance work-life would be inevitable that there would be a definite change in that. Having no support is going to make the employees stressed because they had taken on work-life balance on their own and in their own hands without the help of managers. For the research being conducted on the psychological and emotional implications on employees from the changes and fluctuations of market-driven firms, the managers of such firms should have taken into consideration the study of this article along with the strategies and themes that were concluded (J. Oosthuizen & Mostert).

Managers have reasons and strategies to manage the interaction between work and home. Being able to balance work-life and integrating them is very relevant. There are five reasons; those reasons are demographics and social changes, women in work force, technology advancement and globalization, and job insecurities. The line between work and home life is hard to tell lately and integrating work and personal life is important and also challenging. Surveys were given out to employees in all managerial positions in a national organization in the fast-moving consumable goods sector. With those results they gave suggestions for positive integration of work and personal life.

## **LITERATURE REVIEW**

In the process of understanding and constructing the research, secondary sources were utilized to rely upon prior knowledge and established a foundation to build a sufficient support-base towards constructing a relationship between the changes and fluctuations of a market driven firm and its implications on psychological and emotional health of the employees. The complete review has been presented in **APPENDIX-A**.

## **RESEARCH METHODOLOGY**

Hypotheses have been developed to identify the relationship between changes and fluctuations of a market-driven firm and the identified implications on the psychological and emotional level for employees. These hypotheses will

test a subset of marketers in marketing firms in the United States and conclusions will be drawn on the psychological and emotional implications to employees due to the changes and fluctuations of a market-driven firm in the marketing industry. The focus of the study will aim to address these following problems: 1. to what extent does changes and fluctuations of a market-driven firm cause psychological and emotional implications of their employees; and 2. to what extent is each implication prevalent as to employees of market-driven firms?

The study included exploratory research and the information will come from primary data collected through Internet surveys directed to marketers of both market driven firms and non-market driven firms within the United States. This design was suited to the study because marketers are more knowledgeable towards the topic of B2B market driven firms and their employees. The primary research in the United States, conducted within the U.S. utilized anonymous Internet multi-scaled questionnaires directed towards marketers.

The respondents were evaluated on a multi-structured sale in terms of the views and feelings towards the human resource functioning of a market-driven firm. Respondents were offered a complementary summary of the relevant study to their response. Hypotheses were formulated to test the relevant marketing views towards the human resource dynamics of a market-drive organization.

## Hypotheses

### **Market-Driven Firms:**

- H1. The marketplace has yet to have become familiar with the term, Market-Driven.*
- H2. The marketplace has yet to have appreciated that market-driven firms offer higher levels of customer and/or consumer value.*
- H3. The marketplace agreed that market-driven firms tended to demonstrate continuous innovation.*
- H4. The marketplace has agreed that changes in the market were likely to be better handled by Market-Driven firms.*
- H5. The marketplace has agreed that working for a market-driven firm was or would be challenging?*
- H6. The marketplace has agreed that a Market-Driven firm allows room for positive interaction with its employees with extensive workloads?*
- H7. The marketplace has agreed that Market-Driven firms would likely have offered rewards and or motivation for hard work and good outcomes?*
- H8. The marketplace has agreed that marketing power has played an important role in market-driven firms?*
- H9. The marketplace has agreed that there was a great deal of excitement working in a market-driven firm?*

### **Psychological Issues with Market-Driven Firms:**

- H10. That there was a positive relationship between the following:  
Fluctuations of a market-driven firm and employees' psychological and emotional health.*
  - *Fluctuations in a market driven firm and their employees' level of stress.*
  - *Fluctuations of a market driven firm and their employees' level of motivation.*
  - *Fluctuations of a market driven firm and their employees' level of negativity stemmed from over-work and stress.*
  - *Fluctuations of a market driven firm and their employees' level of confusion regarding the many personal adjustments required within the dynamics of a market-driven firm.*

- *Fluctuations of a market driven firm and their marketing employees' level of satisfaction.*
- *Fluctuations of a market driven firm and their marketing employee's sense of power.*

### **Psychological Resolution with Market-Driven Firms:**

- H11. Individuals with higher levels of optimism will demonstrate better adaptive responses to organizational changes.*
  - H12. Individuals with higher levels of self-esteem will demonstrate better adaptive responses to organizational changes.*
  - H13. Individuals with a higher internal locus of control will demonstrate better adaptive responses to organizational changes.*
  - H14. Individuals with previous transition experience in their current organization will demonstrate better adaptive responses to organizational changes.*
  - H15. Individuals who perceive strong social support during a change will demonstrate better adaptive responses to organizational changes.*
  - H16. Individuals with higher levels of role clarity will demonstrate better adaptive responses to organizational changes.*
  - H17. Individuals who receive more information about a particular change in an organization will demonstrate better adaptive responses to organizational changes.*
  - H18. Individuals who perceive greater amounts participation in an organization change will demonstrate better adaptive responses to organization changes.*
  - H19. Individuals who demonstrate better adaptive responses to organization changes will demonstrate the following with regard to career outcomes:*
    - Higher job satisfaction,
    - Higher perceived performance,
    - Lower levels of absenteeism, and
    - Lower withdrawal intentions. (Parent)
- H19. All-in-all, the degree of impact of changes and fluctuations on its employees generated by a Market-Driven firm was dissimilar to most other marketing firms and its employees?*

## **RESEARCH LIMITATIONS AND FUTURE RESEARCH**

The research was solely based on the responses of marketers in B2B marketing firms in the U.S. Clearly, there were differences in perceptions between industries and it was assumed that marketers were constantly experiencing market changes, institutional responses to those changes and thusly may have been impacted to either a greater or lesser degree. Although the application of Marketing-Driven has been most active for B2B firms, recent studies have shown that B2C firms, particularly at the boutique level have begun to embrace the same dynamic performance activity.

The research was based on opinion and perceptions of marketing firms' employees' in 2012, where limited research has been done in the field. Negative implications and positive implications of such changes in market-driven firms may evolve through time rapidly due to the very nature of the company and thus the validity of the research may be of a relatively shorter period of time.

The demographics such as age, ethnicity, gender, and years being with the company or with a company in any market-driven firm were not a characteristic used for the research. I was recognized that employees of market-driven firms have other stresses in their life such as family and outside uncontrollable factors that could possibly have affected their attitude while working, which may have caused unwarranted stress on their job at levels beyond a normal given day.

Future research that could be conducted would involve the process of narrowing down the regional area and defining the marketers by ethnicity, gender, age, type of marketing firm, and highest level of education. Along with those characteristics, research on foreign market-driven firms and non-market driven firms should be conducted to learn how their firms may be different as well as any good structures or procedures they do that could possibly make them better.

# MODERATING EFFECT OF HUMAN IT INFRASTRUCTURE IN THE RELATIONSHIP BETWEEN IT-BUSINESS ALIGNMENT AND BUSINESS PERFORMANCE

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## ABSTRACT

*For decades new technologies are changing how information technology (IT) professionals plan and develop their IT strategies. Aligning IT strategy to business objectives has been an issue of importance in information system research and is still one of the top issues for IT management (Luftman & Ben-Zvi, 2010; Luftman & Zadeh, 2011). The purpose of this study is to develop a model to examine the moderating effect of human IT infrastructure in the relationships between IT-business alignment, and business performance. This study proposes a new construct for human IT infrastructure incorporating both IT personnel skills and project management planning. Structural equation modeling will be used to test the model. The results will provide useful directions for organizations to effectively and efficiently design their IT strategy in order to obtain competitive advantage. The results will serve as a basis for further research and a guide for curriculum evaluations.*

**Keywords:** *Project Management, Human IT infrastructure.*

## INTRODUCTION

For decades new technologies are changing how information technology (IT) professionals plan and develop their IT strategies. Aligning IT strategy to business objectives has been an issue of importance in information system research and is still one of the top issues for IT management (Luftman & Ben-Zvi, 2010; Luftman & Zadeh, 2011). Today's organizations are facing a new paradigm enabled by new information and communication technologies. Sondergaard (2011) described this paradigm as post-modern business. This is an era of mass collaboration driven by the consumerism of IT (Sondergaard). There are new business models to reach and engage customers, improve productivity, reduce costs, and improve operational management. Due to quick shifts in customer preferences, organizations rely extensively on IT infrastructure to survive and to be productive. More than ever it is necessary to align IT strategy with business objectives.

Information technology is defined as the collection of computing systems, their users, and the management of these technological resources (Turban & Volonino, 2011). The correct deployment of new technologies and their implementation in productive activities are contributing to the performance of firms. Luftman and Ben-Zvi (2010) pointed out that IT initiatives are developed to identify opportunities in order to reduce costs and improve productivity. In order to generate value through IT capability, firms need a human IT infrastructure with the necessary skills to plan and deploy IT systems. Human IT infrastructure refers to the knowledge and skills of the IT professionals required to effectively manage IT resources within an organization (Lee et al., 1995).

New rules and new opportunities are creating different challenges for IT professionals. Due to these challenges, educators are in need of new curriculum models. IT professionals must understand their organizations' needs and expectations about IT. Accordingly, IT professionals must understand how to align IT strategy with business strategies with corporate planning in order to respond effectively and more quickly than competitors. Different frameworks have been used to evaluate the effectiveness of IT infrastructure and IT and business alignment. The responses to the 2011 Society for Information Management's survey showed that IT-business alignment is still one of the top concerns in today's dynamic business and technical environments (Luftman & Ben-Zvi, 2010; Luftman & Zadeh, 2011). There is a lack of empirical research about understanding the interrelationships between IT and business alignment.

## Purpose of the Study

The information systems community is constantly facing many challenges due to rapid pace of technological changes and globalization (Luftman & Kempaiah, 2007). IT leaders must be prepared for the challenges of their new realities. This reality has impacted the necessary knowledge and skills of the IT professionals (Ross, 2011). This study proposes a new model to empirically examine the relationships between IT-business alignment and business performance using the moderating effect of a flexible human IT infrastructure. A new construct has been developed to measure human IT infrastructure incorporating the factors of project management planning.

A considerable number of studies have placed IT infrastructure as the top concern in today's organizations (Accenture, 2006b; Chung, Byrd, Lewis, & Ford, 2005; Luftman & Ben-Zvi, 2010; Luftman & Kempaiah, 2008; Murray & Mohamed, 2007; Turner & Lankford, 2005). More than ever organizations increasingly depend on information systems to reliably provide core services and capabilities. Among the top five management concerns for IT leaders in USA, Latin America, and Asia/Africa were: business productivity and cost reduction, IT-business alignment, and IT reliability and efficiency (Luftman & Ben-Zvi, 2010; Luftman & Zadeh, 2011). Consequently, IT leaders must have the ability to fundamentally rethink, recreate and re-imagine what IT is and what it can do (Gartner, 2011).

This study will investigate the following research questions:

- How do aspects of project management and a flexible human IT infrastructure moderate the relationship between IT-business alignment and business performance?
- What skills and knowledge are necessary to effectively build and implement today's IT infrastructure to help reduce business expenses?

## THEORETICAL FOUNDATION

The benchmarking of issues in the literature has brought the attention into the importance of IT-business alignment. Gartner (2011) reported that IT leaders will be able to meet the considerable demands of the 21st century if they reject rigid IT definitions, embrace powerful new technologies, and cultivate widespread connectivity and collaboration between employees, partners and customers. Aligning IT and business remains as a top concern for almost 30 years for IT executives (Luftman, Ben-Zvi, 2010). IT executives find it difficult to cost-justify re-aligning IT to executive colleagues (Weiss, Thorogood, & Clark, 2006). Tallon and Kraemer (2010) demonstrated that strategic alignment is related to payoffs from IT. Accordingly, firms that use IT to provide greater support for the business strategy will realize greater payoffs from IT.

Luftman and Kemaiah (2007) indicated that no alignment silver bullet exists. Alignment involves interrelated capabilities that can be gauged by measuring six components: communications, value, governance, partnership, scope and architecture, and skills (Luftman and Kemaiah). Research showed positive correlations between the maturity of IT-business alignment and (1) its organizational structure, (2) the CIO's reporting structure and (3) firm performance.

Today's environment of mass collaboration requires IT professionals to be ready to embrace a more modular and flexible infrastructure (Predgo, 2011). The first attempt to evaluate the conditions, symptoms, and barriers of flexibility was exposed by Duncan (1995). In a technology-driven environment, a business can only be as agile as its IT infrastructure (Ross, 2011). The infrastructure flexibility construct was operationalized in the form of compatibility, connectivity, and modularity. Connectivity is the ability of any technology component to attach to any of the other components inside and outside the organizational environment (Duncan). The concept of compatibility is the ability to share any type of information across any technology component (Duncan, 1995a). According to Byrd and Turner (2000), the concept of modularity is the ability to add, modify, and remove any software, hardware, or data components of information technologies with ease and with no major overall effect.

Human IT infrastructure refers to the knowledge and skills required to manage IT resources within an organization. Lee, Dourish, and Mark (2006) defined human infrastructure as the set of people, organizations, networks and arrangements that constitutes business as a collective entity itself. Lee et al. (2006) viewed the human IT infrastructure as the arrangements of organizations and actors that must be brought into alignment in order for work to be accomplished. According to Predgo (2011), the IT world around us is no longer confined to buildings, workspaces or fixed devices. It is really about anywhere, anytime, 100% mobile. IT executives have to work proactively with their business partners in order to ensure that the right initiatives are underway to sustain the business and prepare for the economy turns (Luftman & Kempaiah, 2008). Organizations are focusing in leveraging IT to help reduce business expenses (Luftman and Ben-Zvi, 2011).

IT planning is the organized planning of IT infrastructure and applications portfolios done at various levels of the organization (Turban & Volonino, 2011). The IT project planning process results in a formal IT strategy for the organizations. Project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet project requirements (Kloppenborg, 2010). Project Management Institute. (2008) defined project as a temporary work endeavor designed to meet business objectives. Small, medium, and large organizations perceived alignment in a similar way, but there are significant differences in the way its implement their planning integration strategies (Gutierrez, Orozco, & Serrano, 2009).

According to Alshawi, Irani, and Baldwin (2003), organizations need to develop rigorous evaluation processes before implementing IT in order to improve their business performance. Ravichandran and Lertwongsatien (2005) reported that performance can be explained by how effective the firm is in using information technology to support and enhance its core competencies Rai, Patnayakuni, and Seth (2006) defined business productivity as the degree to which a focal firm has superior performance relative to its competition. Researchers have shown that a firm's ability to effectively leverage its IT investments by developing a strong IT capability can result in improved firm performance (Santhanam & Hartono, 2003). Chung, Byrd, Lewis, & Ford (2005) found that IT infrastructure flexibility can facilitate the organization's effort to mass customize their products and services. This mass customization seems to increase the organization's business performance.

There is a lack of research in understanding the moderating effect of human IT infrastructure in the relationships between IT-business alignment and business performance. IT management faces significant challenges in understanding the mix of skills that is required, in defining an appropriate sourcing strategy, and in retaining the critical talent the organization currently has (Luftman & Kempaiah, 2008). Fink and Newmann (2006) underscored that flexibility is how fast an organization processes its procedures. The flexibility of a human IT infrastructure becomes more important if organizations and markets continue to be dynamic, marketplaces continue to be highly competitive, and IT continues to change rapidly (Syler, 2003).

Technology readiness is not an issue; it is how enterprises adopt new technology and their IT professionals are confident to undergo the necessary organization changes in relation to processes and people to get value from the investments (Accenture, 2008). Accenture's (2005) ongoing effort to identify the common underlying behaviors and characteristics of high performance businesses, found that high-performing IT organizations spend 40% more of their budget on building and integrating new systems than low performing IT organizations. Tippins and Sohi (2003) claimed that managers have begun to realize that the adoption and integration of IT by organizations has become a competitive necessity.

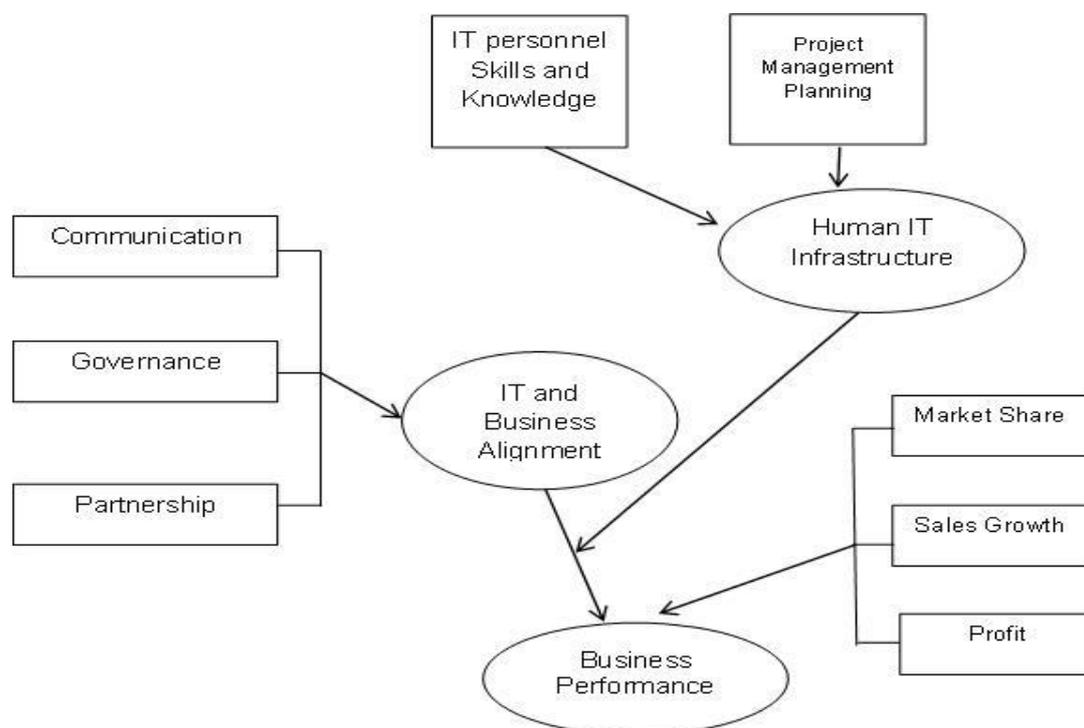
The results of the proposed study represents future trends and provide useful direction for the IS community. The findings provide a basis for further research and a guide for curriculum evaluations. Now this study discusses the proposed model and the hypotheses.

## **CONCEPTUAL MODEL**

The objective of this study is to empirically examine the correlation between IT-business alignment and business performance when using the moderating effect of human IT infrastructure. It is proposed that the moderator human IT infrastructure affects the strength and/or direction of the relationship between IT-business alignment and

business performance. This study incorporates project management planning as a new dimension on the human IT infrastructure construct.

The model will adopt previously identified unobservable or latent variables representing IT-business alignment. Research has provided exogenous factors for assessing the above relationships. Baptista, Newell, and Currie, (2010) exposed that a flexible IT implementation is the ability of the firm to deploy an information technology among functions of the firm which is ongoing compatible and connected with the extended communication channel within firm (Baptista, Newell, & Currie, 2010). Several theoretical frameworks have been proposed to assess IT-business alignment, IT project planning, human IT infrastructure flexibility, and business performance (Byrd et al., 2004; Byrd, Lewis, & Bradley, 2006; Chung et al., 2005; Mahmood & Mann, 1993; Ness, 2005; Chang & Hsieh, 2011; Ravichandran & Lertwongsatien, 2005; Rivera, Amaria, & Rehmani, 2010). The proposed model in Figure 1 serves to understand the underlying dimensions in the relationship between IT-business alignment and business performance.



**Figure 1:** *Conceptual Model* (Source: Developed by the authors)

This study now discusses the constructs and hypotheses of IT-business alignment and business performance.

Middleton and Harper (2004) defined alignment as the understanding and supports of the organization's key goals by the employee. Tallon & Kraemer (2003) defined strategic alignment as a bi-directional relationship between business and IT strategy. If a company is aligned, it will be more likely to be innovative and a good alignment is vital to innovation and change (Middleton and Harper). The Strategic Alignment Maturity model proposed by Luftman (2003), served as a basis to identify factors for the IT-business alignment construct. The maturity model consists of six components of an organization that can indicate IT-business alignment. This study incorporates from Luftman (2003); and Luftman and Kempaiah (2007), three variables to assess IT-business alignment: communications, governance, and partnership.

Communications measures the effectiveness of the exchange of ideas, knowledge, and information between IT and business organizations, enabling both to clearly understand the company's strategies, plans, business and IT environments, risks, priorities, and how to achieve them. Governance defines who has the authority to make IT decisions and what processes IT and business managers use at strategic, tactical, and operational levels to set IT priorities to allocate IT resources. Partnership gauges the relationship between a business and IT organization,

including its role in defining the business's strategies, the degree of trust between the two organizations, and how each perceives the other's contribution. Alignment will enable a company to reach sustainable, higher levels of performance.

About performance, a basic premise is that a firm's performance is influenced by how effective the firm is in using IT to support firm's core competencies (Ravichandran & Lertwongsatien, 2005). Nash (2010) suggested that cost saving and increasing operational efficiency of the business were the top objectives for IT departments in 2010. Researchers claimed that IT is considered to be a large capital investment, but many firms often find difficult to justify its implementation due to their low profit margins (Ravichandran & Lertwongsatien, 2005). In line with previous studies, this study will use profitability, sales growth, and market share to measure business performance. Based on the literature, the following was hypothesized:

*H<sub>1</sub>: IT-business alignment is positively correlated with business performance.*

The human IT infrastructure refers to acquisition, training, and development of the knowledge and skills of the IT personnel required to effectively manage IT resources within an organization. Within a flexible IT infrastructure, the technical resources are considered the basis that enables business-critical IT capabilities to be used and shared (Lewis & Byrd, 2003; Byrd & Turner, 2000). Despite the essence of technical resources, these technical resources signify nothing without the human IT infrastructure. A flexible human IT infrastructure needed four types of knowledge and skills to be effective (Lee, Trauth, & Farwell, 1995). This study will adopt the four knowledge and skills variables validated by Chung et al., (2005) and Lee et al., (1995). On the know-how skills, this study incorporates the ability of the human infrastructure to drive flexibility through connectivity, compatibility, and modularity. These were identified as: (1) technology management knowledge and skills, which include an understanding of where and how to deploy IT effectively and profitably by meeting the strategic goals and objectives of an organization; (2) business functional knowledge and skills, refers to the ability to interpret business problems and develop appropriate technical solutions; (3) interpersonal and management skills, which include abilities like planning, organizing, writing, teaching, and leading; (4) technical knowledge and skills, involve know-how and skills in technical areas.

Turban and Volonino (2011) stated that a good planning process can help ensure that IT aligns, and stays aligned with an organization. Project is defined as a temporary endeavor undertaken to create a unique product, service, or result (Kloppenborg, 2012). According to the PMBOK Guide (2008), project management involves five process groups: project initiating, project planning, project execution, project monitoring and control, project closure. This study proposed project initiation and project planning as the factor of project planning.

Project initiating defines and authorizes a project or a project phase. Project planning defines and refines objectives and plans actions to achieve objectives. The quality of project planning and implementation problems in IT projects moderate the relationship between business-IT strategic alignment and business effect of IT (Kearns & Sabherwal, 2007). The above discussion leads to the following hypothesis:

*H<sub>2</sub>: IT-business alignment has a higher positive correlation with business performance when using the moderating effect of human IT infrastructure.*

*H<sub>3</sub>: IT-business alignment has a positive correlation with business performance when using project management as a moderator.*

*H<sub>4</sub>: Human IT infrastructure is positively correlated with business performance.*

## METHODOLOGY

This study will use a quantitative approach using the survey method to collect the data. The questionnaire will be distributed by email and through personal contacts. Yun and Trumbo (2000) found that using multiple modes for survey, maximize the response rate. The questionnaire will ask respondents their views on the latent variables IT-

business alignment, human IT infrastructure, project management, and business performance. Several researchers have provided the exogenous factors to measure the latent variables. Particularly the studies from Chung et al. (2005); Luftman (2003); Turban and Volonino (2011), and PMBOK (2008) served as a means to achieve construct measurement and instrumentation. Accordingly, to gain respondents answers a 5-point Likert scale will be used in which 1 represents strongly disagree to 5 represents strongly agree.

All the latent variables or unobservable variables in the proposed model will be related with the measures identified for firm performance. The questionnaire also will gather demographic data about the respondents and their industries, such as: type of industry, job title, management level, and years of experience in job, age of firm, number of workers employed, gender, and educational background.

The model will be empirically tested using data from the service sectors in Puerto Rico. The target population will consist of chief information officers, IS executives, supervisors, department heads, IT managers, and or general managers from pharmaceuticals companies (manufacturing sector), bank, and insurance companies (service sector) in Puerto Rico. In order to make personal contact with the subjects, the researchers will access IT executives by telephone, and also will receive assistance from professionals that are already in career positions in pharmaceuticals, banks, and insurance companies. The contacted person will be asked to distribute a copy of the questionnaire or send a message with the attached questionnaire to other IT executives in his or her firm.

Results will be summarized using descriptive statistics, reliability analysis, and correlation and regression analysis to test the relationships. The structural equation modeling will be used to provide a deeper and more explanative estimate of the accuracy of the model parameters and to explore if a higher degree of model fit exists relative to the multiple regressions. A structural equation modeling (SEM) will be conducted to test model constructs.

## CONCLUSIONS AND RECOMMENDATIONS

The results of our research will offer a useful model to study the relationships between IT-business alignment, human IT infrastructure, project management, and business performance. Researchers need to access industry technological trends in order to understand job developments and help in addressing the gaps between academic and real world. This study will be the first of its kind and the results could not be compared with other studies in Puerto Rico. The findings will provide a basis for further research and a guide for curriculum evaluation.

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# RAISING THE LEVELS OF INTERPERSONAL CONFLICT IN INDUSTRIAL SALES ENVIRONMENTS

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## ABSTRACT

*Tension, pressure, hassles, name-calling, back-stabbing, dog-eat-dog, and gut-wrenching internal competition is the common vernacular of industrial salesperson in today's marketplace. Although the terms conjure up fear and trepidation for the non-sales, the life-careers of sales people have commonly accepted the nature of these internal conflicts as par for the course. Yet, some salespersons find themselves quickly withering away at the tension that pervades the sales environment and even others just get fed up and quite. In spite of these seemingly common occurrences in business-to-business (B2B) sales, there are some companies that seldom experience these negatives and still thrive in the marketplace. What are their secrets?*

**Keywords:** Sales Interpersonal Conflict & B2B Sales.

## RESEARCH PURPOSE

This study has demonstrated how various factors have impacted (raised) the levels of interpersonal conflict within the sales department of B2B firms. These factors included inexperience, burnout, work overload, emotional exhaustion, ethnicity, and gender. Furthermore, this study has also explained how the inexperience salesperson would likely have led to emotional exhaustion, which in turn led to him/her leaving the firm or, even worse, sabotaging the firm's sales program. The third factor in this study was developing a better understanding of the relationships between interpersonal conflict and experience levels as pertained to responses from employees in the sales sectors of both business-to-business and business-to-consumer firms. And, lastly, a plan and program of resolution has been offered.

## INTRODUCTION

Although organizations have been finding ways to help their employees strike a healthy balance between work and personal life, recent research has found that 70 percent of workers are not satisfied with their work-family balance, and half of those people were considering looking for new jobs because they were experiencing problems coping with both personal life and work (Huffman et al. 2003) This situation has certainly been the case for industrial salespersons and only recently seems to have impacted consumer-based salespersons as well. The combination of both groups having faced intense psychological pressures within their sales jobs has justified the current research. Consider now, the fundamental issues of sales burnout.

Emotional dissonance has traditionally been generated by having to express emotions that were not felt. It was hypothesized and affirmed in Morris and Feldman's research that emotional dissonance would have led to lower job satisfaction. Increased competition and the growth of the economy have forced a greater attention on the nature and quality of services to the customers and clients. Even how salespersons act and speak with their respective customer(s) has become a more significant concern for management. Emotional dissonance would likely to have led to lower job satisfaction. Face to face contact would, naturally have created an even greater emotional dissonance (Morris, & Feldman, 1996).

Emotional labor has been defined as the act of expressing organizationally desired emotions during work. Emotional labor was the "effort, planning, and control needed to express organizationally desired emotion during interpersonal transactions (Morris et.al.)." It has been said that individuals made sense of emotions through their understanding emotion, which was at least partly socially constructed. When there was a difference between the individual's felt emotion and the organizations desired emotion, there was an effort of labor required in expressing that emotion.

When the felt emotion and the organizations desired emotion was the same, sales persons would still have to put forth some effort to make sure the emotional was displayed appropriately. The more often a work role required socially appropriate emotional displays, the greater the organization's demands for regulated emotions would have been present.

Stress has been defined by Frew and Bruning, which arose from an actual or perceived demand capacity imbalance in the organ's vital adjustment actions and which was partially manifested by a non specific response (Frew & Bruning, 1987). There were three categories that stressors have fallen into:

1. **Environmental/Organizational/Role** characteristics (E/O/R);
2. Personal characteristics; and
3. Interpersonal relations.

The E/O/R characteristics contained variables that related to an individual's ability to perform the job effectively. The personal characteristics pertained to needs, values, behavior patterns, and self-esteem that had a direct or indirect effect upon experienced stress. The interpersonal variables pertained to measures of relationships that impact one's adjustment to the work environment. A main example of this would have been a salesperson's relationship to his/her supervisor or their peers.

Frew and Bruning stated that the E/O/R variables that were most present in stress research were role conflict and role ambiguity, which in many cases were considered the stress indicators. With the present understanding of stress, those role variables would have been antecedents to stress and the stress indicators and would have been variables that provide information about an individual's ability or inability to handle the role demands. One way that stress could have been lessened to a satisfactory point would have been through task significance, task industry, skill variety, and feedback from the job (Free et.al.).

Meurs & Perrewe focused on the measuring and handling of the stress process through the use of the **Cognitive Activation Theory of Stress (CATS)**. This theory developed four components that play a major role in the stress process:

1. The stress stimuli, also known as the stressors;
2. The stress experience (appraised and felt stress);
3. The alarm which is general response of the individual to the stress experience; and
4. The individual's 'experience' or feedback of the stress response (Meurs & Perrewe, 2011).

Research has shown (Rafaeli, 1989; Riggio & Friedman, 1982; Smith; 1992; Hochsch, 1983; and Jackson, Schwab & Schuler, 1986) that the level of effort required for emotional displays of short duration would have been quite minimal. Emotional displays for a longer period of time was to have required more effort as well as more emotional labor. However, with the longer period of time required there would likely have been a greater chance for burnout. The longer the emotional display went on, the more the display of emotion would have been less scripted, which would have required greater attention, and gained greater emotional stamina. The more frequent changes in the variety of emotions displayed over a period of time, the more planning and anticipation on salespersons, which would have created greater emotional labor for the sales teams.

Employees have performed emotional labor in two ways: 1- *Surfacing acting*, which included simulating emotions that were not actually felt; and 2- *Deep acting*, which involves attempted to actually experience the emotions the salesperson was required to display. Morris and Feldman stated that, "deep acting required a greater effort because the role occupant must actively strived to invoke thoughts, images, and memories to have induced the associated emotion (Morris, et.al.)." Emotional intensity can be difficult to fake as a short display of emotion would require little emotional intensity, whereas long displays of emotion were more intense. A sales position requiring high amounts of emotions labor would likely have reported lower job satisfaction, lower self-esteem, poorer health, and more depressive symptoms.

The Beehr and associates research focused on chronic stressors and acute stressors in the workplace, and how they affected job performance. The researchers based their hypotheses on five key factors examined:

1. Co-work social support;
2. Contents of communications with coworkers;
3. Psychological strains;
4. Depression; and
5. Performance measures.

Beehr and team researchers wrote, "... we examined chronic generic stressors (role overload and workload variability) and job-specific (both acute events and chronic situations) stressors for their predictions of both psychological strains and performance (Beehr, Jex, Stacy & Murray, 2000)." This study discovered that, "... all of the stressors were related to both measures of psychological strain, strongly supporting their first hypothesis. The chronic, occupation-specific stressor measure was the most strongly related to the strains, particularly frustration (Beehr, et.al.).

As expected, stressors in the work environment were shown to have been related to psychological strains, although this seemed to have been more consistently true for the strain of depression than frustration (Beehr)." The team's research also determined that chronic stressors were strongly related to the outcomes of work-related stressors compared to acute stressors. An example of acute stressors might have included something as dramatic as a police officer encountering an armed suspect; or annoying as a research assistant encountering computer shutdowns (e.g. Caplan & Jones 1975); or as mundane as a nurse's first encounter with patients (e.g. Eden, 1982).

## **SALESPERSONS FACING BURNOUT**

Shepherd and associates' research had indicated that burnout would have occurred in any field, but workers in client-centered field (salespersons) were most susceptible. In addition one of the most troubling aspects of the various sales positions and sales management levels has been the high level of stress that they often entailed. As such, this has made the research of *job burnout* even more important and more prolific. Burnout has consisted of three items:

1. Emotional exhaustion;
2. Depersonalization; and
3. Feeling of reduced personal accomplishment.

Factors that caused an increased risk of burnout included:

1. A high degree of interpersonal interaction;
2. A continuous heavy workload;
3. Role conflict;
4. Role ambiguity; and
5. Interaction with others

Those elements have often resulted in role conflict or role ambiguity (Shepherd, Tashchian & Ridnour, 2011).

A key aspect discussed in the Plank and Reid study was that "...the very nature of sales facilitates interpersonal conflict." Essentially, the concept has been divided into two parts: 1-Relationship Conflict; and 2- Task Conflict. The researchers determined that relationship conflict has referred to the existence of interpersonal incompatibilities between a salesperson and a buyer and the task conflict referred disagreements between a salesperson and a buyer about the content of task being performed (Plank & Reid, 2010). In essence, relationship conflict has dealt with the sales people involved in these struggles and were viewed through task conflict, which looked at the issues involved. Both dimensions were found to have been important in the study of Interpersonal conflict. In addition, trust was major factor between interpersonal conflict and job performance (Plank, et.al.)

Halbesleben and associates researched one of the more common causes of salespersons stress, described as burnout. One of the authors' published sources stated that, burnout has a psychological response to work stress that was characterized by emotional exhaustion, depersonalization, and reduced feelings of personal accomplishment (Maslach, 1982). Emotional exhaustion was characterized as the depletion of one's emotional resources which then led to the employee feeling as though they lack adaptive resources, and in turn could not produce anymore at their job. Depersonalization has occurred in response to the emotional exhaustion and has been described as when the employee has detached from the job and created uncaring attitudes towards their job and their performance. Finally, the reduced feelings associate with the diminished perceptions of one's ability on the job and the belief that they could not perform their job as efficiently as they once could (Halbesleben & Buckley, 2004).

The model for measuring the levels of burnout has been known as the Maclach Burnout Inventory. This model, originally developed to facilitate consistency in the measurement of burnout, included a scale designed to measure burnout in non-human-services fields, a scale designed to measure burnout in educational settings, and most importantly a scale to measure burnout among workers with a direct relationship with their clients- industrial salespersons. Burnout research has recently led to the notion that burnout was a psychiatric disorder. Ultimately, the extreme nature of burnout was a distinct consequence of work-related stress (Halbesleben et.al. 2004).

Sauders' thesis examined conflict styles and contexts within an organization. It stated that the consequences of a conflict were determined by the characteristics of the conflict, the desired outcomes of those who partake in the conflict, and awareness of the conflict management strategies. There were two different models to consider when examining conflict:

1. A normative which views conflict as problematic and requiring elimination, and
2. A dynamic views conflict as natural and beneficial for the changing dynamics of a relationship (Sauder, 2002).

The thesis went on to determine whether a conflict was positive or negative based on the culture where it takes place. Sauder work determined that in high-context-cultures, an individual was not divided from the situation and would view the conflict as problematic. Low-context-cultures tended to encourage a separation between an individual and the conflict which led to the conflict being viewed as natural, and, that one responded to conflict based on what was learned through their understanding of the internal environment of the company (Sauder).

Singh and associates offer three possible explanations for the influence of burnout on performance:

1. Burnout was characterized by a reduction of the available energy and the amount of effort that was invested to perform well;
2. That employees with support or were not motivated to change their situation; and a final explanation for the impairment of performance was
3. That burnout would undermine employees' self-confidence in their ability to solve work-related problems (Singh, Goolsby & Rhoads, 1994).

The authors presented a depiction of their views in **Figure 1**. The Jobs Demand Resource Model, presented below:

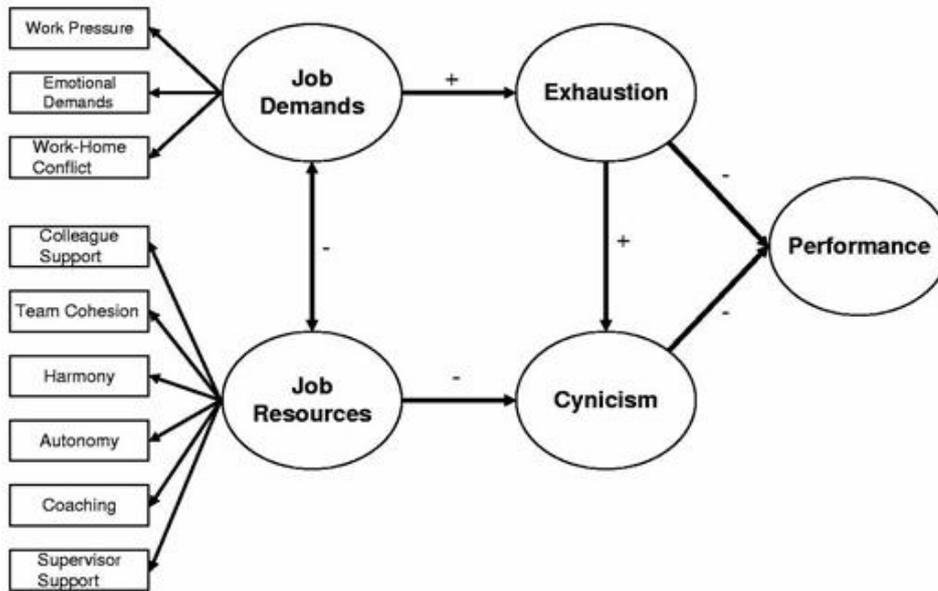


Figure 1: The Job Demands-Resources model.

Job characteristics caused by burnout, which included emotional exhaustion and cynicism, created variances in team performance due to negatively affected it. As such, job performance in general was distinctly influenced by burnout.

According to the Dirks and McClean-Parks study that organizations offered an ideal environment for the study of interpersonal conflict as they provided the impetus for conflict as well as incubated conflict situations (Dirks & McClean-Parks, 2003). The Hamwl and associates study linked emotional exhaustion to sales workers attitudes and behavior intentions such as satisfaction, organization commitment, and turnover intentions. Three types of stressors were: role conflict, role ambiguity, and work-family conflict. Relationship between emotional exhaustion and perceived organization support hope that help could have been deemed successful. The hope would have been to be able to reduce emotional exhaustion while having increased perceived organizational support. This in turn would have increased employee job satisfaction as well as organizational commitment while having reduced employee turnover intentions. The supporting theory was that sales people who are happy with their job perform better in customer satisfaction and customer loyalty. Figure 2 presented the collective understanding of antecedents and consequences of emotional labor burnout:

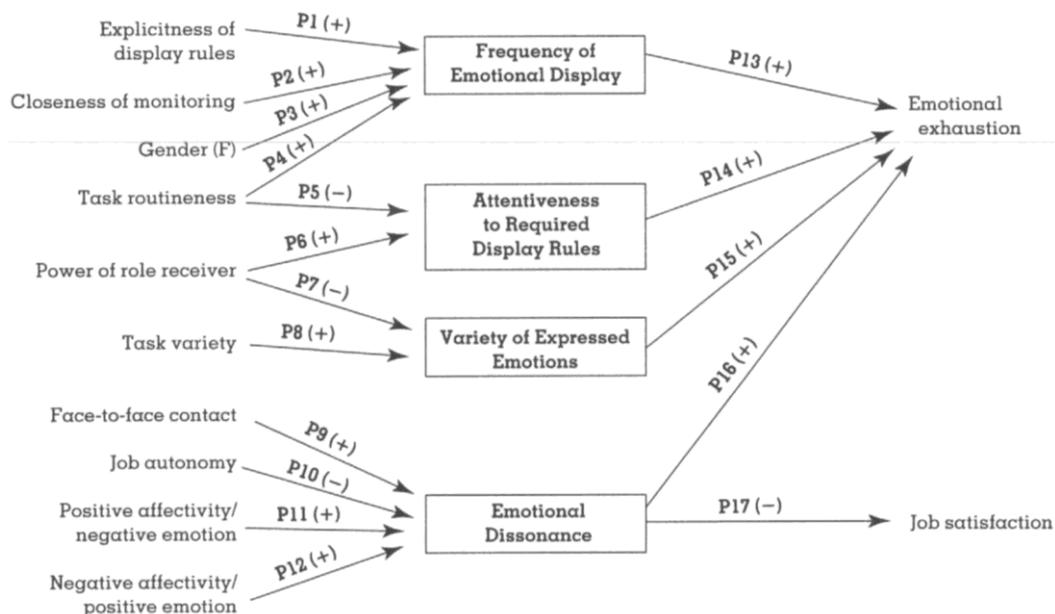


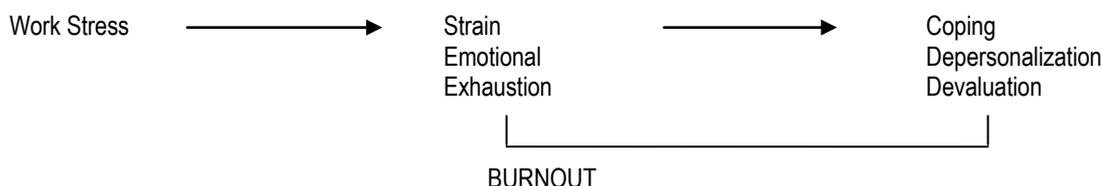
Figure 2: Antecedents and Consequences of Emotional Labor

Burnout could have occurred more easily in situations where there were resource losses or the potential for resource losses and where there were not enough resources to meet work demands. Organizational support has referred to an employee's perception that the firm values their contributions and cares about employees well being. There were two different dimensions of role stress: The first role conflict could have occurred when an employee gets two different directions at work. The second role conflict was when an employee was unclear on how to perform. Increased levels of role stress could have caused a sales person to use additional resources to cope with the problem (Hamwl, Alexander, Rutherford & Boles, 2011). Stress level of the employee was increased when role conflict occurs because the employee could not follow one set of directions without following the other set of orders. When role conflict was increased for a salesperson, they felt that the organization was not providing the correct support. Salespersons who experienced emotional exhaustion usually blamed it on the firm. When this happens they became less open minded and less driven. When a sales person became dissatisfied with their job, they usually end up leaving that position.

According to Moore's findings, tedium would have been associated with a start of physical, emotional, and mental exhaustion caused by a long-term involvement in demanding situations. Moore's research believed that tedium happened when a salesperson would have too many negatives and not enough positive features in an environment-meaning pressures, conflicts, and demands. The potential financial and professional rewards of a sales career may have been considered extensive but the immediate gratification of tedium situation would have yielded little acknowledgments for success. Moore stated, "Individuals experiencing work exhaustion, exhibit a slew of reactions, including reduced organizational commitment, diminished self-esteem, and turnover (Moore, 2000)."

Depersonalization, diminished personal accomplishment, cynicism, and decreased professional self-efficacy were all possible consequence of a salesperson's work exhaustion. Moore's research suggested that work exhaustion tended to be situational factors rather than individual factors. Often the idea would be to question the exhausted salesperson as to whether personal values and goals were the same with the organization. When this would happen, the exhausted salesperson may have felt less attached to the organization (Moore).

Role conflict has been related to emotional exhaustion. Hamwl stated that the lower levels of emotional exhaustion result in sales people that were more driven, had a more positive attitude toward and relationship with their firm, were more customer oriented and were less likely to turn over. "Sales people believe that no matter how supportive a firm may be, there is still going to be emotional exhaustion associated with a sales job (Hamwl)." According to Gaines & Jermier, burnout involved three dimensions: 1- emotional exhaustion; 2- depersonalization of clients; and 3- devaluation of one's accomplishments and oneself. **Figure-3** below has depicted this relationship:



**Figure-3:** Model of Burnout Process

Guoping and Haihua determined that customer related social stressors were predictive of emotional exhaustion, the core dimension of job burnout. Customer verbal aggression reported by call-center employees positively related to that employee's emotional exhaustion, for example, verbal aggression. This was where a sales manager verbally assaulted his/her sales team members. One component of customer related social stressors was the employee feeling of unfairness. This happened in situations where customers tried to take advantage of the employee's time or energy. Another example was when customers demanded service that was not part of the cash value of the transaction, or when the salesperson was asked to perform tasks which should have been done by the customers (Guoping & Haihua, 2010).

Customer verbal aggression was proven to not significantly relate to surface acting. However, the path from surface acting to emotional exhaustion was significant; whereas the path from deep acting to emotional exhaustion was not

significant in the study. There were positive links between customer's related social stressors and emotional exhaustion. Engaged in surface acting required an additional effort of constant supervision and modification of expressions displayed - this process consumed more energy. As such, surface acting was likely to have led to emotional exhaustion. Customer verbal aggression did not impact emotional exhaustion through surface acting. Surface acting was an emotional regulatory strategy infrequently used in the face of customer verbal aggression. Customer verbal aggression usually signaled a high level of transgression of the service exchange norm (Guoping et.al.).

As researched by Cote and associates, emotional intelligence was a set of abilities that includes those abilities to perceive emotional in the self and in others, use emotional to facilitate performance, understand emotions and emotional knowledge, and regulate emotions in the self and in others (Cote & Miners, 2006). The researchers postulated that four subsets of abilities were subsumed by emotional intelligence:

- The abilities to perceive emotions
- Use emotions to facilitate performance
- Understand emotions and emotional knowledge and
- To regulate emotions (Cote, et.al.)

It was stated that emotional intelligence does not always correspond with general intelligence. People with high cognitive intelligence tended to have high emotional intelligence and people with low cognitive intelligence tended to have low emotional intelligence. Cognitive intelligence has been related to the dimensions of job performance, task performance, and organizational citizenship behavior. Individuals with 'logged' cognitive intelligence may have high emotional intelligence because they tended to exhibit low job performance. When job performance was low, there was clearly room for improvement.

## **SALESPERSONS GENDER and AGE FACTORS FACING BURNOUT**

The number of women entering the work force has grown considerably in recent years. It was projected that women, minorities, and immigrants would comprise 85 percent of the growth in the general work force and as much as 80 percent of all new hires by the year 2000 (Johnston, 1987). Although industrial sales opportunities have remained quite limited for women, they, none-the-less, have presence in the professional sales ranks. As such, it seemed most apropos to include gender assessments within this research.

Igbaria & Baroudi researched gender differences in the workplace by having explored the relationship between an employee's gender and the extent to which the supervisor attributed the employee's performance to internal causes. It was found by an associate research team that people attributed task performance to one or more of the following causes: ability, effort, the ease of the task, and luck (Weiner, et al., 1971). Some of the findings revealed that gender was significantly correlated with job performance rating, attributions, and career advancement prospects (Igbaria & Baroudi, 1995).

Erickson and Ritter examined emotional labor and burnout and whether or not gender made a difference in those emotions. Erickson and Ritter wrote, "People who experienced more agitation at work were more burned out ( $B=0.322$ ); experiencing positive emotions was associated with less burnout ( $B=-0.182$ ); and the experience of negative emotions was not related significantly to burnout. Women were more likely than men to hide their feelings of agitation. "Our analyses indicated that experiencing positive emotions reduced feelings of burnout, while agitation (i.e. anger, irritation, nervousness) increased such feelings. As expected, only the management of agitation affected burnout significantly Erickson & Ritter, 2001)."

Javier García-Bernal and associated studied job satisfaction and differences that could have been created due to differences in gender. Job satisfaction, according to their sources (Mumford, 1991), could have been conceived of as a multi-dimensional concept that included a set of favorable or unfavorable feelings by which employees perceived their job (Davis and Newstrom, 1999). The research primary focus was to have identified the variables that affected the level of an individual's satisfaction with their job as well as to have analyzed the level of the impact

of this satisfaction. The secondary objective was to have analyzed the differences between the factors that had an impact on satisfaction as perceived by men and women. Four main factors were researched:

1. Personal development on the job;
2. Interpersonal relationships;
3. Economic aspects; and
4. Job conditions.

These factors demonstrated to have different distinct impacts on men and women. Although there were differences in the values of the items of this factor, positive for men and negative for women, the items that made up each factor were the same, independent of the gender analyzed (Javier García-Bernal, Gargallo-Castel, Marzo-Navarro & Rivera-Torres, 2005).

The main thrust of the Bellas and associates' study was to find out what variables contribute to changes in the percentage of women in sales occupations over time. As stated in their research, "Employers may have an occupation-specific objection to hiring women; for example, they will hire them in retail sales but not as car salesmen (Bellas, Coventry & Thomas, 2001)." When relating the article to possible interpersonal conflict, the article stated, "Hiring women into traditionally male jobs may threaten male workers' sense of masculinity, diminish their status, and raise fears that their earnings will decline (Williams, 1989). Male workers may have responded by harassing women coworkers, or by having created hostile and alienating work environments (Bellas et.al.)."

Additional researchers attempted to discover gender differences in emotional exhaustion by having utilized a model of integrating work-role expectations of employees, work-family conflict, family-work conflict, and a component of burnout. Their research was empirically tested on 163 employees, who were also part of dual earner couples (Posig & Kickul, 2004). The results of their study showed that across gender, work-role expectations and work-family conflict were positively correlated with emotional exhaustion. Gender, however, was significantly correlated with work-role expectations. Females perceived higher work-role expectations than males. According to their study, emotional exhaustion was directly influenced by work-role expectations as well as by work-family conflict for females. The study revealed that male employees found that work-family conflict had been mediated by their relationship between work-role expectations and emotional exhaustion (Posig et.al.).

Brewer and Shepard examined the relationship between age and years of experience and employee burnout. Their report stated that individuals suffering from burnout experience a depletion of physical and emotional resources, develop cynical attitudes, and feel a loss of professional self-efficacy. Meta-analysis, with un-weighted untransformed means and un-weighted transformed means, supported a negative correlation between age and burnout (i.e., older employees experience less burnout than younger employees). Also, meta-analytic results supported a negative correlation between experience in a field and burnout (i.e., employees who have worked in type of job or field for longer periods of time experience less burnout than employees who have worked in that type of job or field for shorter periods) (Brewer & Shepard, 2004). The study fundamentally concluded that older persons were less likely to have experienced burnout as well as the more experienced persons were less likely to have experienced burnout. This was primarily due to these persons having built a higher tolerance for stress and conflict as well as using their family as a strong support mechanism when stress occurred.

## RESEARCH METHODOLOGY

This study has demonstrated how various factors could have impacted (raise) the levels of interpersonal conflict within the sales department of B2B and B2C firms. These factors included inexperience, burnout, work overload, emotional exhaustion, age, gender and marital status. Consistent with this subject, an array of secondary research was presented on sales psychological pressures befallen America's industrial sales forces. Secondary research revealed a consistent thread of interpersonal challenges for sales persons as they attempt to respond both internal and external competitive forces, technological forces, corporate cultural dynamics, learning-curve challenges, team membership performance, quota attainment, and clientele dynamics (both ethical and non-ethical). It was felt that primary research would have also been valuable as it would have solidified the concerns facing B2B and, to some

extent B2C sales persons. A multi-segmented questionnaire (located in the **APPENDIX-B** section) was developed and administered online to a large group of manufacturers and service businesses in America. There were **XXX** questionnaires sent out, **XXX** returned with **XXX** surviving the screens for objectivity and completeness. As such a **XX%** return was achieved, this was quite acceptable. The below-mentioned hypotheses correspond to the questionnaire.

## **HYPOTHESES-**

*H0: The near term (20 years) sales force psychological pressures and structural internal coping challenges of this 21st Century pose only a minimal degree of problems.*

## **INSTITUTIONAL FOCUS**

*H1: Are the present day ECONOMIC/BUSINESS FACTORS placing significant challenges on company's sales efforts for the 21st Century (to include national-, International economics, technology, competition, legal rules & regulations, and environmental safety/development?)*

*H2: Salespersons have been stressed due to interpersonal conflict at work.*

*H3: The interpersonal conflict at work leads salesperson towards emotional exhaustion.*

*H4: The interpersonal conflict at work leads salesperson towards becoming less enthusiastic.*

*H5: The interpersonal conflict at work leads salesperson to become more cynical about contributing to the sales team tasks.*

*H6: Sales team conflicts can overextend and deplete one's emotional stability and physical resources.*

*H7: The interpersonal conflict at work leads salesperson to having difficulties solving complex client problems.*

*H8: The interpersonal conflict at work leads salesperson to become more traumatic when their boss is involved.*

*H9: The interpersonal conflict at work leads salesperson to feel disposed when a client sales loss occurs.*

*H10: The interpersonal conflict at work leads salesperson to become despondent when it seems that, "nobody cares about what they do."*

*H11: Too few salespersons have been aware of prevention strategies to help reduce stress.*

*H12: Work stressors can be reduced by co-worker support.*

*H13: Work stressors can be reduced by supervisor support.*

*H14: Work stressors can be reduced by a successful sale.*

*H15: Work stressors can be reduced by being strongly involved in work tasks.*

*H16: Work stressors can be reduced by experiencing a sense of significance for what one does.*

*H17: Work stressors can be reduced by one's enthusiasms, inspiration, pride, and challenge.*

*H18: Work stressors can be reduced when the entire sales team seemed to be happy.*

*H19: Most salespersons would feel, "At my job, I feel strong and vigorous."*

*H20: Most salespersons would feel, "When I get up in the morning, I feel like going to work."*

*H21: Most salespersons would feel, "I can continue working for very long period of time."*

*H22: Most salespersons would feel, "At my job, I am very resilient, mentally."*

*H23: Most salespersons would feel, "I can effective contribution to my organization."*

*H24: Most salespersons would feel, "Time flies by when I am working."*

*H25: Most salespersons would feel, "I feel happy when I am working intensely for clients or sales team."*

# EFFECTS OF GEOGRAPHIC AND DEMOGRAPHIC DISPERSION ON THE PERFORMANCE OF SYSTEM ENGINEERING TEAMS

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## ABSTRACT

*Globalization and the increasing complexity of the systems require collaboration across multidisciplinary teams. Those systems engineering teams can be geographically and demographically dispersed; and, such types of dispersion might have an effect on the ability of the teams to produce the desired outcomes. The main objective of this research study is to determine how geographic and demographic dispersion affect the performance of a systems engineering team, and which phases of the Systems Engineering Life Cycle are more susceptible to positive or negative effects caused by team dispersion. The results of this study will show positive and negative relationships between factors related to team dispersion and team performance, and will constitute important information for systems engineers and global team managers. For our analysis, we will take into consideration different factors that act as moderators of dispersion. For example, the communication technology and the perceived dispersion mitigated by the use of that technology, knowledge creation and sharing, and, team coordination. We propose that geographic and demographic dispersion have an effect on systems engineering teams, affecting the capacity of those teams to deliver the desired results in each phase of the systems engineering life cycle.*

**Keywords:** Geographic Dispersion; Demographic Dispersion, Team Performance, Systems Engineering, Life Cycle.

## INTRODUCTION

A primary goal for systems engineering is effectively managing complexity and change, reducing risk during the implementation of new systems or modification to complex systems (In cose Systems Engineering Handbook: Version 3.1, 2007). In that effort to manage complexity and change, systems engineering teams are becoming more dispersed due to the need for distributed expertise, expansion of market research, employees' flexibility, and cost reduction (O'Leary & Mortensen, 2010). Many effects of dispersion on the performance of technical teams have been identified; both geographic and demographic dispersion have been linked to negative effects such as coordination problems, trust issues, conflict increase and low transactive memory (Daim et al., 2012; Espinosa, Cummings, & Pickering, 2012; O'Leary & Mortensen, 2010; Polzer, Crisp, Jarvenpaa, & Kim, 2006).

There is a large body of literature that studies the effects of geographic and demographic dispersion in the performance of technical teams (Cummings & Haas, 2012; Espinosa et al., 2012; O'Leary & Cummings, 2007; O'Leary & Mortensen, 2010; Polzer et al., 2006; Ting-Peng, Chih-Chung, Tse-Min, & Binshan, 2007). In addition, another set of studies have been proposed/conducted to define a performance measurement system for teams (Everett, Dawn, & Alisha, 2007; Jill & Kepa, 2003).

Previous studies have examined the effects of geographic and demographic dispersion on the performance of technical teams, with no particular focus in system engineering teams. None of them have specifically examined the effects of dispersion along the different phases of the systems engineering life cycle. Therefore, a study of the effects of geographic and demographic dispersion on the performance of systems engineering teams has not been conducted.

It is a critical challenge for systems engineers and global team managers to successfully lead a dispersed team that executes dynamic and complex tasks (Miriam & Martin, 2010). There are many ways how the performance of a team can be positively or negatively influenced by the effects of dispersion. Each phase of the systems engineering life cycle have its own different characteristics, and therefore will be influenced in a different way by the dispersions

factors. Information about how to mitigate negative effects of dispersion, or how to take advantages of the opportunities, for each one of the phases of the systems engineering lifecycle, will be valuable in order to ensure the systems engineering teams produce the desired outcomes.

This study attempts to contribute to the knowledge base by analyzing the effects of geographic and demographic dispersion on the performance of systems engineering teams, determining how dispersion influence the capacity of those teams to deliver the desired results in each phase of the systems engineering life cycle, and identifying which phases of the SE Life Cycle are more susceptible to positive or negative effects caused by team dispersion.

## RESEARCH PROBLEM

The research problem consists on the analysis and evaluation of the positive and negative effects of geographic and demographic dispersion on the capacity of a systems engineering team to perform as planned and deliver the desired outcomes. The effects of dispersion will be evaluated along the different phases of the ISO/IEC 15288 systems engineering life cycle: concept, development, production, utilization, support and retirement (*IncoSE Systems Engineering Handbook: Version 3.1, 2007*).

## QUESTIONS AND SUB QUESTIONS

The questions related to this study are those which examine the effects of dispersion on the performance of a systems engineering team. These questions should be answered after the correct analysis of statistical data obtained from a set of discussions to be conducted with systems engineers and global team managers from dispersed systems engineering teams. The main question is: What are the effects of geographic and demographic dispersion in the performance of systems engineering teams? Sub-questions are:

- Which phases of the SE Life Cycle are more susceptible to positive or negative effects caused by team dispersion?
- What is the relationship between geographic and demographic dispersion and Team Coordination, and what are the effects of that relationship on the performance of the team?
- What is the relationship between geographic and demographic dispersion and Perceived Dispersion, and what are the effects of that relationship on the performance of the team?
- What is the relationship between geographic and demographic dispersion and Communication Technology, and what are the effects of that relationship on the performance of the team?
- What is the relationship between geographic and demographic dispersion and Knowledge Creation and Sharing, and what are the effects of that relationship on the performance of the team?

## METHODOLOGY

We plan to conduct discussions and collect case study data from 7 to 15 globally distributed Systems Engineering projects. The target population for this research study will be comprised of systems engineers, global team managers, project and program managers, senior staff, and other workers with experience in systems engineering projects that involve collaboration in geographically and demographically distributed teams. Email messages will be sent to organizational managers as well as individual employees asking for their cooperation in this research study. Discussions will be conducted with participants in order to collect all information needed in order to analyze the effect of geographic and demographic dispersion on the performance of distributed engineering teams.

The complete set of responses from the data collection process will be extracted and organized. Data cleansing has to be conducted, especially in order to consider only the answers from participants with at least five years of experience in systems engineering projects and collaboration in geographically and demographically distributed teams. Then, the data will be loaded and analyzed and multiple regression analysis will be performed along with confirmatory and exploratory factor analysis.

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# THE RELATIONSHIP OF CULTURAL EXPERIENCE AND ATTITUDES AND WILLINGNESS TO ACCEPT AN EXPATRIATE ASSIGNMENT

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**Keywords:** *Expatriate Assignment, Worldmindedness, Overseas Assignments, Receptivity, 9/11.*

## INTRODUCTION

One key to an organization's competitive advantage in this global market arena is the availability of qualified human resources. The success of international assignments is an important part to this competitive advantage, providing as well a basis of attracting qualified employees willing to accept these assignments (Kumar, Rose, Subramaniam, 2008). Failure in completion of expatriate assignments, either through poor performance, premature repatriation, subsequent failure to retain employees after repatriation, or failure to meet organizational goals damages a corporation's ability to attract and send the most qualified employees abroad (Forster, 1997). These visible failures discourage employees from accepting such assignments (Harvey, 1997; Welch, 2003). Failure rates have been estimated to be between 25 and 40% (Hogan & Goodson, 1990; Solomon, 1994; Forster, 1997; Sanchez, Spector, & Cooper, 2000). The consequences of these failures carry a high cost to the employer (Suutari & Burch, 2001). Costs of preparing and posting an employee to an overseas assignment can range from \$50,000 to \$150,000, according to Copeland and Griggs (1985).

Expatriate selection has been primarily based on the basis of technical skills (Earley, 1987; Spreitzer, McCall, & Mahoney, 1997). An inordinate emphasis on these skills, at the expense of other relevant skills predominate the selection decision (Sanchez, Spector, & Cooper, 2000). Failure rates are more associated with adjustment issues rather than technical competency. In short, failure to follow some of the primary HR practices in selection providing for the inclusion and evaluation on job requirements in addition to technical proficiency leads to a poor fit between the expatriate and the job. If there is a poor fit, the expatriate's ability to adapt, to adjust to a new job, to a new environment, to a new culture is much more difficult and further contributes to a failure in the assignment.

As a result, it is important that universities teach the importance and requirements for a successful career as an international manager and leader. Expectations of realities, the actual match or mismatch of skills, anticipated benefits and problems associated with international assignments must be clearly communicated to them. Because these students will become part of a pool of potential expatriate managers, it is important to study them in order to prepare them (Hill & Tillery, 1992).

One might intuitively conclude that prior international work experience might lead to receptivity and successful adjustment, research does not support this concept (Bhaskar-Shrinivas, Harrison, Shaffer, & Luk, 2005). Boatler (1991) concluded that an international experience of living abroad provided a more positive relation to worldmindedness of the individual than those with just international travel experience. However, Black, Mendenhall, & Obbou (1991) have suggested that a strong desire for overseas work, openmindedness, being able to adapt to different circumstances, and behavioral flexibility are predictors of expatriate manager success. Little research on interactions and experiences with other cultures within they own country prior to an expatriate assignment has been done. These experiences offer promise as a behavioral measure of cultural flexibility and openness, as well as an in-situ cross-cultural training.. Bhagat & Prien (1996) explained that the benefit of cross-cultural training was its focusing on accepting cultural differences. In short, cross-cultural interactions in daily living may be a means of encouraging acceptance of and openness, and acceptance toward other cultures, a tolerance for differences. Research hypotheses will test the differences between those individuals who would and would not consider an international assignment and measures of cross-cultural experience and attitudes of Worldmindedness.

## **METHODOLOGY**

### **Sample**

The sample is composed of 100 non-traditional undergraduate students, with an average age of 29.9 years and 9.8 years of full-time work experience. The characteristics of this sample fall within the characteristics of those who are offered expatriate assignments.

### **Dependent Variable**

For the dichotomous dependent variable (yes-no), participants were asked "Would you consider taking a job outside of your native country?" as a measure of willingness to accept overseas assignments.

### **Independent Variables**

There eight independent variables, which measure attitudes and behaviors associated with exposure to different cultures. With the exception of the Worldmindedness scale (Sampson & Smith, 1957), all independent variables and scales were developed specifically for this study. First, the Worldmindedness (WM) scale was originally developed as a means to differentiate those with a reference group of the world, or mankind, from those whose reference group was the cultural group to which they belonged. A worldmindedness point of reference went beyond knowledge or interest about international affairs the individual might hold. The scale has an equal number (16) of pro-worldminded items and anti-worldminded items, which can be summed to a single WM scale. The total WM scale was composed of the sum of all 32 items (coefficient alpha=.72). The second variable is a composite variable which asks the number of foreign languages the participant can read and the number of foreign languages that he or she can speak fluently (coefficient alpha= .75). A third variable asks the participants to rate on a four point scale (frequently to never) , "How often were you exposed to diverse cultures when you were growing up?". The fourth variable is a composite variable composed of 10 items asking them to rate on a five point scale how frequently (never to daily) they engaged in activities involving other cultures. A fifth variable asked "How many times have you traveled out of your native country?" A sixth variable asked "What is the longest amount of time you have lived or visited outside of your native country?" The seventh independent variable is a 5 item scale asks them to rate how the attack on the World Trade Center on September 11, 2001 (coefficient alpha=.76) on a 5 point scale from strongly agree to strongly disagree. The eighth independent variable was a 3 item scale that asked participants to rate on a 5 point scale from strongly agree to strongly disagree reasons why "most Americans do not learn more foreign languages?" (coefficient alpha=.77).

## **RESEARCH RESULTS**

A Multivariate Analysis of Variance (MANOVA) was performed and the value of the Pillai Trace statistic was 1.162 ( $F=15.944$ ,  $df=16$ , 184). Individual Analysis of Variance (ANOVA) statistical analyses found that there were significant differences ( $p < .001$ ) between the two groups (acceptors and rejectors) on all eight independent variables.

## **ANALYSIS & DISCUSSION**

Using a different set of independent variables developed specifically for this investigation, this study confirmed the importance of openness to other cultures as measured by attitudes toward worldmindedness and reasons why Americans do not learn more foreign languages and seven biographical measures related to types and frequency of experiences with other cultures, instead of the personality trait of openness to experience.

## **LIMITATIONS, STRENGTHS, AND RECOMMENDATIONS**

The limitations and strengths of this study were discussed, and recommendations for future research were made.

## **REFERENCES AVAILABLE UPON REQUEST**

# ISLAMIC ETHICS OF MANUFACTURING

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## ABSTRACT

*The business of making goods in large quantities in factories, by and large, is considered to be a modern phenomenon. With the development of different types of advanced technology and machinery this phenomenon has been tremendously increased during last few decades all over the world. All these developments have led to a decrease in the involvement of human labor in every type of factory. But because of diversity and vastness of these industries they still require many skilled and non-skilled workers to run them. In the past, complaints have been filed against many factory owners by their workers and employees. Some of these complaints were related to ethical treatment from the owners of these factories. Responding to these complaints, many well-known companies and organizations have developed their codes of ethics to deal with their workers, employees and customers. Islam also has a set of ethics that should be followed by the manufacturers or owners of these factories. Discussing relevant Qur'anic verses and ahadith of the Prophet (p. b. u. h.), this paper highlights these manufacturing ethics aiming to produce a comprehensive Islamic code of ethics for manufacturing; which could be used by Muslim manufacturers all over the world, and which could also be a good reference for non-Muslim manufacturers to improve their codes of ethics for manufacturing.*

**Keywords:** *Islamic Ethics, Manufacturing, Factories, Manufacturers.*

# THE FACEBOOK FUMBLE: ANALYSIS OF AN IPO

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## ABSTRACT

*Facebook (NASDAQ ticker symbol FB) was a household name before the company went public in May 2012. The story about the origin of the firm and its founders had already been made immortal by Hollywood via a film titled 'The Social Network' that went on receive eight Oscar nominations and won three. The film won Best Motion Picture – Drama, Best Director, Best Screenplay, and Best Original Score at the 68th Golden Globe Awards, by all accounts Facebook was one of the most widely anticipated initial public offering of stock since Google went public on August 19, 2004. There was intense competition among the global underwriting firms to win the firm's initial public offer (IPO) business. There was much speculation that Goldman Sachs the number one underwriting firm in the world that had already invested USD 500 million in the firm. The underwriting bid was won by Morgan Stanley the second biggest firm in the underwriting business. The Facebook IPO was one of the largest among internet and technology firms that estimated the firm to be worth over \$104 billion. The IPO was priced at \$38 per share and after briefly trading at \$42 per share on May 18, 2012, the shares traded down steadily. Since the firm went public the shares have lost about fifty percent of the initial market value making it one of the most unsuccessful IPOs in recent history. This research analyses and explains the reasons why the much anticipated IPO of one of America's high profile companies ended up disappointing its retail investors.*

**Keyword:** Facebook, IPO, Initial Public Offer, Underwriting, Underpricing, NASDAQ.

# AN EXAMINATION OF THE PREDICTORS OF ORGANIZATIONAL CITIZENSHIP BEHAVIOUR IN THE BANKING SECTOR OF SAUDI ARABIA

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## ABSTRACT

*Organizational Citizenship Behaviour (OCB) has been signified as one of the antecedents of organizational effectiveness. OCB is widely studied over the years in the US but has received relatively inadequate attention in other Asian contexts. This study explored and examined number of predictors of OCB based on the discussion of the dimensions of OCB in the Arabic-speaking context (Saudi Arabia in Gulf). The data was drawn from 275 employees of both private and public banking sectors. Predictors of OCB examined are Job Satisfaction and Organizational Commitment, Role Perceptions, Fairness Perceptions, Leadership Behavior and LMX, Individual Dispositions, Motivation and Satisfaction with Feedback. The results found support for the hypotheses stating the positive relationship between the predictors of OCB and organizational citizenship behaviour. These results endorse previous studies on OCB that are mainly studied in the US and seem to hold relatively well in another international context. Nevertheless, there are minute discrepancies in the significance level of some variables e.g. satisfaction with feedback-OCB relationship. The study will benefit organizations in devising the employee focused strategies for increased performance particularly in Gulf countries.*

**Keywords:** *Organizational Citizenship Behavior (OCB), Job Satisfaction, Performance, Banking Sector, Saudi Arabia.*

# EMERGENT BEHAVIOR OF THE US GOVERNMENT WORKFORCE: AN AGENT-BASED MODEL OF WORKER LOYALTY

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## ABSTRACT

After a decade of US Government growth, post 9/11, a new era of declining budgets is forcing agencies to evaluate core capabilities, efficiency of operations, and organizational constructs. Individual organizations may be optimized but macro-level or “emergent” trends are not readily understood. Despite a vast array of computational models, individual organizational theories remain fractured requiring integration and a focus on emergent behaviors (Ashworth & Carley, 2007). Building on existing research and frameworks for complex adaptive systems and computational organizational theory, an agent based modeling technique is well suited to evaluate the complex adaptive nature of an organization (Robertson & Caldart, 2008). Using over a decade’s worth of publicly available personnel data from US government agencies as a guide, an agent-based model (ABM) has been constructed assessing emergent behavior based on the loyalty of workers and the workforce environment. The goal of the model is to determine the effects of worker loyalty and team composition on the organizational composition, in terms of age and tenure, and the distribution of technical disciplines. Additionally, the study aims to validate the findings within engineering management of technical leaders shifting to management roles (Weiss & Adams, 2011). The US Office of Personnel Management provides the personnel records for 96% of the Federal government spanning the past 14 years for 500 agencies. Evaluating 26.4M records, 93% of the employee population is within 21 large agencies with an average of 1.8M employees per year. Within each of the agencies, a range of 1 to 64 sub-agencies are delineated. For each of the employees, a record includes: location, occupation, salary level, pay grade, gender, age, and tenure. An initial evaluation has identified 42 occupations within 5 broad engineering or technical disciplines including engineering, information technology, logistics, math, and management. The employee population consists of 307,000 to 370,000 technical or management employees from 1998 to 2011. The ABM includes government employees represented as agents and the global environment affecting all agents. The agent’s state consists of the variables of age, discipline, length of service (LoS), and loyalty (likelihood of staying in the workforce). The global environment governs the rate of the new workers added. Loyalty is initially set by the agent’s length of service and age and changes based on the loyalty of co-workers, and the energy spent seeking acceptable coworkers. Validated by the historical trends of attrition, the government workforce loyalty can be segmented into three broad categories. Approximately seventy percent of the workforce, ages spanning thirty to fifty-four, falls below the overall attrition rate of 5%. Nineteen percent of the workforce, ages twenty-five to twenty-nine and fifty-five to fifty-nine, is at the overall attrition rate. The remaining eleven percent, ages below twenty-five and greater than fifty-nine, is substantially above the overall attrition rate. Using the established segments of worker loyalty, the ABM depicts the individual worker behaviors, the formation of teams, and the changing composition of the overall workforce. Additionally, by varying the worker’s ability to assess the surrounding worker loyalty, the ability of the workforce to sustain a 5% attrition rate can be evaluated based on various population constructs.

**Keywords:** Agent-Based Modeling, Organizational Emergence, Complex Adaptive Systems, Engineering Management, Computational And Mathematical Organizational Theory .

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# **SECTION 2**

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## **SCIENCE & TECHNOLOGY**

# RFID TECHNOLOGY: AUTOMATING, INFORMATING, OR STRATEGIZING?

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## ABSTRACT

*RFID technology has been around for over half a century, new related technologies are developed every day. Yet, RFID's application in businesses specially as a strategic tool has not kept pace. In this paper, we look into the history of RFID technology, describe the technology and different applications of it. We review some of the most important obstacles of adoption of RFID technology, namely standardization and development of integrated software and hardware. We then apply the framework of Value-Added by information systems (IS) to investigate the status of RFID technology as a(n) automating, informing, and/or strategizing IS. We believe that RFID technology has not reached its potential as a strategizing information system. Based on the framework of value-added IS, we offer some explanations as to why this is the case. We build some propositions about RFID as a strategizing IS. We also offer some propositions for future research which can empirically investigate our theoretical propositions.*

**Keywords:** *RFID, Radio Frequency Identification, Information, Information Systems, Information Technologies, Standardization, Software, Middleware, Automating, Informating, Strategizing.*

## INTRODUCTION

While RFID in commerce is a relatively new trend, the technology itself has been around for half a century. RFID technology was used for tracking during the World War II. The United Kingdom used RFID devices to distinguish their airplanes from those of their enemies (Landt, 2001). Table 1 shows a timetable of RFID technology developments (Landt, 2001). Over fifty years later, RFID technology has started to be widely deployed by such organizations as Target, Wal-Mart<sup>8</sup>, the US Department of Defense, Tesco, and Metro AG who are forcing suppliers to put their RFID plans on the fast track. "What retailers are doing right now is looking at the market leaders to set a direction," says Marco Ziegler, a partner in Accenture's retail and consumer-goods practice (BusinessWeek, 2004). Despite this projected growth and promise of advancement, with change comes resistance. RFID is a technology that has been developed and evolved with a great deal of promises and expectations. However, even though this technology has been commercialized for over fifty years, the adoption of RFID seems to not have reached the potential that RFID technology seems to offer. In this paper, we review the academic literature and industry articles on RFID to survey the past and future of this technology to identify some of the obstacles in adoption of this technology.

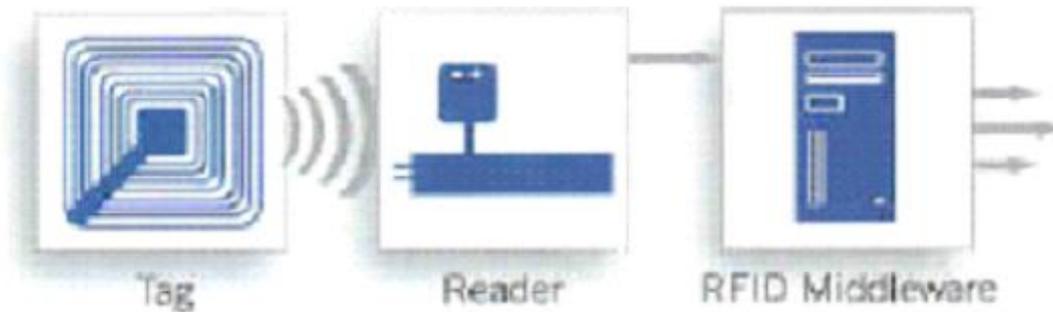
**Table 1:** *History of RFID (Source: Aimglobal)*

Decade	Event
1940-1950	Radar refined and used, major World War II development effort. RFID invented in 1948.
1950-1960	Early explorations of RFID technology, laboratory experiments.
1960-1970	Development of the theory of RFID. Start of applications field trials.
1970-1980	Explosion of RFID development. Tests of RFID accelerate. Very early adopter implementations of RFID.
1980-1990	Commercial applications of RFID enter mainstream.
1990-present	Emergence of standards. RFID widely deployed. RFID becomes a part of everyday life.

<sup>8</sup> In June 2003, Wal-Mart required its top 100 suppliers to label all cases and pallets with EPC compatible RFID tags by the end of 2005 (Barlas, 2003).

## RFID TECHNOLOGY

RFID refers to a set of technologies that use radio waves for identifying objects or people (Jones et al., 2005; Sarac et al., 2010). An RFID system usually includes a radio frequency tag and a reader. The tag consists of a combination of a microchip and an antenna. The reader sends out electromagnetic waves, which are received by the tag's antenna. The tag sends the data, typically a serial number stored on the tag, by communicating with the reader. Figure 1 depicts a schematic view of the components of an RFID system.



**Figure 1:** Components of an RFID system (Source: Manhattan Associates)

There are three main types of RFID tags, active, passive, and semi-passive. Active tags are powered by an internal battery, which is used to run the microchip's circuitry. Active tags are usually used on objects that are away from reader for about 100 feet or more. Passive tags, which are limited to a range of about 20 feet, received the electrical energy that they need from the electromagnetic field generated by the reader. Semi-Passive tags also have batteries. Unlike active tags though, the battery is not used to communicate with the reader. In this case, the battery is only used to run the tag's circuitry.

The amount of information each tag can store depends on the type of the tag, the manufacturer, and the application. Usually each tag carries up to 2 KB of data, which consists of basic information about the product. In industries such as aerospace where there is a need to store the history of the items on RFID tags, Ultra-high frequency tags that can hold up to 4 KB of data have been introduced (RFID Journal, 2012)

The microchip of the RFID tag can be read-only or read-write. In the former case, the information cannot be changed. In the latter case, the information can be overwritten. RFID tags are manufactured to work on specific frequencies. The most common frequencies include, low (around 125 KHz), high (13.56 MHz) and ultra-high frequency, also called UHF (860-960 MHz). Some applications use Microwave (2.45 GHz) frequency (Landt, 2001; RFID Journal, 2012). Active tags are expensive, around \$25 and about \$100 for the kinds with extra-long battery life or sensors, and special protective housing. Active tags are normally used for tracking high-value goods that need to be scanned over long ranges. Passive tags are less expensive and therefore are used on less expensive goods. Passive tags can be found as low as 7-15 U.S. cents. However, the cost of a fully functional RFID system also includes the cost of the reader, middleware, and other expenses, which may add up to very large amounts (RFID Journal, 2012).

### Applications of RFID Technology

RFID technology can be used for a variety of applications. It is most commonly used for tracking goods in supply chains (RFID Journal, 2012; Li and Visich, 2006; Melski et al., 2007). Other examples of the use of RFID technology include, security (preventing theft of automobiles, store items, etc.); controlling access to buildings and networks; payment (collecting tolls (EZ pass), contactless payments at stores), and many others (RFID Journal, 2012). In this section, we discuss some of these applications.

RFID tags have been used extensively by companies for keeping track of inventory. By utilizing RFID technology to track inventory, companies increase inventory visibility and thus reduce shipping errors, costs and theft. However, as the review of the applications of RFID by Sarac et al. (2010) shows, there are not many real applications of RFID

in supply chains. Sara et al. (2010) report that most companies have remained at the pilot test stage. Several organizations have pioneered and excelled in adoption of RFID technologies. The US Department of Defense, Wal-Mart, the Food and Drug Administration, Gillette, and Tesco have pioneered in the application of RFID and are among the institutions that have had real implementation of this technology (Sarac et al., 2010). According to a study by the university of Arkansas, Wal-Mart reduced out-of-stock rate by 16% (Bottani and Rizzi, 2008). The DOD has also already experienced some of the benefits of using the tags on cartons and pallets at some of its facilities. Some of these benefits include asset/supply chain visibility, and more timely and accurate information (Roberti, 2004b).

Moreover, some libraries have started using RFID technology to keep track of their inventories. Tagging library books helps speed up the checkout lines and keeps the collections of books in good order. NBD|Biblion, a Dutch publishing company, is using RFID tags for all the books it sells to Dutch libraries. This publisher is selling the tagged books to libraries at no extra cost with the aim of gaining competitive advantage over its rivals (Collins, 2004d). In spite of the cost, there are several reasons that tagging books makes sense. First, the books (and borrowed items, in general) unlike consumer goods are returned; therefore there is no need to repurchase tags for existing books. In addition, the effort required to manage inventory will be reduced which should generate additional cost savings. The library systems of University of Nevada saved \$40,000 by finding more than 500 lost items in its collection in the process of tagging 600,000 items (Gilbert, 2004b).

RFID tracking primarily has taken off in the supply chain management and this application of the technology is still the most common. Recently, however, the technology has been used in more striking applications. Some real-life examples of more nonconventional applications include RFID system for testing Concrete maturity by International Road Dynamics and Identec Solutions (RFID Journal, 2004); RFID wristbands (by SafeTzone) for real-time locating of family members at Wannado theme park (Gilbert, 2004c); Implantable RFID chips (by VeriChip) for VIP access at Baja Beach Club, Spain (BBC News; Morton, 2004), for building access control at an anticrime center in Mexico city, and tracking patients and storing their medical information on the RFID chips (Feder and Zeller, 2004). If the barriers for RFID adoption are removed, there will be an endless number of implementations for this technology.

## **OBSTACLES TO ADOPTION OF RFID TECHNOLOGY**

There are several issues that have been of concern for companies contemplating the implementation of RFID technologies. These issues have slowed the process of RFID adoption. Some of these issues include cost, unified standardization, efficient middleware for integration of data, and privacy (Chen and Pflueger, 2008). In this paper, we discuss standardization and middleware. These two areas are important and extensive ones. Even though RFID standards and software applications have evolved over the past few decades, the issue of having a globally commonly agreed upon set of standards for RFID systems remains unresolved. As we discuss later in our paper, even though RFID has the potential to be used as a strategic tool, its wider applications seem to have remained in the realm of automating and informing. We argue that standardization and software application development for RFID systems play a key role in crystalizing the potential of RFID systems as strategic tools. In this section, we provide a brief historical overview of standardization process of RFID technology. We then discuss RFID middleware.

### **Standardization**

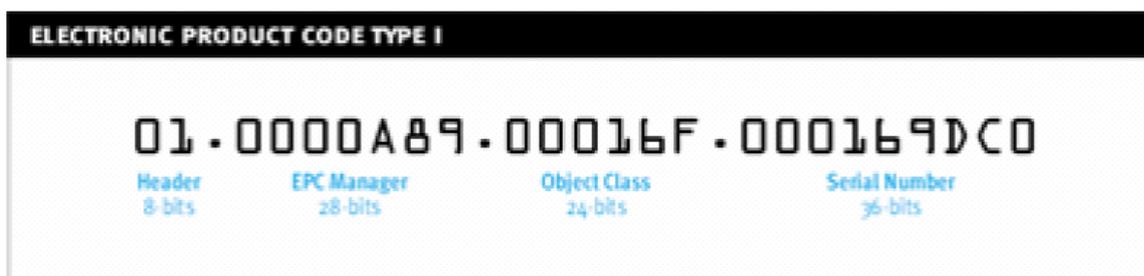
Currently, there is no globally agreed-upon RFID standard. Therefore, many companies are slow to adopt RFID because of potential compatibility problems. Some companies worry that a globally agreed-upon standard may never evolve. Over the course of about three decades, several organizations have been active in standardization of RFID technology. The leading institutions include EPCglobal and the International Organization for Standardization (ISO). EPCglobal was initially the joint venture of European Article Numbering/Uniform Code Council (EAN.UCC) (Wolfe et al., 2003). EPCglobal currently officially works as a subsidiary of GS1, a global not-for-profit organization that develops global standards. Other institutions involved in development of RFID standards include the Automotive Industry Action Group (AIAG) and the American National Standards Institute (ANSI).

EPCglobal has been the most active organization to have worked on standardization of the entire RFID system from the tags to data integration. ISO, the other leading organization, has mainly focused on the standards related to the air interface and has not focused much on other aspects. For these reasons, this paper will focus primarily on EPCglobal and its developments.

EPCglobal is a Belgium-based non-profit organization with the mission of establishing and maintaining the Electronic Product Code (EPC) Network as the global standard for identification of individual items to commercialize the use of RFID technology (Wolfe et al., 2003). The EPCglobal Network was initially developed by the Auto-ID Center at the Massachusetts Institute of Technology (MIT) with the cooperation of five leading research universities. The Auto-ID Center encouraged companies to sponsor development of EPCglobal Network. Some of these companies include Accenture, Coca Cola, Sara Lee, Target Corp. By participating in the center's meetings and activities, these companies have been able to influence the evolution of RFID standards. The Auto-ID Center officially closed its research activities on October 31, 2003. EPCglobal along with Auto-ID Labs took over the Center's responsibilities and have continued to work towards the development of RFID standards (EPCglobal, 2004b; Wolfe et al., 2003)

EPCglobal Network has been designed to work as a set of universal standards that for RFID technology and related technologies to work across entities in a supply chain, companies, and industries (EPCglobal US, 2004). From the start, the EPCglobal Network was intended as an open standard where all of the supporters would be able to freely use the technologies. The process of developing standards is still in the making. Class 1 and 2 specifications that were developed by Auto-ID center were handed to EPCglobal in September 2003. These specifications were completed by EPCglobal and became the first EPC standards. In order to process data from RFID, application level standards were needed. In 2005, EPCglobal approved development of the Application-Level Events (ALE) for this purpose which has resulted in ALE software that can read data from Gen 1 and Gen 2 RFID tags, the newest developments. EPCglobal has also approved a standard for Electronic Product Code Information Services (EPICS). This framework allows sharing and trading EPC related information on the EPCglobal network. EPICS was approved in April 2007. Additional standards are currently being developed. Therefore, this process is still well in progress (RFID Journal, 2010, 2012).

The EPCglobal Network constitutes of five fundamental elements: the ID System (EPC Tags and Readers), Electronic Product Code (EPC), Object Name Service (ONS), Physical Markup Language (PML), and Savant. The EPC, which is stored on the tags, is essentially a serial number designed to identify an individual object uniquely in the supply chain. The EPC is communicated to readers and then translated by ONS to Internet addresses, where further information about the object is stored. The PML provides a standard format for exchanging RFID data throughout the network. Savant comes into play to handle the vast amount of exchanged information. Savant has to manage the data in a way that reduces network traffic (Brock, 2001a; Brock 2001b ; EPCglobal b; Goyal 2003; Wolfe et al. 2003; Hesseldahl 2004b). Table 2 summarizes descriptions of these five elements and highlights their attributes. Figure 2 and 3, respectively, exhibit the structure of EPC and ONS.



**Figure 2:** Structure of Electronic Product Code (Source: The Auto-ID Center)

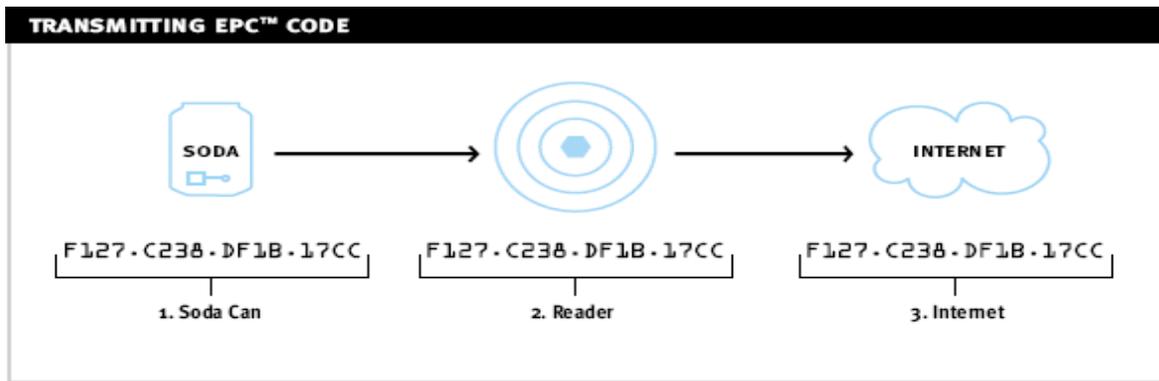


Figure 3: ONS transmits EPC to the Internet (Source: The Auto-ID Center)

Table 2: Elements of EPCglobal Network

Name	Description	Attributes
ID System	RFID tags and readers	<ul style="list-style-type: none"> <li>▪ Please refer to previous sections of the paper</li> </ul>
EPC (Electronic Product Code)	Unique identifier	<ul style="list-style-type: none"> <li>▪ Header, to identify the type, structure, length, generation and version of EPC</li> <li>▪ EPC Manager to identify the company</li> <li>▪ Object Class to identify the class of objects that individual item belongs to</li> <li>▪ Serial number</li> </ul>
ONS (Object Name Service)	Translate EPC codes directly to IP (Internet Protocol) addresses	<ul style="list-style-type: none"> <li>▪ Similar to the existing Domain Name System (DNS), which routes computers to Internet sites</li> <li>▪ Communicates with computer systems</li> <li>▪ Matches the information of the tag with product information</li> </ul>
PLM (Physical Markup Language)	a markup language used for describing information about an individual item.	<ul style="list-style-type: none"> <li>▪ A unified language to describe physical items on the internet</li> <li>▪ Has been proposed by EPCglobal for describing physical objects, processes, and environments</li> <li>▪ Serves a similar purpose as HTML (Hypertext Markup Language) but to describe physical objects and their related networked information</li> <li>▪ Meant to be used as a common base for software applications, data storage and analytic tools</li> </ul>
Savant	Enterprise software technology developed to provide middleware between RFID reader and databases	<ul style="list-style-type: none"> <li>▪ Has a hierarchical architecture that directs the flow of data by gathering, storing, and acting on information and communicating with other Savants</li> <li>▪ Lower level savant filter and direct information to the higher level ones to reduce massive flow of information and network traffic</li> </ul>

### Middleware

Mandates from firms such as Wal-Mart, Target, and the US Department of Defense have created urgency for companies to adopt RFID technology. However, the real benefit of using RFID technology for tracking items stems from the intelligent use of data, retrieved from RFID-tagged products and supplied to business applications. As Nicholas Evans Global Lead, Emerging Technology, for BearingPoint’s public services sector, states:

*“Many companies are struggling to understand how RFID data can be turned into information that they can use to cut costs and drive efficiencies. The key is likely to be found not in the RFID readers or in the enterprise systems, but in the middle-more precisely, in the middleware” (Evans, 2004)*

Therefore, having efficient middleware for incorporating the data to business processes is vital to these companies. The set of applications between RFID tags and business information systems is called middleware. Middleware links the information, obtained from the tags, to the product information that is saved in the databases (Chokshi et al. 2003; Wolfe 2003). Efficient middleware is able to handle the following tasks (Walker 2004): Reader coordination; Data smoothing and filtration; Data routing and integration; Process Management; and Sending System Alerts.

RFID middleware should consist of a core infrastructure in addition to packaged applications. Packaged applications from vendors such as Manhattan Associates and OATSystems are suitable for “meeting the needs of time-strapped early adopters” (Leaver, 2004). Platform providers such as Oracle, IBM, and Microsoft are expected to become more dominant players in the enterprise-wide RFID middleware market. However, it is believed that small vendors will stay in the market (Collins, 2004h; Leaver, 2004).

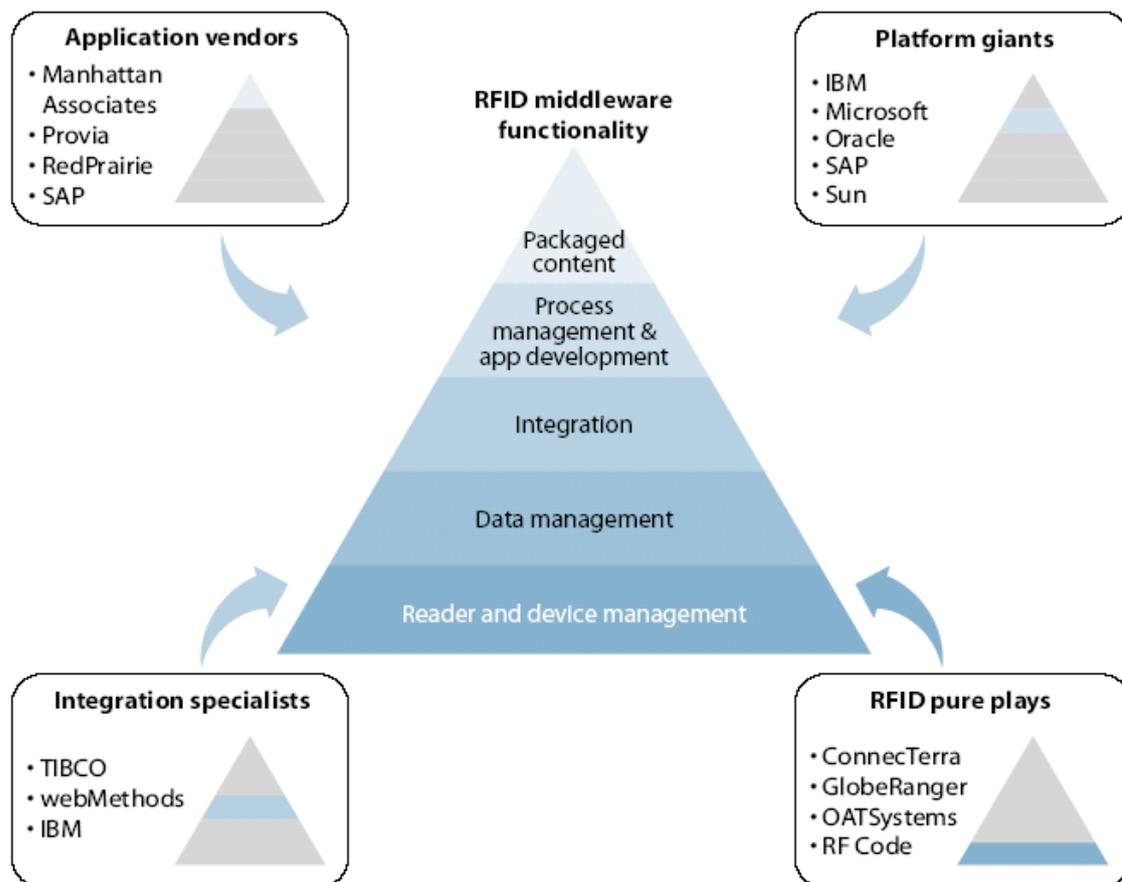
Mandates imposed by industry have created an urgency for companies to look for short term solutions. However, middleware “is positioning itself as a longer-term solution” (Kerner, 2004). Leaver, a Vice-President and Research Director at Forrester Research Inc., believes that currently most companies need fast implementation of RFID technology at the plant level; therefore, they have products from multiple vendors. However, in the long run, in order to deploy RFID at the enterprise level, companies will need middleware architectures (Collins 2004h; Leaver 2004).

In August 2004, Forrester Research Inc. published a report entitled “Evaluating RFID Middleware”. In this study, Forrester surveyed several RFID industry players. The report categorized software vendors into four broad areas, RFID Pure Plays, application vendors, platform giants, and Integration Specialists. Each of these groups of vendors brings different expertise to the table (Figure 8) (Collins 2004h). Table 3, summarizes functionalities of middleware in terms of three categories of middleware.

**Table 3: Middleware Services**

Category	Description of the Service	Examples of Providers
Application Vendors	Offer RFID compatible applications	Manhattan Associates; SAP
Platform Providers	Offer RFID middleware architecture that leverage vendors' application development, data management, and process integration	Sun Microsystems, IBM, Oracle, and Microsoft
Integration Specialists	Add RFID capabilities: reader coordination	WebMethods, OATSystems, SAP, Manhattan Associates

Figure 4, schematically, exhibits functionalities of middleware and lists some of the big players in different areas. Some vendors such as ConnecTerra, GlobeRanger, OATSystems, Savi Technology and RF Code are categorized as Pure Plays. These vendors offer products that integrate with RFID readers, incorporate business rules and filter and aggregate data (Leaver 2004).



**Figure 4:** Vendors apply core expertise to RFID middleware (Source: Forrester Research, Inc.)

As discussed in this paper, developments in standardization of different aspects of RFID technology and software applications have been numerous and many organizations and companies have been involved in these developments. However, lack of unified globally agreed-upon standards and fully interoperable middleware (including the software, platform, and integrators) is a challenge that many organizations face in adopting RFID systems. As a result, RFID technology is not being used to its full potential, serving as a strategic tool.

In the following sections, we first introduce the framework of Value-Added by IS and then apply this framework in the context of RFID technology. Our goal is to examine the status of RFID as a(n) automating, informing, and strategizing technology.

## INFORMATION SYSTEMS: THREE-LEVEL SUPPORT

Over the decades many information technologies and information systems have been adopted in supply chains as competitive tools. In this paper, we draw on various levels of IS value added framework, proposed by Valacich and Schneider (2010), to characterize and suggest ways in which RFID as an IS plays a role supply chains. These levels conceptualized by the framework include: automation, information, and strategizing – each corresponding to a certain level of value added.

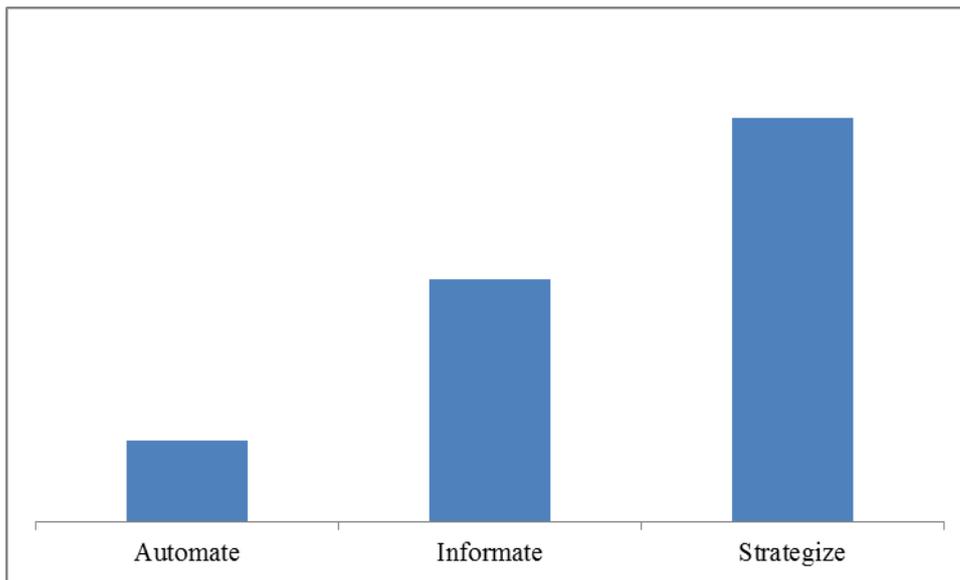
Based on our discussion of use of RFID in supply chains for inventory management and the discussion of the obstacles that businesses face due to lack of globally accepted and interoperable standards, we describe the status of RFID technology in each of the value added IS roles: automation, information, and strategizing.

The nature of RFID technology is such that it is built to become a strategizing tool. However, companies still face challenges to reap the benefits that a strategizing technology such as RFID is promised to deliver. Below, we first

discuss Framework of Value-Added by IS From Valacich and Schneider (2010). We then discuss each level of the framework in the context of RFID technologies.

### Framework of Value-Added by IS

In order to add value to an organization, an IS can be used in different (Valacich and Schneider, 2010), by automating, informing, and strategizing. When used for automating, tasks are more streamlined and completed faster, less costly, with greater consistency and more accurately. When used for informing, information systems can be used to understand the processes better, improve the processes, and support organizational learning. When used for strategizing, IS can be used to gain or sustain competitive edge by turning benefits of automating and informing into strategic advantages. As shown in figure 5 below, with each use of IS different levels of value are added to an organization. While automating provides the least value, it is an essential first step to informing and strategizing. Accordingly, strategizing is possible after informing is achieved.



**Figure 5:** Framework of Value-Added by IS From Valacich and Schneider (2010)

The levels of value added by IS have a direct bearing in the supply chains. Through automation, consistency and accuracy of the processes are improved. Through information, processes are streamlined and made more effective. Through strategizing, processes may be improved to develop competencies that were not possible through older processes. While the ultimate goal of RFID investments for companies is to gain competitive advantage, the framework informs us that this is not possible without first automating and informing. The framework also predicts highest returns on value added to RFID implementation investments when such strategizing occurs.

In the following section, we then demonstrate how RFID technology adds value in three levels: Automation, Information, and Strategizing. Our goal is to also to define the current status of RFID developments in terms of the three levels of the framework of value-added by IS.

### Role of RFID in Automating

One of the main functionalities of RFID systems is to automatically track inventory. The goal is to eliminate the process of individually counting or scanning merchandise and instead passing the merchandise through a reader which then automatically identify all the items that have RFID tags. This can reduce time of the process and drive cost of inventory tracking down. Speed, error reduction, accuracy, and reduction of paper-based processes are characteristics of the automating function of IS. A review various applications of RFID confirms the emphasis on the “automating” features of the system. For example, a recent report from a conference by RFID journal showed that many companies have implemented successfully RFID at this level. One of these companies is DePuy, a division of Johnson & Johnson. DePuy has reduced the processing time of returned ExpressKit orders to less than one minute.

This process used to take 10-30 minutes to complete. In the new form, the RFID-enabled kits are placed on a conveyor belt and passed through an RFID reader tunnel. Every time a kit is passed through the reader, the software shows what item is missing from the kit. This example shows automating and some level of informing (explained next) of RFID technology (RFID Journal Live, 2009).

### **Role of RFID in Informating**

Usually, when tracking inventory through an RFID system, after the inventory has been scanned by the reader, the system generates real-time reports about the inventory. These automated reports help retailers maintain sufficient stock of various sizes, colors and models. If paired with an appropriate middleware, RFID data can be used as an informing tool in order to improve processes to make them more effective. In the example of DePuy mentioned above, the company has been able to improve various processes such as billing the surgeons, or shorten check-in/checkout times. In these cases, the output from the RFID system has been analyzed and used to serve as an informing tool.

### **Role of RFID in Strategizing**

RFID's role as a strategizing IS does not seem to have been realized yet. Sarac et al. (2010) study, for example, showed that many RFID projects do not take advantage of the full potential of RFID technology. In fact, most of RFID adoptions have remained at the pilot stage (Sarac et al., 2010). However, RFID technology is designed to become a strategizing tool. The data collected and gathered over time of the RFID systems can be used as input to business Intelligence (BI) tools for providing further insights about processes. Predictive analytics (Eckerson, 2007) could potentially give competitive advantage to a company if used to analyze the collected data from RFID systems to find patterns and trends. In order to achieve such level of value-added through RFID, there is need for integration of RFID systems and other information systems. As discussed in this paper, standardization of RFID is still in the making. One of the challenges that still exists is the lack of globally agreed upon unified standards. This makes strategizing application of RFID systems more challenging.

## **CONCLUSION**

RFID technology has been around for over fifty years. Throughout the years, RFID technology has developed to the point that its use has become a requirement by some industry leaders. RFID technology has made a large number of applications possible. Even though the nature of RFID systems are such that they have a great deal of potential to serve as strategizing information systems, their applications so far has remained mainly at automating and informing levels.

Several issues have slowed down the process of adoption of RFID technology as strategizing IS. Some of the most important issues in this regard include standardization, the need for efficient middleware to integrate the data to business applications. In order to address these issues, many organizations have been active in the process of standardization. EPCglobal has been one of the most active ones in standardizing RFID technology. In order to achieve this goal, EPCglobal developed EPCglobal Network in order to standardize all aspects of RFID technology. EPCglobal Network is a set of standards aimed at instantaneously and automatically identifying items and sharing the information throughout the supply chain. Many middleware providers have also been active in the development of middleware for RFID data integration to business applications.

In sum, in order for RFID systems to be used as strategizing tools, they need to be used as integrated technologies with other technologies and information systems. Insufficiency of standardization remains an issue. However, as companies and consumers become more receptive to RFID technologies, there are more improvements in the technology, its application, and standardization.

This study aimed as a stepping stone for future studies that investigate the role of RFID as an information system at organizations. Our contribution is in providing a historical view of RFID technology, its development and the major players, and the obstacles that slow down the adoption of RFID technology. We also offered a framework through which we can study RFID and identify its roles as a(n) automating, informing, and strategizing information

systems. Future studies can build on this framework or similar frameworks to investigate the evolution of RFID technology. Empirical studies also can test the framework in the context of real applications of this technology. Case studies through which implementation of RFID at an organization can be studied longitudinally would be specially of high value. This kind of study can shed light on the transformation process of RFID from automating to informing and finally to strategizing IS at an organization.

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# USING TOOLS, PROPERTIES AND MODELS OF COMPLEXITY THEORY IN INTERDISCIPLINARY RESEARCH

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## ABSTRACT

*This article will briefly take the reader through the concepts of complexity theory, the ant model, the bee swarm model, genetic algorithms and interdisciplinary research (IDR). Then, finally, attempt to explain a new structure that may prompt an efficient way of using multiple researchers in different disciplines working in an interdisciplinary environment to more efficiently solve research problems.*

**Keywords:** *Ant Model, Bee Swarm Model, Genetic Algorithm, Interdisciplinary Research, Emergent Model, Complexity Theory.*

## INTRODUCTION

Today there are many complex systems existing in industry, government and business, the Total Force of the Department of Defense, including all branches of the military, academia, and private enterprise. A basic definition of the word complex is many or a whole made up of many parts. The New Merriam-Webster Dictionary defines complex as "Something made up of or involving an often intricate combination of elements; esp: a system of repressed desires, memories, and ideas that exert a dominant influence on the personality and behavior." Most complex systems are of the first and second orders: they are composed of many parts. Scott Page (2009) believes that all complex systems, among other things,

- are unpredictable,
- produce large events,
- are robust, and
- represent bottom-up emergent phenomena.

Moreover, Page (2009) states that complex systems are diverse, connected, interdependent and adaptable. He mentions that the difference between complex systems and complicated systems is complex systems are adaptable, whereas complicated systems are not.

We will be briefly discussing some of the models used in complexity theory, for these models were born out of natural phenomena and real life situations. We will briefly discuss the Bee Model, the Ant Model and the Termite Model (which is like the Ant Model), to name a few of the models studied in complexity theory. This article simply looks briefly at the behavior of these models; and then, goes on to discuss a unique model that is based on these classic models of complexity theory. An outgrowth of the models mentioned is the emergent model, a shell in which scientific research and scientific methods can thrive.

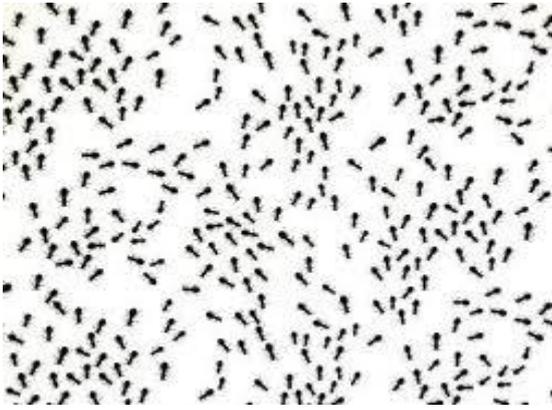
## A BRIEF LOOK AT THE ANT, TERMITE AND BEE MODELS

What do the ant model, the termite model, the bee swarm model and genetic algorithms have in common?

Answer: They all possess efficient systems through which superior processes and functions emerge.

### The Ant Model

The ant model, a model studied in complexity theory, is an efficient model with elements (ants) that perform at a very high level even though there appears to be no central manager, no central contact.



These ants have no central contact, or central manager, to direct their paths. Once food is found by an ant, other ants are made aware via feedback in the form of pheromones left along a path.

**Figure 1:** Ants searching for food with no central manager

Within a very short period, all ants in the field will have converged on the food area. The *termite model* is exactly the same as the *ant model*.



**Figure 2:** Ants converging on the food area

According to Len Fisher (2009, p. 38), in reference to the *ant model*,

*The first ants to return to the nest after foraging are those that happen to have chosen the shortest path. They will have laid down pheromones to mark the trail, and this trail will be followed by other ants, who are genetically programmed to “follow the pheromone.” By the time the ants using the longer trail have returned, there will be more ants using the shorter trail, and laying down yet more pheromone. Furthermore, ants that went out by the longer trail but returned by the shorter trail will also add pheromone to the shorter trail.*

An outgrowth of the *ant model* is the *Emergent Model*, a model we will discuss later. The *Emergent Model* gives a fresh approach to research design, and it stresses small research groups operating as individual, self-contained entities which answer to no central manager or control center.

In Fisher’s (2009) explanation above, the “...ants use the selective reinforcement of a good solution to find the most efficient route to their food source ... . This process of positive feedback ensures that soon everyone knows about the route.” Again, ants use the positive feedback principle to obtain a good approximate solution to the food problem. The *Emergent Model* above will utilize positive feedback as well. Of the many models and ideas utilized by the *Emergent Model*, ant logic and the idea of positive feedback will undergird this model.

## The Bee Swarm Model

The Bee Swarm Model is an excellent example that shows natural phenomena in action. It illustrates a swarm of bees converging on a target as a well-oiled machine and an organized structure, even though no apparent leader

seems to “bee” in charge. For no obvious reason to the observer, the swarm acts as an efficient entity functioning without a leader. From where do they receive their orders? Len Fisher (2009) asserts that emission of pheromone, similar to that of the ants, is not the apparent reason. Instead, individual bees flying within the swarm, lead by doing and all other bees follow their lead. This model will undergird the Emergent Model. Also, keep in mind that positive feedback is very important in this model as well.

## Genetic Algorithms

We are quite familiar with dog, or animal, breeding, which is a human activity. Dog, or animal, breeders have been experimenting in these areas for scores of years. Today’s popular breeds - in many cases, superior breeds - are products of genetic breeding. Lately, out of the genetic breeding process emerges a superior breed. This is the essence of genetic breeding. Of course, years and years of feedback activity have facilitated the process along.

Using his vast computer science experience, Ronald Fisher’s text *The Genetical Theory of Natural Selection*, and his knowledge and love of genetic breeding, John Holland (Mitchell, pp. 127-28) “...laid out a set of general principles for adaptation, including a proposal for genetic algorithms.” This is essentially the beginnings of genetic algorithms. Without the expense of laying out a thesis on genetic algorithms, we will briefly explain its essence as it applies to both the ant model and the bee swarm model.

Genetic algorithms are now loosely based on the principle that the “breeding of two distinct, yet related, computer programs will produce a superior program: the “emergence” of a superior program that is far more capable of providing a superior solution. Computer scientists are well aware that the idea of genetic algorithms is much more detailed; albeit, it is hoped that the sensibility of those working with genetic algorithms is not abraded by our abbreviated description. Finally, it must be noted that feedback is an important process that is associated with genetic algorithms.

## BACKGROUND AND RESEARCH INITIATIVES

A group called the Four Faculty Research Group (FFRG) was created in the Mathematics Department at Clark Atlanta University in Atlanta, GA, to study chaotic dynamical systems, complexity theory and mathematical biology (including ecology). One of the goals of the research group is to delve very deeply into these important areas in mathematics. In these areas of mathematics, a great deal of research has been done. Both Strogatz (1994) and Devaney (1992) give wonderful treatments of chaos and chaotic dynamical systems.

The FFRG realized - as others have - that there are commonalities between these subjects and complexity theory. Even though complexity theory is not a unified theory, there are wonderful models (like the ant model) and examples in complexity theory that command attention from the most renowned individuals.

The bulk of our research is in dynamical systems, chaos and complexity theory, and, applications of tools of these subjects to biology, ecology, university enrollments and other growth issues. Albeit, the shell in which our scientific research is done is the Emergent Model. We will also use this model when working in interdisciplinary research environments.

The FFRG is involved in many scientific research activities that require the applications of tools found in differential equations, dynamical systems, statistics, chaos, complexity theory, and mathematical biology. We are tweaking models found in complexity theory that may be used to facilitate our research efforts; we are using statistics, differential equations and dynamical systems to study the behavior of annual student enrollments at Clark Atlanta University (the FFRG has been commissioned by the Office of Programs, Assessment and Research (OPAR) to perform this task), the list goes on. We are studying the behavior of annual salary gaps between the rich and poor in the United States. We have done extensive research in growth patterns, including population growth. We are constantly looking for new equations that will model the behaviors of different activities for different parameters. We are interested in the behavior of the annual population of a country during the next 10 years, for example, after the completion of a war; we are interested in how many years it will take a country to regain its population total (before

the war) once the war has ended. We are interested in the rate of growth of the annual population of a country during the next 10 to 15 years after the completion of a war. We want to delve into the areas of dynamical systems, chaos, complexity theory, and mathematical biology (including ecology), so deeply so much so that we are able to apply the tools of these areas to other disciplines and other STEM areas to solve problems efficiently in those disciplines. We are highly attuned to interdisciplinary research and we believe we have the tools that will afford us this opportunity. Moreover, our scientific research program will also be able to shape, recruit, train, educate, and retain a large pool of students majoring in the STEM areas: this can be done by offering pertinent courses in our curriculum, courses that are current and relevant to the future workforce. We believe the courses mentioned above are some of those courses needed to better prepare our STEM students so that they are able to perform more competitively.

Interdisciplinary Research (IDR) is a hotbed for discussion and research activity today. Andreassen, et al. (2005, p. 62) stress the idea that interdisciplinary learning and interdisciplinary research (IDR) fosters interest, prompts curiosity, prompts focus on subject matters, while enhancing learning. The programs initiated by the FFRG will be created and designed so that researchers—both professional and young research trainees— perform research activities in dynamical systems, differential equations, complexity theory and mathematical biology, using an interdisciplinary approach.

Acquiring knowledge in all these areas, with great mastery, and applying this knowledge to research activities at Clark Atlanta University (CAU), and to other relative situations, will be part of our state-of-the-art performance in areas where we are needed. We must stress that we are equipped to nurture our student population at CAU as they participate in research and interdisciplinary activities in programs the FFRG hosts.

### Research Constraints and Limitations

The most obvious research constraint the program may encounter is lack of sufficient funding. While public colleges and universities may be supplemented with funds to support a project of this magnitude, private universities will always encounter a dearth of funding sources. Hence, a program of this sort is most appropriate to that institution that is readily able to acquire sufficient funding. At a different focus point of two foci, finding undergraduate students who have satisfied all prerequisites to take a dynamical systems course and do field research in mathematical biology, approximation theory and chaotic dynamical systems, is a serious task that may not be so easily completed. Albeit, all concerned groups should be aggressively recruiting this kind of student.

With reference to limitations and constraints on research design, our project's major model, the emergent model, is a *shell* in which all major research designs may flourish. The major components found in the *scientific method* will work very well in the emergent model. Moreover, both qualitative and quantitative studies will not be limited by this model. Our group will be focusing on quantitative studies and our goal is to work with, and train, at least 12 students each year. Our students will be trained to use the *scientific method* and other methods of research design within the emergent model shell.

### THE EMERGENT MODEL AS A VEHICLE FOR RESEARCH ACTIVITIES

One method that the [FFRG]... will use is the **Emergent Model**. (Pierre, et.al., 2012) We will use the Emergent Model as one of the key components to facilitate improvement in undergraduate [and graduate] student learning, and faculty collaboration, at CAU. We believe the **Emergent Model** will prompt student and faculty interest, high student performance, student learning, etc. The **Emergent Model** is given in the form of an algorithm below. The object of the algorithm is to prompt an ease of understanding.

"The *Emergent Model* is born out of the field of complexity theory, a discipline studied by mathematicians, physicists, biologists, engineers, chemists, as well as political scientists and economists. As mentioned above, one of the many models covered in complexity theory is the *ant model* which concerns individual, self-contained bodies, or ants, that strike out on undetermined paths to find food.

The programs initiated by the FFRG will be created and designed so that researchers—both professional and young research trainees— perform research activities in dynamical systems, differential equations, complexity theory and mathematical biology, using an interdisciplinary approach.



These ants have no central contact, or central manager, to direct their paths.” (Pierre, 2012) The *ant model* is one of the models in complexity theory that undergirds the *Emergent Model*. The *Emergent Model* is an excellent research vehicle within which contemporary research methods may be used and, hopefully, exploited to seek out emerging schemes to resolve issues and/or to solve problems. (Waldrop, 1992) This model, based on concepts found in complexity theory (ant model, bee model, genetic algorithm, etc.) gives a fresh approach to research design, and it stresses groups operating as individual, self-contained entities to which no central manager, or central center, is answered. (Fisher, 2009) (Mitchell, 2009) By using this model, we believe the resulting research results will be superior. Moreover, the *Emergent Model* focuses on mentoring to build a research culture. We are trying to produce a superior research model using positive feedback, observation, etc. This is equivalent to ants leaving pheromone along a path. (Fisher, pp. 38-40) The *Emergent model* is a shell in which all canonical research methods, including the scientific method, will function; a shell through which all canonical methods will progress.

The FFRG realized that tools of population growth have great utility. These tools can be used to analyze the behavior of university enrollment, the annual behavior of certain sectors in large military services, the behavior of certain groups affected by diseases, economics, the Olympics, wars, and other related issues. These tools become even more powerful when they are utilized in Interdisciplinary Research (IDR). In an IDR environment, we see many groups composed of researchers in different disciplines collaborating to find superior solutions.

What if IDR groups of four or five are sent out to perform high-level research operations as independent entities without a central contact, without a central controller? What, then, if these groups met together every two or three weeks to brainstorm over their progress and to debrief each other of their status? What if every group is working on the same major assignment? These questions and their answers make up the essence of the *emergent model*. Although these questions give only a hint of the structure of the *Emergent Model*, they somewhat highlight its *importance*. *Just as in genetic algorithms, the Emergent Model, hopefully, prompts the emergence of a superior solution.*

Our young research participants and research assistants will be exposed to different research methods (e.g., research methods in biology, sociology, chemistry, etc.) as they work collaboratively in interdisciplinary environments. Our faculty will be exposed to cutting-edge research as it is manifested in the form of symposiums and workshops.

Moreover, our research participants will be asked to plan and design their research strategies before they embark on their research activity. “...They will [be] ask[ed] to consider the principal area of investigation (the problem) by dividing it into more manageable subareas. They will be asked to ponder over the main issues and seek direction through appropriate hypotheses based upon obvious assumptions.” (Pierre, 2012) Once these steps are considered, and taken, the researchers will undergo their research activities using the *Emergent Model* algorithm. An algorithm for the *Emergent Model* is given below.

## THE EMERGENT MODEL

**An Algorithm: Ways to create superior groups, projects, products and schemes (Pierre, et.al., 2012):**

1. Create groups of small sizes, [for example, groups of] 3-4.
2. The number of groups should be no more than 10.
3. Work within groups and across groups.
4. Assign a complex task, the same task, to all groups.
5. Send out a directive that all groups, initially, should work independently for about two weeks.
6. The task assignment should take about one to two months.
7. After the first two weeks, pair the independent groups to review, brainstorm, and strategize about the assignment for a day (two to four hours).

### **Example – Week 1**

{Group 1 with Group 10}

{Group 4 with Group 2}

{Group 8 with Group 3}

{Group 5 with Group 9}

{Group 6 with Group 7}

Note: The pairings may change every week.

8. During the week or bi-week, individual groups will research and collect data, review, brainstorm, evaluate and strategize about the assignment as well as the groups' plans and progress.
9. By pairing groups each week, or bi-weekly, it is hoped that the feedback and collaborations will make each group better. We are counting on the fact that the feedback knowledge will make each group better, improve each group's process, strengthen the communication skills of all involved, prompt greater responsibility in all groups, prompt all groups to work towards a common goal and improve the ties and relations between groups.
10. There will be no central figure or manager controlling or managing the groups.
11. The groups, as self-contained and self-supporting entities, will work independently.
12. By the end of the task assignment, members of each of the manager-less or self-directed groups will have worked together to complete the task assignment.
13. The end result should be the emergence of a superior project, product or scheme.
14. Communication within and across groups must be stressed and done regularly.
15. In all, it is hoped that a deeper learning and engagement will be prompted by the processes and that the passion for persistence and performance will undergird the overall operation.

## CONCLUSION

Complexity theory is not yet a unifying theory, and until the conceptual components of complexity theory are identified and put in place, a unified complexity theory will not exist; albeit, there are wonderful models and examples in complexity theory that command attention from the most renowned individual. Given eight or more researchers working in an interdisciplinary environment, a shell like the *Emergent Model*, researchers' sensitivity to other research methods, experts in related areas, other researchers, and a research problem to be solved, eventually, it is hoped, a superior solution to the problem will emerge.

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# INTEGRATING 3D MODELING TO SUPPORT SOCIOLOGICAL RESEARCH

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## ABSTRACT

*This paper addresses the design and implementation of virtual scenes in a 3D virtual environment to support the analysis and modeling of Human, Social Culture and Behavior (HSCB) i.e., conditions within the African continent. Africa, a continent made up of fifty-three countries, and approximately 940 million people, has been gaining in US and global interest throughout the later part of the 20th century and the early part of the 21st century. This is due in part to its abundance in natural/mineral resources, a growing interest in its petroleum sector, accelerating foreign investment, growing importance of proximity to commercial shipping, and its significant fishing grounds. For example, a culture concern is the observable (i.e., associated with different scenes) physical and social environmental changes in a society. This study will aid in making cultural and behavioral decisions concerning regions of stability and instability in Africa. Using a 3D virtual environment to visualize phenomena in many disciplines is being used in today's research environments. However, using object-oriented technology and social network analysis to design and guide the implementation of 3D virtual scenes of HSCB phenomena is relatively new and requires more study. Also, a critical part of the development of these object-oriented models is the use of the Enterprise Architect (EA) modeling tool to archive and access the models. The purpose of this research is to develop object-oriented models and a methodology to analyze culture and behavior to support the development of virtual scenes in a 3D virtual environment. A Healthcare System framework will be used to develop virtual scenes where Social Network Analysis (SNA) will determine the Main and Critical paths to take when developing scenarios. Also, SNA will be used to aid in the blueprint development that will be used to develop scenarios. These virtual scenes will be used to aid the military, sociologists and psychologists in the analysis of their theories developed concerning culture and behavior in Africa.*

**Keywords:** *Human, Social, Culture, Behavior (HSCB), Object-Oriented Analysis and Design (OOAD), Enterprise Architect (EA), Second Life (SL), 3D Virtual Environment, Methodology, Scenes, Scenarios, Social Network Analysis (SNA), Pajek, System Development Life Cycle (SDLC), Blueprint, Bill of Materials (BOM).*

## INTRODUCTION

Human, Social, Culture, Behavior, (HSCB) systems are sociological structures used to study the behaviors of humans in their environment. It was first established by the Office of Security Defense (OSD) and developed for the use of the military to understand socio-culture factors in human behavior (ONR, 2011). The proposed concept of this program is to fully understand HSCB factors and the influence on human behavior. The main purpose of the program is to improve the ability to model these influences as well as to specify the impacts on human behaviors through simulations and visualization modeling tools. Some modeling tools consist of 3D virtual environments. There are research studies in progress focused on communication and understanding of culture and social behaviors to support the military before entering and constructing bases in different counties. This is important because understanding the culture of a region will benefit the military in communicating with citizens in different parts of the world.

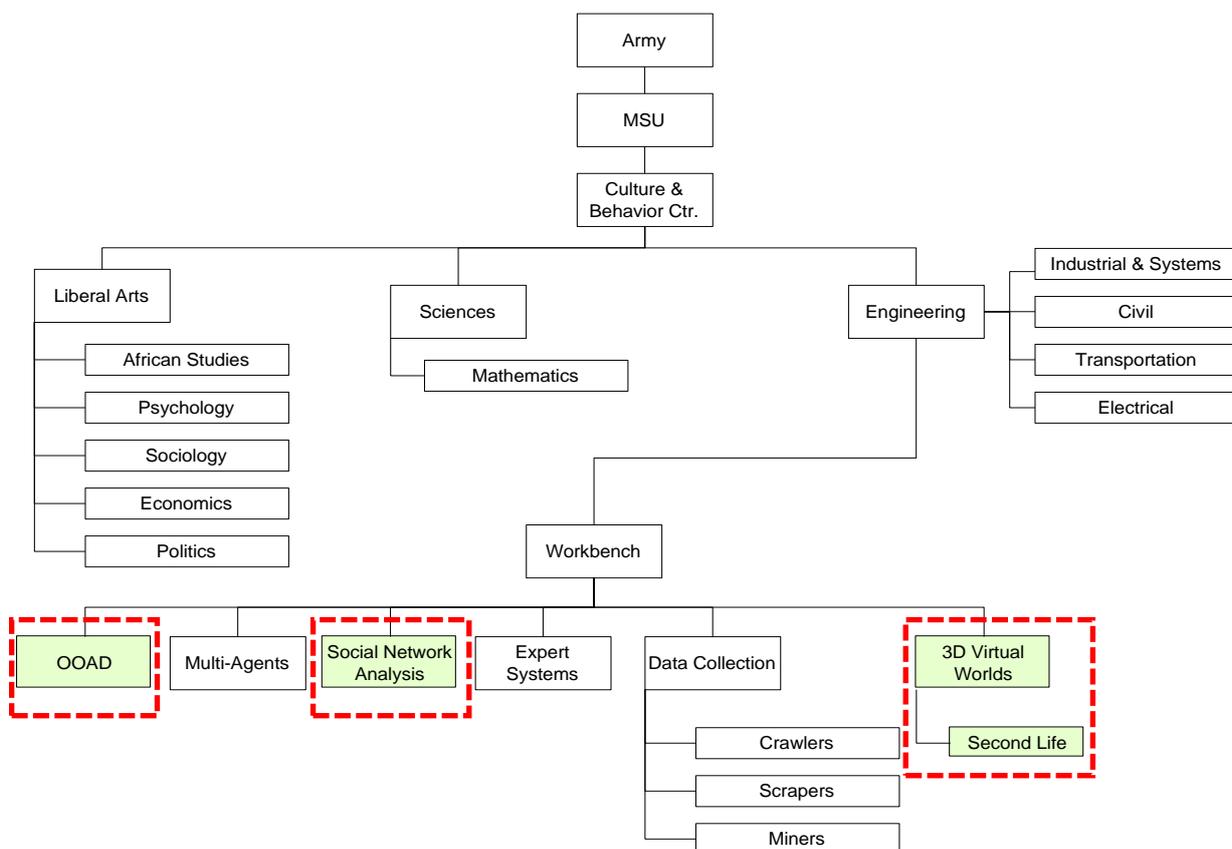
## Background

This paper introduces an approach using Object-Oriented Analysis and Design (OOAD) and Social Network Analysis (SNA) to develop 3D virtual environments to support HSCB research. 3D virtual environments can be used to define communities in a computer. In these environments, users can interact with one another, create and use avatars. The virtual environments replicate physical environments with the use of images and or physical viewing as well as documentation. The virtual environments assist in research, analysis and understanding of human behavior

in various areas. The area of focus for this research is located in Africa. The purpose of this research is to develop a framework and a methodology for the development of 3D virtual environments to support the visualization and understanding of sociological systems.

**MSU HSCB Research Structure**

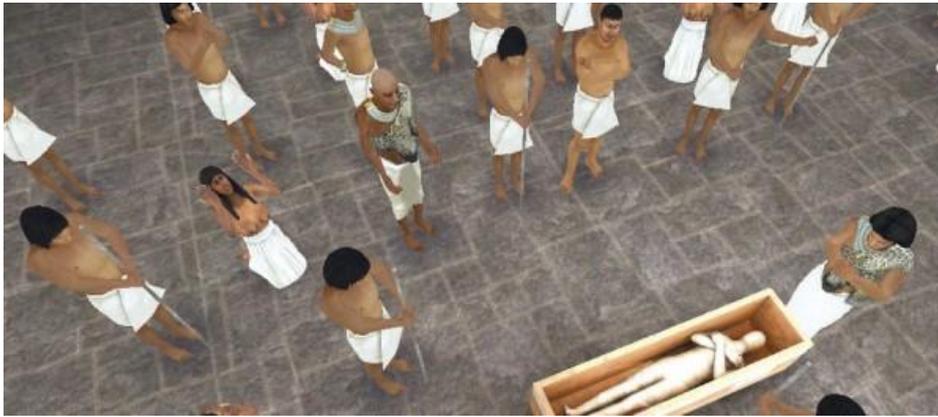
Morgan State University has formed research collaboration between the School of Engineering (SOE) and the College of Liberal Arts (CLA). A key part of the SOE effort is the development of an advanced workbench of tools to study HSCB systems. The workbench will contain tools that support technologies such as Object-Oriented Analysis and Design (OOAD), Social Network Analysis (SNA), Expert Systems Analysis (ESA), Multi-Agent Analysis (MAS) as well as 3D Virtual Modeling. In figure 1 shown below, is a framework defining the HSCB research environment. The highlighted objects shown within the research structure (i.e., OOAD, SNA and 3D Virtual Worlds) are the areas that will be discussed in this paper regarding the development of a 3D virtual environment.



**Figure 1:** MSU HSCB Research Structure

**METHODOLOGY**

A 3D virtual environment can be a replication of a physical environment in the form of a computer based simulation; through which users can interact with one another and use and create avatars. Virtual environments are used in business organizations for global communication, educational purposes of interactions between professors and students and or research purposes. Virtual environments can be utilized in real time as well as static environments. Figure 2 is an example of a virtual environment replicating the ancient Egyptian culture.



**Figure 2:** *The Humanities, Digitized (Harvard University)*

Peter Der Manuelian; a professor at Harvard University developed a computed based model of an actual archaeological documentation from Harvard University-Boston Museum of Fine Arts Expedition from the years 1905-1947. The scene shown above is pharaoh Khufu's funeral ceremony. The scene was developed using software powered by Dassault Systems in Paris (Shaw, 2012). Harvard utilizes virtual modeling to enhance their students thinking and comprehension within their studies.

This paper will discuss an approach that is being used to develop a 3D virtual environment of an African village. As mentioned previously OOAD and SNA will be integrated to structure, analyze, implement and design the virtual environment. OOAD will aid in the development of a Bill of Materials (BOM) to identify physical parts needed to develop the 3D scenes, various procedures and the interaction between avatars. SNA will assist in defining relationships and clustering of elements within the virtual environment in addition to defining the main and critical paths of development (Lewis, 2009). The relationships will be defined with nodes and links that will determine their significance. Pajek is the tool that will be used to develop network graphs to show the relationships and clusters of elements (de Noovy, Mrvar, & Batagelj, 2005). Integrating the two methods will then be applied to the final development of a virtual environment.

### **Systems Development Life Cycle (SDLC)**

To develop a structured outcome from the project objectives, an approach from software engineering will be used known as SDLC which is depicted below in figure 3 (Tang, 2005). This diagram is represented providing the procedures one will pursue in a particular approach. It is essential to follow these procedures when approaching a complex system; beginning from the Stakeholders' / Users (Hoffer, 2009). It is necessary to communicate with the users to understand the system and what they want (i.e., requirements) which will be determined within a Joint Application Development (JAD) Session. From the requirements based on the users' needs and resources available, a High Level System Analysis (HLSA) is performed resulting in a High Level System Diagram (HLSD). The HLSD highlights all the key components of the system which gives a focuses on the project objectives. With a diagram of the system, it is possible to see the key components and their interrelationships. An initial problem definition is defined from the high level system analysis and JAD sessions.

The phase this research is currently in is highlighted; which is the Use Case and Analysis modeling. Within this phase, the system requirements are defined. It is the process of describing behaviors within a targeted system from an external point of view. Use Case Models will have scenarios attached to show events within a system and what it is intended to do. From the Use Case and Analysis phases, the following diagrams are constructed; Class, Object Sequence and Activity. For this research only Use cases, Class and Object diagrams will be discussed.

A key focus of the SDLC is the user's requirements. In this particular study, the requirements would reflect the research around developing a virtual African village, namely, a healthcare system in Owerri Nigeria. Reviewing images from the National Geographic magazine, collaborating with a co-researcher of a healthcare system, Owerri Nigeria will be used to develop scenes within the 3D virtual environment. SNA will also be used to illustrate the

relationships and clusters between elements in the system; figure 4 shows the integration of SDLC, OOAD and SNA for analysis, design and implementation phases; currently in working process of the analysis and design phase.

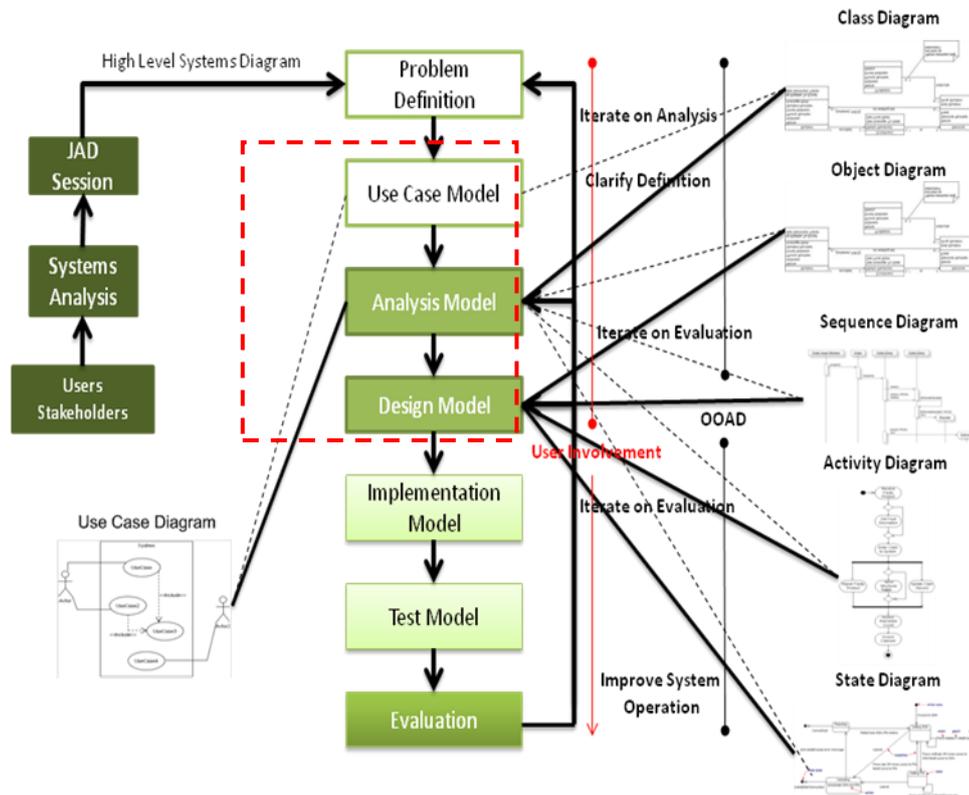


Figure 3: Systems Development Lifecycle

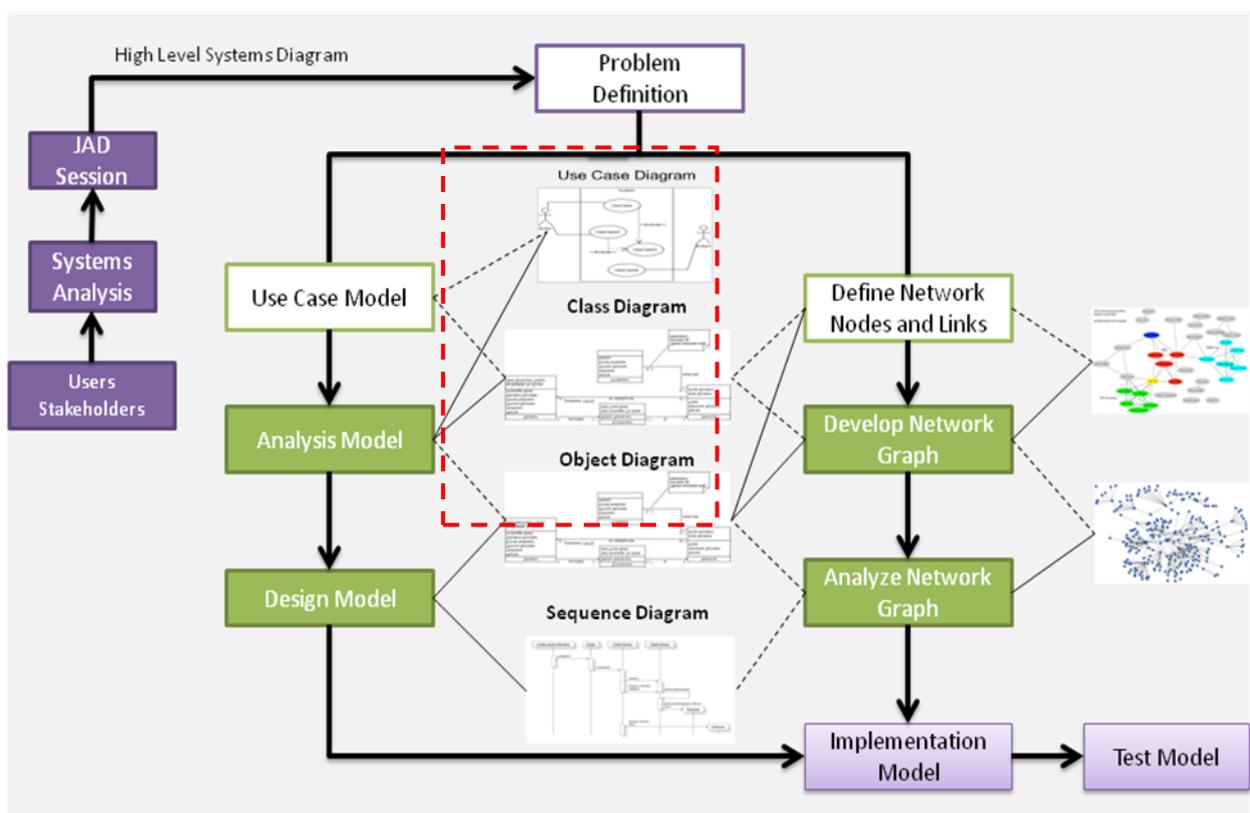
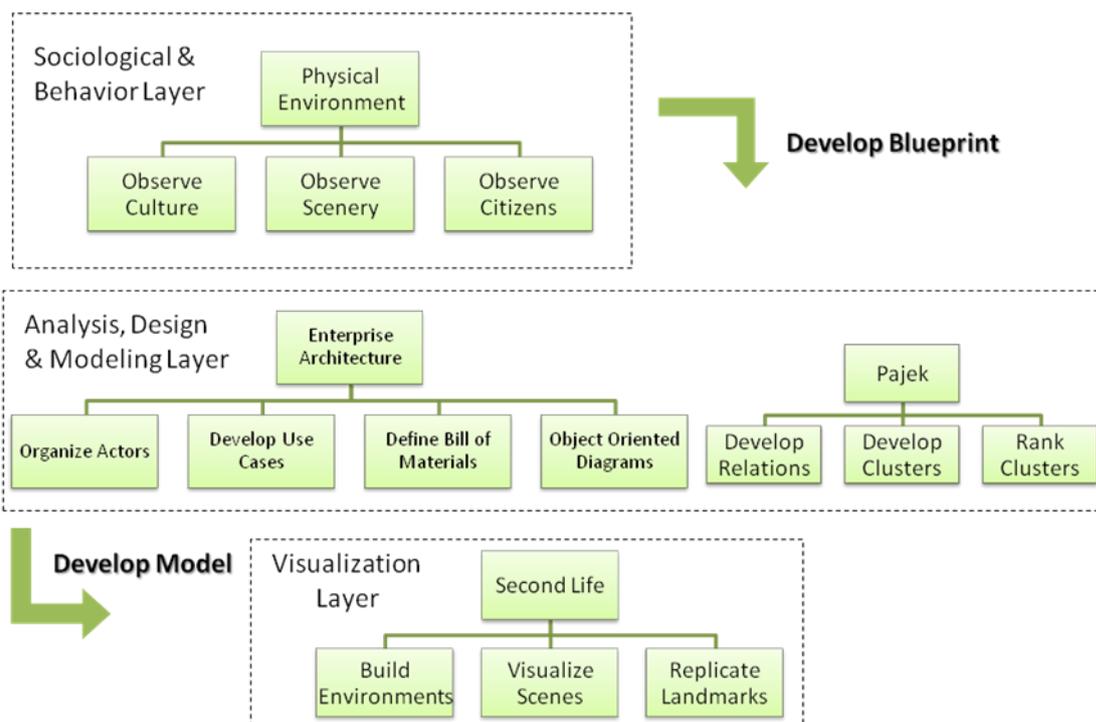


Figure 4: SDLC; Integration of OOAD and SNA Methodology

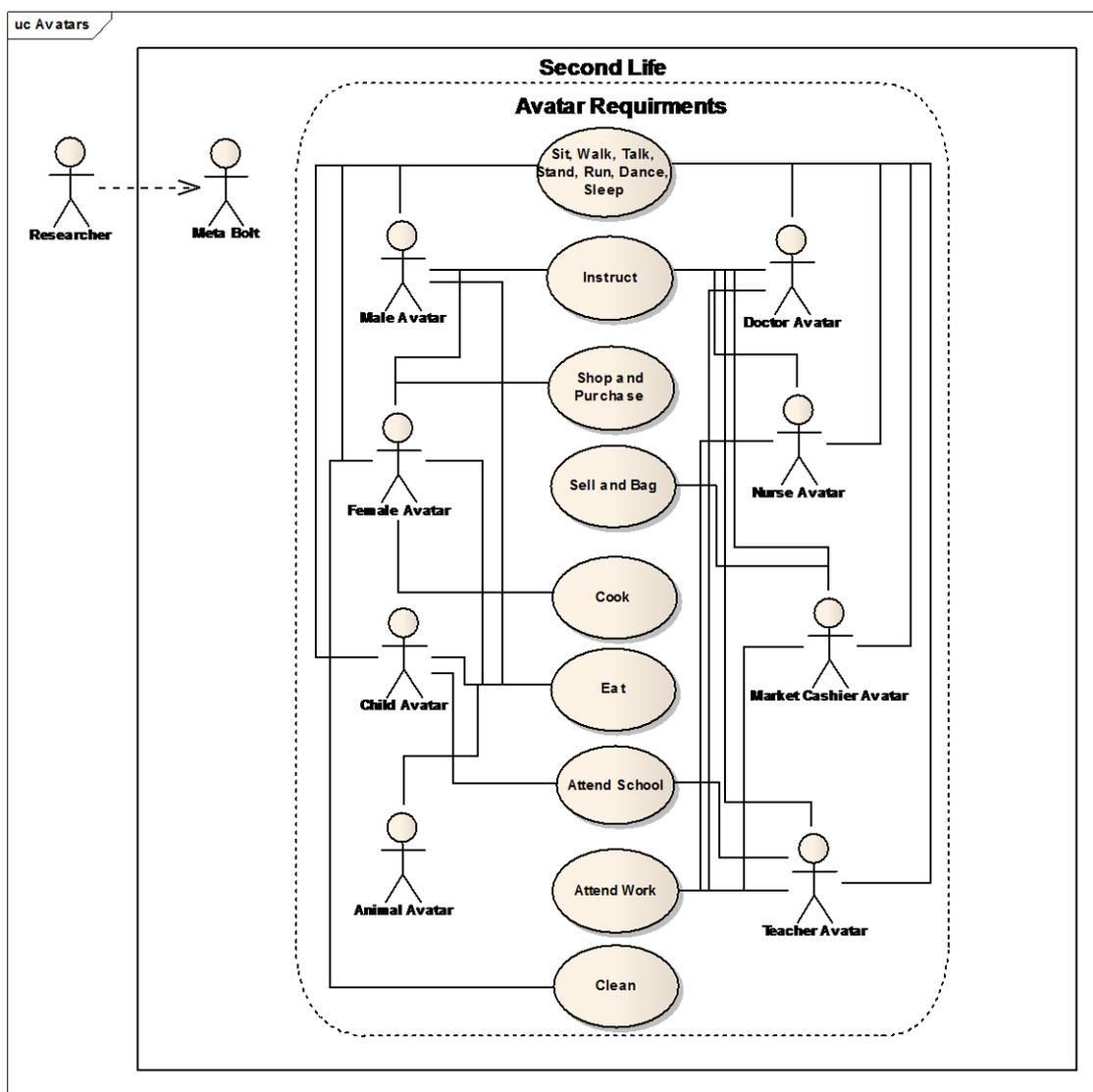
There are three steps that will be taken into consideration in development of a 3D virtual environment. Figure 5 depicts the 3D virtual layered development structure. The structure consists of the steps that will be taken during the development of modeling a physical environment. The first step is the sociological and behavior layer; where a detail analysis of a physical environment will be performed. Documentation and images will be reviewed and observed to understand the culture, scenery and citizens of the proposed area. From the first step, a blueprint will be developed. The blueprint will be structured as a software modeling effort using Enterprise Architect (EA) and Pajek. This step will assist in the analysis and visual simulation. Avatars will be defined as actors in the uses cases and scenarios being developed. From the structuring of the avatars and use cases; a BOM will be defined to organize the virtual environment. The artifacts constructed within EA are object oriented diagrams developed from the unified modeling language (UML). This will aid in the design and development of a virtual simulation of the physical environment. Pajek will assist by defining a network of the element relationships and clusters. A BOM will guide the development phase of the 3D virtual environment in Second Life by structuring external and physical entities in the final step.



**Figure 5:** 3D Virtual Layered Development Structure

### **Object-Oriented Analysis and Design (OOAD)**

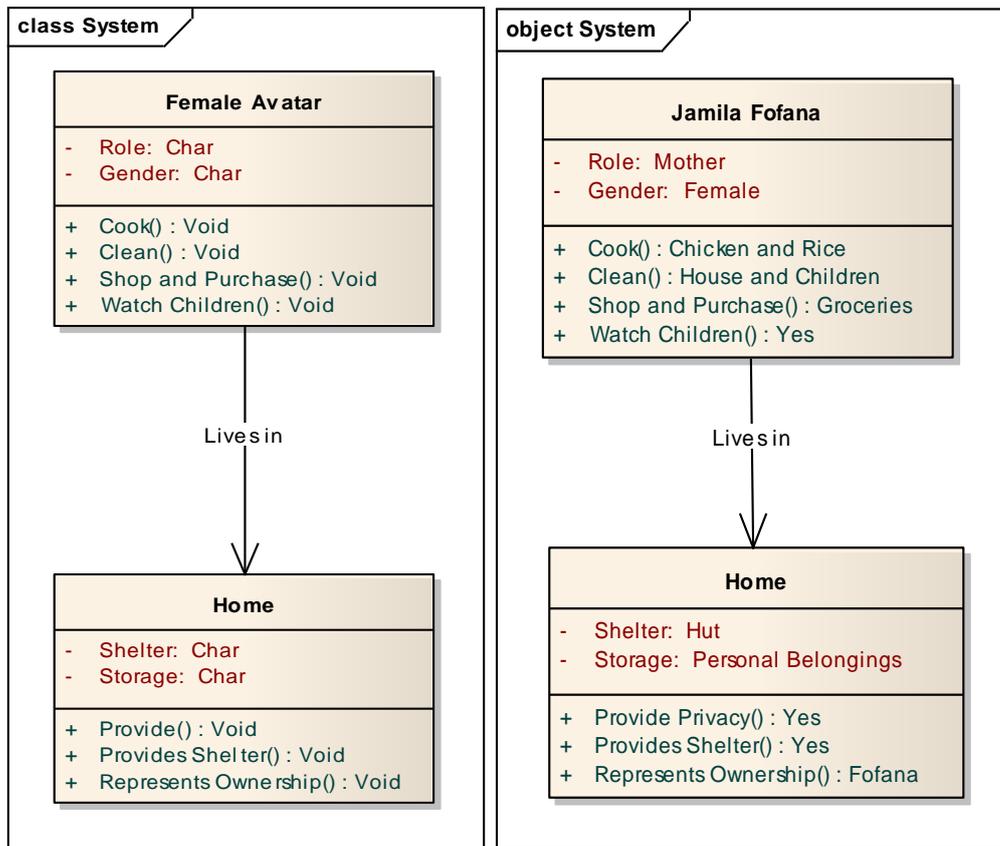
The OOAD methodology is used to develop multiple diagrams during the analysis phase. These initial diagrams are used to develop the design of the system. Within the design phase models are constructed using real world system specifications. Models consist of the Use Case as well as their scenarios. From the Use Case Models, Class diagrams can be constructed as well as Object, Sequence and Activity Diagrams. OOAD methods are used to model the physical world by structuring architecture of the 3D Virtual Environment under development in EA (Tsang, 2005).



**Figure 6:** OOAD Use Case Model: Second Life and Avatar Requirements

Figure 6 is a Use Case Model developed in Enterprise Architect (EA). The model is a graphical representation of the requirements for avatars within Second Life. Scenarios will be developed for each use case. As can be seen, the researcher/actor on the outside of the entire avatar requirement boundary is only connected to the Metabolt actor. The utilization of this tool is under research; the purpose of its use is to be able to control the avatar's movement and interactions within the scenarios without using the manual movement functions in Second Life.

Each use case will be defined by a scenario that will describe how the requirement will be implemented in the system. From the scenarios, class diagrams will be developed. Class diagrams will give detailed characteristics about each entity and their relationship within the entire system. The characteristics are known as "Attributes and Operations"; attributes are entities such as "role and gender" shown in figure 7. Figure 8 depicts an object diagram where the attributes are given values. The class diagrams are for organization of the 3D environment and modifications; object diagrams define the behavior and characteristics of an entity (object). The Class and object diagrams will be used to define the profile of avatars and other major entities within the system to assist in development of the BOM.



**Figure 7:** Class Diagram: Female Avatar and Home **Figure 8:** Object Diagram: Female Avatar and Home

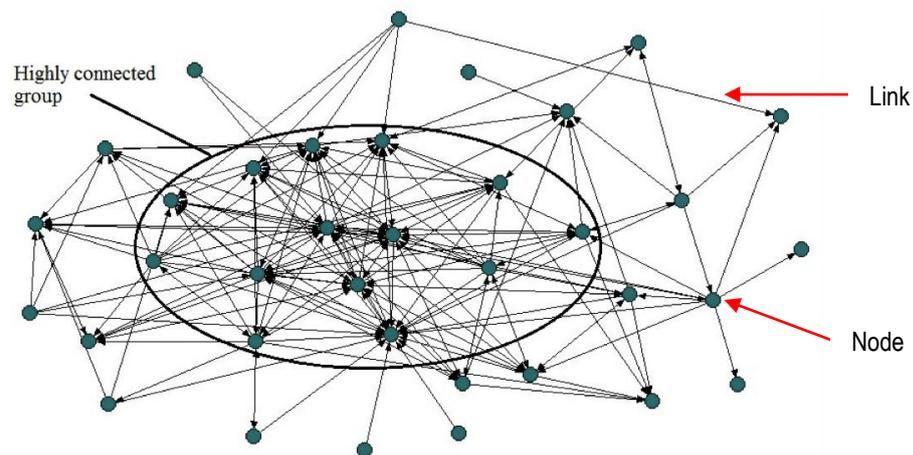
The architecture developed will be defined by the BOM. The BOM will provide a blue print of the proposed virtual environment. The initial procedure of creating avatars, scenes, scenarios and landmarks will be defined. Structuring within OOAD will provide the ability to modify models if necessary.

### Social Network Analysis (SNA)

Social network analysis (SNA) studies social relationships in various environments and uses social science to provide a methodology to analyze social systems. Sociograms can be depicted within SNA. A Sociogram is a graphical representation of a group structure; providing virtualization of a social network. Sociometry studies interpersonal relations focusing on social ties of small groups rather than an entire society (Lewis, 2009). The main goal of SNA is to detect and interpret patterns of social ties among actors (de Noovy, Mrvar, & Batagelj, 2005).

Complex problems are hard to solve and require time, research and analysis. A modern study of network science is the study of science systems (Lewis, 2009). Network science study uses SNA; to study social relationships within systems and the environment. The study of social relationships is important because the interaction of humans and their environment are modeled in depth for accurate analysis focusing on dynamic behavior. Methods of network science consist of graph theory, network analysis, modeling and graphs using computer based tools. Although graphs can have undirected links between nodes; the graphs must have accurate data to have a logical flow and purpose. Some examples of network structures are online social network studies, military tackle operations, and public transportation designs (Derribea & Kennedy, 2011) (Lewis, 2009) (Bordeaux, 2012)

Network graphs are the observation of reality having the ability to model this reality. A network is a graph of an environment formed by nodes and links. Nodes are vertexes that depict a group of people, places or systems for example. Arcs are links, that connect nodes, with heads and tails. Links are edges that can either be directed (with an arrow head) or undirected which connect nodes/vertexes to show a level of relationship, an example can be seen in figure 9.



**Figure 9:** Nodes and Links

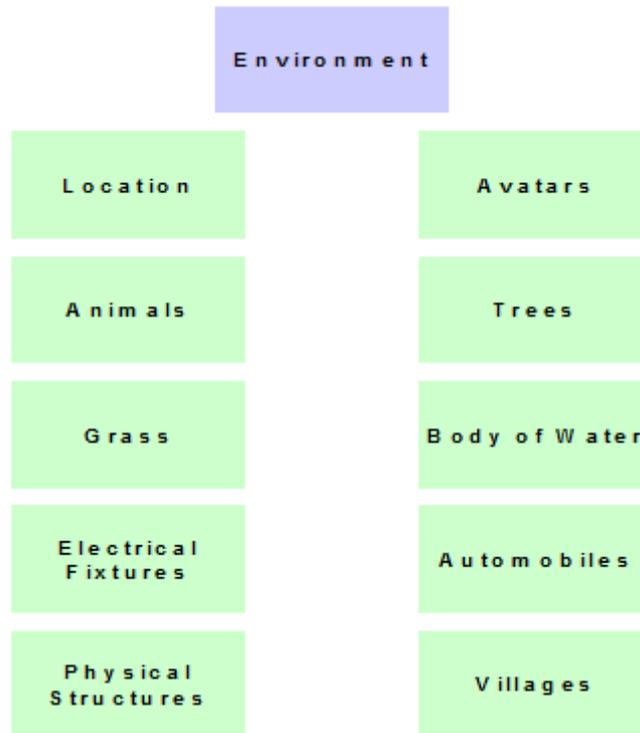
Pajek is a software tool used to analyze and graph social networks. This is a computer based tool that creates networks from information structured in a file. There is also a supporting application for Pajek called Create Pajek which allows a researcher to list their information within Microsoft Office Excel and import the file to Pajek. Then, Pajek can open and create a structured graph and analyze the outcomes. Pajek is able to handle small or large complex problems. It is a tool that analyzes data and generates networks for virtualization. The final outcome from the analysis of a network will determine the significance of the relationships between entities in addition to placing entities in correct locations for an accurate 3D replication of the environment.

### **Bill of Material (BOM)**

The BOM as mentioned previously will be utilized as a blue print of the proposed virtual environment in which the initial procedures for creating avatars, scenes, scenarios, and landmarks will be defined. A BOM is a list of components required to build an entity in virtual space. The BOM developed by this research will define the key entities used in creating the 3D virtual sociological environment. Avatars, other external entities as well as physical structures will be defined.

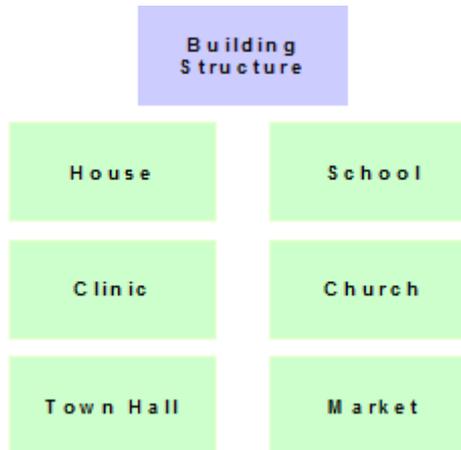
Within Second Life the avatar's BOM will be utilized for communication and interaction with other avatars and environmental settings. The BOM will represent the personalization of registering, creating and/or editing for members and non-members of Second Life.

External entities will be utilized for representation of environmental settings. Some of these settings will consist of trees, homes, avatars, animals, body of water etc. Physical structures will be utilized for representation of building structures for avatars to access and perform an activity. Some building structures are homes, clinics, churches, schools and town hall to name a few examples. This will be used as detailed requirements for virtual modeling focused on specific scenarios developed in OOAD as well as photographs and documentations obtained to replicate a physical environment.



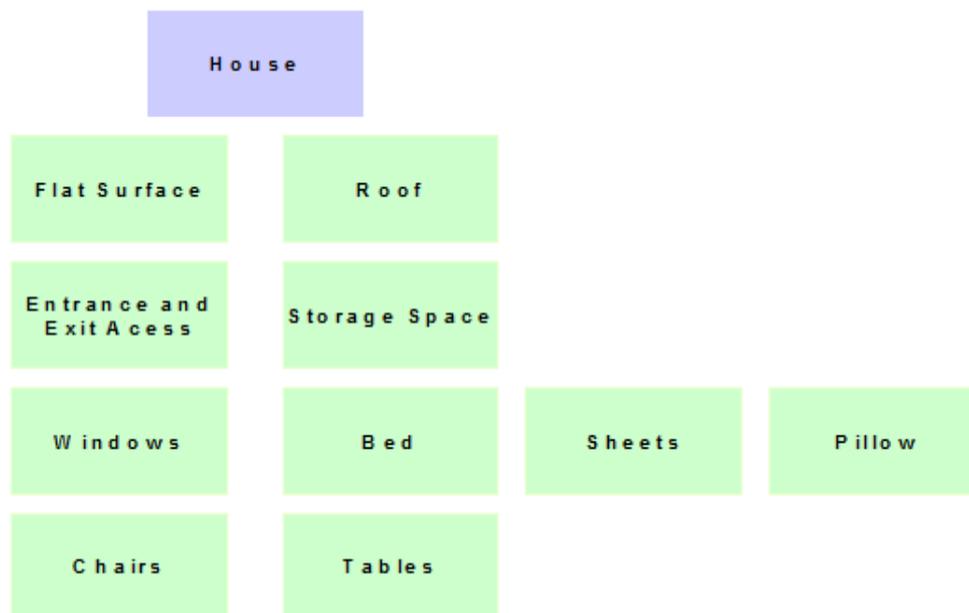
**Figure 10:** External Entities BOM

Figure 10 is an example of external entities for a BOM and figure 11 shows physical entities for a BOM.



**Figure 11:** Physical Entities BOM

A more detailed BOM of a specific entity is illustrated in figure 12. The entity consists of the physical structure – House. As shown below components that generate in the procedure for developing a 3D virtual replication of the physical environment are; chairs, table, bed, & storage space, etc. One of the components has an additional element attached. Bed requires bedding such as sheets and a pillow.



**Figure 12:** Physical Entities; House BOM

### 3D Virtual Layered Development Structure

The application that will be used to develop 3D Virtual Environments is Second Life (SL). SL is a free online source that can be used by any individual if they define themselves as an avatar. If one wants to own a personal island it must be purchased. Islands in SL vary in price depending on size.

SL has been used in previous research conducted at Morgan State University to support sociological research. The purpose of the research is to provide a realistic conceptualization of how physical worlds can be virtually constructed. This research provides a description of how to become a member of SL, how to use the basic functions of SL, as well as how to turn the actions of a human into programming code to setup a routine to develop an avatar (Berry, 2010).

A detailed analysis will be generated to develop scenes and scenarios of a region in Africa; specifically Owerri Nigeria. As mentioned earlier; photographs and documentation collected will be used to develop scenes within SL. The defining and structuring within OOAD will generate a set of BOMs which will assist the development in Second Life.

A preview of the current research where a 3D virtual environment of the Healthcare System in Owerri Nigeria is being developed can be viewed below in figure 13. The physical structures in this environmental view are “Mud Flats”; which are used for shelter as well as markets to name a few examples. From the BOM, Mud Flats were built and edited in keeping with the changes made by OOAD models. To the far bottom right of the image there is a table and chair like structure which was used from the House BOM. This is the first approach in development; further research of technology to use for a more realistic view is currently in process.



**Figure 13:** First Approach: Mud Flats Owerri Nigeria

## CONCLUSION

In closing this research project is to model the process of developing 3D Virtual Environments using Object-Oriented Analysis and Design (OOAD) in addition to Social Network Analysis (SNA); to develop a blueprint structuring the bill of materials (BOM) for a simulation development of an African village. The develop methodology is for the military, sociologists and psychologists researchers to model scenes and scenarios of a physical world into a Virtual Environment utilizing the process of OOAD and SNA from the congregated information and area of interest. This methodology will be able to be used for all areas of interest; it is designed from a general standpoint in addition to a specific view of a Healthcare System in Owerri Nigeria to give the audience a clear understanding of the research in use. The end deliverables are to structure the 3D Virtual Environment scene to depict a more visual demonstration of this research and develop a structured guide to assist researchers in development of sociology research.

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# USING CHATBOTS TO EASILY CREATE INTERACTIVE AND INTELLIGENT FAQ WEBPAGES

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## ABSTRACT

*Many websites employ a “Frequently Asked Questions” (FAQ) page to provide users with a list of concerns that are common among users along with the answers to those concerns. This is an easy system to put into practice and to manage, however there are problems inherent with this system. If there are a large number of concerns, then the FAQ page can become unwieldy as a user may be required to read through many different possible entries before finding one that matches a concern or a question that is specific to the user. Another potential problem with a FAQ page is that a particular user may not be comfortable with the particular wording or terminology used for a question or concern addressed on a FAQ page. These problems of “information overload” and terminology difficulties of naïve or unclear users can be resolved by using Chatbots to conversationally interact with a user on a FAQ page. In a course we offer on Website design, students have used this type of chatbot to create a conversational interface for their “Frequently Asked Questions” (FAQ) page in a topic area that is determined by the student. The chatbot framework we have created can be used in applications both on and off of the web.*

**Keywords:** *HCI, Web design, Web 2.0, CS ED, Social Computing.*

## INTRODUCTION

Websites often contain details that are not fully explained in the normal information presented to user on the main pages, or that is inadequately understood by some of those who are using the site. When this is the case, or when questions come up for other reasons, many Websites will provide a “Frequently Asked Questions” (FAQ) page. A FAQ page provides a user with a list of common questions and answers so a user can read about those things they don't understand without needing to involve any person connected with the website. This approach is a very traditional one that can be traced back to when it was first applied to Usenet groups in 1982 [1]. The approach goes even further back than that in English literature, where it has been traced back to similar uses in 1647 under a different name, as “Certaine Queries answered” [2].

Although the approach is certainly a tried and true one, there are at least two downsides to it as well. A complex information domain can involve an excessively large number of concerns that need to be addressed as questions on the FAQ page. However, the larger the list of questions gets, the less likely a user is to read through the list adequately in order to find an answer to a question in which the user is interested.

The second issue that is a downside of FAQ pages is that the wording of the questions on the FAQ page comes from the owners or developers of the website, and not from the person using the website who may be confused about the content in some way. The confusion of the users may be to such a degree that even the wording of the questions listed in the FAQ page may be difficult to understand.

A resolution for both of these issues would be to have an interactive FAQ page system that allows the user to type in their own questions and receive answers to those specific questions. Such interactivity can be implemented without much more difficulty than is involved in creating a traditional FAQ page when chatbots are used to provide the interactivity. In particular, creating an interactive conversational FAQ page can be done somewhat easily by using a chatbot framework that we have developed that can interact with the user in multiple modes. In a college course that we offer on Website design, students have used this type of chatbot framework to create a conversational interface for their “Frequently Asked Questions” (FAQ) page in topic areas that are determined by the student.

## CHATBOTS AND THE FRAMEWORK

A chatbot is a program that has a dialogue with a user during a chat session. The chatbot takes input from a user and produces outputs that usually attempt to be conversational in nature. In fact, some chatbot programs attempt to respond in as human-like a fashion as possible, at times attempting to act as a general conversational program. This type of chatbot has the distinct potential for fooling a user at times into thinking that they are chatting with a human. For this reason, the Turing Test has been applied to well-designed chatbots to examine the potential and limits of their ability to fool a user into thinking of the chatbot as a human agent.

Chatting online can be an engaging activity, and developing one for a website can be an engaging idea. Turning an old technology FAQ webpage with a simple list Questions and Answers into a interactive chatbot page, can add more of a Web 2.0 feel to the page, since interactivity is key to Web 2.0 interfaces. [3]

To accomplish this, a program must process text typed in by a real user that is chatting with the program. Such programs may search for key words or phrasings in what the user types that trigger the program to respond with one of set of predetermined responses. Perhaps the earliest example of this type of software was created by Joseph Weizenbaum in 1966. [3] His program, called Eliza, acts as a psychoanalyst to some extent in the way that it responds to the user.

To develop chatbots for website, we have developed a Dynamic Link Library (DLL) for creating chatbots on the server side using a C# program, or on the client side using a Java libraries for applet programs. You use our libraries to instantiating a ChatBot object to which the programmer is able to provide a list of keywords and phrases. This list is also linked to a corresponding list of sentences as replies to send back during a chat whenever a keyword, or a group of keywords or phrases is matched. If a user chatting with the chatbot program uses the right words or phrases, a corresponding reply is triggered. If the user doesn't trigger a match, the program will send one of a set of generic responses supplied by the programmer to the ChatBot object as replies to use when no keyword matches are found. Matches can be set up so that any one of a set of keywords triggers a reply, or they can be set up so that all of a group of keywords must be present to trigger a reply.

## A CODING EXAMPLE

A ChatBot object created from our library framework allows you to easily establish rules which are based on keyword searches of a sentence typed in by the user. The keywords that are being searched for are connected to a specific domain, and so the answers they give are related to that domain. The following is an example of a chatbot program that answers questions about a favorite movie:

Sample Chatbot Program's Source Code:

```
ChatBot chat = new ChatBot();
chat.keyResponseAny("Nope.", "western", "comedy", "love");
chat.keyResponseAny("Yep, that's the genre.", "scifi", "action", "adventure");
chat.keyResponseAny("Yep. That's right.", "neo", "morpheus", "trinity", "agent");
chat.keyResponseAll("Yep. He's in it.", "mr", "smith");
chat.keyResponseAll("Yep, that's the genre.", "science", "fiction");
chat.keyResponseAll("You got it! Congratulations!", "matrix");
chat.noMatchMessage("Oh come on, you can do better than that!");
chat.noMatchMessage("You're getting closer!");
\chat.noMatchMessage("That's a strange thing to say?");
chat.noMatchMessage("Can you rephrase that?");
```

Sample Output Produced:

- > The Student said: Is it a western?
- > The Chatbot said: Nope.

- > The Student said: Is it a comedy?
- > The Chatbot said: Nope.
- > The Student said: Is it a scifi movie?
- > The Chatbot said: Yep, that's the genre.
- > The Student said: Is it Star Trek?
- > The Chatbot said: Oh come on, you can do better than that!
- > The Student said: 2001?
- > The Chatbot said: You're getting closer!
- > The Student said: Blade Runner
- > The Chatbot said: That's a strange thing to say?
- > The Student said: Is Morpheus in it?
- > The Chatbot said: Yep. That's right.
- > The Student said: Is it the Matrix?
- > The Chatbot said: You got it! Congratulations!

In the above chatbot code, on the first three lines the `keyResponseAny()` method is called three times. On each of those lines, that method is given a reply as the first argument, followed by any number of keyword arguments. The reply argument from each of these three lines is what the ChatBot object's will send as output whenever any of the keywords from the latter arguments is given by the user chatting with the program (i.e. if either "scifi" or "action" or "adventure" is in a sentence typed in by the user, then "Yep, that's the genre" will be returned by the ChatBot object).

Then three `keyResponseAll()` methods are called. That method is also given a reply as its first argument. The `keyResponseAll()` reply is triggered during the chat whenever all of the keywords that come after that first argument are encountered in the chat (i.e. both "mr" and "smith" must be given by the user for "Yep. He's in it" to be returned by the ChatBot object).

Then code for four replies are specified on four lines with the `noMatchMessage()` method. On each of those lines, a string argument is given which will be shown when something is typed in by the user that doesn't match any of the keyword rules. When multiple `noMatchMessage()` methods are used, each of those replies is used alternatively, one at a time. This is to say that the first `noMatchMessage()` reply is given the first time the user types a sentence with no keyword matches. Then the second `noMatchMessage()` reply is given the second time that happens. And the third is given the third time, and so on. When each of the `noMatchMessage()` replies has been used, the program returns to the first one and cycles through them again as many times as needed.

The chatbot code causes automatic responses to whatever the user who is chatting with the program types, and the chatbot program attempts to set the context for whatever the user will be typing by what is said in the welcome message. In this way, the goal of the online session can vary widely so that the students are not always creating programs to ask a user to guess a movie. Using that welcome message, the goal of the chat can be to guess a favorite food, a favorite state, a favorite color, or any person, place, thing or animal, using adjectives other than "favorite" to describe the object to guess.

Figure 1 shows an example of a sample user interface for a FAQ page using a chatbot to answer questions about a product website.

## CLIENT-SIDE AND SERVER-SIDE IMPLEMENTATIONS

The above code can be written into a client-side Java applet that would be added to a webpage along with a Java library for instantiating the chatbot object. After initializing the chatbot's rules, the next step would be to provide a multiline textbox for the responses that are output from the chatbot, and a single line textbox that is where the user will type in their input. The Applet would read the input from the single line textbox and get a response from chatbot with the following line:

```
String response = chat.getResponse(sentence, true);
```

Alternatively, it can be written for the server side using C# with the same syntax as above, or in VB with the following syntax:

```
Dim response = chat.getResponse(sentence, True)
```

On the server side, a C# chatbot DLL would be used to instantiate the chat object, and then the call above would be made on the server side while receiving the single line textbox input using webforms, MVC and or AJAX and JQuery. Having the data on the server side can be helpful in an application since the chatbot rules can be stored in a database that can be updated at any time. Using an applet for loading in new data from a database would be much slower than doing that on the server side, but if an applet doesn't have to worry about getting new rules for the server periodically, the applet never has to do network operations during the user session and that would make the applet much faster.



Figure 1

## CONCLUSION

By adding interactive technologies like chatbots to a FAQ page, the user interaction is improved, adding to the success of the FAQ page and bringing Web 2.0 experience to this very old interface. In the future, we will seek to develop other types of chatbot technologies to help users give feedback as well as receive answers on a FAQ page.

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# DEVELOPMENT OF A DECISION SUPPORT SYSTEM USING OBJECT ORIENTED TECHNOLOGY AND NETWORK ANALYSIS

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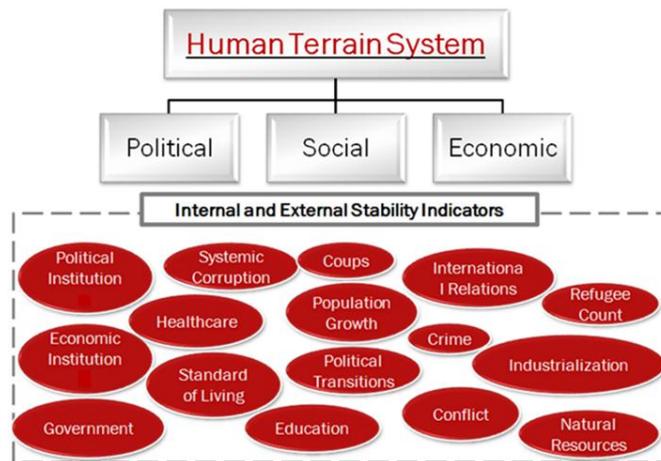
## ABSTRACT

*Engineers and scientists use math and science to define and solve numerous environmental issues. This paper introduces an engineering methodology to visualize problems and solutions in a sociological environment. The sociological problem addressed is the visualization of instability as it pertains to culture and behavior. The regions selected for this research are located in Africa: Somalia and Namibia. The research consists of three layers: social, modeling, and presentation. The social layer is the sociological information collected, modeling is the analysis and design layer, and presentation is the visualization of the sociological environment. This methodology consists of an architecture that organizes human and physical entities that will be used to visualize a depicted region in Africa. The region can be divided into subsystems: healthcare, education, political, financial and economic systems. These subsystems are influenced by underlying cultural frameworks that are distinct to each region. Each subsystem can be modeled individually then re-assembled to construct the human terrain system for the environment of interest. This research centers on the depiction of the healthcare system. The human terrain system is designed in an object-oriented format using the Enterprise Architect (EA) modeling tool and displayed and analyzed as a social network, using the Pajek tool. This architecture is being developed to support a decision support system designed to evaluate the stability of a region. The 3D virtual environment that will be used to present the sociological information is an online software system termed Second Life (SL), but that segment of the research is being conducted separately.*

**Keywords:** Network Analysis, Object-oriented Technology, Decision Support System.

## INTRODUCTION

A country or region is considered to be unstable when factors contributing to the proper functioning of its human terrain (Elridge, 2008 p. 18-23) are at unacceptable levels and processes responsible for monitoring these factors are inefficient or possibly non-existent. The resulting effects can lead to a disintegration of the entire state. The human terrain system is divided into three main categories: political, economic and social. These divisions are not independent of each other as two or more may share contributing factors. The factors contributing to the derailment of the human terrain system, frequently referred to as instability indicators, are numerous. In addition there are a number of supporting institutions. Political and economic institutions are responsible for creating and enforcing law, collecting and monitoring financial data and overseeing local and international transactions. The relationship a country has with others and the role non-governmental organizations, both local and international, play in a country also impact its stability. As shown in figure 1, other indicating factors may include type of government and political transition, quality of education and healthcare, involuntary mass population displacement, population density, standard of living, industrialization and climate change.

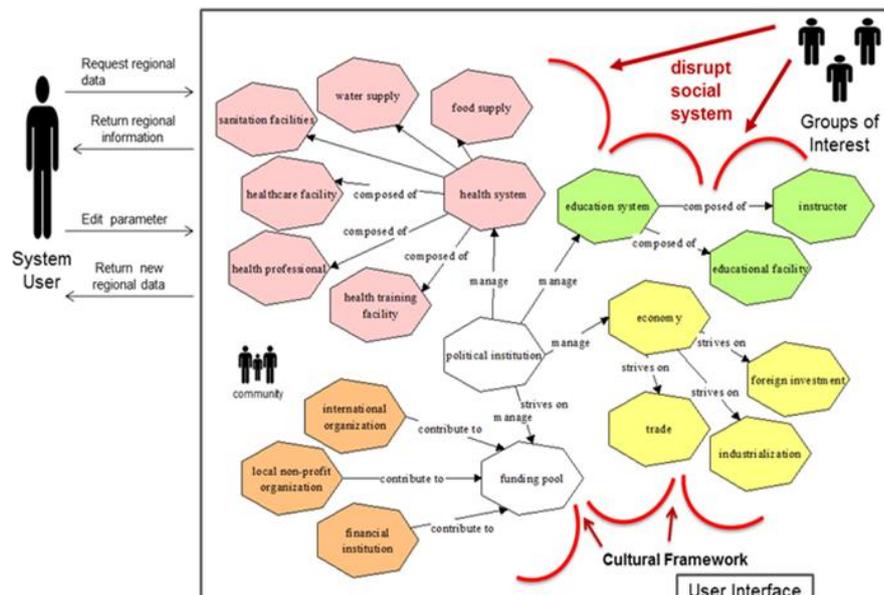


**Figure 1:** Stability Indicating Factors of the Human Terrain System

It is important to monitor a region’s susceptibility to economic distress and political and social turmoil. The execution of quick and effective solutions in a timely manner is necessary to alleviate growing situations. Events stemming from instability can result in, widespread violence, increased criminal activities, civil wars, political coups and, in severe cases, a collapsed state. They can also strain international relations hindering international aid in the form of humanitarian protection, security and peace agreements, trade and other affairs.

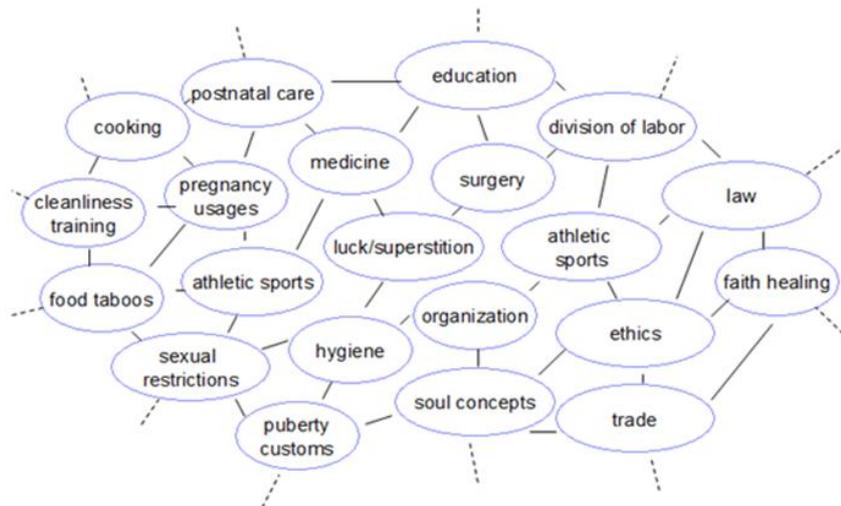
The object oriented methodology is an approach to guide the developer through the system development life cycle (Tsang, 2005, p. 73-147): problem definition, analysis, design, and implementation. This is accomplished by determining and analyzing system requirements and identifying the objects in the system and their interrelationships. This methodology is integrated with network technology to aid in both the network development and analysis stages.

Network technology is a field of study that investigates the theoretical foundations of networks, their structures and dynamic behavior when applied to various fields. These fields include, but are not limited to, engineering, information technology, biology, physics and social sciences. This science creates predictive models by establishing common tools, algorithms and principles that influence how a network behaves. Networks represent real world phenomena. Therefore, a network can be developed to represent the correlation between sub-systems in the human terrain system, and their influencers; a model is shown in figure 2. One such influencer is the cultural framework, indicated in the bottom right of figure 2.



**Figure 2:** Human Terrain System’s Subsystems and Influencers

The cultural framework influences all regional internal processes and individual behavior. Additional influences include interest groups, such as terrorists and extremist organizations, and they play a part in determining how well a social system is developing and being maintained. Figure 3 provides a partial expanded view of the cultural framework. More specifically it shows a few of the concepts which pertain to the healthcare system. The culture system includes individuals' external behaviors, the communities' day-to-day systems and structures; and the shared beliefs. Each fragment identified in the cultural framework can be classified under one or more of twelve defining categories of culture: family and kinship, religion, sex and gender, political and social relations, economics, time, language and communication, technology, history and myth, health and sustenance, learning and knowledge, and lastly aesthetics and recreation.



**Figure 3:** Elements of a Partial Cultural Framework Pertaining to the Healthcare System

Vital information can be extracted from network models to aid in the restructuring of old ones or development of new networks. Their complexities vary. In network science [5], the characteristics and properties of networks are examined. Such analyses are accomplished by calculating its various attributes. A few of these calculations are discussed later in this report.

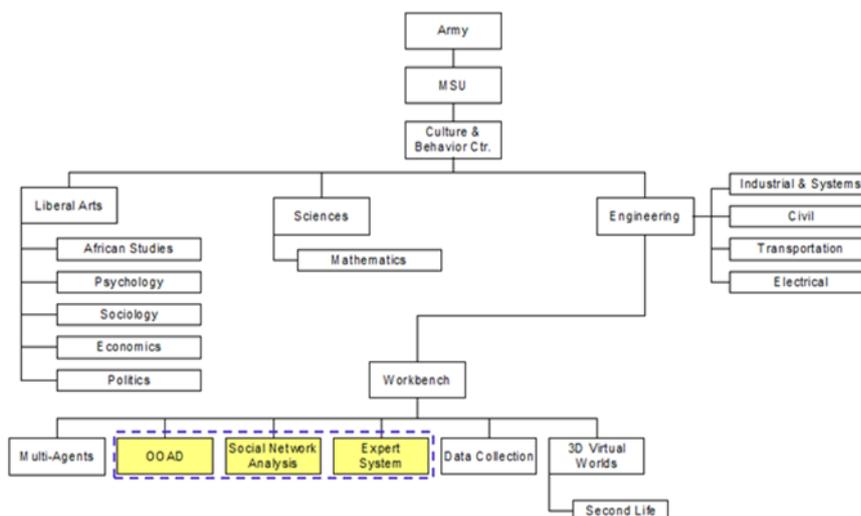
## BACKGROUND

This research is being conducted on two regions: Somalia and Namibia. Somalia has endured conditions of instability and conflict over twenty years. The effects of perpetuating instability factors can be seen in all sectors: health, education, political and economic. Somalia has a population of 9 million with an adult literacy rate of 24.1 % and female youth literacy rate of 24%. 30% of the population utilizes proper drinking sources while 23% has access to a suitable sanitation system. These low values can be attributed to Somalia's overall economy, grossing a GDP per capita of \$600.00. The country thrives on agriculture, services and little industry with exports mainly in livestock, fish, charcoal, hides and bananas. Namibia is located in southern Africa approximately 2900 miles from Somalia. It has a population of 2.1 million positioning it as the second least densely populated country in the world. Its adult literacy rate of 88%, along with youth male and female rates of 91% and 95% respectively, greatly shadows corresponding Somalia values. Its relative stability can be attributed to its multi-party parliamentary democratic framework and GDP per capita of \$6,900. However, Namibia struggles with HIV, its leading cause of death and this is evident in its adult HIV prevalence rate of 13.1% compared to Somalia's 0.7%.

As aforementioned, instability in one region can have international impact. Therefore, it is not surprising that first world countries, such as the United States of America, now have heightened interests in the activities and welfare of select developing countries. Increases in violent extremist activities, humanitarian crises, armed conflicts, HIV prevalence rates and threats to global economic interests, such as trade and oil, are responsible for the newly acquired spotlight. United Nations International Children's Emergency Fund (UNICEF), US Africa Command and USAID have implemented sustainable development programs to address conditions contributing to instability and counter possible extremist threats. Additional organizations, like the International Monetary Fund, focus primarily on

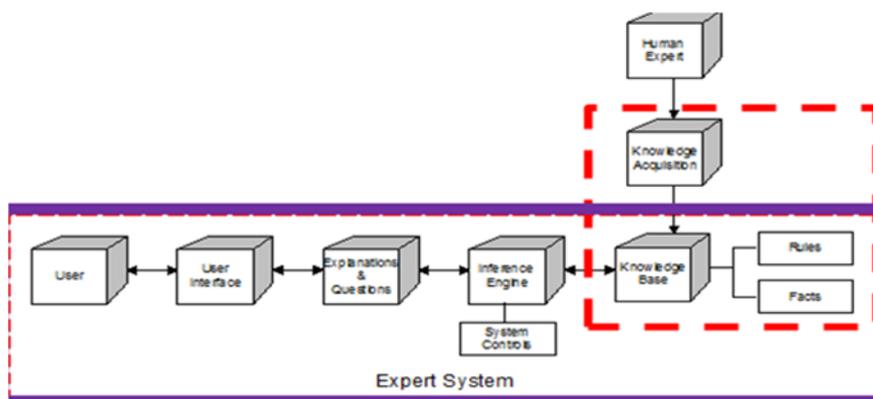
tracking global economic trends and performance by conducting surveillance on a number of countries worldwide. The IMF provides forecasts, research, technical assistance and policy advice to countries in difficulty and also creates financial loan plans to aid the region in achieving economic stability.

To ensure and improve the success and efficiency of these projects, a system for evaluating the project's impact on current and future stability conditions and a method of evaluating a region's level of stability is required. The approach being used is illustrated in figure 4. A culture and behavioral center is under development, comprising the departments of Liberal Arts, Science and Engineering. Various research application areas have been identified. The portion addressed in this paper is highlighted in yellow within the blue dotted line, and involves the integration and implementation of object oriented methodology and social network analysis in the creation of a framework for a decision support system (DSS).



**Figure 4:** The Research Approach at Morgan State University

The expert system, as shown in figure 5, is also being explored and its degree of applicability to the problem, being studied. The expert system represents only one decision support system option.



**Figure 5:** Expert System and its Components

**OBJECTIVES**

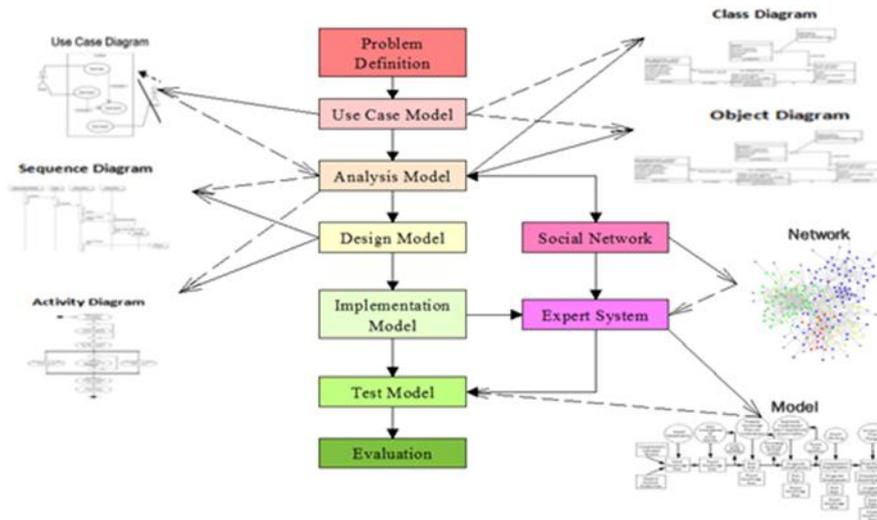
As mentioned above events arising from instability can be impacted with the implementation of a system that monitors subsystems, elements and stability indicators of a selected region. This process aids in determining the future stability conditions and serves as a first guide to structuring social programs such as peace keeping operations and additional sustainable development projects.

The overall objective of this study is to:

1. Research an approach to develop HSCB models for evaluation of selected regions,
2. Determine, collect and analyze instability indicators,
3. Develop a HSCB model to support a decision support system.

## METHODOLOGY

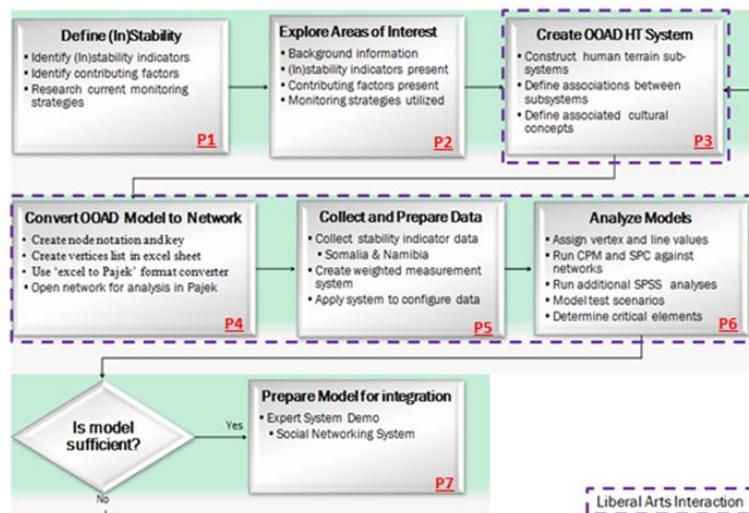
The Object- Oriented Analysis and Design (OOAD) approach is a versatile and detailed methodology for defining, decomposing and solving problems. In figure 6, the first requirement is to define the problem. The problem is analyzed to ensure a clear and precise understanding of what is required to develop the solution. This research acknowledges the difficulty of modeling the complexities of culture and behavior; and understanding how they relate to the stability of a country or region.



**Figure 6:** The Integration of OOAD System Development Life Cycle and Social Network Analysis

As emphasized at the beginning of this paper and in the associated diagram, social network analysis and expert system technology are being integrated with OOAD to complete this research.

A process for defining, identifying, analyzing and modeling the human terrain system for a region of interest has been defined. The process, shown in figure 7, is integrated with the system development cycle previously discussed. The process is summarized below in seven phases.



**Figure 7:** Process for Modeling and Analyzing the Human Terrain System

PHASE I (P1): This phase reemphasizes defining the problem. To define the scope, human terrain system stability is decomposed to ascertain the characteristics and factors that indicate and contribute to negative changes in critical areas such as social, economic and political. Additionally, development projects conducted in unstable countries and current strategies utilized in tracking a region's political, economic and social status are examined.

PHASE II (P2): The second phase refers exclusively to the regions of interest. Background information and significant historical stability related events are explored. Instability contributing factors, indicators present and monitoring strategies utilized in both regions were noted.

PHASE III (P3): Regional subsystems and elements that form the human terrain (HT) system are constructed during the third phase. Associations between the subsystems and their associated cultural concepts are defined. This phase is complete when an object oriented HT model has been developed in Enterprise Architect.

PHASE IV (P4): The fourth phase entails converting the OOAD model, created in phase three, into a network. To complete this phase the vertices are determined, based on the classes in the OOAD HT model, and entered in an excel sheet in preparation for the conversion process. An 'Excel to Pajek' conversion tool is used and the newly developed network is re-opened in Pajek for analysis.

PHASE V (P5): Data pertaining to the regions of interest, Somalia and Namibia, is collected and prepared for analysis in the fifth phase. The data will be a compilation of indicator values that aid in determining the quality of service provided by the healthcare subsystem to the community it serves. The data must be configured for analysis by re-assigning the values according to a constructed weighted measurement system.

PHASE VI (P6): The sixth phase consists of evaluating the models created in phases three and four. The objective is to ensure that the model is sufficient using the configured data from phase 5 and test scenarios. Critical path method and search path count will be applied to identify the critical elements in the healthcare subsystem and indicate the subsystems overall stability. The results will be compared with the real-life results. This phase is followed immediately by a decision phase: Is the model created adequate? If not, the process will return to phase three and modifications would be made in response to phase six results.

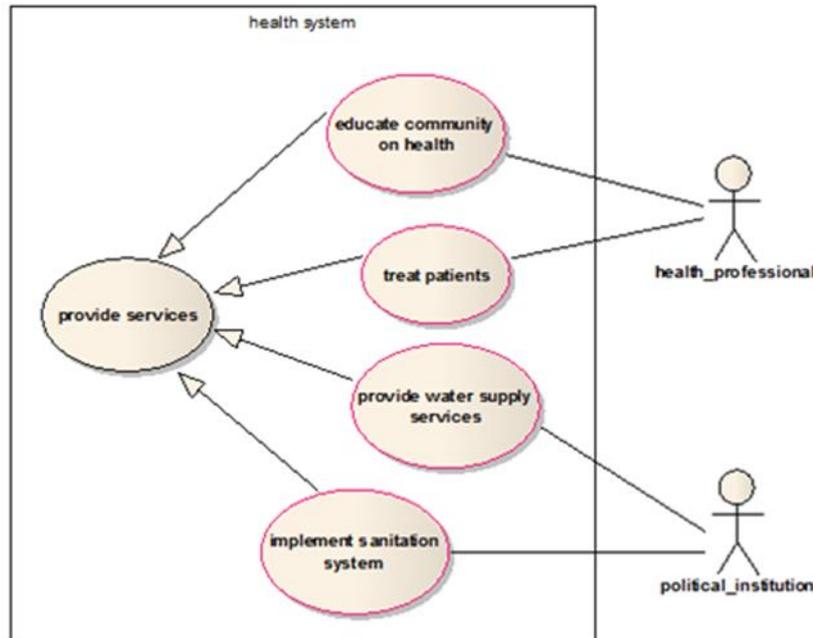
PHASE VII (P7): The final phase focuses on preparing the model for implementation into a hybrid decision support system. This phase will include a number of tasks. These task descriptions are dependent on the exploration of expert systems and the findings of two researches being currently conducted within the research group 1) multi agent systems and 2) 3D virtual worlds. A task may include, but are not limited to, completing a matrix of conditional statements against the developed model.

## RESULTS, ANALYSIS & DISCUSSION

The analyses and current results are discussed in this portion of the paper using the healthcare subsystem. A decision support system is the focus of this research. The framework defined for this decision support system will address numerous questions such as 1) which direction must a human terrain system element be adjusted to increase system stability, 2) if a particular element is adjusted while maintaining all others how would the stability level of the human terrain system differ. This portion of the paper discusses the analyses and trial results surrounding the system's ability to answer the following healthcare related question: What elements in the healthcare system need to be adjusted to increase its stability?

A complete use case model was created from the perspective of the community. The community members are represented as the system users. All use cases were created based on the assumption that there are two main functions: 1) the human terrain system must serve the community 2) and must in itself be supported, namely, by an infrastructure. A complete set of requirements was obtained, that is, a detailed record of what the healthcare system provides or is expected to provide for the community. One example of the use case diagram, illustrated in figure 8 displays a few health related services provided by the health professional and political institution. A regional health

structure was created based on the class diagram, directly derived from the scenarios (Tsang, 2005, p. 73-147) developed in the use case model.



**Figure 8:** Example of Healthcare System Use Case Diagram

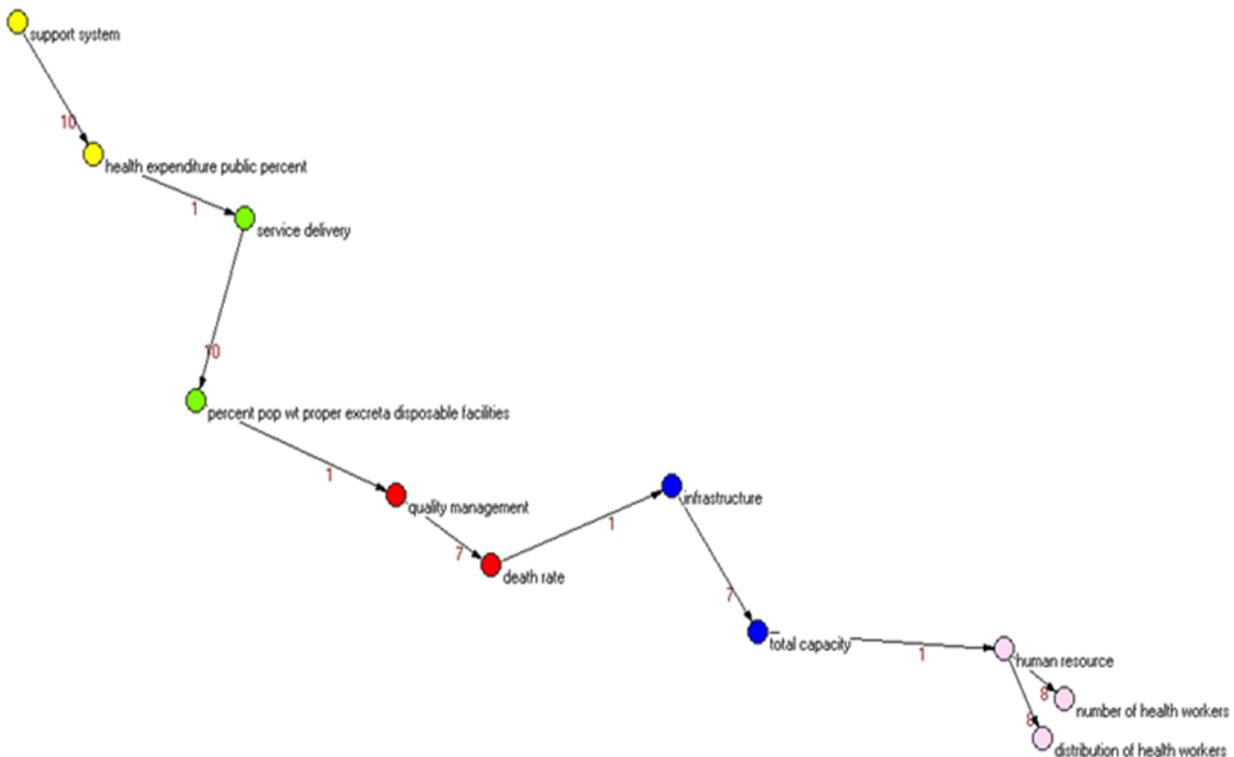
The health structure, not shown in this paper, shows the interaction between the main classes within the health environment, namely, the funding institution, funding source, political institution, community, health professionals, healthcare facilities and healthcare training facilities. Association classes were included to give additional information about the links between the main classes. The health system can be defined using five categories: 1) human resource, 2) infrastructure 3) quality management, 4) service delivery and 5) support system. Measures, that may be applied to determine the health system's overall success or impact on its community, were identified. For example, to assess the service delivery some critical factors are 1) percentage of population with access to local health services, 2) percentage of population with access to proper excreta disposable facilities 3) percentage of population with access to safe drinking water sources 4) percentage of children immunized and 5) percentage of children with malnutrition.

After identifying assessment factors for each segment within the healthcare system and incorporating it into the health system's class diagram, a network, representing this information, was developed in Pajek. This is displayed in figure 9. A partition was created to cluster the factors by segment. The key on the bottom-left of the diagram gives further information pertaining to the colors and the clusters they represent.



level of each factor. These values will be assigned by taking the collected estimated values obtained from databases and standardizing them using a measurement system that will be created. For example, a system can be implemented that ranges from 1 to 10 where the closer the value is to 10 the more that factor contributes to the instability of the human terrain system.

In this network it was assumed that the health system segments shared the same weighted values i.e. that each has the same impact on the system. This may not always be the case and will be accounted for in future research. To show how the CPM works and how the results would be interpreted arbitrary values were applied as line information preceding the vertices. The network in figure 11 contains only the nodes that are associated with the critical path. The new path tells us that based on the input, to increase the stability of the healthcare system, the factors that need to be adjusted are the health expenditure public percent, percentage of population with access to proper excreta disposal facilities, death rate, facilities capacity, number of health workers and the distribution of health workers.



**Figure 11:** Healthcare System Network after CPM Analysis

Additional networks were created. Further analyses will be conducted to determine which networks are effective and how can they be utilized in the analysis of human terrain systems.

## CONCLUSION & SUGGESTIONS

The aim of this research is to provide a comprehensive sociological framework in the form of an object oriented regional model within Enterprise Architect. This model will be an assembly of subsystems and will be sufficient to aid in the re-creation of regions of interest in a hybrid decision support system. It will also be the foundation which would allow the decision support system to address a series of concerns related to the stability of human terrain systems.

A structured approach to modeling human, social, culture and behavior systems, in a region, with emphasis on monitoring stability, will be produced. This approach will be one that can be applied in generating a well-organized, realistic representation of sociological information with the purpose of increasing the accuracy of forecasts and the likelihood of alleviating, or more significantly, preventing episodes of instability.

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# THE EFFECTS OF SUSTAINABLE DEVELOPMENT ON TECHNOLOGICAL INNOVATION PERFORMANCE – AN EMPIRICAL APPROACH

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## ABSTRACT

Since the release of the Brundtland Report by the World Commission on Environment and Development (WCED, 1987), the sustainable development (SD) concept has been gaining more and more traction from a majority of research disciplines for the recent two decades. For instance, the effects of sustainable development performance on firm financial performance have been studied by previous research study extensively. Many researchers, however, recognize the effects and significance of 'technology' on climate change and sustainability assessment; and have proposed to include innovation and technology as an element of the sustainability debate. To this end, there has not been a quantitative study specifically dedicated to investigating sustainable development effects on organizations' technological innovation performance. The purpose of this research study is to examine the intertwined roles of firms' 'sustainable development' and 'technological innovation'. The study proceeds in the following manner. First, we briefly review the literature regarding sustainable development theory and technological innovation to hypothesize the effects of firms' sustainability on technological innovation. Next, we test our hypotheses using structural equation models (SEM) to analyze secondary data of firms' sustainability scores in order to reveal the relationship and influence between the two variables. Finally, we describe the data collection method and analytical framework.

**Keywords:** Sustainable Development, Technological Innovation, Performance, Structural Model, Dow Jones Sustainability Index, Stakeholder Engagement.

## INTRODUCTION

The sustainable development theory, proposed by the World Commission on Environment and Development in 1987, has gradually gained traction worldwide with regard to achieving a balanced integrated development among economy, environment and society. MIT Sloan in collaboration with The Boston Consulting Group (Kiron, Kruschwitz, Haanaes, & von Streng Velken, 2012) has found and reported that more and more organizations are drawing connections between innovation and sustainability. Innovation and technology is one of the most crucial and fundamental factors, as it influences an organization's top-line revenue and bottom-line profit (Nidumolu, Prahalad, & Rangaswami, 2009). In addition, technology often raises system's vulnerability, as well as creates irreversible adverse impact. The original sustainable development theory, therefore, has been contested by many experts and researchers for failing to address the importance of innovation and technological development as an element of sustainable development assessment. The findings of the framework will ensure engineering managers and decision makers to look beyond communications, risk management and reputational concerns toward solid organizational performance through corporate sustainability implementation and practice.

## LITERATURE REVIEW

Several prior research findings were proposed and conducted only with qualitative measures to outline the importance of technological innovation as part of sustainable development assessment. Hasna (2010), for example, has pointed out that the sustainable development aspects "fail to address the importance of 'technology' as an element of the climate change and sustainability debate." Hasna is a strong advocate for 'technology considerations be analyzed when assessing for sustainability, since technology can also increase society's vulnerability. Some adverse effects are irreversible.' In the meantime, Beder (1994) suggests that sustainable development relies on radical technological innovation rather than the technological fixes, while Balkema et al. (2002) emphasizes the importance of technology and environment interaction to 'yield insight into the trade-offs made when selecting sustainable wastewater treatment systems.'

A special report by Kiron *et al.* (2012) describes that some harvester [organizations], firms that claim their sustainability activities are contributing to their profits, are looking at sustainability as a source of innovation, increased market share and improved profit margins. Based on the foregoing, we propose the following.

**Hypothesis 1:** *Corporate sustainability generates influences on an organization's technological innovation performance and varies in accordance with time.*

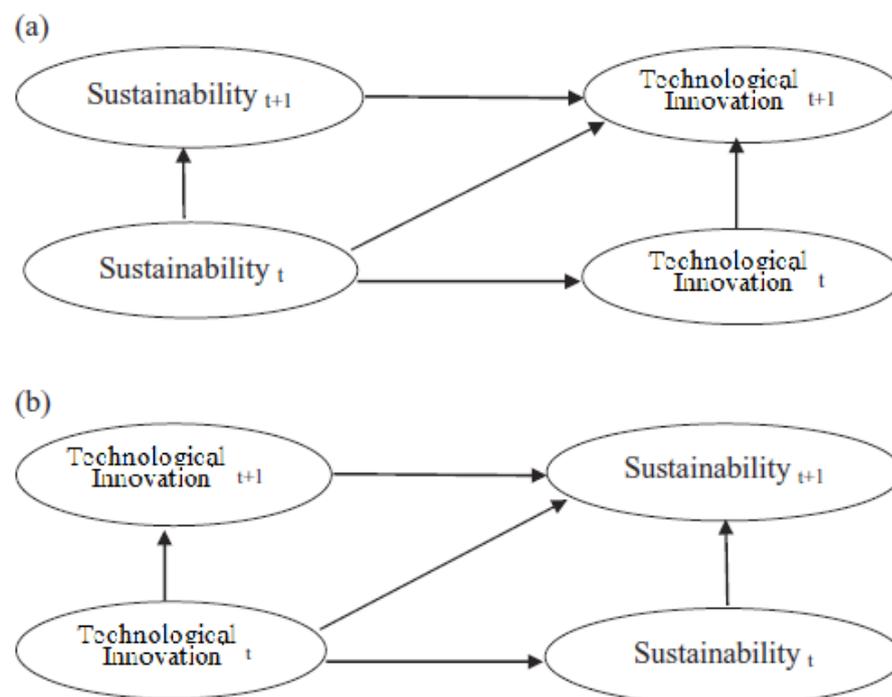
Furthermore, Wang (2011) has explicitly expressed that to achieve sustainable development, the key point lies in science and technology. The capability of a country or region's sustainable development is reflected in all aspects, which can be summarized as economic, social, and ecological development. Another research entitled 'Why Sustainability is now the key driver of innovation' by Nidumolu *et al.* (2009) claims that becoming environment-friendly can lower costs and increase revenues and suggests that sustainability should be a touchstone for all innovation. Therefore, we postulate the following.

**Hypothesis 2:** *There is a positive reciprocal influence between corporate sustainability and technological innovation performance.*

## METHODOLOGY

The proposed framework aims to examine the causality of organization's sustainable development and technological innovation performance. The proposed framework evaluates both orientations of sustainability and technological innovation performance as the exogenous latent variable over two periods of time through a structural equation model. Thus, a proper relationship between technological innovation and sustainable development can be assessed and understood in order to verify the influence or efficiency of sustainable development.

Based on the literature review, the causal relationship of sustainable development and technological innovation performance remains in dispute. In this presentation, a quantitative research framework adopts the concept of a dynamic circulation viewpoint hypothesizing a measurable model as to assessing the relationship and influence between the two variables from an empirical approach.



**Figure 1:** (a) Framework of Influences between Sustainability and Technological Innovation Performance with Sustainability as Exogenous Latent Variable (b) Framework of Influences between Sustainability and Technological Innovation Performance with Technological Innovation as Exogenous Latent Variable

This study adopts the same sustainability data collection method proposed in the research by Chang & Kuo (2008). Secondary corporate sustainability data is utilized to construct a latent variable containing three indicators, which include the investor relationship, code of conduct/compliance/corruption/bribery and corporate governance for measurement of the economic dimension and eco-efficiency, environmental policy and environmental reporting for the measure of environmental performance, while the social aspect includes measurements of labor practice indicators, human capital development, talent attraction and retention. The sustainability scores, which can be collected from SAM Sustainable Asset Management (DJSI, 2004), are the results of self-reporting on a standardized questionnaire, audit of company documents and policies, media and stakeholder analysis, company interaction and a visit.

As suggested by Hagedoorn and Cloudt (2003), the technological innovation performance of an organization can be defined as R&D inputs, patent counts, patent citations, and new product announcements. These four indicators can be collected through secondary data sources (i.e., Amadeus, the US Patent and Trademark Office database, RDS Business & Industry databank, etc.) in order to measure technological innovation performance of organizations in the broader sense.

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# DEVELOPMENT OF AN EDUCATION AND WORKFORCE MODEL TO SUPPORT ENERGY EFFICIENT BUILDING INNOVATIONS

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## ABSTRACT

*The United States (US) is the second largest user of energy in the world as of 2010. This study addresses US energy consumption in commercial buildings. Nearly 4.9 million office buildings existed in 2003 in the U.S. Every year, approximately 170,000 commercial buildings are constructed, and nearly 44,000 commercial buildings demolished (1995). Buildings accounted for 38.9% of total U.S. energy consumption in 2005 with residential buildings accounting for 53.7% of that total, while commercial buildings accounted for the other 46.3%. Buildings accounted for 72% of total U.S. electricity consumption in 2006 and this number is predicted to rise to 75% by 2025. 51% of that total was attributed to residential building use, while 49% was attributed to commercial building usage [2, 3]. The Energy Efficient Buildings (EEB) Hub managed by the Pennsylvania State University and supported by a Department of Energy (DOE) grant was established to research and develop solutions to reduce energy consumption in commercial buildings through innovative retrofitting. This project was broken into a number of tasks in order to meet their overall goals, one of which is the Education and Workforce Development. This task focuses on the requirements needed to support the new energy efficient technologies used to implement energy saving innovations in commercial buildings. This task will provide a robust human capital infrastructure to support the hub activities and mission. As part of the task, three programs have been defined, namely; Webinars, Green campus and Saturday Academy. This research will focus on the Webinars sub-task. The purpose of the Webinars Program is to raise public awareness of the EEB Hub by attracting a niche market of professionals into energy efficient careers. An Object-Oriented Analysis and Design (OOAD) Methodology will be used to develop a conceptual model that will guide the development and implementation of the Webinar program. Use cases and scenarios will be used to analyze how users will interact with the system. Then, Object Oriented Development can design the conceptual model to take into account the constraints imposed on the real world functional model. Complete with a functional description of how the solution is built and will guide project leaders in the development a robust Webinar Program. The purpose of this study is to report upon the current research accomplished by the Webinar sub-task under the Education and Workforce task. The goal of this research is to develop new energy efficient technologies and systems that provide a robust human capital infrastructure. This model will be developed using a systems engineering approach based upon object-oriented technology. Object-Oriented methodology is a modelling paradigm used in the field of software engineering.*

**Keywords:** *Energy Efficient Buildings (EEB), Object-Oriented Analysis and Design (OOAD), System Development Life Cycle (SDLC), Use Cases, Class Diagrams, Webinars and Workshops, Job Creation, Energy Efficiency Careers, Underrepresented Groups, Sequence Diagrams.*

## INTRODUCTION

The Energy Efficient Buildings (EEB) Hub was established on February 1, 2011 with funding primarily from the Department of Energy (D.O.E). The hub has a dual mission of improving energy efficiency in buildings and promoting regional economic growth and job creation. The primary goal of this project is to reduce energy consumption in commercial buildings and multi-unit residential buildings by 20% by 2020. The major initial activity of this hub includes the retrofit of Building 661 located in Philadelphia at the Naval Yard. In order to achieve their goals it is vital to inform, train, and educate people about proven energy saving strategies and technologies whether they design, own, construct, maintain, or occupy buildings. The purpose of this study is to research the education and workforce requirements needed to support the new energy efficient technologies used to implement energy saving innovations in commercial buildings. The primary goal is to develop new energy efficient technologies and systems that provide a robust human capital infrastructure to support the hub activities and mission.

To analyze the education and workforce needs to support the new energy efficient technologies implemented in commercial buildings an Object-Oriented Analysis and Design (OOAD) approach is being used. From this analysis, a methodology will be developed for the design and implementation of Webinars to support education of the public concerning energy efficiency. This analysis will address the skills needed at all levels in the commercial energy efficient building sector. Education and workforce development efforts involve partnerships with industry, organized labor, education institutions, workforce investment boards (WIBs), and others to improve existing education and training programs. Also, new programs will be developed to address skill needs in the construction trades and professional fields such as energy efficient building design and engineering, building diagnostics, operation, and maintenance, and other areas. This will enable the diffusion of the technologies through demonstration and deployment. This model will be developed using a systems engineering approach by using object-oriented technology. The approach being taken will provide for the success of this project by implementing the most efficient schema for accomplishing the activities of this task.

To address these education and workforce needs Morgan State University (MSU) is proposing three programs (Figure1). This paper will focus solely on the Webinars and Workshops Program.



**Figure 1:** Proposed Research Programs

## Webinars and Workshops

Activities specific to webinars and workshops:

1. Help develop and deliver programs to train a cadre of certified building energy auditors and design teams capable of performing building energy audits that enable investment decisions for energy efficient retrofit of specific buildings.
2. Work with building owners, educational institutions, labor, workforce investment boards, and others to meet the demand for building operators with the skills need to operate buildings with sophisticated controls, HVAC and lighting management systems
3. Provide programs to educate building owners, occupants, and operators, government officials, and the general public about building energy efficiency and to attract members of underrepresented groups to participate in building systems education at all levels.

## Objectives

The primary objective of the Webinars Program is to raise public awareness about the Energy Efficient Buildings (EEB) Hub by attracting a niche market of professionals into energy efficient careers. This will be accomplished primarily in two areas: by publishing a number of informative videos and a website. Together these approaches of reaching out to the public will make up the Webinars.

## Goals

The primary goals of the Webinars and Workshops Program:

1. Approximately **80-120 workers** trained to perform building energy audits that enable investment decisions for energy efficient retrofit of specific buildings.

2. Approximately **100-200 members** of underrepresented groups participating in energy efficient building education and training programs.
3. Approximately **2,000-3,000** building owners, occupants, operators and members of the general public participating in educational programs about building energy efficiency.

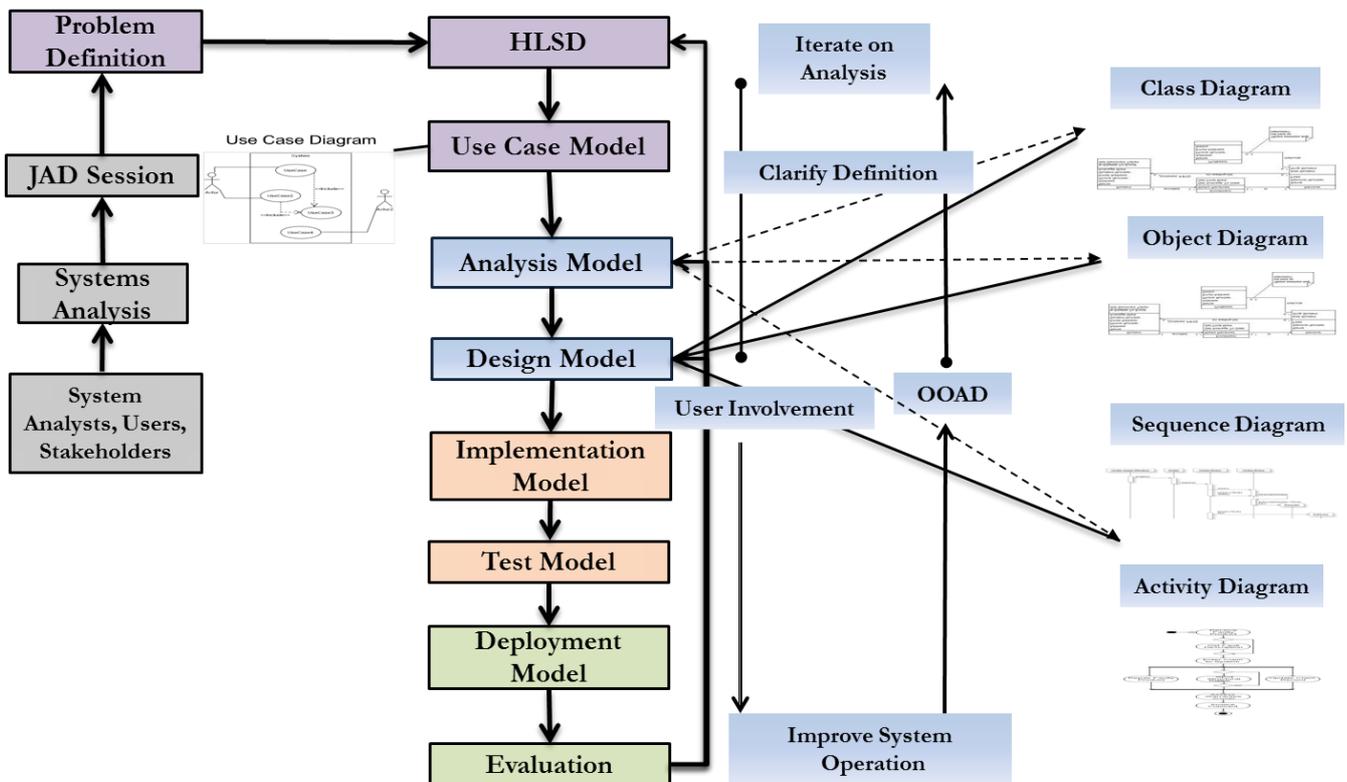
To ensure these goals are met, quarterly evaluations of the effectiveness of the program will be done.

## METHODOLOGY

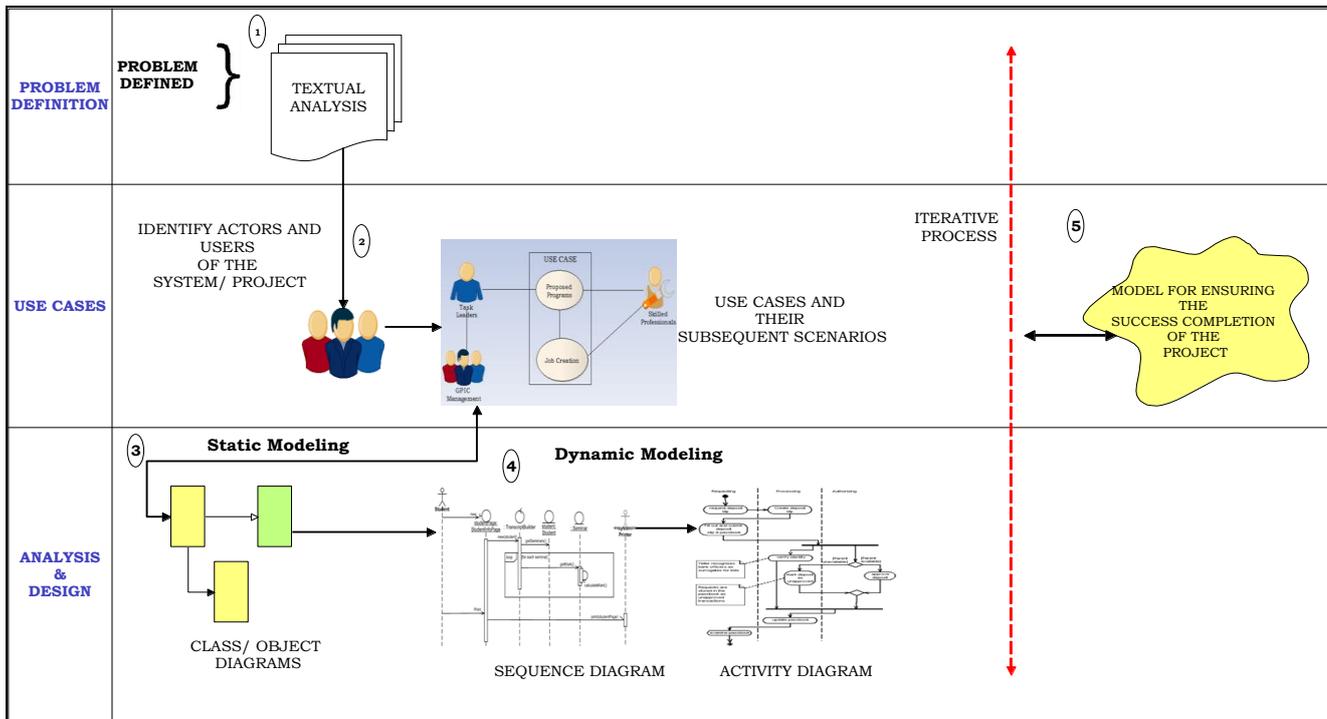
### System Development Life Cycle (SDLC)

The System Development Life Cycle is a methodology for developing a system solution to meet a user's requirements. The SDLC has three major goals that include: ensuring that high quality systems are delivered, with strong management controls throughout the project while maximizing the productivity of the system users. Object-Oriented Analysis and Design (OOAD) will be used to support the SDLC methodology. Figure 2 below, outlines the SDLC. It is an iterative process that guides the system analyst from gathering the requirements of the system, defining the problem and developing the Use Case Model which defines the system's requirements. From here the problem is decomposed into classes and objects which contain attributes and activities specific to the problem. This research addresses the SDLC through the Design Model phase of the process.

As aforementioned, the SDLC approach ensures that a robust and high quality system solution is produced that will meet the needs of the users while ensuring the completion of the project in a timely and cost effective manner. Maintaining a system has proven to be quite expensive if it is not designed correctly. The use of the SDLC methodology can vary widely depending on the requirements of the system or project being analyzed.



**Figure 2:** The Object-Oriented System Development Life Cycle (SDLC)



**Figure 3:** Road Map of the SDLC Development of the Webinar

The diagram in figure 3 outlines the research approach using in the Analysis and Design phases of the SDLC process. This depicts the iterative process that begins with an extensive textual analysis of the available material on the problem (i.e., Webinars). This gives way to the Use Cases and Scenarios which lay the ground work for the Static Model (Class and Object Diagrams) and eventually the Dynamic Model (Sequence/ Activity Diagram).

## ANALYSIS & DISCUSSION

### Use Cases

A Use Case Diagram is basically a graphical depiction of how users interact with the system so as to meet user requirements. A use case scenario is a step-by-step procedure defined by the user where a series of actions are performed to meet the requirements of the system. Use case scenarios were developed for three of the use cases defined below; however, they are not shown in this paper. From this point, the major users in the system were identified and a Class Diagram was developed to represent them and their relationships.

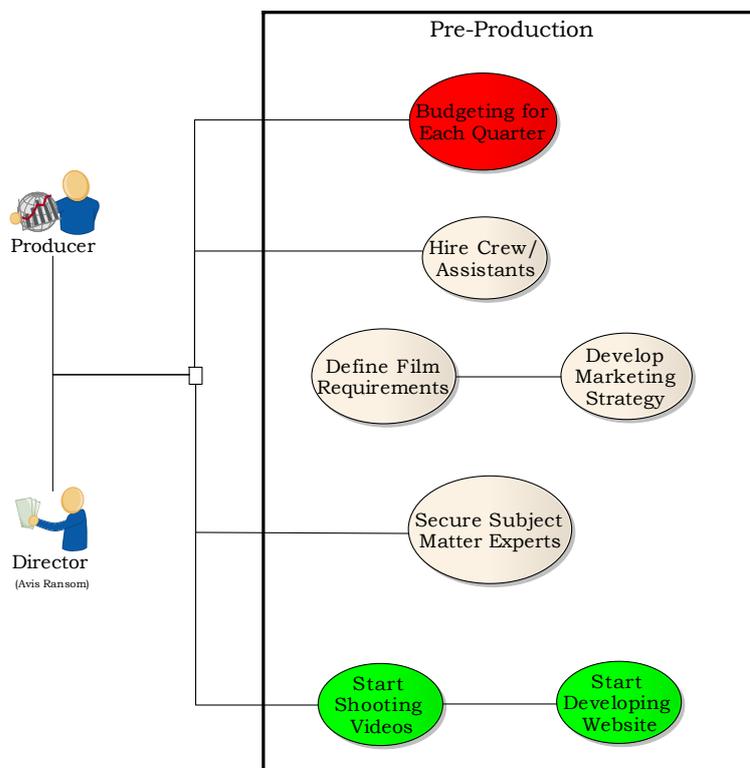


Figure 4: The Pre-Production Use Case Diagram

This use case depicts the step- by- step processes that the Producer and the Director have to work through as they lay the ground work for initiating the Webinars program. Some key processes had been identified as being critical to the successful kickoff for the project. These processes include; budgeting, hiring the crew, developing the films requirements, developing the marketing strategy for the film, securing the subject matter experts to be interviewed and begin shooting the videos and develop the website.

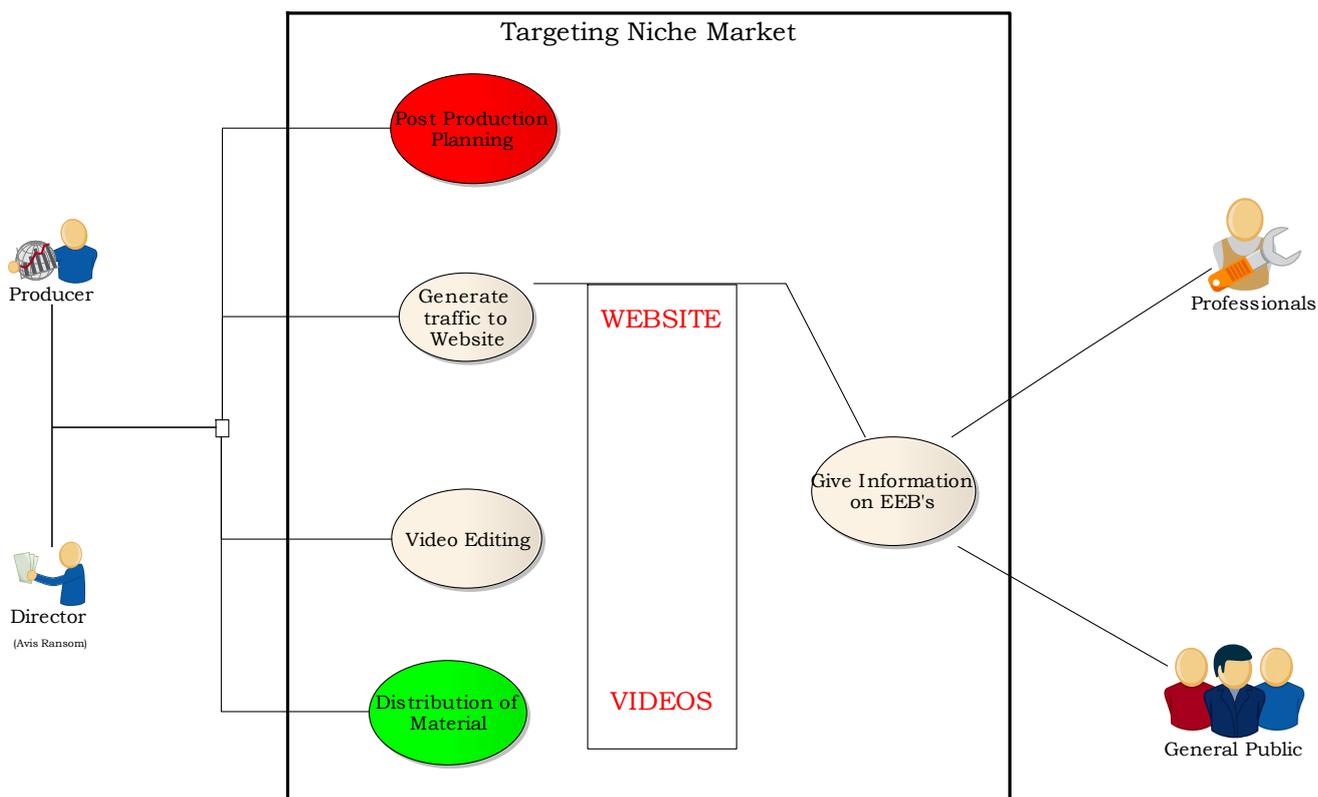
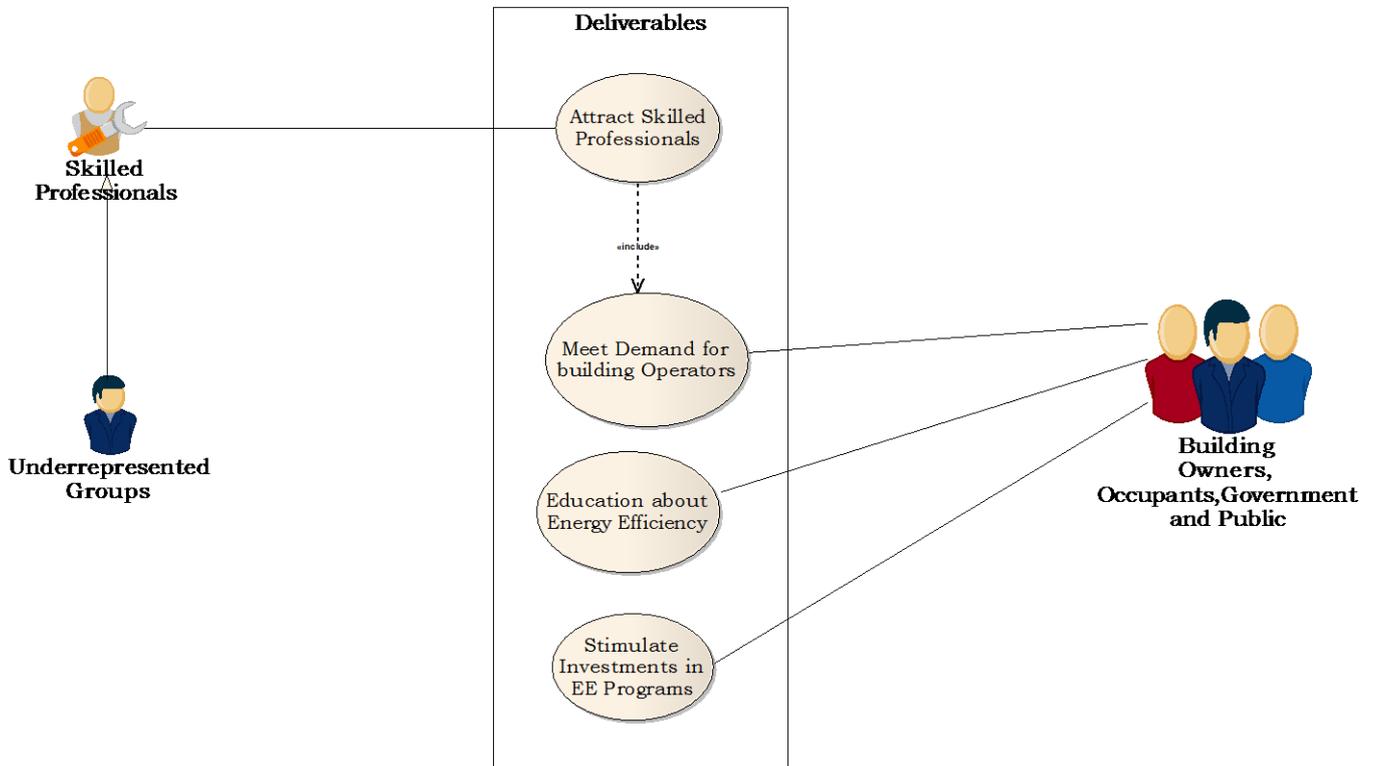


Figure 5 Use Case depicting how to target the market

The next step is for the Producer and Director to consider who the the video and website will be targeting. Ultimately, the purpose of these videos and website are to provide the much needed information about EEBs careers for professionals in this field and to the general public. They had to figure out how to generate enough traffic to their website and raise awareness of the upcoming video. The video had to be edited before finally being released.



**Figure 6:** *The Deliverables Use Case Diagram*

This Use case defines what the Webinar Project will deliver. These deliverables include educating and attracting skilled professionals for EEB careers. Emphasis is being placed on reaching out to under- represented groups. This will ultimately meet the rising demand for these professionals in this industry. The videos will create excitement about EEBs and hopefully stimulate more investments in this industry.

The class diagram of figure 7 was developed from the use case scenarios for figure 6. The use case scenarios are not shown. A number of entities/ actors were identified from these use cases such as the Producer, Director, Government Officials, Building Owners and the Skilled Professionals. The class diagram depicts their interaction with each other. Each class has a number attributes and operation specific to it. This is done so as to give life to each one of them. The purpose of the class diagram is to show the static structure of the system being modeled.

### CLASS DIAGRAM

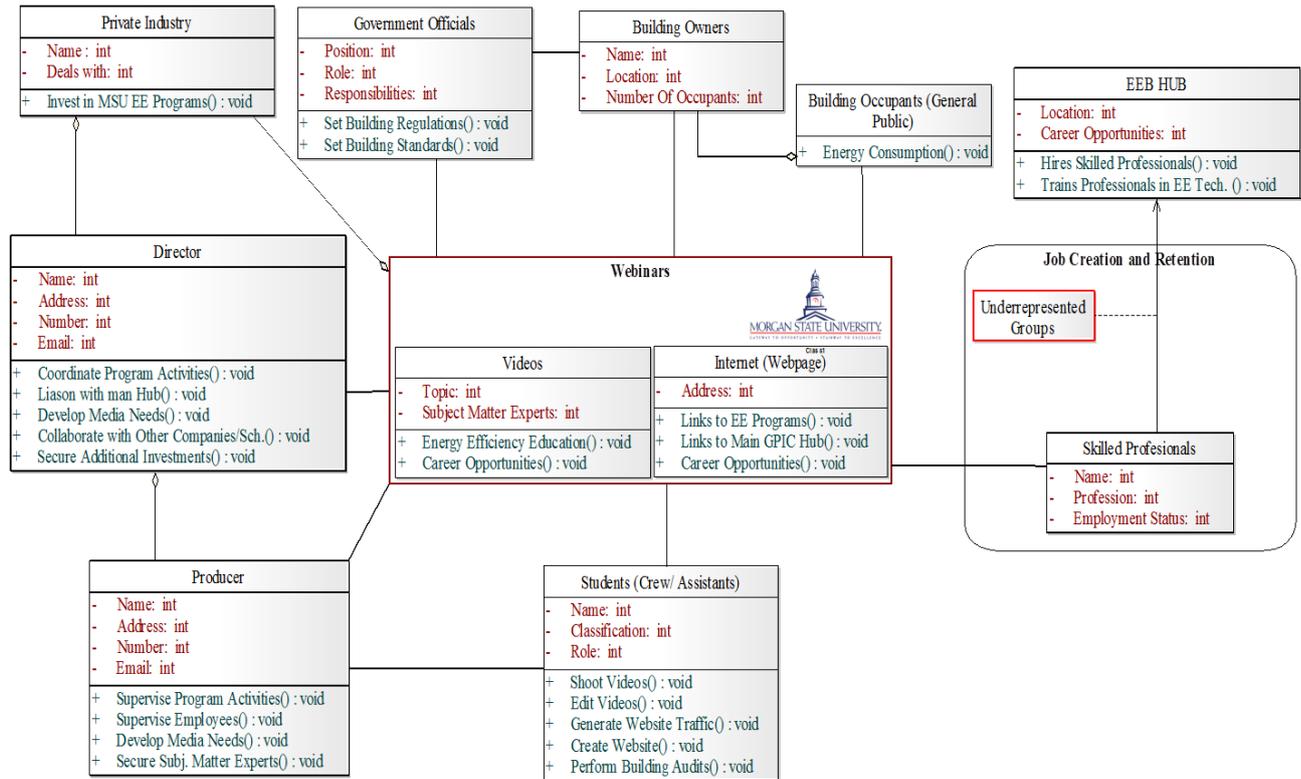


Figure 7: Class Diagram showing the interaction between the main entities in the project.

### SEQUENCE DIAGRAM

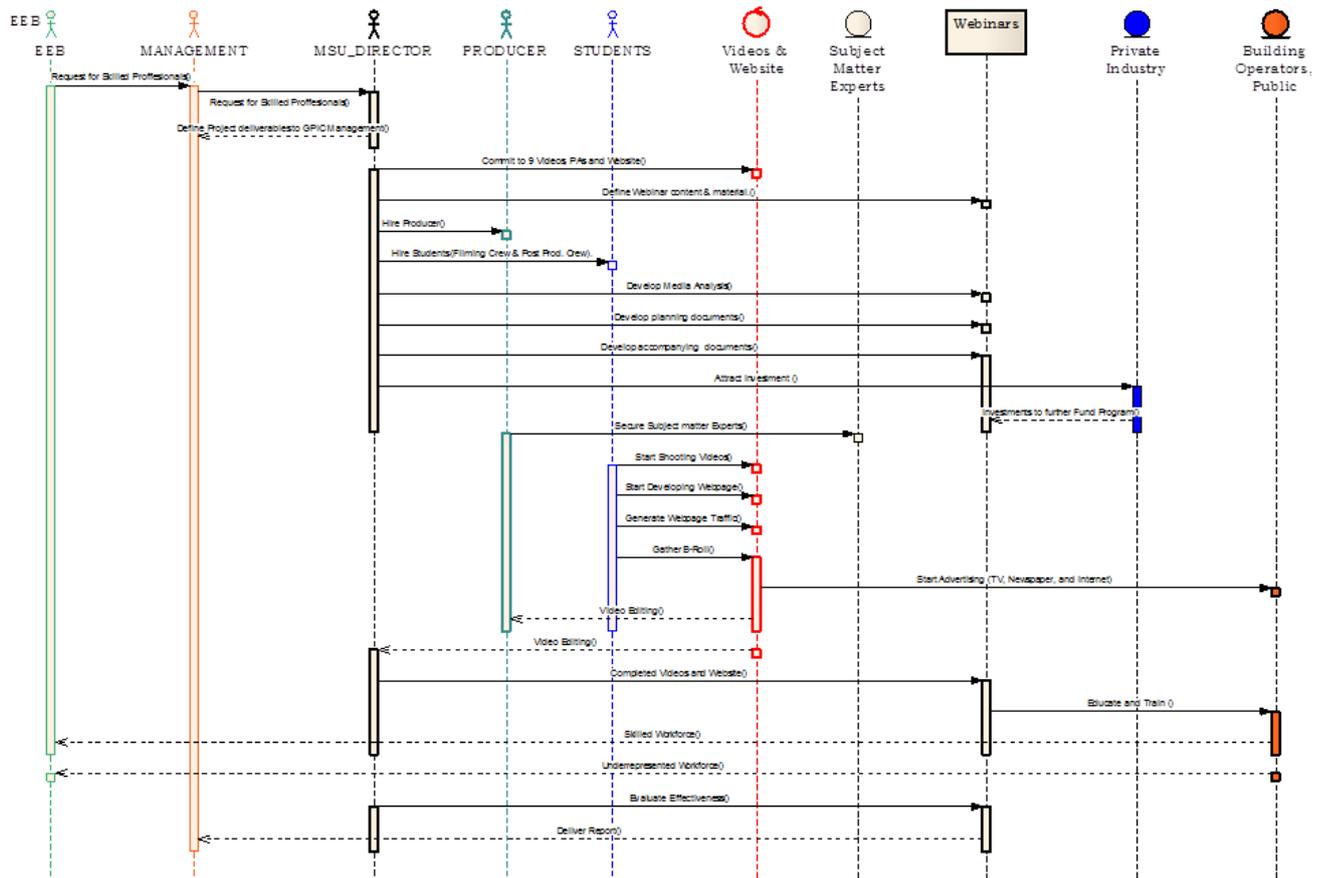


Figure 8: Sequence Diagram showing the interaction and information flows between the various objects.

Armed with the knowledge of who the main actors are in the program and their roles (i.e., attributes and operations) it is now important to determine the activities that they engage in. These all culminate in meeting the goals for the project. To determine these activities a sequence diagram was created in Enterprise Architect (EA).

The Sequence Diagram (figure 8) shows information flows and communication between the different objects in the system. The Sequence Diagram was derived from an Object Diagram (i.e., the instantiation of the Class Diagram). The Object Diagram is not shown here due to its close similarity to the Class Diagram. The Sequence Diagram cycles through all the steps involved in actually creating jobs and delivering professionals to the EEB jobs. It starts right from the time the request is made by the EEB Hub for skilled professionals. The producer and manager on the other hand respond to this request by developing the Webinars Program on the university campus grounds. The program is targeted at both the skilled professionals and the general public as well.

## CONCLUSION

The System Development Life Cycle (SDLC) supported by the Object-Oriented methodology is one of the most important modelling paradigms in the field of system engineering. This paradigm provides a very structured approach for solving problems. The problem addressed by this research is the development of a Webinar. A Webinar, as defined for this study, is a program to raise public awareness about the Energy Efficient Buildings (EEB) Hub by attracting a niche market of professionals into energy efficient careers. This will be accomplished primarily in two areas: by publishing a number of informative videos and a website. The Object Oriented approach maps the real world problem presented by the Energy Efficient Buildings (EEB) Hub project into a very structured model that fits naturally into the human thought process. The model developed during this study will maintain a certain level of simplicity thus making it user-friendly to use and modify. This type of model can be reused while still being able to meet the project goals. Ultimately, this model will ensure that the skills needed at all levels in the commercial energy efficient building sector are met by proving a schema to follow to meet these goals.

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# MITIGATING BIODIVERSITY LOSS IN NIGERIA'S RAINFOREST ECOZONE - WATERSHED MANAGEMENT APPROACH

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## ABSTRACT

*Nigeria, with a population of about 167m and 923,800km<sup>2</sup> of land area, has striking biodiversity. There are about 22,090 species of animals and over 7,900 plant species, with about 1,085 million metric tons of carbon in living forest biomass. The country has lost over 6000 km<sup>2</sup> of land to expanding gullies, resulting in the reduction of above and below ground floral and faunal biodiversity. Mitigation of the gully erosion menace requires a comprehensive watershed management approach using planting stock of species with good coppicing propensity and capacity to adapt to degraded sites. The environmental range of adaptation of any given species is related to its cardinal temperatures of response. This paper reports on germination and early seedling growth studies carried out under a range of constant temperatures in seeds of some rainforest species with orthodox and recalcitrant viability characteristics. Regression lines of seed thermal responses identified the thermal times, base temperatures and theoretical maximum temperatures for germination. The variations in thermal responses, plant growth indices (RGR, NAR, LAR etc) and transpiration rates were used to identify plant species for recruitment in afforestation/reforestation programmes. Tropical hard wood species identified as having potential in afforestation/reforestation programmes around gully sites included *Erythrina* sp, *Brachystegia eurycoma*, *Dalbergia* sp., *Khaya ivorensis*, and *Pterocarpus ossum*. The use of these native species will increase the potential to support a high level of biodiversity. The study is important in targeting climate adaptation and degradation, sustainable forest management, mitigation of biodiversity loss and reduction of longer-term erosion vulnerability in Nigeria's rainforest ecozone.*

**Keywords:** *Biodiversity, Growth Analysis, Germination, Temperature, Watershed.*

## INTRODUCTION AND LITERATURE REVIEW

Nigeria, the largest country in tropical West Africa, has a heavily forested coastal south where humid tropical conditions favor tree growth. Nigeria has diverse climate, landforms and soils and these bestow high biodiversity to the country. In South Eastern Nigeria, the forest was possibly the last refuge during the last glaciation for forest species in the Lower Guinean rainforest block. These areas were centres of distribution for mammalian populations and for speciation and dispersal of plant species which show disjunct distributions today. These forests represent an important site for endemism in West Africa (Myers et al, 2000). The area has a number of distinct monkey species e.g. the Cross River gorilla (*Gorilla gorilla* subsp. *gorilla*), a sub species of chimpanzee (*Pan troglodytes* subsp. *troglodytes*), the drill monkey (*Mandrillus leucophaeus*) and the mandrill (*Mandrillus sphinx*) as well as highly diverse bird fauna, endemic amphibians, and butterflies. Most of these species are of high conservation interest, being listed as endangered or vulnerable based on International Union for Conservation of Nature and Natural Resources (IUCN, 1994) categorization.

Nigeria has striking biodiversity, with 1000 species of birds, 1000 fishes, 247 mammals, 154 reptiles, 53 amphibians and 7,895 plant species (identified in 338 families and 2,215 genera). Unfortunately, Nigeria has one of the highest deforestation rates in the world, having lost about 55.7% of her primary forests. Prevailing land-use management practices have affected the constituent ecosystems within landscapes, altered local hydrological cycles, terrestrial carbon storage, soil erosion rates, water quality and human welfare.

The increasing loss of intact forest structure, which offers protection against erosion, has led to rapidly expanding gully complexes in Southeastern Nigeria. The impacts have been extensive including loss of human life/livelihoods and loss of both built and natural assets (e.g., roads, drainage, housing, farmlands, community assets, silted waterways). The country has lost up to 6000 km<sup>2</sup> of land to gullies (Plate 1). Root causes for the gullies differ but

are largely human-induced, including improper road design particularly for adequate cross-drainage, inadequate land use planning, and destructive and unsustainable land-use practices. Since run-off is multiplied by a factor of approximately two for every unit increase in rainfall intensity, more widespread erosion is expected because of increased rains and extreme precipitation intensity in Southeastern Nigeria. The gullies have contributed to the loss of above and below ground floral and faunal biodiversity in the country. The disruption of ecosystems and loss of components of biodiversity can be devastating, not only materially, but also psychologically and spiritually.



**Plate 1:** Typical gully site in Southeast Nigeria (Gullies could extend for several kilometers).

The destruction of forest around watersheds exposes the area to severe erosion, leading to siltation and blocking of the watershed. Destruction of watershed protection results in reduced or absence of percolation and increased surface runoff, which exposes the water to evapo-desiccation, rather than recharging the aquifer. Therefore, natural regeneration of vegetation cover, as a legitimate design tool to address erosion problems, could be a low-cost approach that can bring entire landscapes back into production. The focal point in watershed management approach is basically conservation of forest around the edges of the watershed and catchment area. A watershed is the land drained by a stream or river. Watersheds are rooted in the groundwater aquifer, which is a porous layer of rock underground that stores, filters and releases water. Watersheds or catchment areas are naturally protected by tree cover around the edges. The watersheds are being destroyed by anthropogenic activities of deforestation, mining and associated consequences of erosion, drought, flood and lost genetic resources.

Mitigation of the gully erosion menace requires a comprehensive watershed management approach (with an investment focus on gully erosion prevention and rehabilitation of forested areas) using planting stock of species with good coppicing propensity and capacity to adapt to degraded sites. The environmental range of adaptation of any given species is related to its cardinal temperatures of response. Thermal response computations are important in reforestation programmes as the cardinal temperatures for germination are generally related to the environmental range of adaptation of a given species. This serves to match germination timing to favorable conditions for subsequent seedling growth and development. The relationship between germination rate (defined as the reciprocal of the time taken for a specified fraction of seeds to germinate) and temperature is usually linear within a specified well-defined range. The rate of germination ( $1/t$ ) often increases linearly with temperature,  $T$ , up to an optimum ( $T_o$ ) beyond which the rate decreases. The base temperature,  $T_b$ , for germination of any species can be determined as

the X- intercept from regressing the rate of germination against the mean temperature (Garcia-Huidobro *et al.*, 1982; Lawlor *et al.*, 1990). The thermal response of germination can then be represented as

$$1/t = \text{constant} \times (T - T_b)$$

The reciprocal of this constant, represented here as  $\theta$  when  $T < T_o$  is the thermal time or accumulated temperature (Monteith 1977). Thermal time can be used to compare germination in different species, climates and locations (Wagenvoort and Bierhuizen 1977).

Differing speeds of germination (the spread in germination rates) is a feature common to most seed samples and may be due to the occurrence of sub-sets of identical individuals within a batch of seeds (Garcia-Huidobro *et al.*, 1982). Each sub-set or germination fraction, identified by a value of  $G$ , has a thermal response defined by distinctive values of  $T_b$  and  $\theta$ . For example  $G = 0.5$  identifies the sub-set that germinates immediately after half the population has already germinated.

This paper reports on germination and growth analysis studies carried out under diurnal and a range of constant temperatures in seeds of some rainforest species with orthodox viability characteristics. Such species are more likely to be early successional species and thus important in any afforestation programme.

## MATERIALS AND METHODS

Seeds of *Erythrina caffra* (Family Fabaceae) and an unidentified shrub (Shrub 1) were harvested directly from the parent trees while seeds of *Brachstegia eurycoma* (Family Fabaceae), *Dalbergia ecastaphyllum* (Family Fabaceae), *Khaya ivorensis* (Family Meliaceae) and *Pterocarpus ossum* (Family Combretaceae) were obtained from the Federal Department of Forestry, Calabar. Seeds of the herbaceous plant, *Luffa cylindrica* (Family Cucurbitaceae) were picked from plants growing in the university garden. Seeds were put out to germinate on moist vermiculite under diurnal conditions in the University of Calabar Botanical Garden. Seeds were regarded as germinated if the radicle pierced through the seedcoat by more than 2mm. Forty (40) seedlings of each species were transplanted after 4 weeks into polythene bags containing soils from selected priority erosion sites. The Soil samples (A-C) were collected from erosion sites (10- 100 km apart) while soil sample D, which served as control, was collected from the University of Calabar Botanical Garden.

Soil pH was determined in the filtrate after percolating 100g of soil in 250 ml of de-ionized and distilled water. Total nitrogen in sulphuric acid digests was determined by the semi-microKjeldahl method. Phosphorus in soil digests was determined spectrophotometrically at 430nm using the vanadomolydo-phosphoric acid method.

Ten seedlings of each species were harvested for plant growth analysis 7 weeks from transplantation. At each harvest the stem, root and leaf portions were put in appropriately labelled dishes and oven-dried at 80°C for 24 hours to obtain dry weights. Growth analysis parameters were calculated using classical growth analysis techniques. Transpiration rates were measured using the weight method (- loss in weight of a well watered and suitably covered (root portion only) potted plant after transpiring for 6 hours.

Thermal response studies were initiated using seeds of *Erythrina caffra*. Hardseededness in the seeds was eliminated by scarifying seeds with conc.  $H_2SO_4$  for 60 mins. Scarified seeds were rinsed several times with deionised water before putting out to germinate on moist vermiculite in a 1-way thermogradient cabinet with a set temperature range of 13- 41°C. Germination scores were recorded daily. Values shown represent mean values of two replicates on batches of 40 seeds.

## RESULTS AND DISCUSSION

The best overall means of providing permanent erosion control and reduce longer term erosion vulnerability in Southeastern Nigeria is to establish and maintain a dense vegetation cover over the entire catchment. The choice of one or more species of plants for erosion control is based largely on the specific climatic and soil conditions of the

planting site, using species and provenances which are most adaptable. Such species should show good survival and fast growth on impoverished sites, deep and wide spreading root system and low nutrient tolerance. The provision of some degree of economic return may also be important. These factors were taken into consideration in the choice of species for this study.

There were marked differences in soil pH and in the content of nitrogen and phosphorus (Table 1). Soils from the eroded sites had much lower nitrogen and phosphorus contents. Results suggest that a marked leaching of exchangeable metallic cations may have occurred in these areas. The soils were consequently more acidic than soil D which, as expected, demonstrated greater nutrient availability.

**Table 1:** Soil pH, total nitrogen and phosphorus content of soil samples.

Soil Type	Nitrogen Content (%)	Phosphorus Content (%)	pH
A	0.007	0.01	5.5
B	0.007	0.004	4.7
C	0.07	0.004	5.3
D	0.14	0.02	6.0

The relative competitive ability and growth characteristics of some selected tree species were compared. The growth analysis parameters determined are shown in Table 2. The plant species differed in mean Relative Growth Rate (RGR) ranging from 18.7 (*Khaya ivorensis*) to 70.0 (*Pterocarpus ossum*) on Soil A; 20.4 (*Khaya ivorensis*) to 64.6 (*Brachystegia eurycoma*) on Soil B; 19.9 (*Dalbergia ecastaphyllum*) to 56.1 (Shrub 1) on Soil C and 20.0 (*Khaya ivorensis*) to 152.9 (Shrub 1) on Soil D (garden soil). RGR in the herbaceous species, *Luffa cylindrica*, ranged from 44 (Soil D) to 152.9 (Soil A). Consequently, the total plant biomass at harvest also varied considerably ranging from 0.24 (*Dalbergia ecastaphyllum*) to 0.99 (*Pterocarpus ossum*) on Soil A; 0.2 (*Dalbergia ecastaphyllum*) to about 0.91 (*Brachystegia eurycoma*, *Pterocarpus ossum*) on Soil B; 0.44 (*Dalbergia ecastaphyllum*); 0.29 (*Dalbergia ecastaphyllum*) to 0.65 (*Brachystegia eurycoma*) on Soil C and 0.44 (*Dalbergia ecastaphyllum*) to 1.20 (*Pterocarpus ossum*) on Soil D. *Khaya ivorensis* and *Dalbergia ecastaphyllum* generally exhibited poor RGR and had lower total plant biomass on all soils than the other species (Table 2).

Leaf Area Ratio (LAR), a morphological component that measures leafiness of the plant, showed a different trend as species with lower RGR values (*Dalbergia ecastaphyllum*, *Khaya ivorensis*) had higher LAR than the others (Table 2). Among the woody species, *Brachystegia eurycoma* and Shrub 1 had the highest NAR values. These species also had higher root mass ratio (the ratio of root to total plant biomass). *Luffa cylindrica*, the herbaceous species, had the highest NAR and RGR values. Results agree with previous reports that woody plant species have lower NAR values than herbaceous plants (Okali 1971). There was no clear correlation between RGR and NAR. The differences in growth rate might reflect the variation in productivity in the natural habitat of these species (Poorter and Remkes, 1990). Also, comparison of species which differ in size could obscure possible trends.

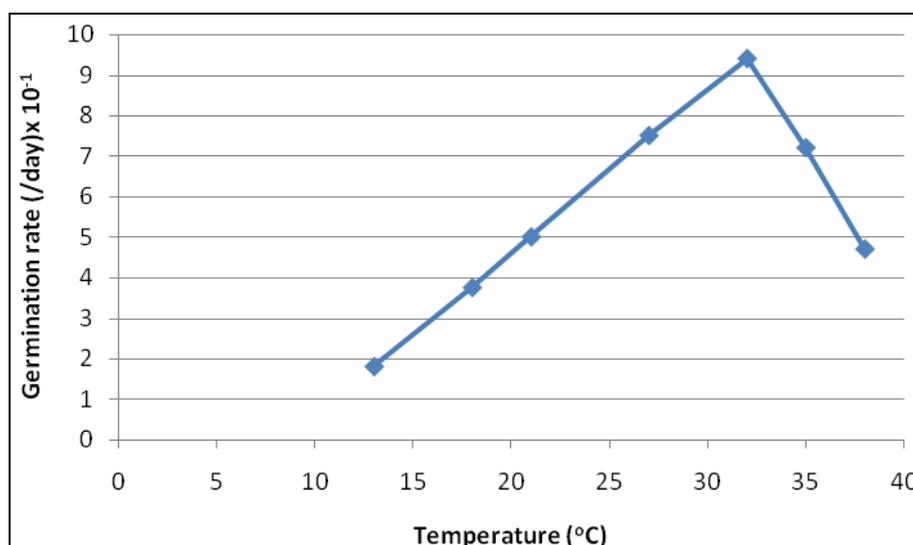
There were slight variations in transpiration rates on different soils (Table 2). Since seedlings were grown under identical conditions on each soil type, these variations may be due to differences in specific soils and extent of investment in leaf area, root development and other supporting structures.

**Table 2:** Root and shoot growth parameters and derived growth data for selected species grown in full sunlight on soils from erosion sites.

Species / Soil from erosion site	RGR	NAR	LAR	Av. No. lateral roots	RMR	TPDW (gm)	Transpiration rates (gm H <sub>2</sub> O lost h <sup>-1</sup> )
<i>Brachystegia eurycoma</i>							
A	51.4	8.3x10 <sup>-3</sup>	599.2	23	0.45	0.67	1.21
B	64.6	63.6x10 <sup>-3</sup>	769.6	28	0.79	0.91	1.57
C	38.1	54.9x10 <sup>-3</sup>	607.7	38	1.04	0.65	1.28
D	55.7	50.9x10 <sup>-3</sup>	808.7	18	0.90	0.63	1.40
<i>Pterocarpus ossum</i>							
A	70.0	28.6x10 <sup>-3</sup>	1789.8	18	1.28	0.99	1.42
B	40.0	8.7x10 <sup>-3</sup>	5220.5	10	0.33	0.90	1.14
C	20.0	6.7x10 <sup>-3</sup>	2666.1	33	0.10	0.50	1.93
D	110.0	6.7x10 <sup>-3</sup>	1011.9	14	0.13	1.2	1.70
<i>Dalbergia sp.</i>							
A	20.7	9.7x10 <sup>-3</sup>	3175.7	15	0.53	0.24	1.66
B	20.0	2.2x10 <sup>-3</sup>	8146.1	10	0.11	0.2	1.25
C	19.9	6.1x10 <sup>-3</sup>	5747.9	12	0.23	0.29	1.83
D	24.3	10.7x10 <sup>-3</sup>	1968.3	15	0.11	0.44	1.83
<i>Khaya ivorensis</i>							
A	18.7	23.4x10 <sup>-3</sup>	1126.5	ND	ND	ND	ND
B	20.4	11.6x10 <sup>-3</sup>	1542.8	ND	ND	ND	ND
C	21.4	2.1x10 <sup>-3</sup>	9070.4	ND	ND	ND	ND
D	20.0	7.0x10 <sup>-3</sup>	2731.9	ND	ND	ND	ND
Shrub 1							
A	44.9	32.0x10 <sup>-3</sup>	1119.4	ND	ND	ND	ND
B	38.6	17.6x10 <sup>-3</sup>	1769.1	ND	ND	ND	ND
C	56.4	34.4x10 <sup>-3</sup>	1220.6	ND	ND	ND	ND
D	152.9	64.0x10 <sup>-3</sup>	1480.5	ND	ND	ND	ND
<i>Luffa cylindrical</i>							
A	257.1	744.3x10 <sup>-3</sup>	170.4	ND	ND	ND	ND
B	52.6	825.7x10 <sup>-3</sup>	463.4	ND	ND	ND	ND
C	118.6	328.6x10 <sup>-3</sup>	222.3	ND	ND	ND	ND
D	44.0	941.4x10 <sup>-3</sup>	431.8	ND	ND	ND	ND

ND= not determined. RMR=Root mass ratio. TPDW= Total plant dry weight.

Thermal response studies were initiated using seeds of *Erythrina caffra*. The rate of germination in *E. caffra* increased linearly with temperature above  $T_b$  to a somewhat sharply defined optimum,  $T_o$ , (at about 30 °C), beyond which the rate decreased (Fig. 1). The regressions of  $1/t$  (G) on T (when  $T < T_o$ ) for values of 0.1- 0.9 are summarized in Table 3. Seeds of *E. caffra* appeared to have a requirement for a range of base temperatures and thermal times in order to germinate (Table 3). However, when data presented in Table 3 were recomputed using the Generalized Linear Interactive Modelling (GLIM) statistical package (GLIM, Royal Statistical Society, London) estimated a common base temperature at 9.5 °C when  $1/t = 0$ . This suggested that at temperatures  $\leq 9.5$  °C the seeds are unlikely to germinate. Also, Variations in thermal time are ecologically advantageous as they increase dispersal time in time and in space. Thermal response computations will be important in the identification of early successional species with lower thermal requirements and consequently, more likely to germinate and establish quickly.



**Figure 1:** Typical relationship between germination rate and temperature in seeds of *Erythrina caffra*. Lines shown regressions of  $1/t$  on  $T$  when  $G = 0.1$ . Details of regressions are included in Table 3.

**Table 3:** Parameters of linear regressions of germination rate on temperature (when  $T < T_0$ ) for different values of  $G$  (cumulative germination) during germination of *Erythrina caffra*.

Cumulative Germination (G)	$T_b$	$\theta$	$r^2$	N
0.1	10.31	20.8	0.99	4
0.2	9.94	24.8	0.99	4
0.3	9.50	29.0	0.99	4
0.4	8.87	33.8	0.99	4
0.5	8.37	38.7	0.99	4
0.6	7.26	46.6	0.99	4
0.7	6.53	54.04	0.99	4
0.8	7.02	57.4	0.99	4
0.9	5.27	74.5	0.89	3

$r^2$  = coefficient of determination  
 $n$  = sample size

## CONCLUSION

The development of watersheds and vegetation corridors will involve A/R activities in erosion prone areas. Mitigation of the gully erosion menace requires a comprehensive watershed management approach (with an investment focus on gully erosion prevention and rehabilitation of forested areas) using planting stock of species with good coppicing propensity and capacity to adapt to degraded sites. The ability to opportunistically capture resources seems to be an important factor in successful cases of plant invasions (Grotkopp *et al* 2010). Results of preliminary studies suggest that *Brachystegia eurycoma*, *Pterocarpus ossum* and the unidentified shrub are suitable candidates for rehabilitation of eroded or impoverished soils. More indigenous perennial species are being screened for their potential utilitarian benefits in erosion control. Identification of such species will be invaluable in the development of appropriate vegetation designs for reforestation and afforestation programmes. The Watershed Management approach will promote the reconstitution of forests (planting seedlings), soil and water conservation, biodiversity corridors. The maintenance of these corridors will enhance faunal migration and the ability of organisms to distribute their habitat use across broad regions.

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# DEVELOPMENT OF A GREEN CAMPUS MODEL FOCUSING ON ENERGY EFFICIENT BUILDINGS

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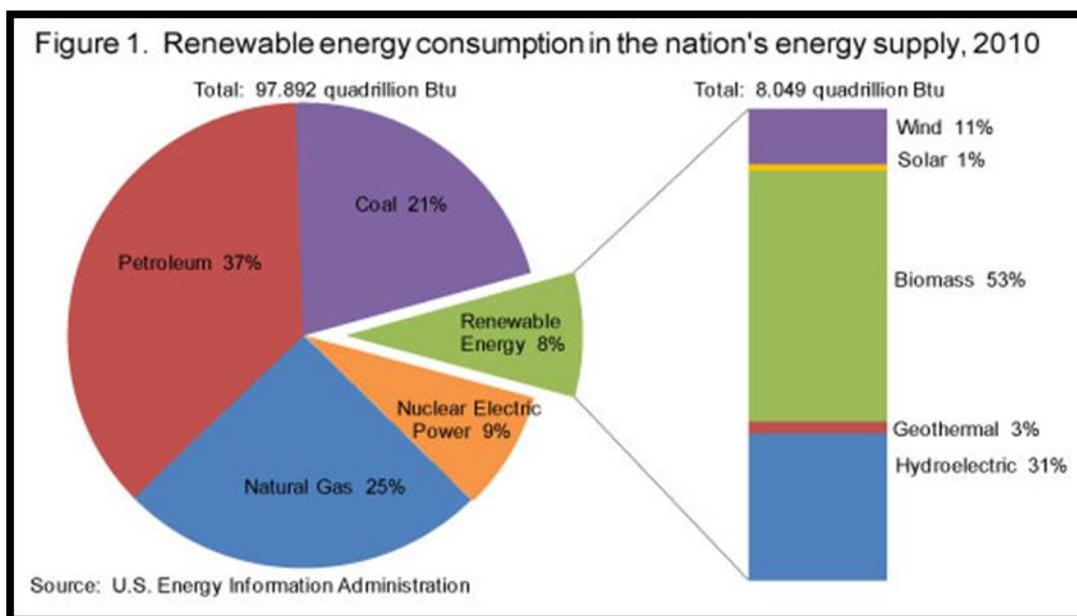
## ABSTRACT

There have been recent efforts seeking to redevelop energy utilization efforts by focusing on how buildings are expending energy, how United States commercial buildings are designed, and more importantly, re-structuring how building owners operate within their respective buildings. These efforts are aimed at reducing energy consumption in buildings by promoting economic development, education and workforce efforts pertaining to job creation, while ultimately reducing energy use in the United States commercial buildings sector of 20% by Year 2020. Morgan State University will be developing a robust model that can be used as a reference tool, as they create a Green Campus environment for the institution. This model will help address the problem of the lack of workforce development and education training program efforts that promote employment for underprivileged workers and minorities, and once this model has been developed and implemented, it will be useful to other universities, organizations and businesses whom are seeking to create green environments. Systems engineering principles as Object-Oriented Analysis and Design, Systems Development Life Cycle and Agile Development Methodology will be used to create the reference tool.

**Keywords:** Systems Development Life Cycle, Green Environments, Agile Development Methodology, Enterprise Architect, Complex Problem.

## INTRODUCTION

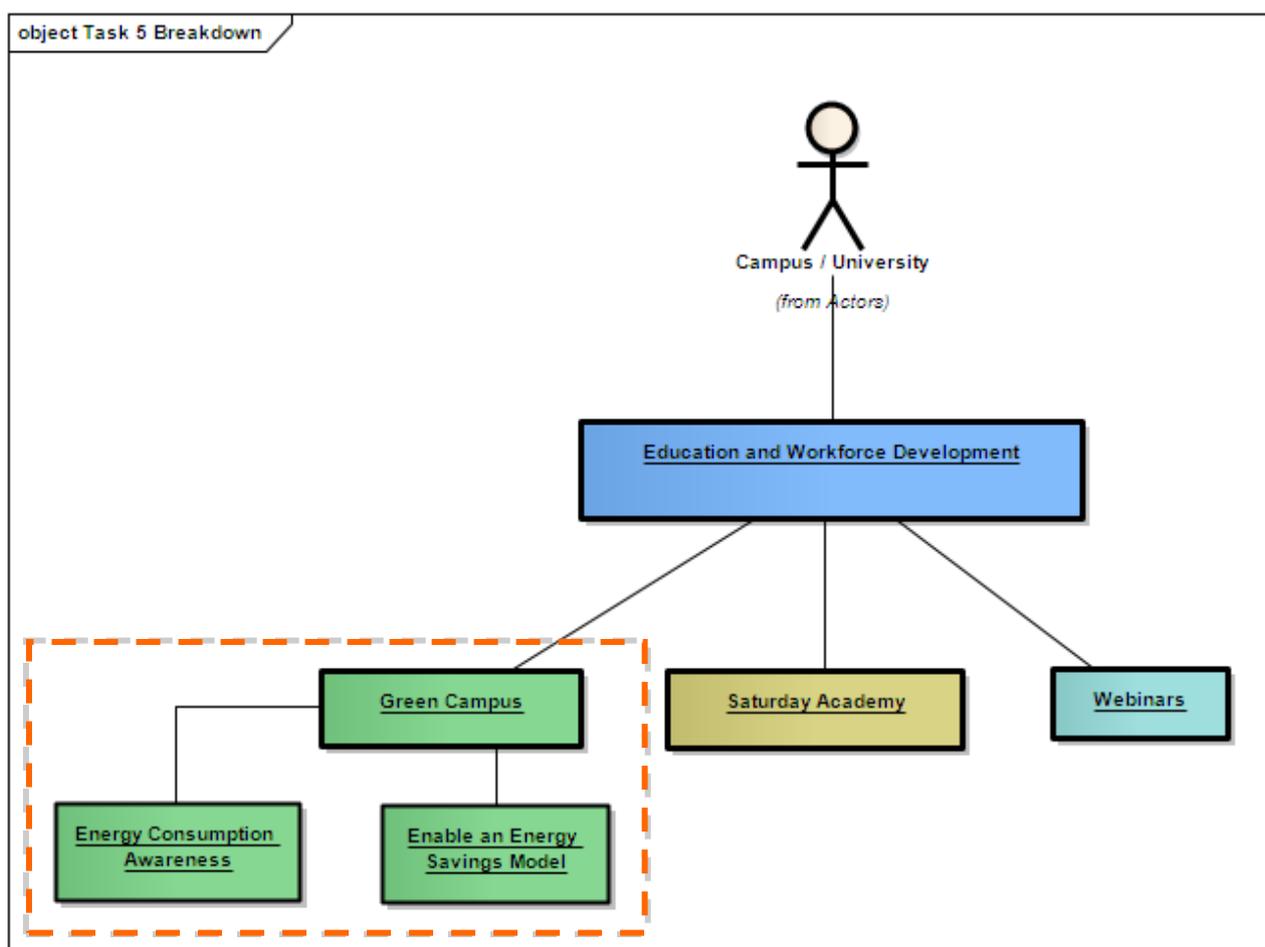
United States has consumed 8% of renewable energy over the course of year 2010. This is the smallest amount of energy compared to the rest of energy consumed (Figure 1). However, this energy can be converted to other mediums for energy usage. Because this amount is so low, it is imperative that citizens that live in the U.S. are educated about energy efficiency to help preserve the energy, and acquire jobs to help with energy utilization within the commercial buildings sector.



**Figure 1:** Pie Chart of United States Energy Consumption

This study focuses on education and workforce development that will ultimately, enable students, users, and administrators to teach, learn and produce energy savings and solutions. This initiative has three parts: **Green Campus** (An environment to develop an education curriculum where campus awareness is increased pertaining to energy efficiency and energy consumption for students, minorities and underprivileged workers), **Webinars** (Multimedia created to assist with developing relevant curricula for Green Campus environment and Saturday Academy for K-12 students). The multimedia medium will help with presenting the information in different formats specifically for reaching students cognitively in the three ways [7] of receptive learning: visual, auditory, and kinesthetic), **and Saturday Academy** (A program geared towards K-12 students (primarily the secondary level) to help with learning energy efficiency best practices and prepare for certificate, associate, and baccalaureate degree programs). In this paper, planning and implementation of Green Campus will be discussed. The problem addressed is the lack of workforce development and education training programs that promote employment for underprivileged workers and minorities. The Green Campus project focuses on improving existing education and training programs while developing skills needed by creating curricula, increasing campus awareness of energy consumption among the commercial building sector, and increasing energy efficiency and usage.

High Level Systems Diagram

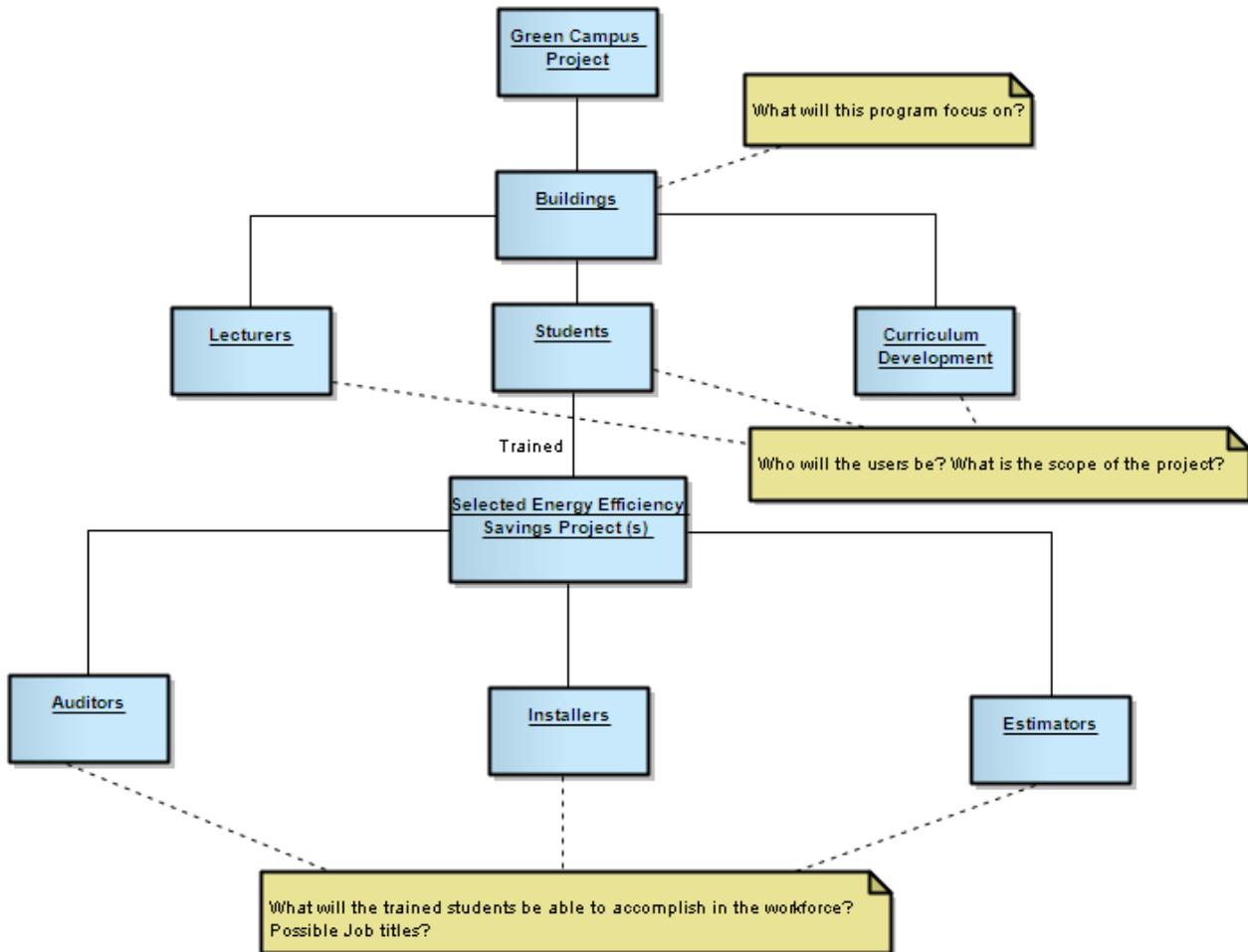


**Figure 6:** High Level Systems Diagram of Education and Workforce Development Initiative

A high-level system diagram is depicted in figure 2 giving a hierarchical view of the project. Also, while giving a hierarchical view of some of its main components, it also helps to define the structure of the system. As shown in the dotted box, the Green Campus will be developed by researching, designing and implementing several programs to help with education and workforce development as it pertains to energy consumption awareness, energy savings, and utilization. A green campus model will be developed that extends the scope of this paper, focusing on two entities, energy consumption awareness and enabling an energy savings model.

## What is Green Campus?

Green campus is a model that will provide a base and structure for the definition of the green campus concept, its users, and its main components. The model will inform and guide how a green campus can be implemented at prospective university campuses. The model will provide feedback for specific questions, and provide a process of the best practices for networking, utilizing resources, and promoting energy savings for buildings, companies, universities, etc.



**Figure 7:** Green Campus High Level Systems Diagram

Figure 3 depicts a high-level system diagram of the Green Campus Model. From the 'Green Campus Project' object entity at the top of the model, the relationship branches off to buildings, because this will be the focus of the Green Campus model. From this entity (buildings), the next branch links to lecturers, students and curriculum development. These entities will benefit from the implementation of the Green Campus model. The next level of entities will answer the question of what the "trained" students will be able to accomplish in the workforce: possible job titles such as auditor, installer, and estimator are listed at the bottom level of the model. The main objective portrayed by this hierarchy of entities is to answer a series of questions relative to the users of the green campus implementation, while also giving a very specific presentation of what the green campus model is capable of solving.

## METHODOLOGY

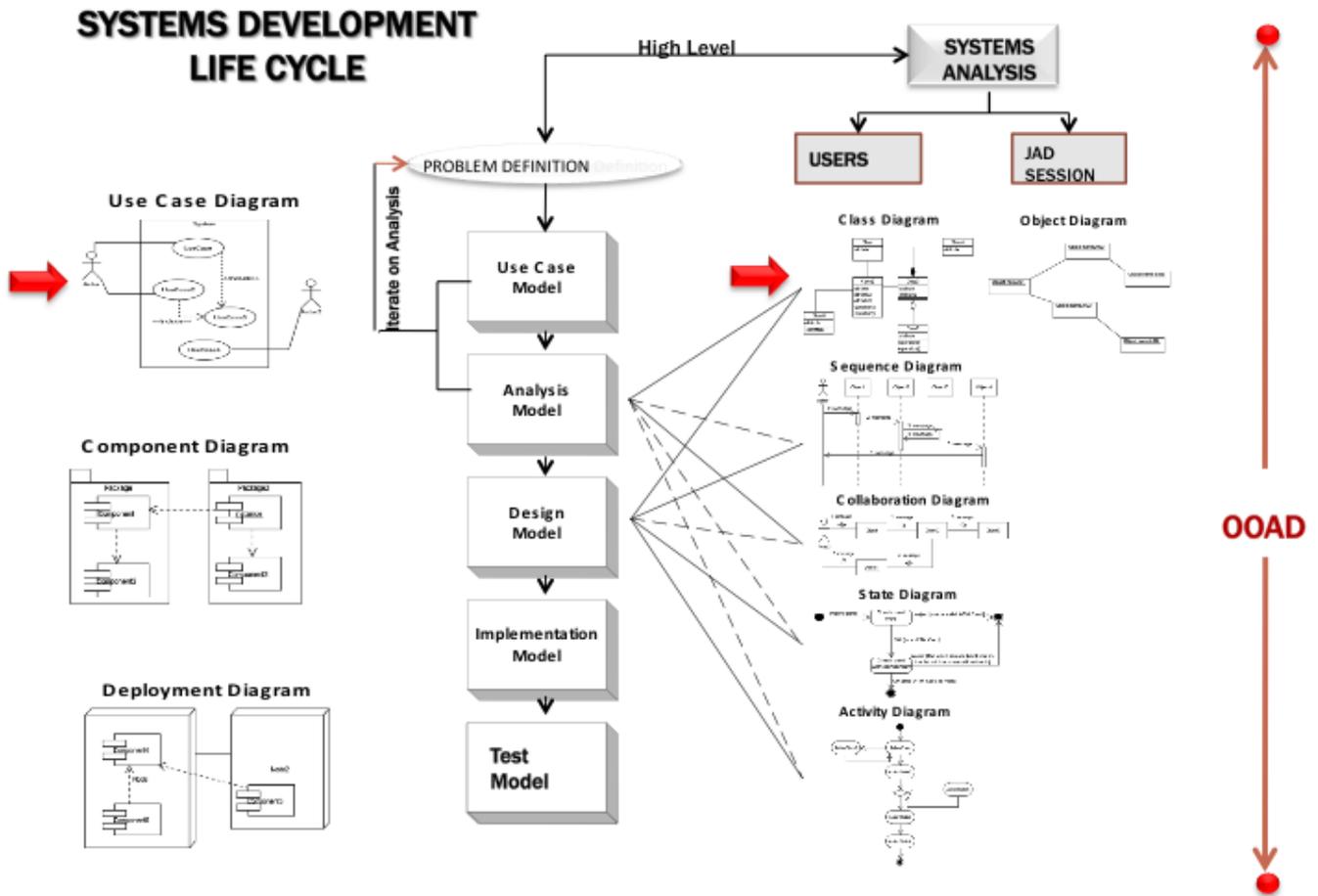


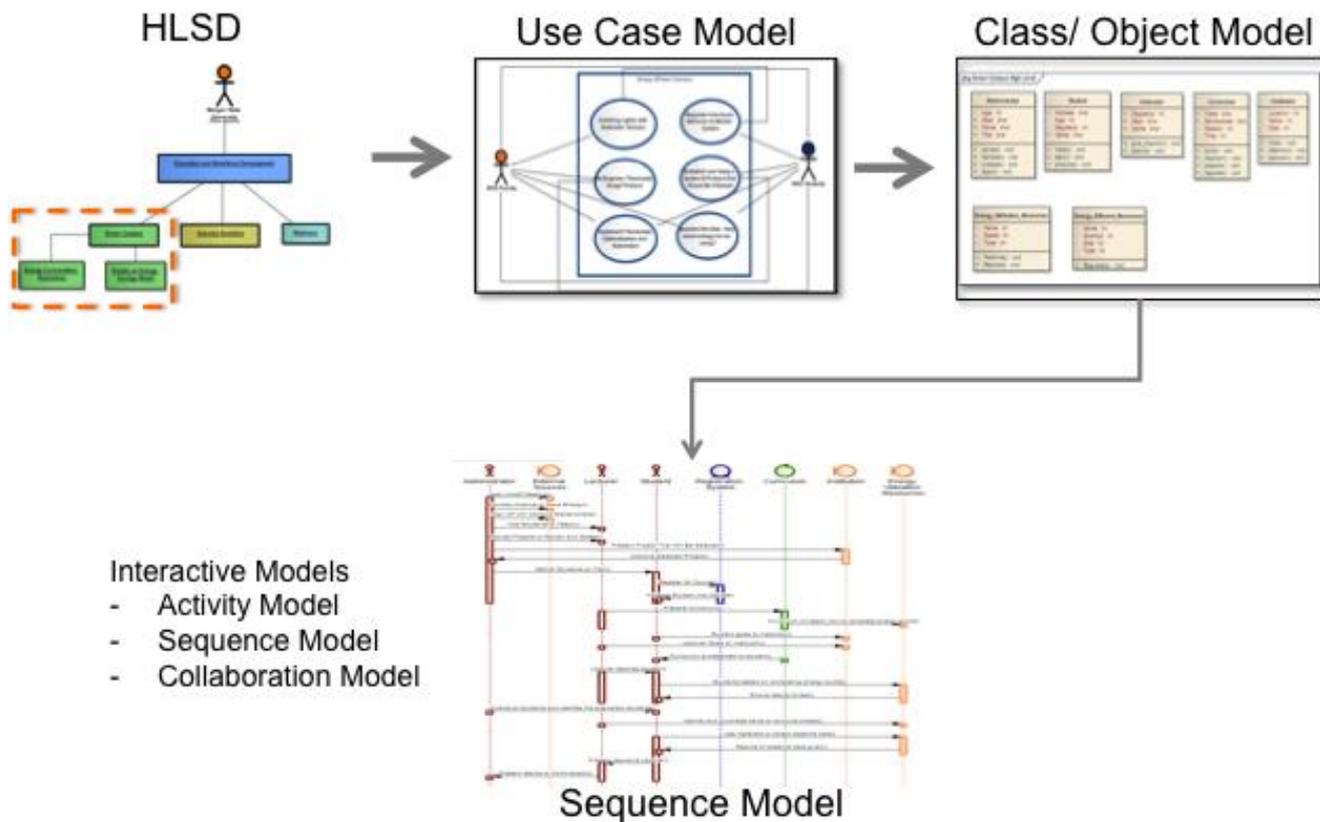
Figure 8: Systems Development Life Cycle Methodology

The Systems Development Life Cycle, [2] is one of many Systems Engineering methodologies and is a process for developing information and data systems. The logical focus of the system development life cycle (SDLC) is to plan a systematic project, gather requirements, complete an analysis, design the system solution, implement the solution, integrate and test the system solution, and lastly install or deploy the tested system solution into the actual environment. After the solution has been installed, it is very imperative to maintain and control the system, check for errors, make necessary changes, and to overall, ensure the system operates, as it should. In figure 4 above, an image of the flowchart of the SDLC is shown. First, a problem definition is developed, and a high level analysis of the system is performed; this can very effectively be defined in a diagram. Also, at this point the critical users are defined, a Joint Application Development (JAD) [3] Session is held where users, stakeholders, and any other person(s) relative to the project meet to discuss the problems of the system and what they wish to accomplish once the system is installed. In this particular project, the SDLC phase will begin with the Problem Definition, and will end at the Implementation Model. The implementation model will serve as the deliverable of a complete structure of the Green Campus Model. The Object-Oriented Analysis and Design (OOAD) process is defined below.

### Overview of Object-Oriented Analysis and Design (OOAD)

Object-Oriented Analysis and Design, [4] is a software engineering approach that models a system as a group of interacting objects. Each object represents some entity of interest in the system being modeled, and is characterized by its class, its state, and its behavior [1]. There are Unified Modeling Language (UML) [5] models that are used to define the design of a system (see the SDLC above). To begin, we have several types of models that include: the use case, class, object, activity, and sequence models. The use case model shows actors involved in the system and their use cases. Use cases are entities that define the user's requirements of the system. For example, a requirement of this project is that the students are educated. Specifically, the use case would be 'educate student'.

In the implementation of a use case a list of steps (i.e., the use case scenario) define how the use case is implemented in the system. Use Case models are developed at a very high level within the system analysis but give a very good definition of the system. A complete use case model of the system defines the system solution. The class model is basically the blueprint for the system. It gives the most detail in each entity that will include the name of the class, attributes (which tell details about the entity), and operations (which tell how the entity will be used). An interactive model has the responsibility of showing how the classes, objects, and relationships that are identified interact together. The sequence model illustrates the use case scenario of a use case in a time sensitive manner, focusing on the sequence of how objects interact with each other. Beginning with the problem definition, object-oriented analysis and design is used to help understand the problem and provide a vocabulary of the structure of the problem. Entities such as users, attributes, operations, classes, and interactive diagrams are the vocabulary for the problem, which tell what the problem consists of through use of UML models.



**Figure 9:** Model presentation of Object-Oriented Analysis Methodology

### Agile Development Methodology

The Agile Development Methodology [6] is a concept that is used to break a system into several subsystems. Instead of completing an entire project and then presenting it to the end user upon completion, parts of the project are broken down into several iterations.

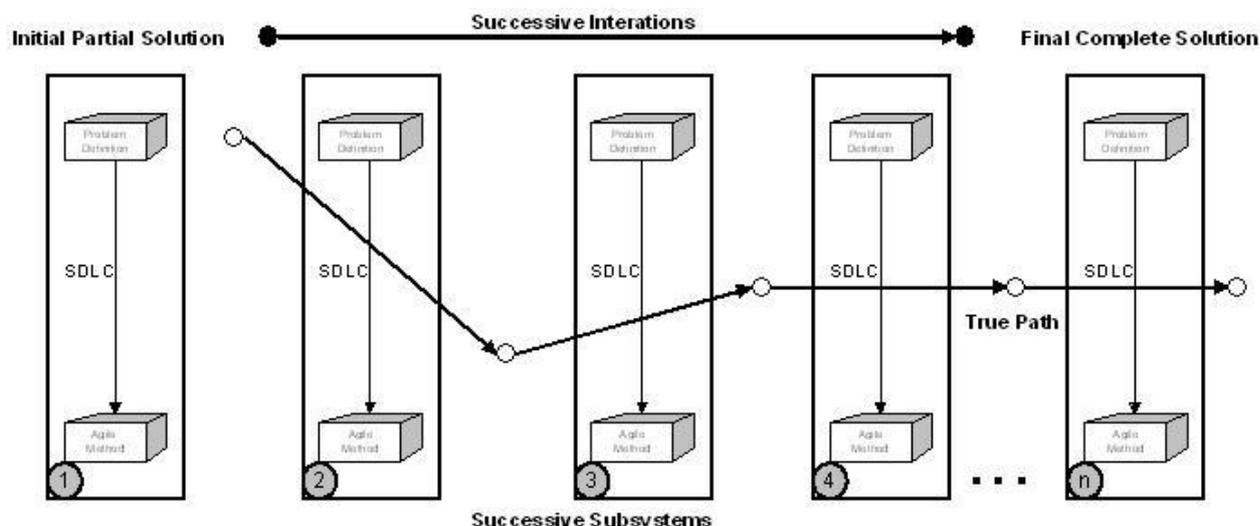


Figure 10: Model of Agile Development Methodology

The idea of this methodology is to complete the SDLC methodology for a subsystem, receive feedback from the end-user, make corrections if necessary, and then continue to the second subsystem. This allows each sub-analysis to inform the follow-on analysis. This methodology involves ongoing participation from the users and stakeholders to ensure the requirements are completed and satisfied. In the instance of the Green Campus Model, subsystems of the project will include different sections of the campus map layout. The campus will be separated into several sections or subsystems. A selected project as installing automated light sensors will be completed on section 1 of the campus. Section 1 is equivalent to subsystem 1, feedback will be received from users of the system, the system will be adjusted, and section 2 will be addressed, and so forth.

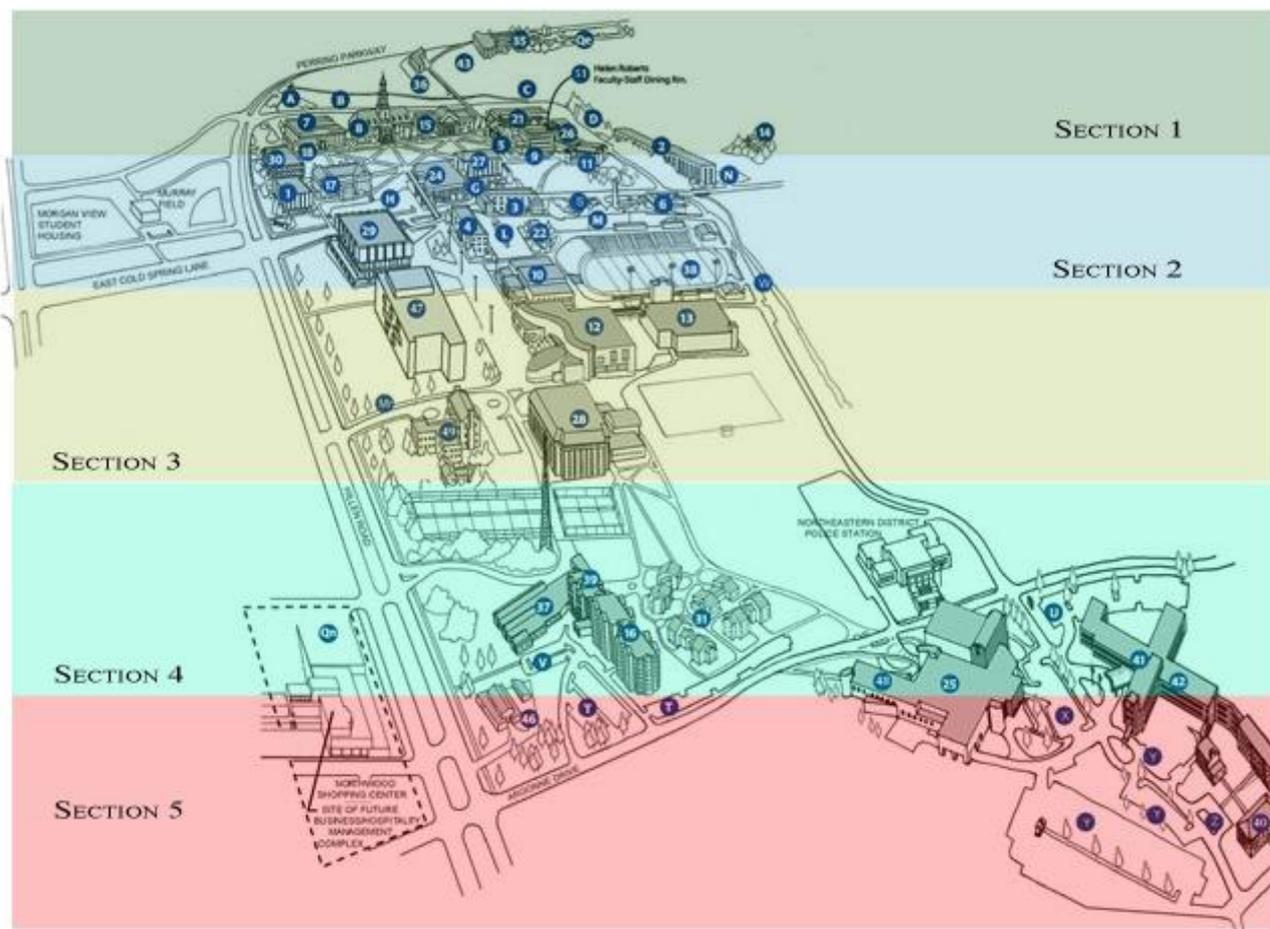
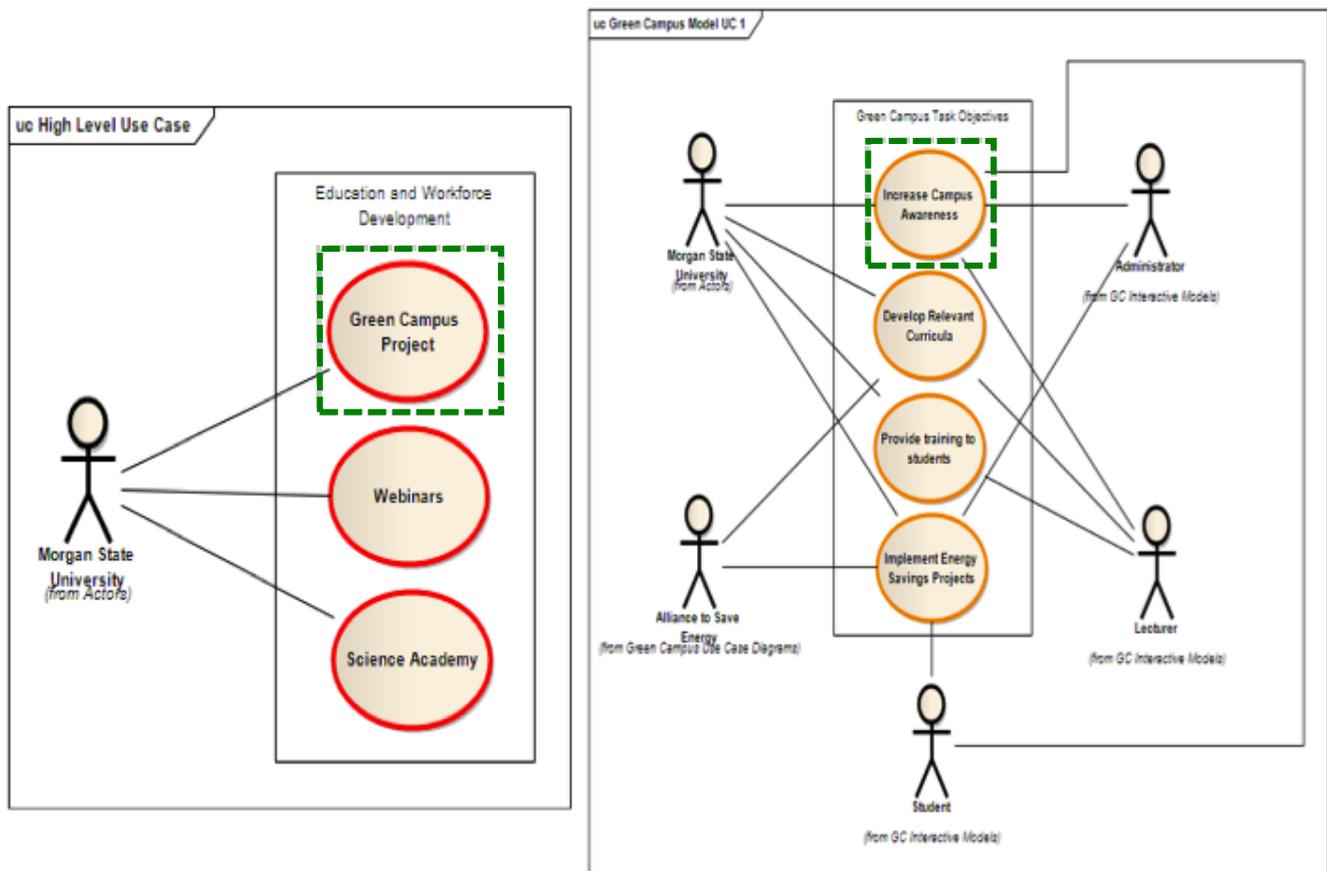


Figure 11: University Campus dissected into five sections, or subsystems.

## ANALYSIS

At Morgan State University, to complete a segment of the Education and Workforce Development Initiative, as stated previously (see Background of Problem) MSU will be developing a green campus model for implementation.



**Figure 12:** (Image 1) MSU Education and Workforce Development Use Case Model; (Image 2) Green Campus Project Use Case Model

In the Green Campus Use Case Model, the use cases are task objectives for Morgan State University’s Green Campus. The use cases in this instance are (1) increase campus awareness, (2) develop relevant curricula, (3) provide training to students, (4) implement energy savings projects, define the vocabulary for the ‘Green Campus model (users, relationships, objectives, and scope).

Figure 8 shows a gradual progression, showing more detail as the models are presented. ‘Increase Campus Awareness’ is one of the task objectives for the Green Campus Model. This objective was further decomposed into the use case model presented in figure 9. The use cases outlined in figure 9 are, (1) host an energy efficient interest meeting, (2) create a workshop – managing appropriate system behavior, and (3) baseline present energy data). As an example, the ‘Baseline Present Energy Data’ use case will be analyzed. The main objective of this use case is to measure the current energy being expended at Morgan State University’s campus. This has to be completed before any energy saving projects can be implemented, to have an understanding of how much energy can possibly be saved once the Green Campus Model is implemented.

### Case Study: Increase Campus Awareness

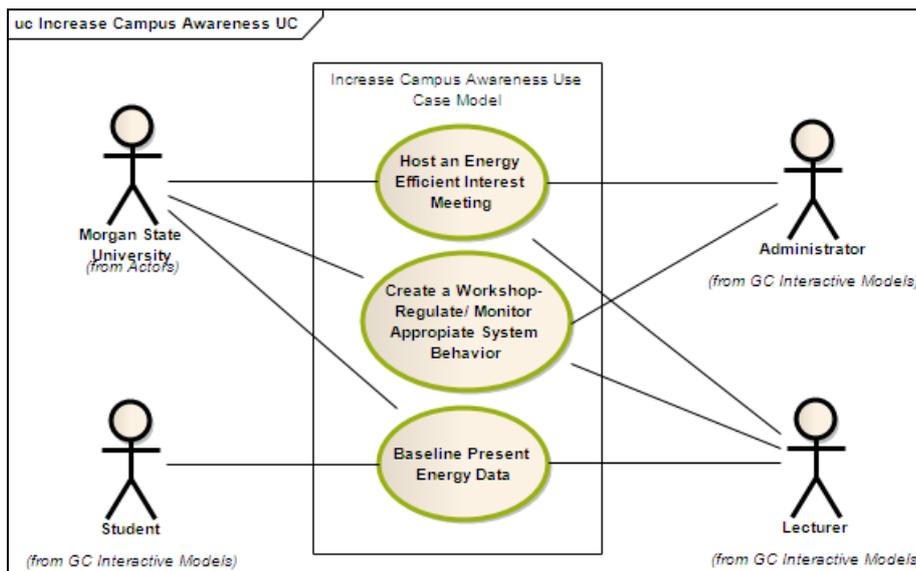


Figure 13: Increase Campus Awareness Use Case Diagram

A class diagram (see Overview of OOAD Process) [5] is a blueprint for the system. It does not show any pertinent information specific to the user but highlights the source of information that can be stored in the diagram, once the user gives details for input into the system. As 'Baseline Present Energy Data' is our case study, we can begin analysis by looking at the blueprint of how this process is defined.

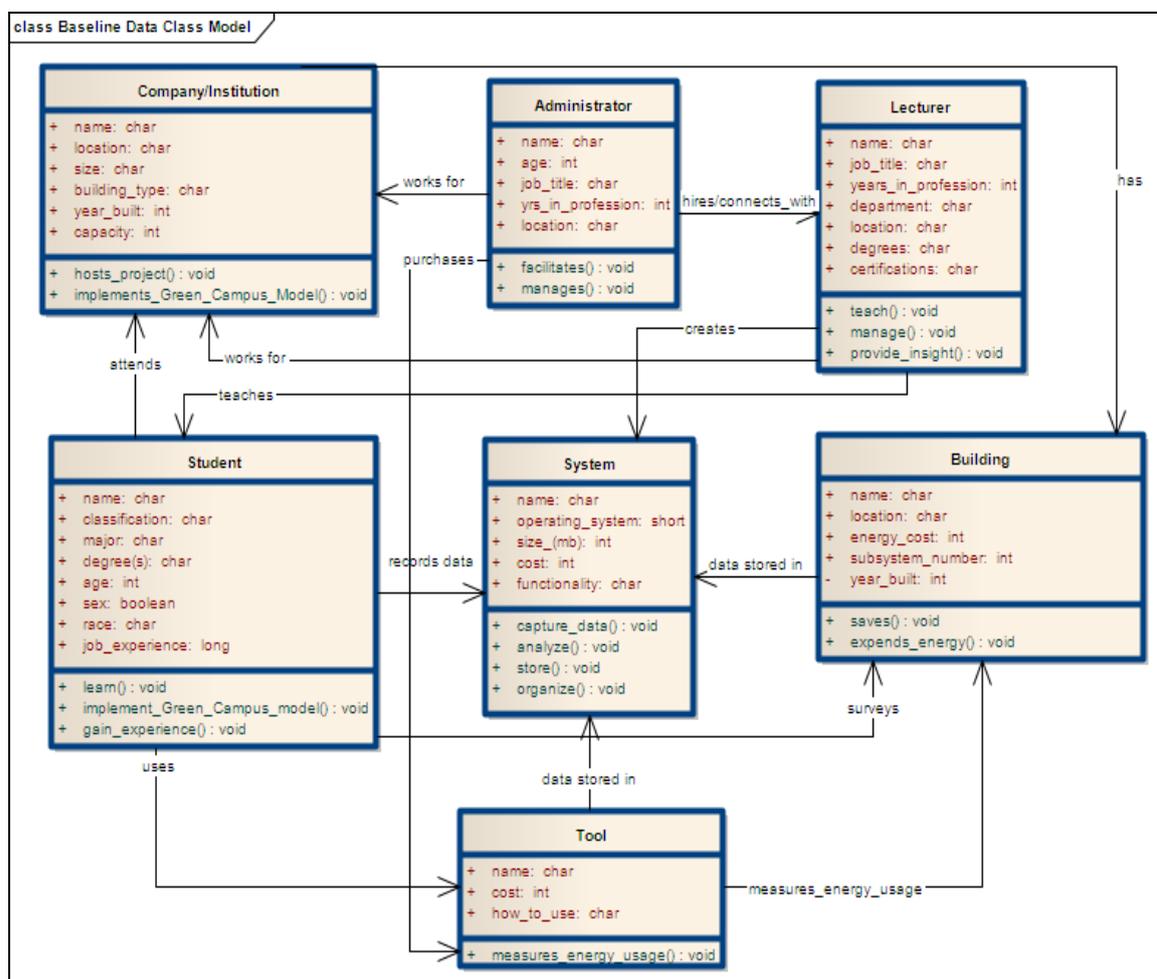
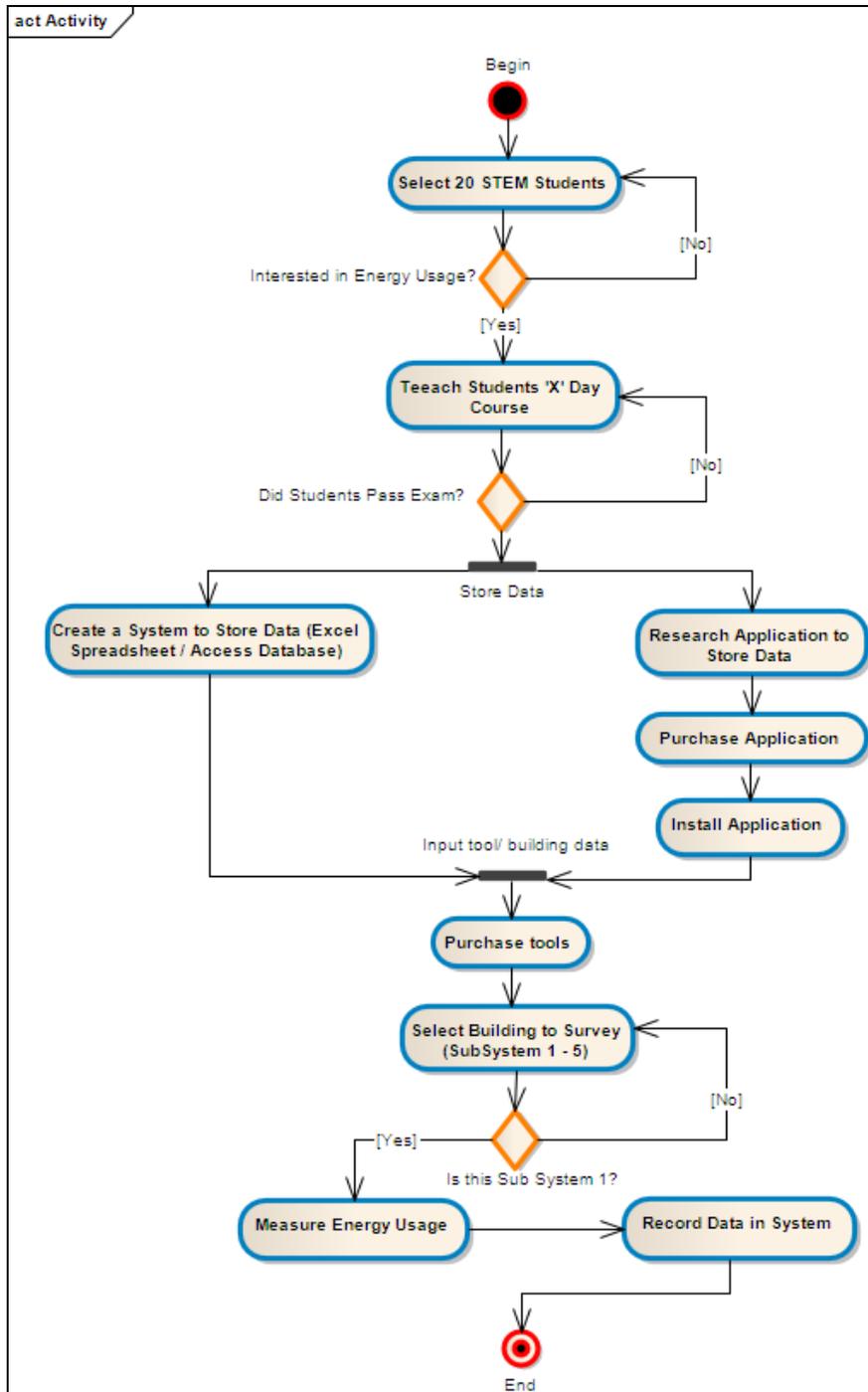


Figure 14: Class Diagram of 'Baseline Present Energy Data' Use Case

Figure 10 outlines seven different classes, with their attributes, operations, and common relationships between each of the classes. For example, Lecturer 'W' is hired by Administrator 'X', creates System 'Y', and teaches Student 'Z'. It is imperative that the classes for the 'Baseline Present Energy Data' use case are defined, the details of the entity are included in the class, and then relationships are established between each class to have a visual representation of how this system may work once implemented. To further depict how these classes identify and are relative to each other, interactive models are used, assuming the object model is relatively similar to the class model.



**Figure 15:** Activity Diagram of 'Baseline Present Energy Data' Use Case Model

The activity diagram gives a pictorial illustration of how the case study's process flow can occur. This diagram uses the class model and the established relationships and gives a blueprint of a possible process for a 'how-to' guide of surveying present energy data, from selecting students to researching applications for storing energy-related data.

This case study is just a very minute example of how the Green Campus model will be completed and ready for implementation. Each use case will be developed and analyzed using the aforementioned methodologies.

## CONCLUSION

Large, complex projects govern many resources and tasks; however, situations and requirement changes arise and change the project frequently, and sometimes demand extensive changes. It is very important to be conscious of these occurrences while developing a model that is sustainable. The more robust a model is, the increased probability of having a complete system solution that satisfies user-specific requirements. With use of the Agile Development Methodology, Object-Oriented Analysis and Design and Systems Development Life Cycle, a complete system solution is being developed and tested for Morgan State University's Green Campus Model. The major functionality of the model is that it can be completed with specific details for Morgan State University, and the model will be able to ask specific questions, such as who are the primary users, what is a green campus, how will energy data be measured, etc. Because the model will be useful as a tool to assist with implementing an actual Green Campus environment at Morgan State University, the latter functionality of the UML model due to its robust design, will be able to handle changes and other subtleties that may surface as the requirements are being met based on user-specific information.

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# SIMULATING FIXED POINT PROPERTIES OF A TWO DIMENSIONAL DYNAMICAL SYSTEM

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## ABSTRACT

A brief but self contained review of the theory of two dimensional continuous dynamical systems and its linear version is given. The linear version's characterization in terms of its system matrix, eigenvalues, eigenvectors and its unique fixed point described. MATLAB Monte Carlo simulation codes to calculate probabilities for the unique fixed point to be 1) stable, unstable and neutrally stable center 2) a saddle point and 3) stable and unstable node are given for both uniformly and normally distributed system matrix entries. The particular advantages of the MATLAB software over other coding languages are explicitly described and used. Numerical values of the probabilities for each possibility shown. In the analysis and discussion section of the paper, the relative probabilities of the events are analyzed and explained. Events that were not covered by the simulation codes are accounted for. Potential future spinoffs from the research paper as well as limitations of the simulation methodology pointed out. In the last section, probability distributions for some system parameters are calculated analytically for the tractable case of uniformly distributed matrix entries. The potential and limitations of the analytical approach are spelled out. Future directions and extrapolations indicated. Key representative references spanning applied mathematics, physics and computing are included in the bibliography.

**Keywords:** System Matrix, Fixed point, Attracting Fixed Point, Repelling Fixed Point, Saddle Point, Node, Monte Carlo Simulation Code, Random Number Generator, Uniform Distribution, Normal Distribution.

## 1. INTRODUCTION

Deterministic problems in dynamical systems (in our case, two dimensional continuous dynamical systems), as well studied and relevant as they are, (Arrowsmith and Place,1990, Wiggins,2000) do not address the need to modeling dynamical systems whose system parameters could be random. Problems of random makeup are quite ubiquitous in practical as well as theoretical studies.

The source of randomness could be unavoidable experimental errors of significantly wide margin, or the system under study could be so complex in its number of characterizing variables (degrees of freedom) that a deterministic approach is impracticable, or though the system parameters could be determined experimentally precisely, the system is under the influence of noisy perturbations.

The paper addresses the case of a random two dimensional linear dynamical system whose four parameters  $\alpha, \beta, \gamma, \delta$  are uniformly or normally distributed random variables on the interval  $[-1, 1]$ . The major part of the paper is about simulational/computational approach to calculating probabilities for different properties of the system fixed point. An appendix at the end of the paper discusses an analytical approach to be elaborated in future papers in this conference series.

## 2. BASICS OF TWO DIMENSIONAL CONTINUOUS DYNAMICAL SYSTEMS

A two dimensional continuous dynamical system is a system of two coupled ordinary differential equations

$$\dot{x} = f(x, y)$$

2.1

$$\dot{y} = g(x, y)$$

where  $\dot{x} = \frac{dx}{dt}$  and  $\dot{y} = \frac{dy}{dt}$ . The functions  $f$  &  $g$  are generally smooth functions of the degrees of freedom  $x, y$  and the "time" parameter  $t$ . If the parameter  $t$  does not appear explicitly in the functions  $f$  &  $g$ , we say the system is autonomous, if not, non-autonomous.

The fixed points or equilibrium points of the dynamical system are points in the  $(x, y)$  plane at which  $f(x, y) = g(x, y) = 0$  and hence  $\dot{x} = \dot{y} = 0$ .

The paper is a simulational/probabilistic study of the stability properties of the fixed points of the linear version of the system of equations (2.1) (Strogatz, 1994, P.143)

$$\dot{x} = \alpha x + \beta y \quad (2.2)$$

$$\dot{y} = \gamma x + \delta y$$

Where  $\alpha, \beta, \gamma, \delta$  are random experimental constants picked from a continuous uniform distribution over the interval  $[-1, 1]$ . The linear system can also be conveniently written in matrix form as

$$\dot{\mathbf{x}} = \mathbf{A}\mathbf{x}, \text{ where } \mathbf{A} \equiv \begin{pmatrix} \alpha & \beta \\ \gamma & \delta \end{pmatrix}, \mathbf{x} \equiv \begin{pmatrix} x \\ y \end{pmatrix} \text{ and } \dot{\mathbf{x}} \equiv \begin{pmatrix} \dot{x} \\ \dot{y} \end{pmatrix} \quad (2.3)$$

In the most important case where  $\text{Det}(\mathbf{A}) = \alpha\delta - \beta\gamma \neq 0$ , the homogeneous system

$$\alpha x + \beta y = 0 \quad (2.4)$$

$$\gamma x + \delta y = 0$$

has only one solution  $(0, 0)$ , and we will be studying the stability properties of this unique fixed point under continuously distributed random values of the entries of the system matrix  $\alpha, \beta, \gamma, \delta$ .

Explicit solution is known (Strogatz, 1994, P.130) in terms of the eigen values  $\lambda_1$  &  $\lambda_2$  and the corresponding eigenvectors  $\mathbf{V}_1$  &  $\mathbf{V}_2$  given by

$$\mathbf{X} = e^{\lambda_1 t} \mathbf{V}_1 + e^{\lambda_2 t} \mathbf{V}_2 \quad (2.5)$$

where

$$\lambda_1 = \frac{\tau + \sqrt{\tau^2 - 4\Delta}}{2}, \quad \lambda_2 = \frac{\tau - \sqrt{\tau^2 - 4\Delta}}{2} \quad (2.6)$$

and  $\tau \equiv (\alpha + \delta)$  is the trace of the system matrix and  $\Delta \equiv (\alpha\delta - \beta\gamma)$  is the determinant of the system matrix.

### 3. MATLAB CODES

Depending on the joint values of the trace  $\tau$  and the determinant  $\Delta$  of the system matrix, the isolated fixed point  $(0, 0)$  has the following stability properties (Strogatz, 1994, P.137).

### Case I: Stable and Unstable Spirals & Neutrally Stable Center

This case corresponds to the case of  $\tau^2 - 4 * \Delta < 0$  and hence  $\Delta > 0$ , as in this case, the two eigenvalues come in complex conjugate pairs. For  $\tau > 0$ , the fixed point will be an unstable (or repelling) spiral, where as for  $\tau < 0$ , the fixed point will be a stable (or attracting) spiral. If  $\tau = 0$ , the fixed point will be surrounded by neutrally stable closed trajectories.

The MATLAB Codes are as follows (Lindfield and Penny,2012):

```

m = 0;
n = 0;
p = 0;
total = 108
for i = 1 : total;
    α = 2 * rand - 1;
    β = 2 * rand - 1;
    γ = 2 * rand - 1;
    δ = 2 * rand - 1;
    τ = α + β;
    Δ = α * δ - β * γ;
    if (τ2 - 4 * Δ) < 0 && τ > 0
        m = m + 1;
    end
    If τ2 - 4 * Δ < 0 && τ < 0
        n = n + 1;
    end
    if τ2 - 4 * Δ < 0 && τ == 0
        p = p + 1;
    end
Probability for attracting spiral =  $\frac{n}{total}$ ;
Probability for repelling spiral =  $\frac{m}{total}$ ;
Probability for neutral center =  $\frac{p}{total}$ ;

```

In the above MATLAB simulation, the random system matrix entries were derived from a uniform distribution over the interval [-1, 1]. Furthermore, the code can be very easily transcribed into any procedural language like FORTRAN or C++ .The number of Monte-Carlo cycles can go as high as hundred million, depending on the memory and CPU time available.

In order to simulate the important case of normally distributed random system matrix entries with center at zero and unit variance one has to just switch the random number generation call from  $2 * rand - 1$  to  $randn$  .

In programming languages like MATLAB that have unique array handling capabilities, the four matrix entries can be randomly generated simultaneously as members of a single matrix, for both uniformly and normally distributed cases (Hanselman & Littlefield, 1996). In this case the MATLAB code will have the following slightly different form on the lines for the random calls, evaluation of the trace and determinant of the system matrix:

```

m = 0;
n = 0;
p = 0;
total = 108
for i = 1 : total;
A = 2 * rand(2) - ones(2);
τ = trace(A);
Δ = det(A);
•
•
•

```

In the last code, the command *rand(2)* calls a two by two matrix with uniformly distributed entries over the interval [0, 1], where as the command *ones(2)* produces a two by two matrix of ones. Then the command *2 \* rand(2) - ones(2)* produces a two by two matrix with uniformly distributed entries over the interval [-1, 1]. The case of normally distributed entries centered at 0 and with unit variance can be simulated by just changing *rand* or *rand(2)* into *randn* or *randn(2)* respectively.

### **Case II: Saddle Point**

In this case both eigenvalues are real and with opposite signs. Then the system determinant  $\Delta$  is negative. To simulate this special case, whether for the case of uniform or normally distributed matrix entries, we just have to generate random two by two matrices and count the number with negative determinants.

The MATLAB codes are as follows:

```

m = 0;
total = 108
for i = 1 : total;
α = 2 * rand - 1;
β = 2 * rand - 1;
γ = 2 * rand - 1;
δ = 2 * rand - 1;
τ = α + β;
Δ = α * δ - β * γ;
if Δ < 0
m = m + 1;
end
Probability for Saddle Point = m / total

```

Again for programming languages capable of generating random matrix entries simultaneously as entries of a single matrix, one can employ the call  $2 * rand(2) - ones(2)$  for the case of uniformly distributed entries over the interval  $[1, -1]$  or just  $randn(2)$  for normally distributed entries.

### **Case III: Stable and Unstable Nodes**

In this case, both eigenvalues are real, furthermore, they have identical signs. When both eigenvalues are positive, the fixed point  $(0, 0)$  is an unstable node. When both negative, the fixed point becomes a stable node.

The MATLAB code that counts this special case is as follows:

```

m = 0;
n = 0;
total = 108
for i = 1 : total;
    α = 2 * rand - 1;
    β = 2 * rand - 1;
    γ = 2 * rand - 1;
    δ = 2 * rand - 1;
    τ = α + β;
    Δ = α * δ - β * γ;
    if Δ > 0 && abs(τ) > 2 * sqrt(Δ)
        m = m + 1;
    end
    if Δ > 0 && abs(τ) < 2 * sqrt(Δ)
        n = n + 1;
    end
end
Probability for stable node =  $\frac{n}{total}$ ;
Probability for unstable node =  $\frac{m}{total}$ ;

```

## **4. RESULTS OF THE SIMULATION**

- Given that the random entries are derived from a **uniform distribution** over the interval  $[-1, 1]$ , the probability that the unique fixed point  $(0, 0)$  of a linear two dimensional system be an **attracting spiral** is **0.1597**. The same probability is also found for the case of a repelling spiral. On the other hand the probability that the fixed point be a neutrally stable center is negligible, practically zero.
- Given that the random entries are derived from a **normal distribution** centered at zero and with unit variance, the probability that the unique fixed point  $(0, 0)$  of a linear two dimensional system be an attracting spiral is **0.1464**. The same probability is also found for the case of a repelling spiral. Again, the probability that the fixed point be a **neutrally stable center** is negligible; practically zero.
- Given that the random entries are derived from a **uniform distribution** over the interval  $[-1, 1]$ , the probability that the unique fixed point  $(0, 0)$  of a linear two dimensional system be a **saddle point** is **0.4999**. The same probability is found when the random entries are derived from a **normal distribution** centered at zero and with unit variance.

- Given that the random entries are derived from a **uniform distribution** over the interval  $[-1, 1]$ , the probability that the unique fixed point  $(0, 0)$  of a linear two dimensional system be a **stable node** is **0.0904**. The same probability is found for the case of an **unstable node**. A probability of **0.1036** is found for both stable and unstable nodes when the random matrix entries are derived from a **normal distribution** centered at zero and with unit variance.

### 5. ANALYTICAL CALCULATIONS OF SOME PROBABILITY DISTRIBUTIONS

As a prelude to future investigations on the analytical approaches to the same problem, we derive below a set of probability density functions to the random system parameters  $\tau$  and  $\Delta$  assuming that the four matrix entries of the system matrix are uniformly distributed over the interval  $[-1, 1]$ .

The parameters  $\alpha$  &  $\delta$  are uniformly distributed over the interval  $[-1, 1]$  according to the following uniform probability densities:

$$P_\alpha(x) = \begin{cases} \frac{1}{2} & \text{for } -1 \leq x \leq 1 \\ 0 & \text{otherwise} \end{cases} \qquad P_\delta(x) = \begin{cases} \frac{1}{2} & \text{for } -1 \leq x \leq 1 \\ 0 & \text{otherwise} \end{cases} \tag{5.1}$$

The probability distribution  $P_\tau(x)$  for the trace of the matrix  $\tau$  is given by the convolution integral of the above two uniform distributions for the diagonal entries alpha and delta (Sirinivasan and Mehta ,1981):

$P_\tau(\tau) = \int_{-\infty}^{\infty} P_\alpha(x)P_\delta(\tau - x)dx = \frac{1}{2} \int_{-1}^1 P_\delta(\tau - x)dx$  , which by the change of variables  $u = \tau - x$  and braking the integral into two symmetric intervals centered at the origin becomes

$$P_i(\tau) = \frac{1}{2} \int_{\tau-1}^{\tau+1} P_\delta(u)du = \frac{1}{2} \left[ \int_{\tau-1}^0 P_\delta(u)du + \int_0^{\tau+1} P_\delta(u)du \right] \equiv I_1 + I_2 , \text{ where the first integral}$$

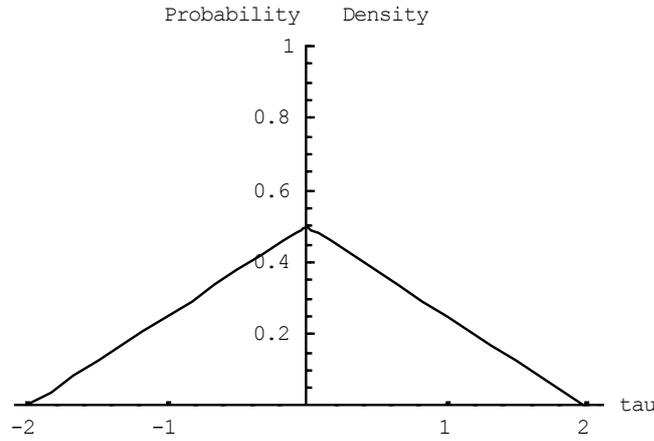
$$I_1 = \begin{cases} \frac{1}{2} & \text{if } \tau < 0 \\ \frac{1}{2}(1 - \tau) & \text{if } \tau > 0 \end{cases} \tag{5.2}$$

and the second integral

$$I_2 = \begin{cases} \frac{1}{2} & \text{if } \tau > 0 \\ \frac{1}{2}(1 + \tau) & \text{if } \tau < 0 \end{cases} \tag{5.3}$$

Hence  $P_\tau(x) = \begin{cases} \frac{1}{2} - \frac{1}{4}x & \text{if } x > 0 \\ \frac{1}{2} + \frac{1}{4}x & \text{if } x < 0 \end{cases} \qquad x \in [-2,2] \tag{5.4}$

The distribution for tau is usefully plotted below, the expected normalization property being obvious from the figure:



To work out the probability distribution for the determinant of the system matrix, we first calculate the distribution for the product of the entries alpha and delta using the well known formula for the distribution of products (Sirinivasan & Mehta, 1981) viz.

$$P_{\alpha\delta}(x) = \int_{-1}^1 \frac{1}{|v|} P_{\alpha}(v) P_{\delta}\left(\frac{x}{v}\right) dv \quad (5.5)$$

Since the probability distributions for all the matrix elements is the uniform distribution over the interval  $[-1, 1]$ , the second factor  $P_{\delta}\left(\frac{x}{v}\right)$  in the integrand of the above formula is given by

$$P_{\delta}\left(\frac{x}{v}\right) = \begin{cases} \frac{1}{2} & \text{for } \left|\frac{x}{v}\right| < 1 \\ 0 & \text{for } \left|\frac{x}{v}\right| > 1 \end{cases} \quad (5.6)$$

Substituting the above function the integral becomes

$$P_{\alpha\delta}(x) = \frac{1}{4} \left[ \int_{-x}^{-1} \frac{1}{|v|} dv + \int_x^1 \frac{1}{|v|} dv \right] = -\frac{\ln|x|}{2}, \quad x \in [-1, 1] \quad (5.7)$$

In spite of the singularity of  $P_{\alpha\delta}(x)$  at  $x = 0$ , the function is integrable over its domain  $[-1, 1]$  as can be checked by doing the following integral by parts:

$$\int_{-1}^1 P_{\alpha\delta}(x) dx = \int_{-1}^1 -\frac{\ln|x|}{2} dx = -\int_0^1 \ln x dx = [x \ln x - x]_{x=1} - \lim_{x \rightarrow 0} [x \ln x - x] = 1$$

as is expected for any proper probability distribution.

By repeating exactly the same set of calculations, the probability  $P_{\beta\gamma}(x)$  for the distribution of the product of the matrix entries beta and gamma can be shown to be

$$P_{\beta\gamma}(x) = -\frac{\ln|x|}{2}, x \in [-1,1]$$

From the distributions  $P_{\alpha\delta}(x)$  and  $P_{\beta\gamma}(x)$  we calculate the probability distribution for the determinant  $\Delta$  of the system matrix by calculating the following convolution:

$$P_{\Delta}(x) = \int_{-\infty}^{\infty} P_{\alpha\delta}(x+v)P_{\beta\gamma}(v)dv = \int_{-1}^1 \frac{\ln|x+v|\ln|v|}{4} dv \quad \text{where } x \in [-2,2] \quad (5.8)$$

A numerical evaluation of the above definite integral can be tabulated and graphed as a function of the independent variable  $x$ . (Fausett,1999). Clearly, in terms of calculating probabilities, averages and other practically useful characteristics, the simulation method is far more direct than the analytical approach.

## 6. ANALYSIS & DISCUSSION

The probability that the fixed point is neutrally stable turned out to be zero according to the simulation result does not mean that in actual reality there are no two dimensional systems with system parameters from the interval  $[-1, 1]$ . Simply, in the  $(\tau, \Delta)$  plane, the condition that the fixed point is a neutrally stable center is satisfied by a set of points of zero area, i.e., a 1-dimensional subset of the  $(\tau, \Delta)$  plane. On the other hand, within sets of zero area, the probabilities from the simulation result add up to one as they must, which is very satisfactory.

Indeed,  $0.1597+0.1597+0.4999+0.0904+0.0904=1.0001$  for **uniformly distributed** system parameters, and  $0.1464+0.1464+0.4999+0.1096+0.1096=0.9999$  for **normally distributed** system parameters. The analytical approach is more appropriate for proving general principles as most the attempts to derive practically useful results involve highly nontrivial integrals but still interesting by their own rights. This will be a subject matter for a next paper in the same conference series.

## 7. LIMITATIONS & SUGGESTIONS

The simulation approach, as impressively direct as it is, is not without its limitations. For one thing, any random number generator does not output a truly random sequence of system parameters. The random number calls are merely deterministic iterative formulae of very large period, and one algorithm is better than another (Landau & Binder, 2000), (Ross,2002). This limitation will be very serious when doing large scale simulation works. Second, as we already noted in the discussion, there are subsets of the  $(\tau, \Delta)$  plane to which the methodology is blind, because they have zero area. These subsets can be made "visible" to the simulation method by modifying the MATLAB codes to generate a priori 1-dimensional subsets in the  $(\tau, \Delta)$  plane and count the relative number of random points that land in one or another subset. The procedure will then assign relative or conditional probabilities to the different subsets. This will again be a subject matter for a different proceeding paper.

Last, we should be cognizant of the fact that the method rests on the linear version of the original non-linear equation (2.1). It turns out that 2-dimensional events like the ones whose probabilities the simulation method calculated (saddle events, spirals events, node events) are unaffected by the linearization. Only relative probabilities between 1-dimensional events are affected by the linearization.

## 8. CONCLUSION

The simulation method being akin to actual physical measurement, gives a very direct approach to calculating probabilities for the different properties of the fixed point not matched by the analytical method.

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# ENGINEERING THE ANALYSIS AND EVALUATION OF THE HIV EPIDEMIC

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## ABSTRACT

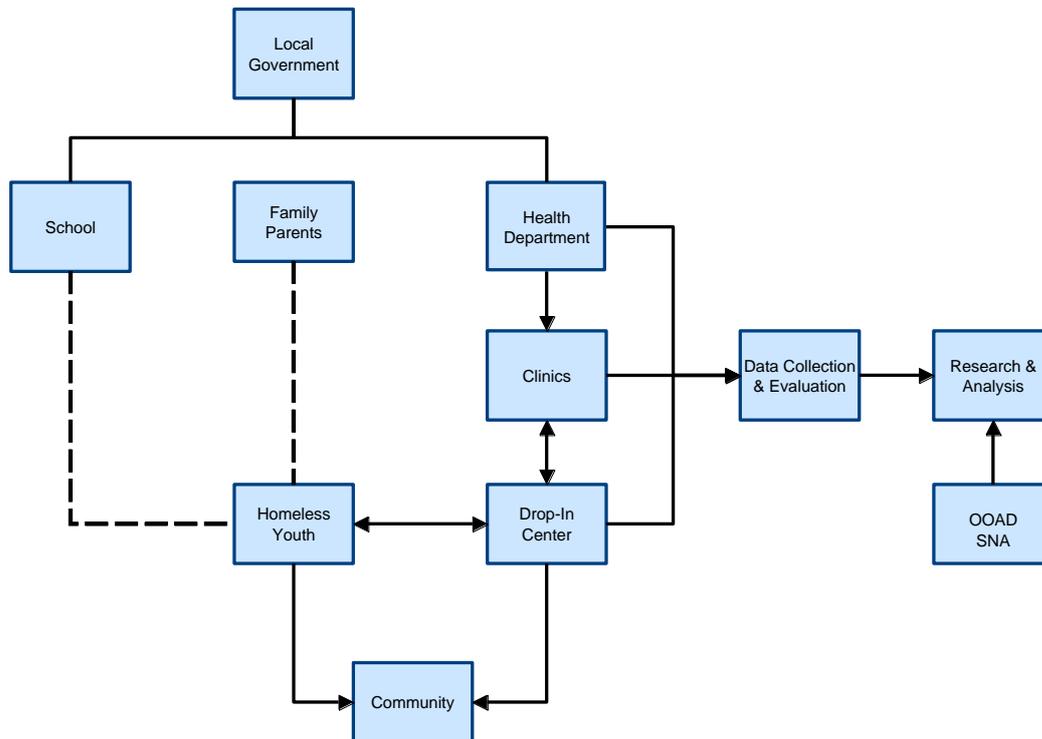
*Observing a number of studies, there is a gap in the availability of information the outlines the procedures that are followed scientist or sociologists to get to the social networking structures. Considering the level of complexity dynamism amongst social networks, it would be extremely difficult to mimic a similar environment to confirm or test the results of previous work. The main intention of this study is to assist with the conceptualization of what a homeless drop-in center is. To help with understanding what they are, what types of interactions occur within, what services they offer and how this environment can be improved. To demonstrate the concepts of systems in defining this environment will create a more dynamic perspective of the problem that is not typically referenced by sociological experts. The objectives of this research are to illustrate that using engineering principles can be used to evaluate and resolve sociological issues, to raise awareness on the issue involving homeless adolescents to promote community involvement and to illustrate an application of the methodology by analyzing the HIV epidemic among homeless adolescents within a drop-in center. During the first phase of the analysis, the environment will be observed, the current state of the environment surrounding the DIC, factors to be included or eliminated and units to be addressed will be documented. In the textual analysis phase, the problem and its scope are defined. Once the scope is established, it forms the basis for the object-oriented solution where use cases, classes, and objects are identified. After object structures are established, their attributes will be transferred into a social networking environment to determine the existence of any patterns that can be used to support conclusions drawn in previous related research. The behaviors among adolescent youth that visit shelters or recreational facilities in order to take advantage of free resources and services are the basis of this study. Several characteristic of these individuals are closely observed in order to create profiles and develop patterns that can be used as prevention, treatment and interventions for those adolescents. This system will be beneficial to a number of medical professionals, educators, government officials and researchers. In this study OOAD is integrated with Social Network Analysis (SNA) to analyze the problems associated with HIV infected homeless youth. A detailed study of these sociological structures aided by OOAD leads to profound sociological profiles of the actors of the sociogram to develop individual profiles that reflect a broader definition of what relationship exist and potentially explain what those relationships exist. This study uses classes, objects, relationships (i.e., OOAD) along with the use of nodes, links and paths (i.e., SNA). Also, providing documentation throughout the procedure from the problem definition all the way through to the conclusions can support an iterative approach which aids in the evaluation process as well as storing details about the study that can be retrieve and use in future related research.*

**Keywords:** *Object Oriented Analysis & Design, Social Network Analysis, Systems Engineering, Human Immunodeficiency Disease HIV), Socio-cultural Modeling.*

## INTRODUCTION

The study of runaway homeless youth infected with the Human Immunodeficiency Virus (HIV) virus have recently become the focus of researchers due to the dynamics involved in how those individuals have become victims of their societies or environments. Researchers seek to determine the common variables that connect each individual for the purpose of outreach for prevention and treatment. The scope of this study is limited to activity that occurs within what an agency has defined as a Drop-In Center (DIC) which is a central meeting place for the homeless youth to utilize resources such as food, shower and counseling as well as to socialize with other runaway youth. Due to their circumstances, the youth may engage in high risk behaviors such as drug and/or alcohol use, poor hygiene or health practices and high right sexual activity. Researchers observe that the networks formed among these individuals can reveal the exposure risk levels of individuals that may enter the network. The patterns of the connections made within the networks have potential to outline the best point of attack when considering the most effective method to prevent exposure to or treat the homeless youth for the consequences of their risky behavior(s).

Observing a number of studies, there is a gap in the availability of information that outlines the procedures that are followed by scientists or sociologists to get to the social networking structures. Considering the level of complexity and dynamism amongst social networks, it would be extremely difficult to mimic a similar environment to confirm or test the results of previous work. In the time it would take for a reasonable attempt of a simulation of the environment in question, it would be likely that several variables would have been added or eliminated. This forms a grey area to which future researchers must manipulate their studies around. This study will incorporate a systematic approach to sociological issues to guide sociologists through their scientific research as well as develop a library of documentation that describes elaborate details of the procedure used. Starting from the clinic/drop-in centers where data is captured, tools such as Enterprise Architect (EA) and Pajek, can fill the gap to aid in the definition of the problem at hand to improve the outcomes obtained in previous research and analysis of sociological problems. A high level systems diagram of the problem that will be addressed in this study can be seen in Figure 1.



**Figure 1:** High Level Systems Diagram

## Importance of Research

In 2007, researchers found that detailed information on the interaction between actors within a social network could be investigated using multi-level network analysis. [2] Carnegie Mellon University has integrated a platform called Service Oriented Architectures for Socio-Cultural Systems SORASCS to support socio-cultural analysis [6]. This study will be an extension of the research stated above and hopefully lead to innovative findings surrounding the topic of HIV. Previous works that closely relate to this study are those complex methodologies and technologies that are applied to solve sociological problems such as the epidemic of HIV. In 1996, a study used object oriented analysis to conduct a sequence analysis of the DNA of HIV and identified very general biological classes and objects to define the structures. [1] In 2006, a Stanford University thesis paper explains an implementation of database architecture to protect the sensitive information of HIV patients. The work found to date that is closest in scope of this study is the work published in the Sociological Focus article in 1999 found that network structures promote the spread of HIV all while acting as a valuable prevention/intervention resource. [3]

## Objectives

Applications of systems include sociology, biology, information technology, manufacturing, military, health and transportation. The main intention of this study is to assist with the conceptualization of what a homeless drop-in

center is. To help with understanding what they are, what types of interactions occur within, what services they offer and how this environment can be improved. To demonstrate the concepts of systems in defining this environment will create a more dynamic perspective of the problem that is not typically referenced by sociological experts. The concepts of OOAD and SNA used will be the key to establishing the baseline of this system.

The objectives of this research are:

- To illustrate that using engineering principles can be used to evaluate and resolve sociological issues.
- To raise awareness on the issue involving homeless adolescents to promote community involvement.
- To provide analysis data that supports Social Networking results as well as documenting the process of analysis.
- To illustrate an application of the methodology by analyzing the HIV epidemic among homeless adolescents within a drop-in center.

In review of the literature on the HIV epidemic, a large number of the researchers use text and statistical data to depict their findings. Other researchers used sociograms to draw social connections from one entity to another. Few articles provided details on the entities that establish their individual states and/or the change of their state, if any, once the connection was established. At a static level, such details may not be pertinent but to aid in dynamic scenarios such as finding ways to prevent the spread of HIV, all details are vital.

## METHODOLOGY

Object-Oriented Analysis and Design (OOAD) is a methodology that uses Unified Modeling Language (UML) to provide a structured approach for systems engineers and analysts to conceptualize and model complex systems [1]. In addition to systems specialists, OOAD can benefit program/ project managers, product developers and students as well. OOAD follows the system development life cycle (SDLC) therefore a modified version of this process shown in Figure 2 will guide users from initial problem definition to evaluation. First, a project plan must be established in order to determine the feasibility of the projects and develop a high level systems diagram (HLSD) of the proposed plan. Next, a system analysis must be performed in order to determine the goals, desired functions, operations and requirements of the system. Within the design phase of the analysis model, social network analysis will be incorporated to identify attributes and relationships previously recognized from the OOA. Upon completion of the design phase, the collection of data and diagrams can be used to develop a strategic plan of intervention.

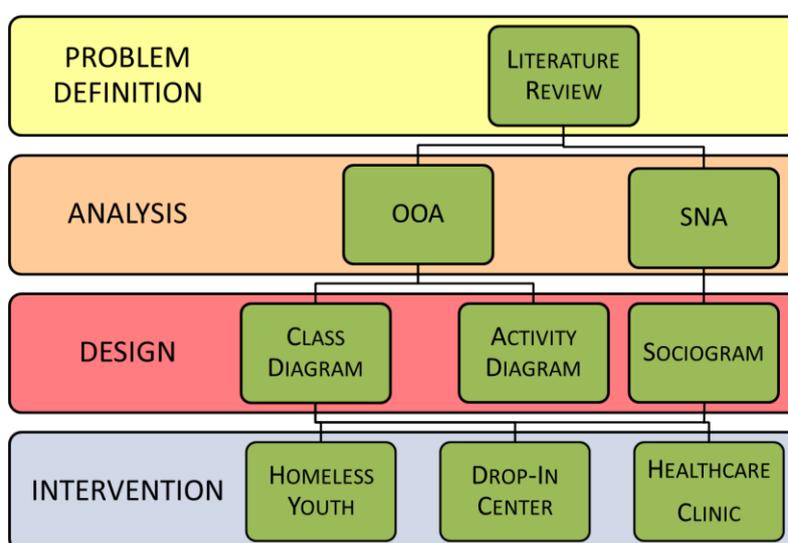
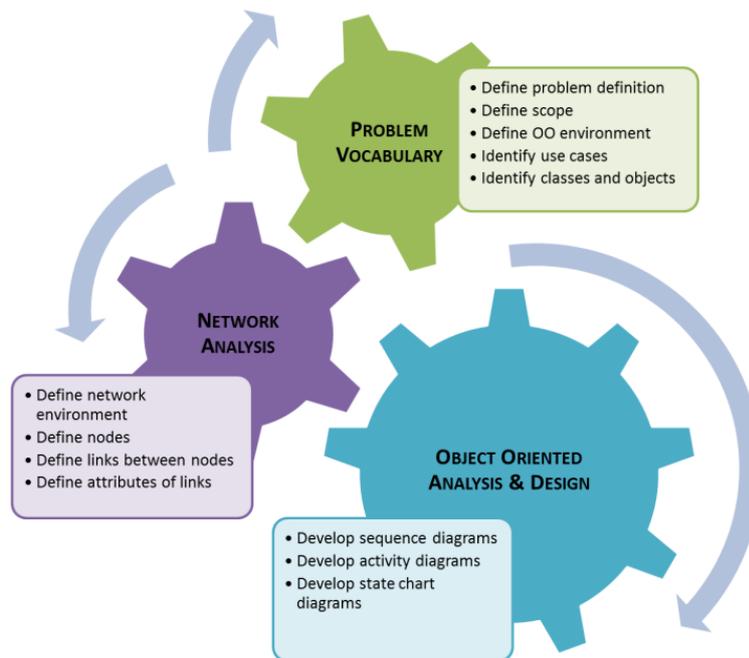


Figure 16: Methodology

The first phase in the analysis is problem definition. During this phase, the environment will be observed, the current state of the environment surrounding the DIC, factors to be included or eliminated and units to be addressed will be

documented. This is the most crucial phase since all further analyses is based on this initial definition. From a textual analysis, the problem and its scope are defined. Once the scope is established, it forms the basis for the object-oriented solution where use cases, classes, and objects are identified. After object structures are established, their attributes will be transferred into a social networking environment to determine the existence of any patterns that can be used to support conclusions drawn in previous related research. This transfer will be based on what attributes exist in the classes under close observation. Classes that contain similar attributes will be converted to nodes to form a sociogram. The new sociogram created will be compared to previously developed structures. Next, the dynamic portion of the object-oriented analysis is performed. This is where the objects and classes developed in the initial phase form the basis for sequence, activity and state chart diagrams. These diagrams will show an instantiation that supports the conclusions drawn and provide a conceptual illustration what events, if any, occur as a result the relationships that do exist amongst nodes. The diagrams will center on events that highlight at-risk behavior that could create a risk of or lead to exposure to HIV. A visual representation of the analysis model is shown in Figure 3 below.



**Figure 17:** Analysis Model

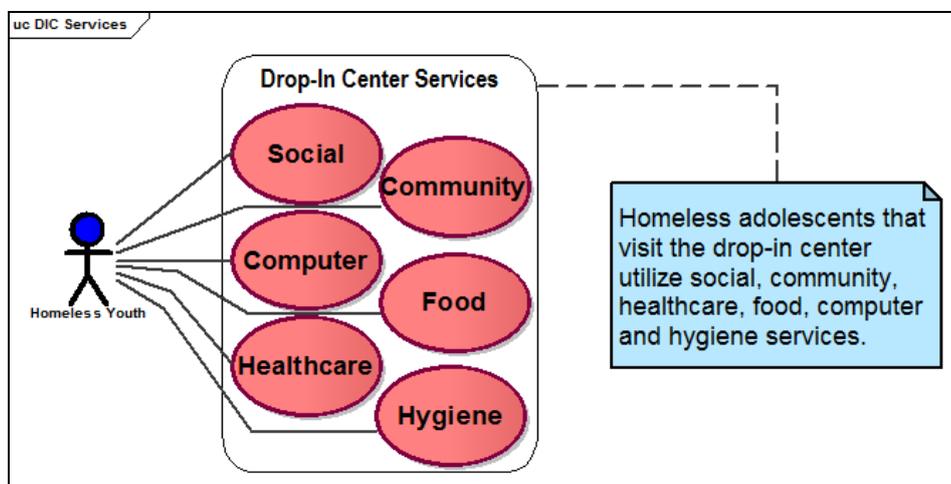
Many relationships are formed among the HIV infected youth, statistical analyses are used to provide a mathematical representation of those relationships and the impact these relationships will have on their state. These relationships define what risks the adolescents are exposed to in their environments and generate an accurate calculation of whether or not those risks impact their HIV status. In the activities of these youth, several relationships are formed. A social network analysis can be developed to visually represent all of those relationships and identify the key players in the network. Both analysis methods (i.e., OOA and SNA) can be performed to optimize and reflect all dimensions of the systems.

## Users

This system will be beneficial to a number of populations. Medical professionals will access information from patients, update the system with the patient demographics in order to determine the methods of prevention that best fit the patient. Educators will use this system mainly to retrieve statistics in order to deliver yearly and quarterly reports. Government officials will use the data stored in the system to determine the amount of funding that will be needed for treatment and prevention of sexually transmitted diseases. Researchers will use the patient information to generate statistics on patients and update their social network structures. Law enforcers can also use this system to monitor the trends risky behavior such as prostitution and drug-use within social network structures.

## Case Study Structure

The behaviors among adolescent youth that visit shelters or recreational facilities in order to take advantage of free resources and services are the basis of this study. Several characteristics of these individuals are closely observed in order to create profiles and develop patterns that can be used as prevention, treatment and interventions for those adolescents. Characteristics such as childhood, family structure, religious affiliation, education and psychological state will be noted in effort to draw parallels in their behaviors and choice of social networks. The shelters are referred to as DIC and the environment within these facilities can be presented as the Figure 4 below.



**Figure 18:** Drop-In Center Services

To develop a feasible scope for this study, previous work by Eric Rice et. al. [5] defined four categories that explain the risk levels of adolescents within closed networks. These networks structures were developed in order to summarize the environments that most adolescents are presented with upon their arrival at the DIC. The groups that the adolescents choose to socialize with have shown to define the risk level of their exposure to and engagement in risky activity. The first network (a) shows a situation where all individuals do interaction with most individuals within the network as time passes but the individuals within the network is very defined which keeps the risk levels at a minimum. A cluster is least likely to occur in a real world situation therefore it should be considered the best case scenario. The next network is called a chain (b) where adolescents engaging in risky behavior interact closely with other adolescents that engage in similar behavior but there is at least one non-risk individuals that associates themselves with another that is engaged in at-risk behaviors. In a chain structure, at-risk behavior is more likely to spread than in a situation similar to a cluster environment. The third category is the most lifelike situation where there is a core risk(c). This is a situation where the individuals at the core of the network are the individuals involved in at-risk behavior and the at-risk individuals are tightly connected. However, those individuals eventually ranch out to form associations both with individuals that also engage in at-risk behavior and with non-risk individuals. The last network discussed in this work is where there is a peripheral risk (d). A peripheral risk is the opposite of the core risk. The non-risk individuals are tightly connected at the core of the network. At some point, those non-risk individuals form relationships with individuals that engage in at risk behaviors. The four network categories are shown in the figure below.

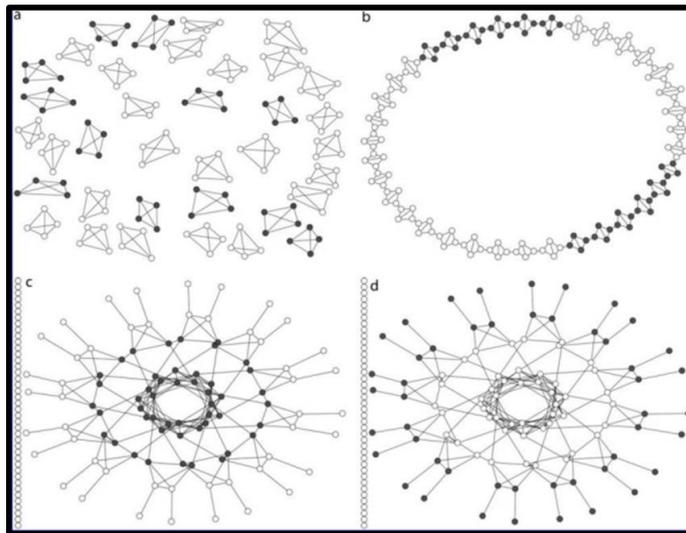


Figure 19: Network Categories (Rice et. al.)[5]

In clusters, the key concept to keep in mind is that the non-risk adolescents in the DIC do not interact with the at-risk adolescents. In this scenario, a class diagram is able to show critical relationships among the adolescents that have the potential to provide information about the network such as individual characteristics, behavior similarities and differences and potential and present risks. In each class, the arbitrary adolescents are shown and their individually defined and their relationship to the other adolescents are reflected. These characteristics and relationship are shown thru in Figure 6 below with arbitrary classes; the non-risk adolescents are Adolescent A, Adolescent B, Adolescent C and Adolescent D and the at-risk adolescents are Adolescent W, Adolescent X, Adolescent Y and Adolescent Z. As seen below, Adolescent A related to Adolescent B since they are both from weak family structures but continue to maintain contact with their family.

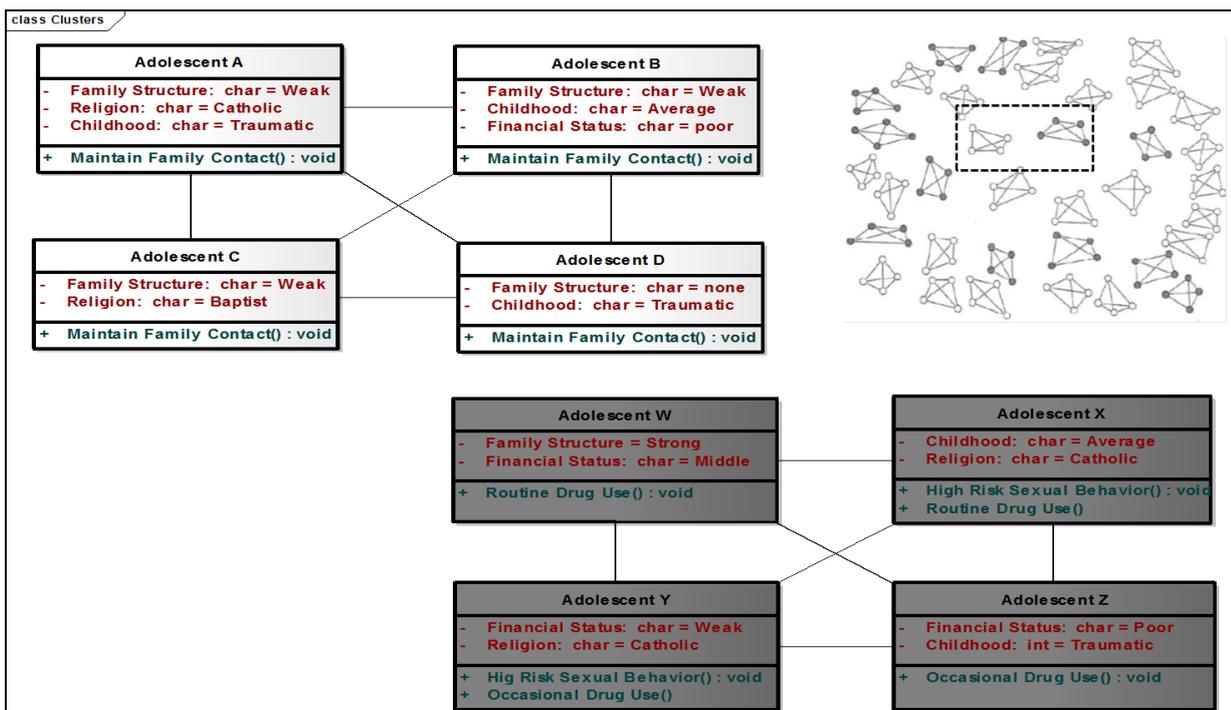


Figure 20: Cluster Representation in class diagram

## FINDINGS

Object-Orient Analysis and Design (OOAD) is a methodology used in software development, however, this technology can be used to document the manipulation of data which verifies and supports the analysis social

systems. OOAD can be used to model and document the interaction of adolescents, actions that occur as a result of those interactions performed and outcomes of the adolescents. In this study OOAD is integrated with Social Network Analysis (SNA) to analyze the problems associated with HIV infected homeless adolescents.

Social Network Analysis (SNA) is a methodology that concentrates on analyzing the relationships between actors to detect and interpret social patterns. Actors are people, groups, organizations or countries. Sociometry is used to provide a visual representation of an actor’s response to a social choice. A SNA procedure includes the definition of the network, network manipulation, determination of structural features and visual inspection. A sociogram is one way to graph a network of actors which can be drawn several different ways to highlight distinct social features. [4] A detailed study of these sociological structures leads to profound sociological profiles of the actors of the sociogram to develop individual profiles that reflect a broader definition of what relationship exist and potentially explain what those relationships exist. For example, Figure 7 below shows a further iteration of the class diagram shown in Figure 6. What distinguished the structure shown in the diagram below are the association classes, which happens in UML when the association between two classes has attributes. Those attributes are displayed to provide clarity to define exactly what relationship(s) those classes share. Such as Adolescent A and Adolescent both having weak family structures, Adolescent A and Adolescent X are both catholic and Adolescent B and Adolescent X both had an average childhood. The association classes provide an additional layer of detail to the problem and can be stored in the EA model for future reference.

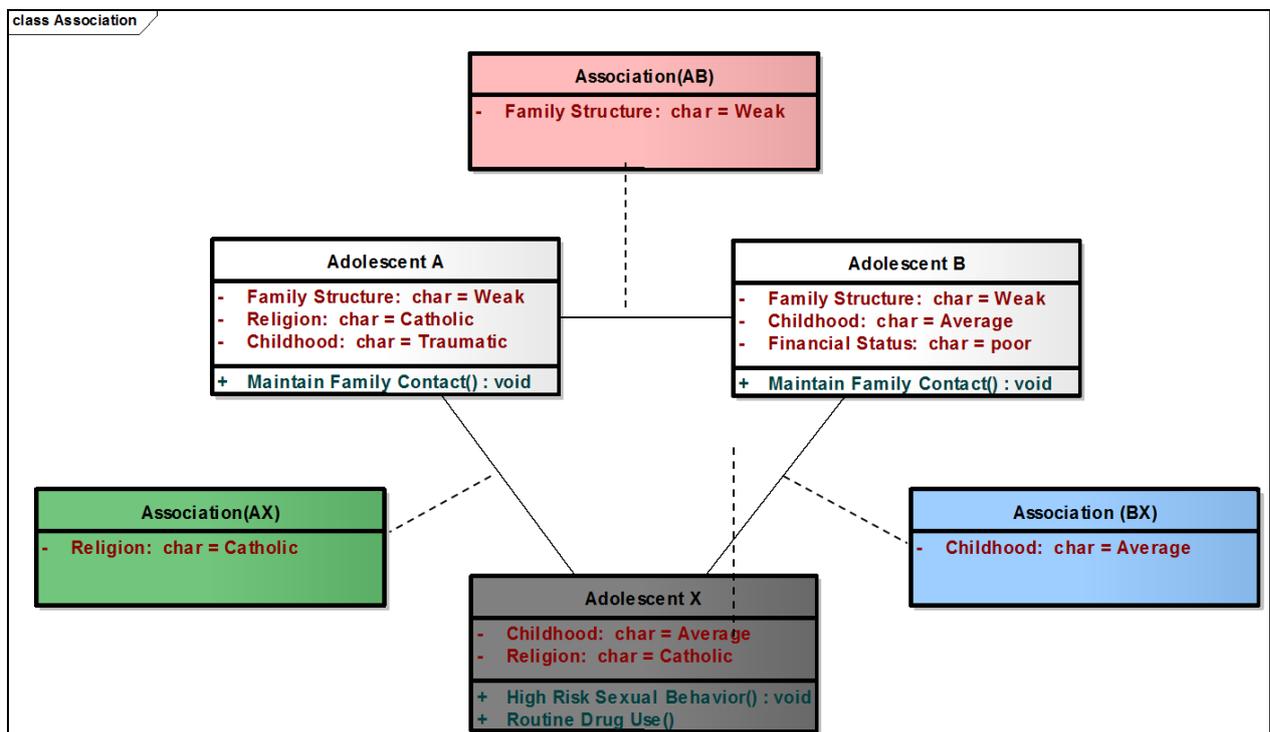


Figure 21: Class Diagram with Association Classes

With discussion of human, social, cultural and behavioral concepts, the incorporation of social network analysis is pertinent to the accuracy and efficacy of the models that were developed throughout this study. This research utilizes classes, objects, and relationships (i.e., OOAD) with the use of nodes, links and paths (i.e., SNA). Also, providing documentation throughout the procedure from the problem definition all the way through to the conclusions can support an iterative approach which aids in the evaluation process as well as storing details about the study that can be retrieve and use in future related research.

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# COMBINATORIAL DIMENSIONS OF SETS

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## ABSTRACT

*This paper discusses three kinds of dimensions: Minkowski dimension, Hausdorff dimension, and combinatorial dimension. However the main focus is the definition of the combinatorial dimension. This paper uses graphs and tables to help illustrate some examples of the combinatorial dimension. Then it uses formulas to give a general definition of the dimension. All these three kinds of dimensions, Minkowski dimension, Hausdorff dimension, and the combinatorial dimension, are not necessarily positive integer dimensions. Instead they can be 1.2, 1.5, or other real numbers. Similarities and differences of methods among the three kinds of dimensions are discussed. The ideas of Minkowski dimension, Hausdorff dimension are very similar. They use smaller and smaller boxes or circles to cover or analyze an object or set, and then count the number of boxes or circles. On the other hand the combinatorial dimension uses different method and it applies to different sets. However there are still some similarities between the method of the combinatorial dimension and the other two dimensions. Applications of the three kinds of dimensions are also discussed.*

**Keywords:** Cartesian Coordinate System, Combinatorial Dimension, Dimension, Hausdorff Dimension, Minkowski Dimension.

## 1. INTRODUCTION

The concept of dimension is used to describe a space or an object. For example, the dimension of a line is 1, and the dimension of a rectangle is 2.



**Figure 1:** Examples of 1-Dimensional and 2-Dimensional Objects

Minkowski dimension (also called box-counting dimension) and Hausdorff dimension are not necessarily integers. Mandelbrot (1967) published a paper to discuss the curve of the coast of Great Britain that had Minkowski dimension or Hausdorff dimension between 1 and 2. Figures 2 below from Wikipedia illustrates how to estimate the Minkowski dimension of the curve of the coast.



**Figure 2:** Estimating the Minkowski Dimension (Box-Counting Dimension) of the Coast of Great Britain

Let  $N(\epsilon)$  be the number of boxes of side length  $\epsilon$  required to cover the curve of the coast. Then the Minkowski Dimension is defined as:

$$\text{Dimension} = \lim_{\epsilon \rightarrow 0} \frac{\log N(\epsilon)}{\log(1/\epsilon)} \quad (1)$$

If the limit does not exist, then we need to use upper limit or lower limit.

Figure 3 below from Wikipedia illustrates how to estimate the Hausdorff dimension of the curve of the coast. Instead of using boxes for Minkowski dimension, the Hausdorff dimension uses circles to cover the curve.



**Figure 3:** Estimating the Hausdorff Dimension of the Coast of Great Britain

Comparing Figures 2 and 3, we see that the Minkowski dimension uses boxes but the Hausdorff dimension uses circles. However their ideas are very similar; that is, using smaller and smaller boxes or circles to cover the curve of the coast.

This paper discusses another concept of dimension called combinatorial dimension, or fractional dimension, introduced by Ron Blei (1979). The concept of combinatorial dimension can be applied to any infinite countable set in multiple-dimensional Cartesian coordinate systems. There are similarities between the combinatorial dimension and the Minkowski dimension (or the Hausdorff dimension). For example, all the three dimensions are not necessarily positive integers. Instead they can be 1.2, 1.5, or other real numbers. There are also differences between the combinatorial dimension and the Minkowski dimension (or the Hausdorff dimension). In Figure 2 and 3 above, the Minkowski dimension or the Hausdorff dimension use smaller and smaller boxes or circles to cover or analyze an object or set, and then count the number of boxes or circles. On the other hand the combinatorial dimension uses different method and it applies to different sets.

## 2. COMBINATORIAL DIMENSION

The concept of combinatorial dimension can be applied to any infinite countable set in multiple-dimension Cartesian coordinate systems. However for simplicity, we first discuss sets of points with integer coordinates in the 2-dimensional Cartesian coordinate system.

Consider an example of a set of points  $F$  in Figure 4 below. The figure only shows part of the set of points  $F$  which has infinitely many points.

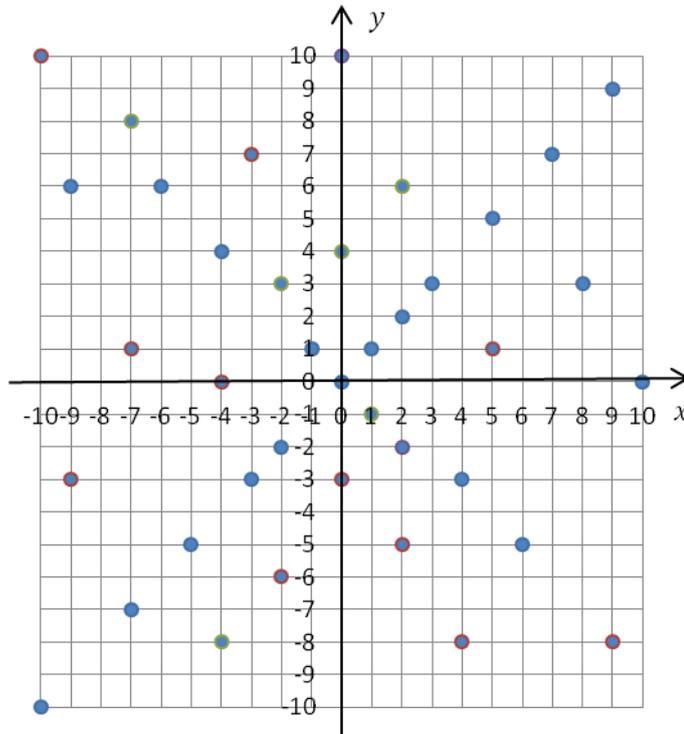


Figure 4: Part of a Set of Points  $F$  with Integer Coordinates

Figure 5 below shows how we analyze the point distribution of the points  $F$ .  $[0, 1]^2$  denotes the cross points of the vertical lines  $x = 0, 1$  and the horizontal lines  $y = 0, 1$ .  $[-1, 0, 1]^2$  denotes the cross points for the vertical lines  $x = -1, 0, 1$  and the horizontal lines  $y = -1, 0, 1$ . The symbol  $s$  denotes the number of vertical lines in  $[0, 1]^2, [-1, 0, 1]^2, \dots$ . The symbol  $\Psi_F(s)$  denotes the number of points of  $F$  in  $[0, 1]^2, [-1, 0, 1]^2, \dots$ . For example,  $[0, 1]^2$  has 2 vertical lines and has 2 points of the set  $F$ . Then  $s = 2$ , and  $\Psi_F(s) = \Psi_F(2) = 2$ . Similarly,  $[-1, 0, 1]^2$  has 3 vertical lines and has 4 points of the set  $F$ . Then  $s = 3$ , and  $\Psi_F(s) = \Psi_F(3) = 4$ .

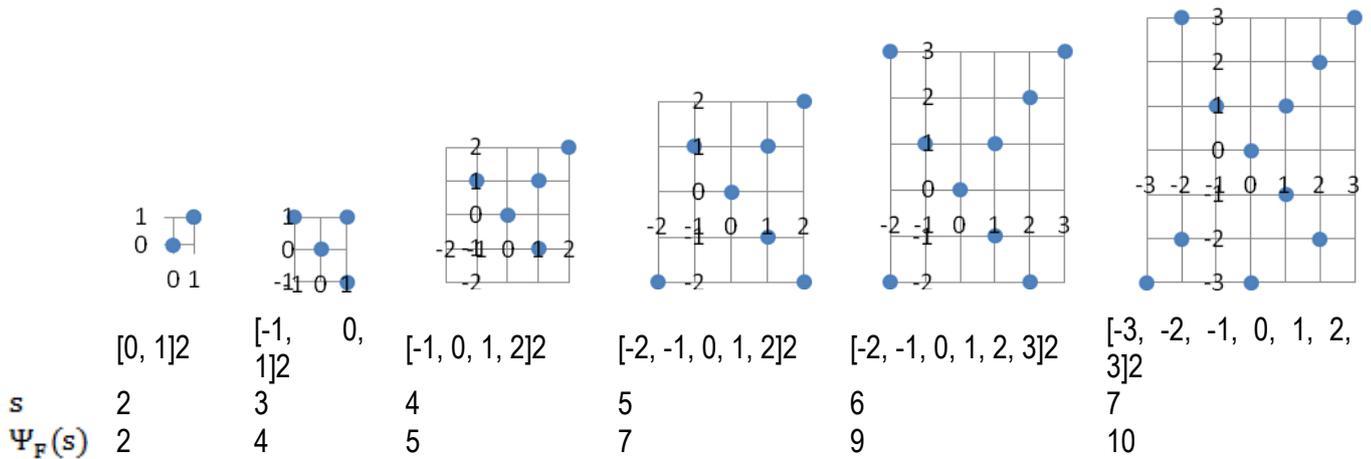


Figure 5: Analysis of the set of Points  $F$

As mentioned above, Figure 4 only shows part of the set of points  $F$ . For all the set of points  $F$ , suppose the relation between  $s$  and  $\Psi_F(s)$  is as follows:

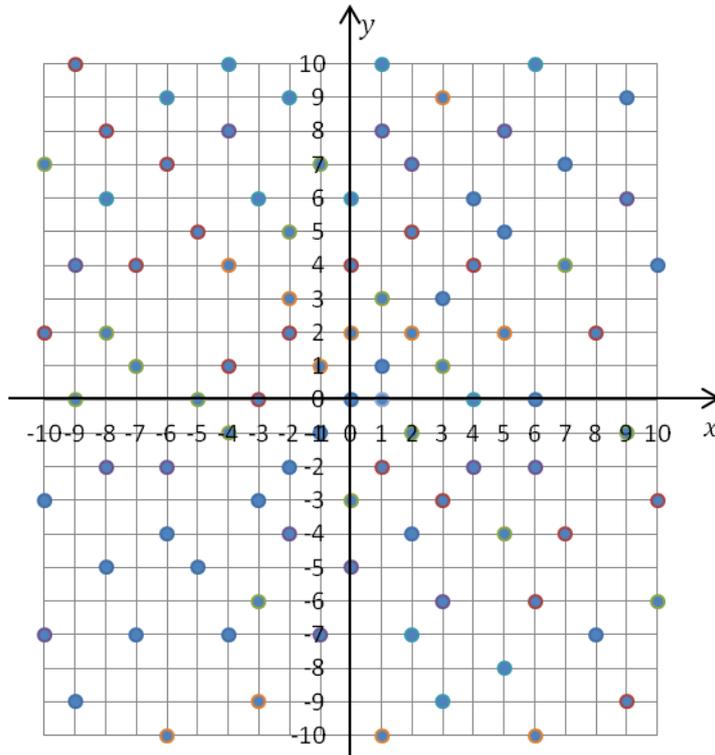
$$\Psi_F(s) = s^{1.2} \text{ for } s = 2, 3, \dots$$

**Table 1:** Relation between  $s$  and  $\Psi_F(s)$

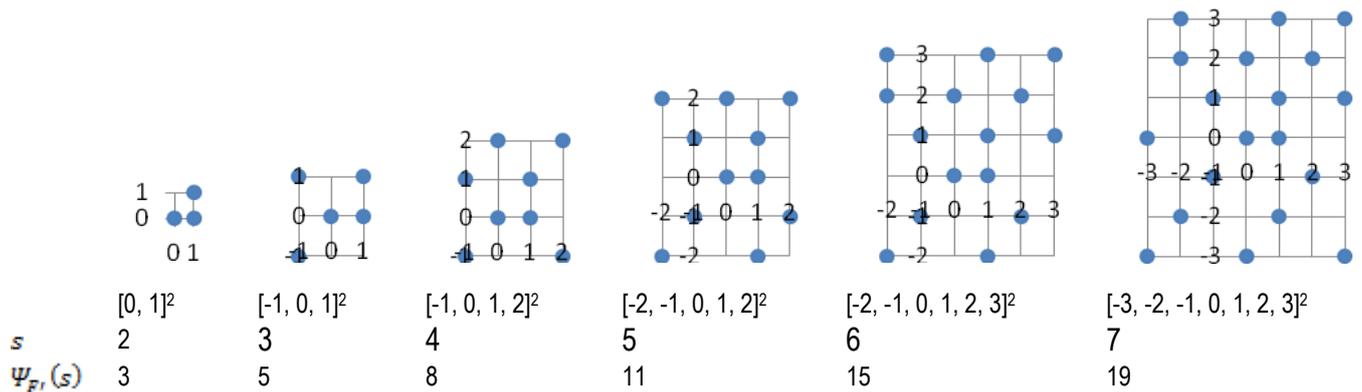
	$s$	$\Psi(s)$
$[0, 1]^2$	2	2
$[-1, 0, 1]^2$	3	4
$[-1, 0, 1, 2]^2$	4	5
$[-2, -1, 0, 1, 2]^2$	5	7
$[-2, -1, 0, 1, 2, 3]^2$	6	9
$[-3, -2, -1, 0, 1, 2, 3]^2$	7	10
$\vdots$	$\vdots$	$\vdots$
	$s$	$s^{1.2}$

The power 1.2 in  $\Psi_F(s) = s^{1.2}$  is said to be the dimension of the set of points  $F$  in Figure 4.

Next consider another example of the set of points  $F'$  in Figure 6 below.



**Figure 6:** Part of a Set of Points  $F'$  with Integer Coordinates



**Figure 7:** Analysis of the Set of Points  $F'$

In general, suppose the relation between  $s$  and  $\Psi_{F'}(s)$  is as follows:

$$\Psi_{F'}(s) = s^{1.5} \text{ for } s = 2, 3, \dots$$

**Table 2:** Relation between  $s$  and  $\Psi_{F'}(s)$

	$s$	$\Psi(s)$
$[0, 1]^2$	2	3
$[-1, 0, 1]^2$	3	5
$[-1, 0, 1, 2]^2$	4	8
$[-2, -1, 0, 1, 2]^2$	5	11
$[-2, -1, 0, 1, 2, 3]^2$	6	15
$[-3, -2, -1, 0, 1, 2, 3]^2$	7	19
$\vdots$	$\vdots$	$\vdots$
	$s$	$s^{1.5}$

The power 1.5 in  $\Psi_{F'}(s) = s^{1.5}$  is said to be the dimension of the set of points  $F'$  in Figure 6.

Now we give a general definition of combinatorial dimension for any set of points  $F$  with integer coordinates; that is,  $C = \{(n, m): n, m \text{ are integers}\}$ . Let

$$\Psi_F(s) = \max\{|F \cap (A_1 \times A_2)| : |A_i| = s, i = 1, 2\} \tag{II}$$

Here  $A_1 \times A_2, |A_i| = s, i = 1, 2$ , corresponds to  $[0, 1]^2, [-1, 0, 1]^2, [-1, 0, 1, 2]^2, \dots$  in Figures 5 and 7. However  $A_1$  or  $A_2$  can be  $[-5, 8, 10, 15]$ ; that is, the integers do not have to be next to each other.  $|A_i| = s, i = 1, 2$  indicates that  $A_1$  and  $A_2$  each has  $s$  integers. For example, if  $s = 3$ , then  $A_1$  has 3 integers such as  $[-6, 0, 3]$  or  $[1, 4, 5]$  or any other 3 integers. Also  $A_2$  has 3 integers such as  $[-5, -4, 5]$  or  $[-10, 1, 9]$  or any other integers. In formula (II) above,  $|F \cap (A_1 \times A_2)|$  is the number of elements of the set  $F$  that are in  $A_1 \times A_2$ . Note there are many possible  $A_1$  and  $A_2$  as we just mentioned. The formula shows that  $\Psi_F(s)$  takes the maximum of  $|F \cap (A_1 \times A_2)|$  for all possible  $A_1$  and  $A_2$ .

Then the dimension of subset  $F$  is defined as:

$$\dim F = \overline{\lim}_{s \rightarrow \infty} \frac{\log \Psi_F(s)}{\log s} \tag{III}$$

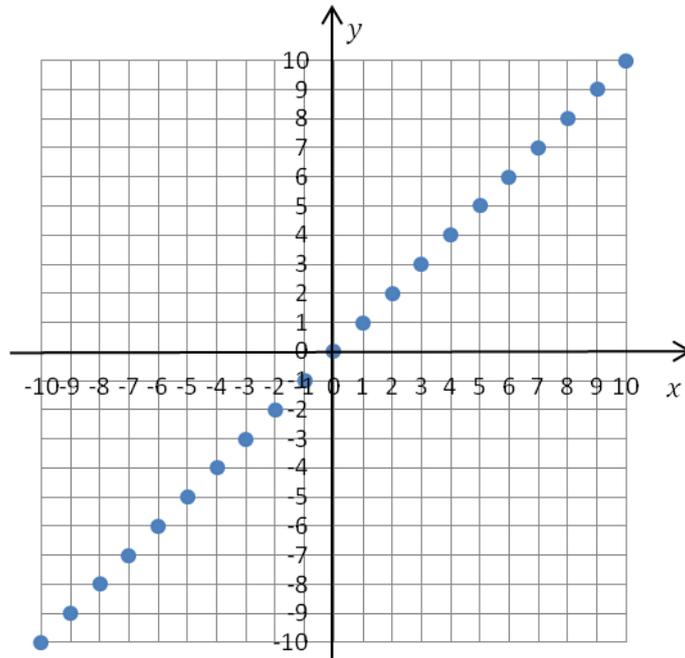
Here we use the upper limit instead of limit because the limit may not exist.

For example, if  $\Psi_F(s) = s^{1.2}$  as  $s \rightarrow \infty$  (see Table 1), then

$$\dim F = \overline{\lim}_{s \rightarrow \infty} \frac{\log \Psi_F(s)}{\log s} = \overline{\lim}_{s \rightarrow \infty} \frac{\log s^{1.2}}{\log s} = \overline{\lim}_{s \rightarrow \infty} \frac{1.2 \log s}{\log s} = 1.2$$

If  $\Psi_F(s) = s$  as  $s \rightarrow \infty$  (see Figure 8 below), then

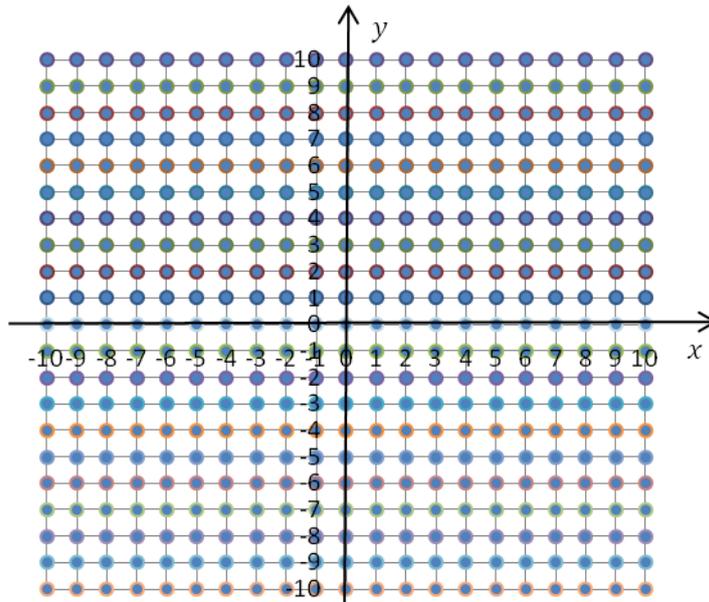
$$\dim F = \overline{\lim}_{s \rightarrow \infty} \frac{\log \Psi_F(s)}{\log s} = \overline{\lim}_{s \rightarrow \infty} \frac{\log s}{\log s} = 1$$



**Figure 8:** A 1-Dimensional Set

If  $\Psi_F(s) = s^2$  as  $s \rightarrow \infty$  (see Figure 9 below), then

$$\dim F = \overline{\lim}_{s \rightarrow \infty} \frac{\log \Psi_F(s)}{\log s} = \overline{\lim}_{s \rightarrow \infty} \frac{\log s^2}{\log s} = \overline{\lim}_{s \rightarrow \infty} \frac{2 \log s}{\log s} = 2$$



**Figure 9:** A 2-Dimensional Set

Theoretical applications of the combinatorial dimension can be found in works by Blei and other authors (Blei, 1979, 1984, 1985, and 2001; Blei and Ge, 2009; Blei, Peres, and Schmerl, 1995; Blei, and Schmerl, 1994).

### 3. CONCLUSION

The above discusses the definition of the combinatorial dimension. Comparing the definition in formula (III) with the definition of the Minkowski dimension in formula (I), the structures of them are similar. Comparing Figure 5 for the

combinatorial dimension with Figures 2 and 3 for the Minkowski dimension or the Hausdorff dimension, Figure 5 uses more and more boxes to cover more and more of a set of points, but Figures 2 and 3 use smaller and smaller boxes or circles to cover the entire curve of the coast.

There are limitations for the above discussion of the combinatorial dimension. Figures 4-7 use graphs to help illustrate the definition of the combinatorial dimension. However it is possible that there are better graphs to illustrate the definition.

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## TIME AND VOLTAGE DEPENDENT ION FLUX MODEL RESULTS

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### ABSTRACT

A modified Nernst-Planck ion flux model is presented that describes ion flow through the Gramicidin A ion channel. The influence of the tryptophan electric dipole on ion flux is explicitly represented at the molecular level. Four tryptophan amino acids embedded in the Gramicidin polypeptide each exhibit an electric dipole that is reported to influence ion flow through the channel. The tryptophan molecule is also capable of conformational changes affecting its resultant dipole. Via existing experimental biological results and first principles in physics, we develop models for time-dependent and voltage-dependent ion flux. Ion flux profiles generated by the model equations follow trends in experimental results for time and voltage dependent ion currents measured in whole cell and single channel recordings.

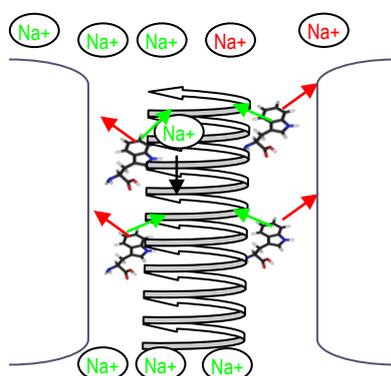
**Keywords:** Mathematical Electrophysiology, Ion Channel Dynamics, Ion Current Model, Ion Channel Gating, Nernst-Planck Ion Flux Equation.

### GRAMICIDIN A & TRYPTOPHAN

The molecular composition of gramicidin A ion channel with tryptophan in red:

Formyl - L - X - Gly - L - Ala - D - Leu - L - Ala - D - Val - L - Val - D - Val - L - **Tryp** - D - Leu - L - **Tryp** - D - Leu - L - **Tryp** - D - Leu - L - **Tryp** - ethanolamine.

The channel is a head to head dimer of two  $\beta$  helices configuring a 4-Å diameter 20 Å length pore, and is lined by an amino acid backbone (Anderson et. al. 2001, p. 1255). Within the gramicidin A backbone structure exists the essential amino acid tryptophan that is known to influence ion flow through the gramicidin A channel. The electric dipole of the tryptophan molecule is responsible for influencing ion flow due to changes in its electric dipole (Durrant, Caywood, and Bussath, 2006, p. 3230).



**Figure 1:** The helical gramicidin A channel with four tryptophan amino acids embedded in the channel wall. Red and green arrows indicate various tryptophan electric dipole directions. Ions are illustrated by ovals- five ions in extracellular pool (top channel exterior), three ions in intracellular pool (bottom channel exterior), and one ion traversing the channel.

### Tryptophan Electric Field: the $E_{Tryp}$ term

The total electric field magnitude produced by the four-tryptophan dipoles is

$$E_{Tryp} = \sum_{j=1}^4 \ddot{a} k \frac{|\vec{P}| \cos \theta_j}{r_j^3}, \quad (1)$$

where,  $\vec{P}$  is the tryptophan electric dipole,  $r_j$  is a distance away from the  $j$ th Tryptophan dipole and  $\theta_j$  is the angle between the  $j$ th tryptophan dipole and the vector  $\vec{r}_j$ . Also,  $r_j$  is in the direction of  $\vec{r}_j$ .

We also approximate a discrete form for  $q_j$ , involving the forces acting on the tryptophan dipole

$$q_j = \frac{Dt^2}{lm} \left( \left| \frac{\partial H_{Tryp}}{\partial \vec{r}} \right| + \frac{V_m}{s^2} |\vec{p}| + k \frac{|\vec{p}| q_+}{r^3} \right) + 2q_n - q_o.$$

$H_{Tryp}$  is a general Hamiltonian function that computes the internal energy for a fourteen-atom tryptophan molecule given by the equation

$$H_{Tryp}(r, p) = k \sum_{n=1}^{13} \sum_{j=n+1}^{14} \frac{q_n q_j}{|\vec{r}_n - \vec{r}_j|} + \sum_{j=12}^{14} \frac{1}{2m_j} p_j^2,$$

where the first term is the total potential energy and the second term is the kinetic energy. The  $q$ 's are the positive charges of each atom nucleus in the molecule with corresponding position vector  $\vec{r}$ .

### Time dependent Model Equations

The membrane voltage  $V_m$ , in terms of intra- and extracellular charge densities  $q_i$  and  $q_e$ , respectively, across the cell membrane, of thickness  $L$  is given by

$$V_m = V_i - V_e = h \frac{q_i - q_e}{L}, \quad (2)$$

where  $h = \frac{mm^3}{4pe}$  with permittivity of free space  $e$ .

We assume that the time change in extracellular voltage and ion density is negligible compared to that of time changes in intracellular voltage and ion density so that

$$\frac{dV_i}{dt} = \frac{h}{L} \frac{dq_i}{dt} \quad (3)$$

The time derivative of the intracellular charge density is proportional to the ion flux through the ion channel and is negatively proportional to the amount of intracellular charge density present, thus

$$\frac{dq_i}{dt} = K_1(K_2 - q_i) + K_3 I, \quad (4)$$

where  $K_1 = (R_m C_m)^{-1}$  is a time rate constant in terms of the membrane resistance in kilo-ohms and membrane capacitance in micro-farads,  $R_m$  and  $C_m$ , respectively.  $K_2$  is the maximum intracellular ion density.  $K_3 = (mm)^{-1}$  is a spatial constant.

### Time Dependent Ion Flux

Given the modified Nernst-Planck ion flux equation (5)

$$I = D\left(\frac{dq}{dz} + q_+ bg\left(\frac{dv}{dz} + E_{Trypt}\right)\right),$$

we assume that the ion charge density differential across the cell membrane is  $dq \gg q_i - q_e$ . We take the voltage differential to be the membrane voltage, in terms of the difference in intra- and extracellular voltage,  $V_i$  and  $V_e$ , respectively,  $dv \gg V_m = V_i - V_e$ . Consider the space differential to be the thickness of the membrane (ion channel length),  $dz \gg L$ .  $V_i$  and  $q_i$  are time dependent. We let  $V_e$  and  $q_e$  be constant since, biologically, the extracellular voltage and ion charge density change little with respect to time.

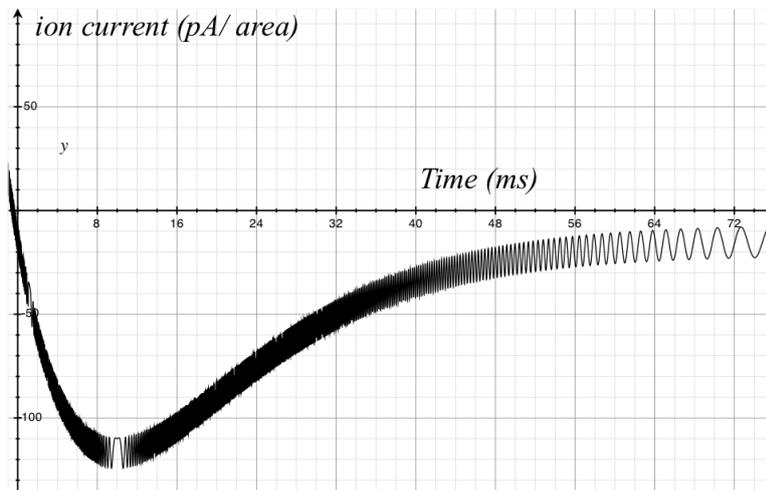
Substitution of differentials into equation (5) yields

$$I = D\left(\frac{q_i - q_e}{L} + q_+ bg\left(\frac{V_i - V_e}{L} + E_{Trypt}\right)\right) \quad (6)$$

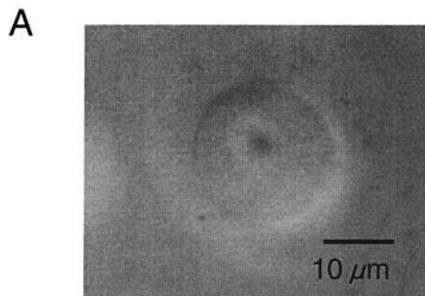
Equations (1), (3), (4), and (6) constitute the time dependent ion flux model with explicit representation of the tryptophan dipole physics.

## PRELIMINARY COMPUTATIONAL RESULTS

### Time dependent Ion Flux



**Figure 2:** Ion flux profile computed by model equations (1), (3), (4), and (6), in pico-amps per area. The profile is of exponential type and with small secondary periodic behavior due to tryptophan dipole influences. Note the perturbation in periodic behavior near  $t = 9$  ms.

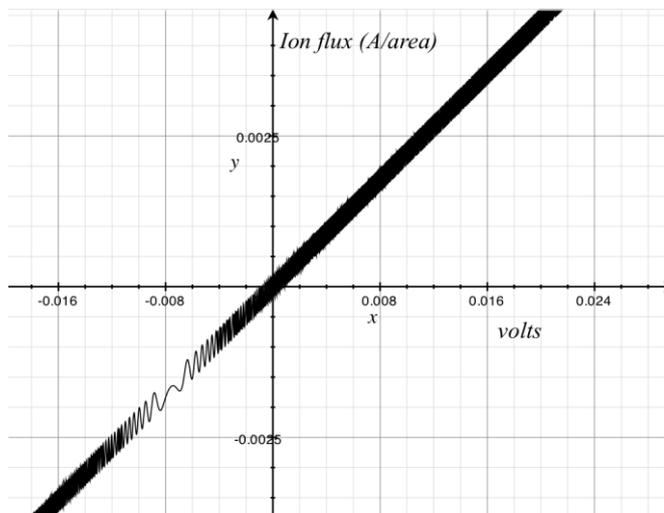


**Figure 3:** Three whole cell calcium ion currents, in pico amps, recorded from neuroblastoma in response to steps in membrane voltage (Fertig, Blick, and Behrends, 2002, p. 3056).

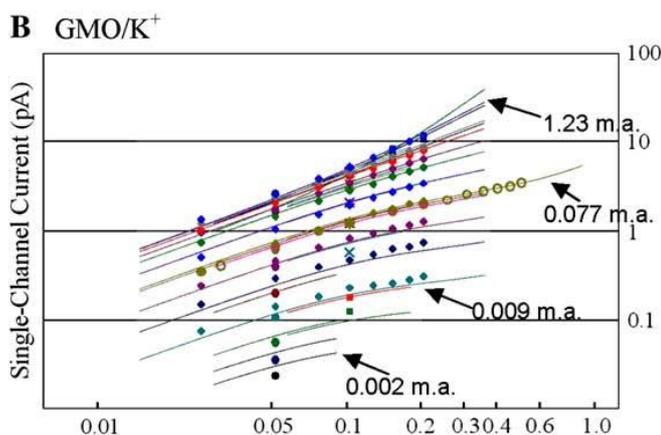
### Ion Flux vs. Membrane Voltage

Equation for Ion flux in terms of the membrane voltage is given by

$$I = D_C \frac{\partial V_m}{\partial h} + q_+ b g_C \frac{\partial V_m}{\partial L} + E_{Trypt} \frac{\partial \phi}{\partial \theta} \tag{7}$$



**Figure 4:** Ion flux vs. membrane voltage computed by model equation (7) (flux in amps per area). The profile is of linear type with small secondary periodic behavior due to tryptophan dipole influences. Note perturbation in periodic behavior near  $V_m = -0.008$  volts.



**Figure 5:** Linear type sodium ion current-voltage curves for the single gramicidin channel for various ion pool concentrations. Points are experimental curves and lines are model predictions (Durrant, Caywood, and Busath, 2006, p. 3230).

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# DEVELOPING AN ENERGY EFFICIENCY MODEL FOR UNIVERSITIES

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## ABSTRACT

In 2012 the Environmental Defense Fund (EDF) Climate Corp sent almost 100 fellows for the summer to different host organizations across the USA to identify, evaluate and execute valuable energy-saving opportunities. EDF Climate Corps fellow leverages their professional experience and financial skills to develop customized, cost-effective energy savings strategies for their host organizations. As a result hosts save money and reduce carbon pollution. EDF has decades of experience working closely with leading companies to develop and promote cleaner, more efficient business practices that save energy and preserve scarce natural resources.

A Climate Corp fellow spent ten weeks conducting an energy analysis of a historical Black College and University ((HBCU) campus starting with their billing rate schedule, where building Power Factor (PF) came into the picture for some of their 22 buildings. Energy and cost intensity were used to forecast potential annual cost savings of over \$250,000 dollars in the areas of Lighting, Energy Management System (EMS), Heating, Ventilating and Air Conditioning (HVAC).

**Keywords:** Sustainability, Built Environment, Rate Schedule, Power Factor (PF), Energy Efficiency, Energy Management System (EMS), Green House Gas (GHG).

**Table 1:** Executive Summary Chart

Project	Cost (Equipment & Labor)	Estimated Annual Energy Savings (kilo-Watt-hour)	Estimated Annual Cost Savings	Payback (Years)	NPV for 5 Years at 2% interest	CO <sub>2</sub> Reduction (Metric Tons)
Lighting, EMS & HVAC	\$2,357,000.00	3,761,997	\$275,632.00	8.55	(\$1,057,808.57)	2,594.00
Vending Machines	\$8,270.00	73,640	\$7,364.00	1.12	\$27,050.00	50.80
Utility Power Factor Adjustment	Unknown Cost at this time	N/A	\$6,219.25	N/A	N/A	N/A
Utility Rate Schedule Adjustment	\$0.00	N/A	\$2,726.00	Instant	N/A	N/A
Solar Panels	\$0.00	180,000	\$18,000	Instant	\$84,843.00	324.00
<b>Total</b>	<b>\$2,365,270.00</b>	<b>3,835,637</b>	<b>\$291,941.25</b>			<b>2,644.80</b>

The Climate Corps fellow identified an estimated potential total annual savings of \$291,941.25 in annual energy cost savings, CO<sub>2</sub> reduction of 2,645 Metric Tons and energy saving of 3,835,637 kilo-Watts-hours annually. The energy saving and the CO<sub>2</sub> reduction according Environmental Protection Agency (EPA) is equivalent to:

1. Annual greenhouse gas emissions from 519 passenger vehicles.
2. CO<sub>2</sub> emissions from 296,512 gallons of gasoline consumed.
3. CO<sub>2</sub> emissions from 6,151 barrels of oil consumed.
4. CO<sub>2</sub> emissions from 34.9 tanker trucks' worth of gasoline.
5. CO<sub>2</sub> emissions from the electricity use of 330 homes for one year.
6. CO<sub>2</sub> emissions from the energy use of 229 homes for one year.
7. Carbon sequestered by 67,818 tree seedlings grown for 10 years.

8. Carbon sequestered annually by 564 acres of pine or fir forests.
9. Carbon sequestered annually by 26.2 acres of forest preserved from deforestation.
10. CO<sub>2</sub> emissions from 110,204 propane cylinders used for home barbeques.
11. CO<sub>2</sub> emissions from burning 14.4 railcars' worth of coal.
12. Greenhouse gas emissions avoided by recycling 922 tons of waste instead of sending it to the landfill.
13. Annual CO<sub>2</sub> emissions of 0.0006 coal fired power plants.

There are over a 1,000 universities and colleges in the USA and if each one did their fair share to reduce their Green House Gas (GHG) and energy usage. Then the USA could make a significant contribution to the global epidemic of energy waste and become a leader in the area of energy efficiency and sustainability.

# WHAT HAPPENED AT THE MACONDO WELL: A REVIEW OF OFFSHORE DRILLING AND THE BRITISH PETROLEUM-MACONDO WELL DISASTER OF APRIL, 2010

**Kenton Fleming**

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## **ABSTRACT**

*On April 20, 2010 the British Petroleum (BP) - Transocean Deepwater Horizon offshore drilling rig exploded and sank to the bottom of the Gulf of Mexico, twisting and tearing the riser connection to the well. This chain reaction of events resulted in the loss of life, destruction of the well, subsequent oil spill, and damage to businesses, property and the environment measured in billions of dollars. This paper discusses current drilling architecture. The existing Blowout Preventer system (BOP), Lower Marine Riser Package (LMRP), and the Emergency Disconnect System (EDS) are illustrated. While the existing architecture remains a vital part of the safety philosophy, improvements are needed in the overall architecture or its philosophy to reduce likelihood of future incidents. Additional catastrophic incidents have been recorded throughout drilling history, and are discussed in this paper. Of interest is the common underlying factor behind these incidents: BOP failure. Thus BOP failure mechanisms are also discussed. Proprietary designs for improvement are discussed briefly.*

**Keywords:** *Offshore, Drilling, Well Blowout, Blow Out Preventer, BOP, Deep Water Horizon, Well, Macondo, Marine, Riser, Safety, Environment, Oil Spill, Drilling Rig.*

# LOW SNR OFDM USING NONPARAMETRIC ESTIMATOR

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## ABSTRACT

*This paper proposes a simple and efficient method for OFDM channel estimation using non-parametric Kernel Density Estimator (KDE) under low SNR. Orthogonal frequency division multiplexing (OFDM) communication systems is one of the most used schemes for achieving high data rates, channel estimation techniques has been a very active research area recently. Channel estimation accurate performance compensate for arbitrary time dispersion, attenuation, and phase shift caused by the signal propagation through the noise channel in a OFDM communication systems. Parametric channel estimators are the most common communication channel estimator, but require constant channel knowledge that impose high computation complexity compare to non-parametric estimator. In this paper, non-parametric KDE is implemented as a channel estimator technique to improve the performance and reduce the complexity of channel parameter estimation. The non-parametric KDE is compared to conventional parametric minimum mean squared error (MMSE) and least squares (LS) estimator techniques as a channel estimator. Both performance and computational complexity implementation are analysed to establish a non-parametric KDE solution for channel estimation in OFDM communications systems. The most attractive advantage is that the complicated calculation is replaced with a significantly lower complexity implementation which can estimate the channel without significantly increasing the complexity of the system with comparative negligible performance degradation.*

**Keywords:** *Channel Estimation, OFDM, Kernel Density Estimator, KDE, Non-Parametric Estimation, Parametric Estimation.*

## EXTENDED ABSTRACT

Recent trends in the wireless communication world suggest the ever increasing demand for high speed data communications (Migdadi, Unggul Priantoro, & Faizal Mohammad, 2007). Orthogonal Frequency Division Multiplexing (OFDM) is becoming widely applied in wireless communications systems due to its high rate transmission capability with high bandwidth efficiency and its robustness in multi-path fading and delay (Edfors, Sandell, Van de Beek, Landström, & Sjöberg, 1996).

OFDM communication systems need accurate channel estimation to compensate for the distortions caused by propagation through the dispersive channel (Golovins & Ventura, 2007). From previous literature, it is known that an accurate estimation using standard parametric algorithms for channel estimation are still very difficult to achieve (Mehlfuhrer, Caban, & Rupp, 2008). In general, parametric estimation methods make more assumptions than non-parametric estimation methods. In addition, given such assumptions, parametric methods could result in more accurate and precise estimates. However, parametric channel estimators require constant channel knowledge. Despite this complexity, such parametric are the most common communication channel estimator.

On the other hand, non-parametric estimators requires minimal or no channel knowledge. Moreover, non-parametric statistics have the advantage of being independently distributed as well as insensitive to extreme values or outliers (Thatcher, North, & Biver, 2005). Therefore, non-parametric estimators might be an uncomplicated alternative for communication channel estimation

This paper analyses a simple and efficient method for OFDM channel estimation using non-parametric Kernel Density Estimator (KDE). This estimator provides an alternative for channel estimator technique to improve the performance and reduce the complexity of channel parameter estimation. The non-parametric KDE is compared to conventional parametric minimum mean squared error (MMSE) and least squares (LS) estimator techniques as a

channel estimator. The non-parametric KDE effectiveness is demonstrated through a computer simulation in a simplified OFDM transmitter and receiver system in additive white Gaussian noise (AWGN).

First, we construct a signal comparison representation of minimum mean squared error (MMSE), least squares (LS) and non-parametric KDE technique to identify the “best” estimator over an AWGN channel. Second, the symbol error rate (SER) versus the signal-to-noise ratio (SNR) is plotted for each estimation techniques over an AWGN channel. A signal throughput performance versus the SNR is also plotted.

The experimental results have shown the effectiveness of the non-parametric KDE approach. The approach was applied to a simulated simplified OFDM transmitter and receiver system in AWGN resulting in a correctly approximations in all simulations. The results have shown that non-parametric methods give higher accuracy than the parametric method in the simulation results obtained under low SNR. Moreover, these results open the area for more in-depth research in the non-parametric channel estimation. Computer simulation results show that the proposed non-parametric estimator offers comparable efficient estimation accuracy compared to existing parametric estimators under low SNR. The non-parametric estimator significantly reduces the complexity of the channel estimation at the expense of negligible performance degradation. An alternative communication channel estimation strategy is presented for future developments of non-parametric communication channel estimator for communication systems.

We have proposed a method of channel estimation that uses the non-parametric KDE estimator and extended it to OFDM systems under low SNR. The most attractive advantage is that the complicated calculation is replaced with a simple implementation which can estimate the channel without significantly increasing the complexity of the system with comparative negligible performance degradation.

## ACKNOWLEDGEMENTS

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# ACADEMIC DEPARTMENT'S WORKSTATIONS: A SYSTEM ENGINEERING FRAMEWORK FOR IMPLEMENTATION OF SECURITY AND CRITICAL PATCH MANAGEMENT PROCESS (SCPMP) FOR DIVERSE ENVIRONMENTS

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## ABSTRACT

*In every networked computing system, particularly in academic environment, there have always been multiple workstations being compromised. This is due to the security vulnerability and viruses in any operating systems or installed software packages. However, applying security and critical patch management process (SCPMP) at early stage in every computing system can mitigate the risk of being attacked. Generally, patch management has become crucial responsibility in every information technology infrastructure in order to (a) prevent networked computer systems from being attacked and (b) maintain a secure network, assuring that the latest security and critical patches (SCP) are installed in the entire networked computing system. The target of patching is not only fixing security and critical related vulnerabilities but also is avoiding the leak of critical data and security information from every diverse environment. The primary objective of this paper is to propose an optimal research systems engineering (SE) framework which can improve the current patch management process framework in order to control any organization networked computer system from becoming target vulnerabilities that are immediately exploitable and could lead to critical system failure or security compromise. The proposed SE framework is composed of a new mechanism for IT operational activities (ITOA), which increases the network security and critical systems integration. Exerting systems engineering principles with considerable influence on patching enables IT department to manipulate SCPMP framework in terms of meeting patch management requirements, estimating the stages of SCPMP performance and determining an affordable portfolio. In this article, the details of patch management framework designing along with preliminary implementation of SCPMP on academic environment, measuring the variations in components of full patching cycle, and analyzing the collected data from the implemented processes on academic's workstations (case study) will be explained. The proposed SE framework enhances the SCPMP efficiency and also helps IT decision makers whether continue or override patching process while the new urgent security patches are being released. In other words, the main focus of this paper is to evaluate and manage the risks of implementation the security and critical patch management process (SCPM) while some new patches are being released.*

**Keywords:** Security And Critical Patch Management (SCPMP), Systems Engineering, Vulnerability, Security, Software.

# PERCEPTION TO CLIMATE VARIABILITY AND RELATED VULNERABILITIES IN THE LAKE BOSOMTWE BASIN- GHANA

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## ABSTRACT OF THE STUDY

*Climate change is becoming one of the most serious global challenges of our time, with direct effects on people, livelihoods and biophysical resources. It is now widely acknowledged that climate change will pose unequivocal negative effects to both countries in global north and south (Adger et al. 2003; Schipper & Pelling 2006). But the severity of various forms of climate change manifestation (such as storm, sea level rise, melting of ice, drought etc.) will differ across space and time, with developing countries experiencing the worst impacts (Arrow 2007). In West Africa, the climate change is already interacting with varying dimensions of human socio-economic and biophysical systems rendering rural livelihoods to dissimilar vulnerabilities (Watson et al. 1998; Hulme et al. 2001). This is crucial because the region is most vulnerable to climate change especially in the area of flood, drought, scarce water resources, food insecurity among others. There are also limited social, political and technical opportunities for people to draw to address the negative impacts of climate change or non-climate stresses. Hence, adaptation opportunities are severely hampered both at the national and local level (Morton 2007; Paavola 2008). The prevailing biophysical and socio-economic exigencies are constraining the ability of people in rural areas who depend on nature (for instance in area of subsistence agriculture) to adapt in any meaningful way in such volatile environments.*

*Despite this, studies on vulnerability of human societies to climate change have focused their attention on national, regional and sectoral scales (Jones & Thornton 2003; Brown et al. 2007; Challinor et al. 2007; Agrawal & Perrin 2009). Their contribution, though significant, is not enough to understand how climate change is shaping rural livelihood systems at a smaller scales and overtime. Again, how rural populations experience the varying impacts of climate change is poorly understood. In view of this, local level studies or bottom-up approaches to climate change have emerged (Ziervogel & Calder 2003; Cooper et al. 2008; Agrawal & Perrin 2009).*

*Meanwhile, few researchers have delved into how rural people understand and perceive climate change related vulnerabilities. This is important because climate change perception will differ significantly in spatially 'restricted' rural settings (see). For instance, some rural people even see it as spiritual issue (Byg & Salick 2009). These interpretations will influence how rural people deal with climate change and how they appreciate which remedies are essential. In the light of this, it is highly important to assess the multiply dimension of perceptions to climate change since locally relevant ideas are crucial for enhancing people adaptive capacity (Vedwan & Rhoades 2001; Meze-Hausken 2004; Mertz et al. 2009). Rural people's observations are worth analysing since it demonstrates the undeniable nature of local cultural and social context in explaining biophysical changes. Yet local people's observations are not given due consideration in most scientific or climate change models (Houghton 2001). Studying and redirecting the foci of climate change discourse to local perceptions can provide invaluable information about local livelihood conditions that has been ignored by scientists over the years. This can also influence policy since local perceptions reflect local concerns (Danielsen et al, 2005 cited in Byg & Salick 2009).*

*In view of this, the study generally seeks to assess how climate change related impacts are embedded in the everyday lives and vulnerability perceptions of people in the lake Bosomtwe basin of Ghana; and to explore how to enhance adaptive capacity of the people. The lake Bosomtwe basin, located in the Ashanti region of Ghana is the biggest natural lake in West Africa. It is surrounding by 24 villages, with 65 percent of the population engaged in subsistence agriculture and fishing (Ghana Statistical Service (GSS) [2002]. Over the years, climate change impacts are already affecting the rural people's ability to engage in agriculture which sustains their livelihoods. Recent report by the Ghana National Development Planning Commission (NDPC, 2008) indicates that the lake is drying up at an alarming rate. Such climate change manifestations and other multiple stressors will in no less way exacerbate the vulnerabilities of these people. This study, apart from contributing to climate change vulnerability studies will provide significant practical information to enhance the adaptive capacity of the people in the area. It will also add to the dearth of information on local peoples' perceptions to climate change and adaptive capacity.*

## **SUSTAINABILITY AND EDUCATION METHODOLOGIES: VARIOUS WAYS TO GREEN THE BUSINESS CURRICULUM**

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### **ABSTRACT**

*The practice of sustainably utilizing natural resources through lifecycle management practices of reducing waste, cradle-to-cradle product development, and engaging in energy efficient consumption may not be something new to civilization; but it has become forefront today for businesses globally and a significant focus of academic curriculum across more and more business schools. Some college and university business schools are equipping future leaders with the decision making tools needed by companies today, and in the future, to implement sustainable initiatives while creating long term economic growth. This conceptual paper provides pedagogical examples of a variety of best practices in greening the business curriculum.*

**Keywords:** *Sustainability, Action Learning, Experiential Learning, Pedagogy.*

# **SECTION 3**

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**EDUCATION, POLITICAL & SOCIAL**

# TROY UNIVERSITY'S SECONDARY EDUCATION INTERNSHIP ORIENTATION: FOSTERING STRONGER READING COMPETENCIES: FROM THE PROSPECTIVE OF A VISITING CHINESE SCHOLAR

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## ABSTRACT

*This literature review is one aspect of an ongoing collaboration between one visiting Chinese Scholar and four Troy University, College of Education faculty members. This paper evolved out of the need to answer a question posed by the Chinese Scholar, "Why do you (Troy University) have ARI (Alabama Reading Initiative) training in the secondary education internship orientation?" This question brought about cultural and global debate. The simple answer is the training has been aimed at assisting the interns to continue gaining skills in competencies for certification. But the deeper and more insightful answer to the question can only be reached through an understanding of who Troy University is and where Troy University is located. Because of the location of Troy University, the past has had a great impact on the present and the two are intermingled or entangled in the educational approach of preparing secondary education majors to have a focused and productive impact on K-12 reading. Plus, it is important that secondary education interns be prepared to take on the challenges of today's teaching environments which are surrounded in large part with generational poverty. The ARI training referenced in the initial question is related to literacy. Literacy's impact on the economic and the social well-being of a state's citizens is staggering, thus another intermingling and entanglement between the two entities, Higher Education's Teacher Preparation Programs and the citizens of Alabama. This literature review has brought the debate together in a sequential manner to answer the Chinese Scholar's question, "Why do you (Troy University) have ARI (Alabama Reading Initiative) training in the secondary education internship orientation?" The literature review has been a merging of the oriental and occidental approaches to answering an essential question.*

**Keywords:** *Internship, Reading, Poverty, Student Achievement, Teacher Preparation, Alabama Reading Initiative (ARI).*

## INTRODUCTION

The objective of this literature review is to examine why reading training for secondary education majors through the use of Alabama Reading Initiative (ARI) is imbedded in the design of Troy University's College of Education secondary internship orientation.

## BACKGROUND: HISTORY OF TROY UNIVERSITY

Troy University's tradition of teaching excellence dates to its founding on February 26, 1887, when an act of the Alabama Legislature established Troy State Normal School as an institution to train teachers for Alabama's schools. The Normal College offered extension courses for teachers and granted teaching certificates until 1929, when the State Board of Education changed the charter of the institution and renamed it Troy State Teacher's College. In 1957, the State Board of Education recognized this expanded role and dropped "Teacher's" from Troy State College's name. (Troy University, 2012)

The Troy University of today has an academic presence in more than eight U.S. states and also is located in an estimated five countries. It has four Alabama campuses, located in Troy, Montgomery, Dothan, and Phenix City. In addition to the College of Education, Troy University has the College of Arts and Sciences, the Sorrell College of Business, and the College of Health and Human Services.

Troy University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools and is allowed to award associate, baccalaureate, masters, education specialist, and doctoral degrees.

Troy University has re-affirmed its 1887 motto, “educate the mind to think, the heart to feel and the body to act” which stills applies today.

### **BACKGROUND: ALABAMA (the state of)**

According to the Encyclopedia Alabama, “... Alabama has been one of the nation’s poorest states. In the 2000 U.S. Census, Alabama was the seventh poorest state, with 16 percent of its residents living in poverty” (Flynt, 2011). From the information prologue to the blog posted by the Birmingham News, “Alabama has struggled with generational poverty, which means families, generation after generation have been poor” (Chandler, 2011). The prologue goes on to say, “In 2010, 27.4 percent of children age 18 and under in Alabama lived in poverty. The percentage was 23.6 percent in 2007” (Chandler, 2011). To continue to gain an understanding of these grim statistics, one last number needs to be examined, “The number of children in the United States considered poor rose by 1 million in 2010, the U.S. Census said Thursday, with more than one in five of the youngest Americans now living in poverty” (Reuters, 2011). These children are in the Alabama’s schools. These children are trying to learn while battling poverty and their teachers are trying to teach them while they are in the grips of what poverty does to the body, mind, and spirit.

### **BACKGROUND: POVERTY AND LITERACY:**

Driscoll and Nagel (2008) in the article, *Poverty and the Effects on Children and Parents* explain some of the debilitating effects on poverty to the children and to the nation.

*For children of all ages, poverty has some devastating effects. Poor children are two times more likely than non-poor children to have stunted growth, iron deficiency, and severe asthma. A government study in 1996 showed that poverty placed children at greater risk of dying before their first birthdays than did a mother's smoking during pregnancy. Another study conducted by the U.S. Department of Education found that for every year a child spends in poverty; there is the chance that the child will fall behind a grade level by age 18. In the 1994 book, *Wasting America's Future*, the Children's Defense Fund estimates that every year of child poverty at current levels will cost the nation at least \$36 billion in lost future productivity alone, because poor children will be less educated and less effective workers. (Paragraph 1)*

Lacour and Tissington (2011) in the article, *The Effects on Poverty on Academic Achievement*, discuss the research in relationship to this topic:

A study conducted by Sum and Fogg (1991) found that poor students are ranked in the 19th percentile on assessments while students from a mid-upper income family are ranked in the 66th percentile on assessments. In data from the Early Childhood Longitudinal Study (ECLS) measuring kindergarten students achievement on the ECLS reading achievement assessment, low-income students scored at about the 30th percentile, middle income students scored at about the 45th percentile, and upper-income students scores at about the 70th percentile (Rowan et al., 2004). Students from low income families consistently, regardless of ethnicity or race, score well below average (Bergeson, 2006). For example, in one study, 43.5% of low-income students did not successfully meet any of the required subject area assessments while only 13.2% of low-income students met all of the required subject area assessments (pp.522-527).

### **BACKGROUND: ALABAMA READING INITIATIVE (ARI)**

The Alabama Reading Initiative (ARI), which began in 1998, is a statewide K-12 initiative managed by the Department of Education. The goal of the ARI is to significantly improve reading instruction and ultimately achieve 100% literacy among public school students. The Alabama Reading Initiative provides differentiated levels of support, including professional development, onsite support, and school coaches to over 1,000 schools. The initiative focuses intensely on three aspects of the teaching of reading: preventing reading difficulties, identifying struggling readers and intervening to help them become proficient readers, and expanding the reading power of all students. (Alabama Department of Education, 2012)

Joseph B. Morton, State Superintendent of Education states, "The cooperative development and implementation of *Alabama's Action Plan for Literacy: Birth through Grade 12* affords us a critical opportunity in a new decade to combine all available resources and commit to a cohesive and systematic framework and action to ensure that every child has the literacy skills necessary to be successful in school and to graduate college- and/or career-ready" (p.3). He goes on to say, "Our joint efforts will assure that our citizens are literate, well-educated, and successful in school and in life. Alabama's children will be the beneficiaries of this work. They deserve no less" (p. 3).

The Alabama Reading Initiative teaches a bottom up approach which involves the basics of learning to read. This is done through continually reading aloud to children beginning with infants. This exposes them to how words are read and involves hearing fluent reading. Through read alouds, the children are exposed to vocabulary as well as background knowledge. Children also learn the concepts of print through read alouds. They learn that books are read from front to back; pages are read from top to bottom; lines on the page are read from left to right. Through parental involvement at home, children learn the letters of the alphabet, numbers, and the colors of the rainbow. By allowing children to scribble on paper, they learn the fundamentals of learning to write letters through circles and lines. Children learn that sounds make letters, letters make words, and words make sentences. Phonemes are the smallest sounds in words. Phonemic awareness is the ability to hear phoneme differences. Once a child is able to recognize phonemes in words, then they can associate letters with these sounds. That is what is called Phonics or the alphabetic code. Once a child has mastered phonics and decoding, then the art of reading begins, along with learning vocabulary, fluency, and ultimately comprehension.

Parents play a crucial role in establishing the groundwork of their children's education. Parents are children's first and primary teachers (Morris, Taylor, Knight, & Wasson, 1995). Ideally, all children should come to school with certain experiences and interests in literacy; however, children who grow up in poverty come to school lacking these fundamentals of learning to read.

## **METHODOLOGY**

The methodology used for the exploration of the initial question is that of a literature review. The reason for the selection of this approach was to establish a baseline of documented research and expert analysis to bring to bear on reaching answers to the question.

## **RESEARCH RESULTS**

The review of literature and the establishment of a protocol supported the need for secondary education majors to have the Alabama Reading Initiative (ARI) as part of their internship orientation.

## **LIMITATIONS & FUTURE RESEARCH PLANS**

The major limitation of this study is the short amount of time that the visiting scholar has in the United States for collaboration with the four Troy University faculty members. Also, the short amount of time to debate and reflect on the enormity of the impact of poverty on children and literacy. This is an ongoing passion and research for the four Troy University faculty members

To continue this research on a global stage, the four Troy University faculty members are planning to visit China and study their secondary education preparation program.

## **DEFINITIONS**

### **Internship**

*Definition: Internships provide real world experience to those looking to explore or gain the relevant knowledge and skills required to enter into a particular career field. Internships are relatively short term in nature with the primary focus on getting some on the job training and taking what's learned in the classroom and applying it to the real world. Interns generally have a supervisor who assigns specific tasks*

and evaluates the interns overall work. For internships for credit, usually a faculty sponsor will work along with the site supervisor to ensure that the necessary learning is taking place. Interns can be high school or college students or even adults interested in trying out a new career. Many college students do internships to gain relevant experience in a particular career field as well as to get exposure to determine if they have a genuine interest in the field. Internships are an excellent way to begin building those all-important connections that are invaluable in developing and maintaining a strong professional network for the future (Loretto, 2012).

## Reading

Reading is the process of constructing meaning from written texts. It is a complex skill requiring the coordination of a number of interrelated sources of information (Anderson et al., 1985).

Reading is the process of constructing meaning through the dynamic interaction among: (1) the reader's existing knowledge; (2) the information suggested by the text being read; and (3) the context of the reading situation (Wixson, Peters, Weber, & Roeber, 1987, citing the new definition of reading for Michigan) (Houghton Mifflin Company, 1997)

## Poverty

The federal definition of poverty, which is an annual income of \$22,050 for a family of four (Singleton-Rickman, 2012)

## Student Achievement

Means -

- (a) For tested grades and subjects: (1) a student's score on the State's assessments under section 1111(b)(3) of the ESEA; and, as appropriate, (2) other measures of student learning, such as those described in paragraph (b) of this definition, provided they are rigorous and comparable across classrooms; and
- (b) For non-tested grades and subjects: alternative measures of student learning and performance such as student scores on pre-tests and end-of-course tests; student performance on English language proficiency assessments; and other measures of student achievement that are rigorous and comparable across classrooms (U.S. Department of Education, 2012).

## Teacher Preparation

HEA Title II Definition of Teacher Preparation Program as reported in the Secretary's Sixth Annual Report on Teacher Quality (2009).

A state-approved course of study, the completion of which signifies that an enrollee has met all the state's education requirements, or training requirements, or both, for initial certification or licensure to teach in the state's elementary or secondary schools. A teacher preparation program may be either a regular program or an alternative route to certification, as defined by the state. Also, it may be within or outside an institution of higher education. In applying this definition, states and institutions may not determine that a teacher preparation program concludes after an individual has passed all examinations the state uses for initial certification or licensure, unless the state or institution requires that an individual pass these examinations before it will confer a degree, institutional certificate, program credential, transcript or other proof of having met the program's requirements. Definitions for this report can be found in the glossary of the Higher Education Act, Title II: Reporting Reference and User Manual. Source: U.S. Department of Education, Office of Postsecondary Education. (2006). Higher Education Act, Title II: (p.2)

## Alabama Reading Initiative (ARI)

The initiative began with a panel of educators from K-12 and higher education and representatives of business and industry conducting months of research on teaching reading. They devised a plan based on

*the research that emphasizes not only beginning reading, but strengthening and expanding students' reading ability, and providing strong intervention for students who are struggling to read and comprehend. (University of South Alabama, 2000)*

## CONCLUSION & SUGGESTIONS

The stakeholders (all of us are the stakeholders) need to be made aware of the devastating impact poverty has on student learning and thus on society as a whole. A multi-dimensional, non-blaming, “all-hands-on-deck” mentality by all can only be the approach. This can be done through publication, presentations, and being aware of policies.

In the area of teacher preparation, the suggestion is that university faculty members responsible for secondary education students' courses take professional development course work by engaging in Alabama Reading Initiative training. Thus being able to model in their classroom what the secondary students will need to model when they are in their internship and new practicing professionals.

### **Reflections: (From the Prospective of a Visiting Chinese Scholar)**

The No Child Left Behind Act (NCLB) of 2001 and its efforts to define a highly qualified teacher were followed by Race to the Top (RTTT) brought forward by the Obama administration in 2009. The two large federal efforts that focused primarily on PreK-12 education serve as bookends to a series of federal and state pressures on teacher education (Wiseman, 2012). NCLB attempted to define highly qualified teachers by focusing on the subject matter preparation of current and future teachers. In making the point of the importance of subject matter preparation and building a case against teacher preparation, former secretary of Education Rod Paige asserted that teacher preparation did not ensure teacher quality. College and schools of education reacted by rethinking existing programs, focusing on the inclusion of stronger subject matter preparation (Wiseman, 2012). RTTT identified the improvement of teacher quality as one of the most pressing educational issues and its accountability focus related to teachers and teacher education programs greatly affected the field. The teacher education components of RTTT require that students' achievement be linked to their teachers' teacher education programs and ultimately supports the expansion of programs that can produce teachers who raise the achievement of their students (Wiseman, 2012).

The design that Troy University has ARI training in the secondary internship orientation is the measured response to NCLB and RTTT's influence and effect on teacher education and its consequential educational reform policies. As a visitor from China, I would like to conclude the article by the oriental approach to answering the essential question as follow:

#### **1. A Person's Spiritual History is the History of Reading.**

Paraphrased from the article entitled, *Reading We Change Everything* published in the Southern Metropolis Daily, Zhu Yongxin (2012) expresses some very prophetic thoughts such as; Somatic growth is mainly dominated by a hereditary gene. An individual's spiritual growth however is not as identical as the somatic growth, because the human being's spirit, unlike the body, can't rely on gene. Our spiritual history is a microcosm of the human spirit's developmental history. Each individual in the process of growing up is to repeat the process of their ancestors' experiences by picking up books to read. When we come to this world, we are chaotic, hazy. So we must go through a stage to develop our spiritual life. In order to achieve the level of the spirit of an era, which highly relies on the writings by the great writers in history, we must do some reading. For instance, to exchange ideas with the Masters of the Renaissance era, we could achieve their era's ideological realm. The human spirit is developed by constant reading. A contemporary individual needs repeating exposure to the masterpieces. If there is no such repetition, our spiritual world will be fading. The spiritual realm of our generation may not be as good as those masters at the previous stage of the Renaissance. But our personal wisdom, thoughts, personal spiritual world can be grown by reading.

It is impossible to have the individual spiritual world grow without reading. Reading cannot change the length of our life, genes, health and other elements in the length of one's life, but you can change your

wisdom. Reading cannot change your appearance, but it can change one's taste and quality. Our appearance cannot be changed for it is based on genes, but the human spirit can be changed by reading. Reading is very important for the growth of individual spirit.

## **2. The Development of Nation Depends on the Nation's Reading Level**

For a long time, we believed that reading is the behavior of only the individual. This understanding is not completely true. Reading is absolutely not only an individual's behavior but also the behavior of a nation (Yongxin Zhu, 2011). As we know a nation's competitiveness is not determined by the number of the population, but rather depends on the quality of the population, and the quality of the population depends on the spiritual strength. Spiritual force plays a key role in a national final competition.

Jim Trelease, the author of *The Read-Aloud Handbook*, has stated, "Common sense should tell us that reading is the ultimate weapon – destroying ignorance, poverty and despair before they can destroy us. A nation that doesn't read doesn't know much" (p.99). Reading must come to the height of a national strategic weapon to get rid of ignorance, poverty and despair.

## **3. A School Without Reading Can Never Have a Real Education**

The most critical point of school education is to enable students to develop the strong reading abilities. If a school education can resolve this issue, the main task of education is completed. Our children spend more than 10 years at school for basic education. If they do not develop an interest or habits in reading, education must be a failure for once they leave school they won't read any more. In contrast, even if a child is not excellent in his/her courses, but if he/she develops a keen interest in reading, and develops a life-long learning and reading habits, he/she must go further than those with high test scores only. The most important effect is that we learn by reading independently.

To become true human being we need a hunger in us to obtain information, which is a basic need for information to feed the spirit (Yongxin Zhu, 2011). This need is formed in primary and secondary schools. This does not mean we could only form a spiritual hunger habit in primary and secondary not in the future, but it is quite difficult. Only an individual, who feels hungry spiritually, can become an engaged reader.

In short, education is to wake up our spirit. Each life is a magical seed which holds the secret of the mysterious. By reading, one is able to be awakened; so is his/her bright and magical seed. Education is given to both the characteristics of the national culture, the universal values of civilization. Both teachers and parents are responsible for reading stories to the children, and responsible for making reading our lifestyle, the main content of education, and our national strategy!

## **4. Suggestion**

The November 1, 2011 Alabama Department of Education's press release reports that due to the work of the Alabama Reading Initiative, Alabama has shown the greatest increase in Grade Four reading scale scores in America over the last eight years (2003-2011).

As Donna Wiseman (2012) mentioned in the *Journal of Teacher Education*, "The struggle to find a coherent way to measure the impact of teacher education and professional development on the classroom performance of students still provides a challenge to researches and deserves serious attendant resources from teacher education scholars" (p. 88).

Strongly believe that measures to evaluate the efficiency and effectiveness of the ARI training in the secondary internship orientation at Troy University should be taken in the coming future.

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# DEVELOPING THE NEXT GENERATION OF GRADUATE AND DOCTORAL LEVEL PUBLIC HEALTH AND SAFETY LEADERSHIP PROFESSIONALS IN THE US FEDERAL GOVERNMENT THROUGH LEADERSHIP DEVELOPMENT INTERNSHIP PROGRAMS

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**Keywords:** *Succession planning in government, Public health employee development.*

The Federal workforce is aging. By some accounts, between 600,000 and 700,000 current Federal employees will have retired by the end of this decade. The scenario is even more striking for the management ranks. During the same period, almost 70 percent of the Government's managers and super-visors will become eligible to retire, and the Government faces the significant challenge of finding high quality replacements for those who retire. The program was in 1976 born more than 20 years ago out of a growing concern that the civil service's management ranks needed to be strengthened. Today that concern is just as valid, if not more so, because of the Government's lack of a unified approach in addressing its human resource management challenges, particularly with respect to succession planning (Lunney, 2011). The General Accounting Office (GAO) has noted that years of neglect have made human capital problems so pervasive that the situation might lead to programmatic problems that could threaten agency missions (Saldarini, 2000). This lost of talent and expertise is significant for government agencies with public health and safety-oriented missions. Consider the complexities effective government responses to nuclear power accidents, hurricanes, tornados, and public health pandemics. Consider the challenges of what happens when employees retire and younger and newer workers do not fill jobs. Knowledge management (KM) or intellectual capital is one of the latest techniques for improvement adopted by government. KM may be defined as the collective knowledge (including experience, skills, data and information) of an organization. It includes knowledge that resides internally as well as knowledge selectively acquired from external sources for improvement of the organization. But in order for knowledge management efforts to be effective, government agencies need to find effective ways to recruit develop knowledge and intellectual capital (DeLong, 2004).

New innovative graduate programs are allowing professionals to gain knowledge and expertise in the most pressing and evolving areas in the federal government. Some of the most innovative examples include Michigan State University's on-line graduate degree in Food Safety, Bellevue University's on-line graduate in Security and Homeland Security Management, Marylhurst University's on-line Master of Business Administration in Sustainability Development, George Mason University's Doctorate and graduate program in Bio-defense, and Georgetown University's on-line certificate in Bio-threat Analysis. These programs equip graduates with expertise in areas that are lacking on the federal government.

Managing talent is about providing opportunities for people with the highest potential in an organization to learn, develop, and gain useful experience and progress in their careers. It means stimulating and retaining the people who are destined to play a major role in the future of the organization. Succession planning is about the identification and development of future leaders. This task is made much easier where talent has been well managed. After all, the right successors are unlikely be found inside an organization where the talent has not been properly nurtured and developed. Succession planning forces an organization to look closely at its talent, develop reliable assessment procedures, and ensure that they are applied systematically across the board.

The Presidential Management Fellows (PMF) Program is a leadership development program designed to groom outstanding recent graduates of law, master's or doctoral-level programs for careers in the federal service. Created in 1977, the PMF program is a stepping-stone to highly visible and respected leadership positions in the federal government. This rigorous two-year paid program includes 80-hours of training each year, challenging rotations,

accelerated promotions, and opportunities to network between agencies. PMF assignments include domestic and international issues, and many fields in support of public service programs. The PMF Program seeks the best and brightest Americans who want to make a difference in the public service. Students are eligible to apply for the PMF class if they meet the degree requirements for a master's or doctoral degree. Although any eligible student may apply, only those nominated by their school are eligible to participate in an assessment process to determine PMF Finalists, and ideally hired by federal agencies as PMFs. Fellows are hired as high paid interns for two years, offered promotions during the internships, and have the ability to do at least two 90 days rotations in other offices. At the end of two years employees have the option to be hired permanently into positions. Starting salaries, based on work experience and education level, range from \$51,000 to \$74,000 (Office of Personnel Management, 2012). Many of the agencies also offer assistance to pay back up to \$60,000 (\$10,000 per year) of student loans and also offer financial support for an additional degree up to the doctoral level. Interns are guaranteed promotions over the two years during the period of internship (Office of Personnel Management, 2012). Participating agencies include the Environmental Protection Agency, the Centers for Disease Control, The Department of Homeland Security, and the US Nuclear Regulatory Commission.

The Presidential Management Fellows PMF program and programs like it have been very successful with addressing the succession planning issues in government. More Presidential Management Fellows advance into management ranks than do comparable non-PMF employees. A study done in 2000, found that about 30 percent of the remaining PMFs hired between 1982 and 1989 had become supervisors, as opposed to 18 percent of a comparison group of non-PMFs. Further, for this same group of PMFs more than 1 in 12 had become members of the Senior Executive Service (which are like vice presidents in the federal government), versus only 1 out of 100 of the comparison group (US Merit Protection Board, 2001).

The Nuclear Safety Professional Development Program (NSPDP) is a two-year program for outstanding individuals in all areas of Engineering, Homeland Security, Public Safety Leadership, Disaster Management, Criminal Justice, Public Health, and Information Security from across the nation who will enter into a career with Nuclear Regulatory Commission (NRC). The NRC has a mission to protect the public health and safety of the commercial use of nuclear power. The objective of NSPDP program is to provide interns with both a broad and specialized perspective of operations in the organization's Office of Incident Response, which has a major role in the nation's homeland security. During the two-year NSPDP program, interns will complete at least two rotational work assignments of at least 90 days each. An NSPDP participant who successfully pursues the program will be promoted each year and, when completed, placed in a career ladder position. An applicant could qualify for this program with a bachelor's, master's, law degree, or doctoral degree (US Nuclear Regulatory Commission, 2012).

These programs provide job opportunities for recent graduates that allow agencies to apply the most relevant academic knowledge to work on government projects like pandemic scenario planning, emergency response planning, terrorist threat assessment, facility security planning, GPS public health emergency planning, and many other areas that support the business of government. At the end of two years, interns are offered permanent jobs at their agency.

### **Applying to Programs**

The on-line application often includes a resume and questions that relate to situations in which applicants have demonstrated skills in teamwork, leadership, and customer service. Applicants are encouraged to answer these questions in detail, providing examples of actual work or academic situations that were complex, unique, and challenging. Applicants should ensure that all answers are thoroughly proofread by a second party before submitting the application.

### **Background Check**

When offered an internship opportunity, applicants are subjected to a background and clearance process. This process includes a FBI criminal background check and a review of credit history. Applicants should review their credit report in advance and make every effort to resolve outstanding debts that could negatively impact the

decision-making. All government agencies will check applicants' credit with Transunion and run a police record background check with the FBI. Charge offs, credit accounts more than 90 days delinquent, and unpaid judgments more than \$3,500 dollars on a credit report could prevent applicants from passing the clearance process, resulting in ineligibility for the internship program.

## CONCLUSION

An important part of succession planning is reviewing the functions of jobs, reviewing the competencies necessary to accomplish the work, and reviewing the way in which the work may be accomplished. The purpose is to ensure a high quality match between jobs and applicants, Public sector organizations find themselves in a time in which the demand for services has increased, the expectation for quality service is high, and the accountability for results is exceptional. Agencies must be results-driven, citizen-centered, and market-based. In an effort to improve and enhance organizational effectiveness and to drive. To become a high performing organization requires an investment in the people working in the organization and an understanding of customer and stakeholder needs. The demand for talent continues to be high as corporations compete for the limited pool of highly skilled candidates. Succession planning developmental programs like the PMF and NSPDP programs have the potential to bring in and tap into the intellectual capital and expertise of the most highly qualified graduate degree educated professionals into effective roles in the federal government. This expertise will be needed as new challenges present themselves in the form of food outbreaks, environmental protection concerns, public health outbreaks, and natural disasters.

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# CONNECTIONS BETWEEN PLAYING SPORTS AND SUCCESS IN ENGLISH COMPOSITION

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## ABSTRACT

*An extraordinary number of secondary students read below grade level, reports showing as many as six million (Mongillo & Wilder, 2012). According to Biancarosa & Snow (2006), "approximately 8 million young people between fourth and eighth grade struggle to read at grade level" and "some 70 percent of older readers require some form of remediation." When these students enter college they are unprepared to meet academic demands. The primary purpose of the study was to determine if English composition grade point average (GPA) was significantly different for collegiate student-athletes competing in team versus individual sports. In addition to collegiate athletic participation and English composition GPA, data were collected on age, gender, college classification, and family income level. Participants (N=80) were undergraduate students attending a junior/senior level baccalaureate university, seeking a Bachelor of Science in Education degree with a P-12 Certification in Physical Education. Questionnaires were distributed and completed anonymously by subjects. The participants, ranged in age from 22 to 46 years, and had previously competed in intercollegiate athletics at either the NCAA or NAIA level. Sixty-four of the subjects competed in a team sport and 16 subjects participated in an individual sport. An analysis of the descriptive statistics (means and standard deviations) was first performed for English composition GPA for athletic participants (team sport v. individual sport), gender, college classification (2-year v. 4-year institution), and family income level. ANOVA statistical analysis revealed the following results concerning English composition GPA performance based on athletic participation [ $F(1,78)=32.9, p=.000$ ], gender [ $F(1,78)=3.735, p=.057$ ], college classification [ $F(1,78)=.713, p=.401$ ], and family income [ $F(3,76)=29.66, p=.000$ ]. English composition GPA was significantly better for subjects participating in individual sports, and, regardless of sport participation, higher family income subjects had significantly better English composition GPAs.*

**Keywords:** *Collegiate Athlete Academic Performance, English Composition, Collegiate Reading Intervention, Collegiate Writing Intervention, Collegiate Athlete Grade Point Average*

## INTRODUCTION AND REVIEW OF LITERATURE

An extraordinary number of secondary students read below grade level, reports showing as many as six million (Mongillo & Wilder, 2012). According to Biancarosa & Snow (2006), "approximately 8 million young people between fourth and eighth grade struggle to read at grade level" and "some 70 percent of older readers require some form of remediation." When these students enter college, they are underprepared to meet academic demands. Mongillo and Wilder (2012) stress need for developmental reading courses in higher education. Low literacy levels for students entering colleges is not uncommon. Courses are regularly taught in basic writing as well. Green (2006) even suggests it disproportionately affects groups to include first-generation and low-income students. There is great need to assist at-risk collegiate students who struggle with literacy - reading and writing. Educational settings must rise to occasion to meet this need. (Mongillo & Wilder, 2012).

And while many students in higher education need critical attention in the area of literacy, research has also shown that the best predictor of a student's overall college grade point average (GPA) is the student's high school GPA (Harrison, Comeaux & Plecha, 2006). This suggests that an athlete, or any student, with a low high school GPA is likely to suffer from a low college GPA as well. And research has shown that athletes may be more likely to be challenged academically than non-athletes. For example, researchers conducting five wave studies with collegiate athlete--sample sizes ranging from 267-377 at a liberal arts college to 423-1061 at an Ivy League institution--found that athletes generally enter college with lower SAT score than do non-athletes. In the same study, findings also showed that athletes reported more academic challenges and "lower self-assessments of their academic skills" than did non-athletes (Aries, McCarthy, Salovey & Banaji, 2004).

One reason collegiate athletes may struggle academically is the requirement they face to balance athletic and academic work. Research has shown that collegiate athletes do, in fact, struggle with balancing athletic commitments and academic requirements (Aries, et al., 2004, McKenna & Dunstan-Lewis, 2004; Singer, 2008). Parham (1993) argues the challenge is compounded when athletes enter college with less academic preparedness. Athletes also describe physical exhaustion as a factor affecting their own academic performance (McKenna & Dunstan-Lewis, 2004; Singer, 2008). Aries, et al. report lower collegiate athlete grade point averages associated when athletes demonstrate a greater commitment to athletic demands. Given the amount of reading and writing required at the college level, it is important to consider the impact of athletes' busier-than-average schedules on their success as college-level writers and communicators. Furthermore, in addition to comparing "athletes" GPA's to "non-athletes" GPA's, it would be valuable to more clearly identify whether athletes in team sports tend to perform higher academically than athletes in individual sports (or vice versa). And it is worth noting whether there are any trends related to individual sports and GPA in college.

Researchers have recognized differences in sub-populations of student athletes. Variations exist across sports and between genders. Rishe (2003) reported athletes participating in football and men's basketball tend to be less academically prepared for college and a lower college graduation rate results. For many years, researchers have found that males in these two sports face academic challenges (Harrison, et al., 2006; Lapchick & Snyder; 1996). Researchers identified high-revenue sports as a cause of greater time commitments and greater pressures for athletes (Gaston-Gayles, 2005; Singer 2008; Snyder, 1996). Male participants recognize the revenue that is generated by the sports they play and that "stakeholders" follow them more closely than in low-revenue sports (Rishe, 2003; Snyder, 1996). Gaston-Gayles (2005), Rishe (2003) and Snyder (1996) found that male high-revenue sport athletes exhibit a greater pursuit to achieve professional status than female athletes, creating even more pressure and time constraints. This results in more women athletes being able to balance their athletic and academic roles.

## **DESCRIPTION OF THE STUDY, SUBJECTS, AND METHODOLOGY**

The primary purpose of the study was to determine if English composition grade point average (GPA) was significantly different for collegiate student-athletes competing in team versus individual sports. In addition to collegiate athletic participation and English composition GPA, data were collected on age, gender, college classification, and family income level.

Participants (N=80) were undergraduate students attending a junior/senior level baccalaureate university, seeking a Bachelor of Science in Education degree with a P-12 Certification in Physical Education. Questionnaires were distributed and completed anonymously by subjects. The participants, ranged in age from 22 to 46 years, and had previously competed in intercollegiate athletics at either the NCAA or NAIA level. Sixty-four of the subjects competed in a team sport and 16 subjects participated in an individual sport. In addition, 50 of the subjects were male and 30 were female. Fifty-nine subjects complete English composition requirements at a two-year community college and 21 subjects completed the requirements at a four-year college/university. Thirty-four subjects had family incomes of \$20,000 or less, 15 subjects had family incomes greater than \$20,000 but less than or equal to \$60,000, 15 subjects had family incomes greater than \$60,000 but less than or equal to \$90,000, and 16 subjects had family incomes greater than \$90,000. English composition grades were verified on official university transcripts and all English composition grades were used to calculate English composition grade point average.

## **ANALYSIS OF DATA AND RESULTS**

Data analyses were performed using SPSS 19.0 for Windows (SPSS Inc., Chicago, IL). An analysis of the descriptive statistics (means and standard deviations) was first performed for English composition GPA for athletic participants (team sport v. individual sport), gender, college classification (2-year v. 4-year institution), and family income level. To investigate differences in English composition GPA between athletic participation groups, gender, college classification groups, and family income level an ANOVA statistical technique was utilized. A univariate analysis of variance was utilized to determine the differences in English composition GPA between males and females competing in team and individual sports, Figure 1. A level of  $p \leq .01$  was used to determine significance.

Descriptive statistics (means and standard deviations) for English composition GPA related to athletic participation, gender, college classification, family income, and athletic performance-gender combined are displayed in Table 1. ANOVA statistical analysis revealed the following results concerning English composition GPA performance based on athletic participation [F(1,78)=32.9,  $p=.000$ ], Figure 2., gender [F(1,78)=3.735,  $p=.057$ ], Figure 3., college classification [F(1,78)=.713,  $p=.401$ ], Figure 4, and family income [F(3,76)=29.66,  $p=.000$ ], Figure 5. Univariate analysis of variance revealed a non-significance between the English composition GPA of males and females competing in team and individual sports.

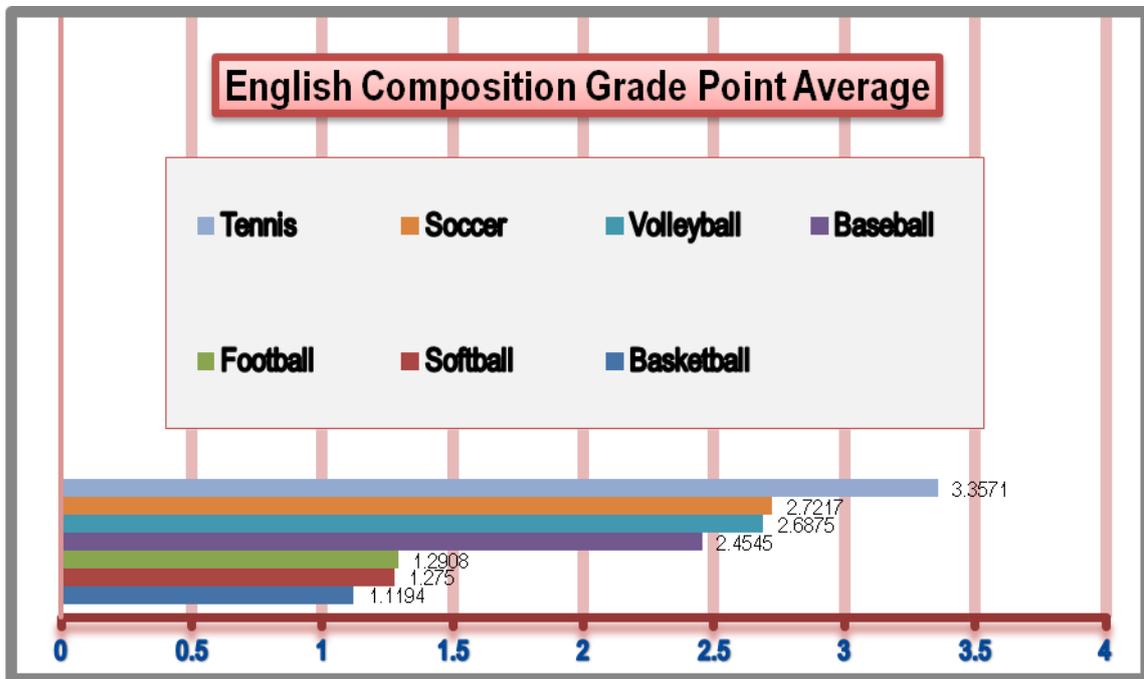


Figure 1

Table 1

Sample Characteristics			
Variables	N	GPA Mean	GPA SD
Gender			
Male	50	1.86	.88
Female	30	2.28	1.03
Athletic Participation			
Team	64	1.76	.85
Individual	16	3.05	.586
College Classification			
Two-year community college	59	1.96	.93
Four-year college/university	21	2.17	1.02
Family Income			
≤\$20,000	34	1.25	.48
>\$20,000 - ≤\$60,000	15	2.17	.80
>\$60,000 - ≤\$90,000	15	2.67	.817
>\$90,000	16	2.9	.696
Combination (Gender – Athletic Participation)			
Male – Team Sport	41	1.62	.746
Female – Team Sport	23	2.02	.972
Male – Individual Sport	9	2.98	.46
Female – Individual Sport	7	3.14	.748

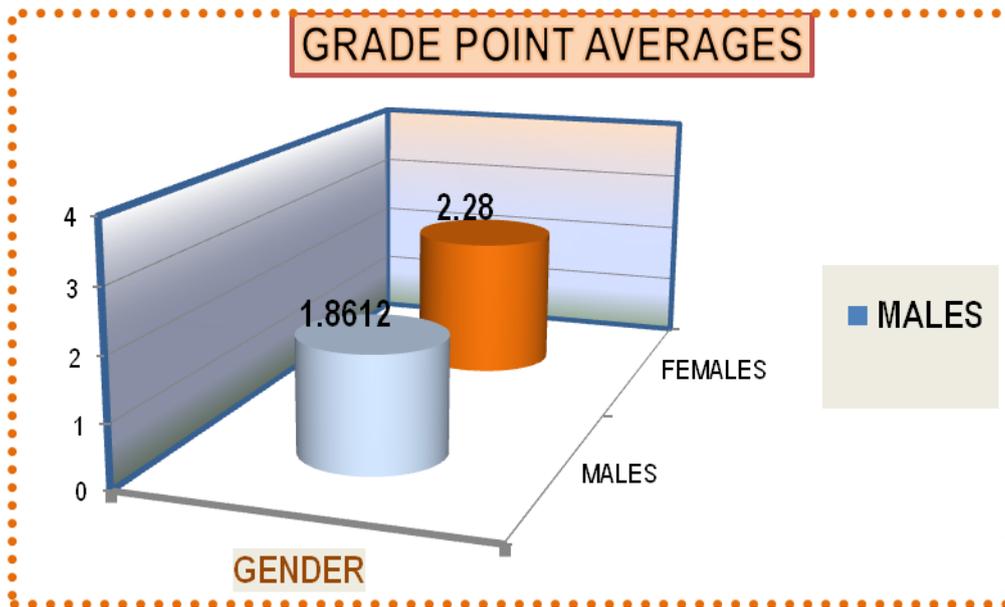


Figure 2

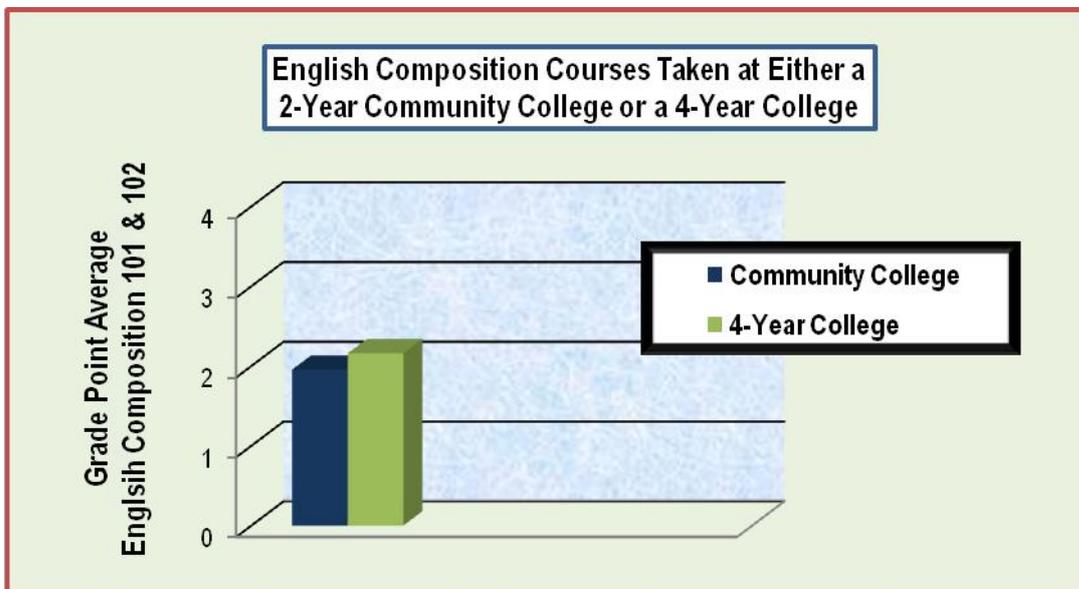


Figure 3

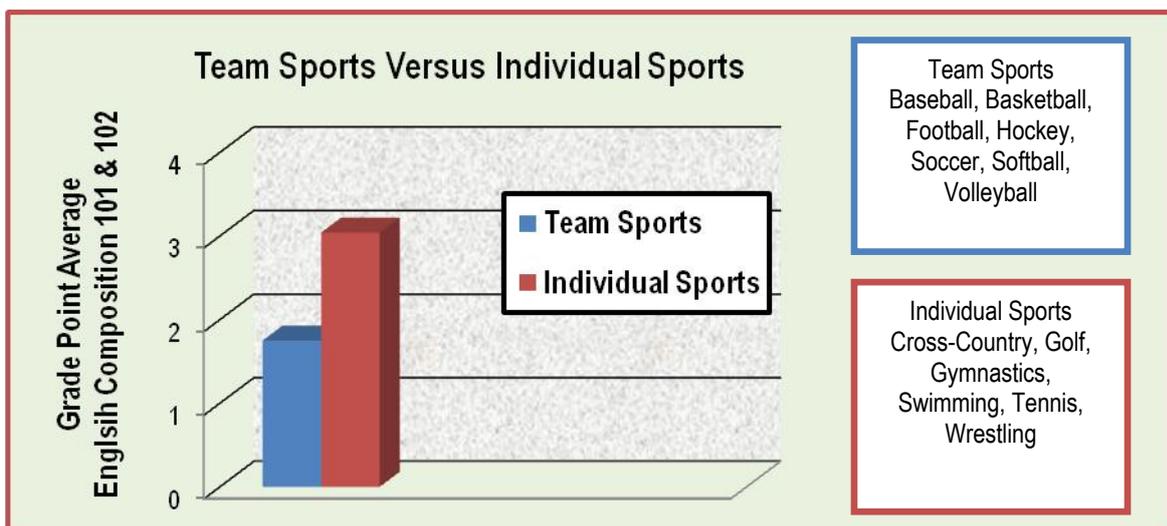


Figure 4

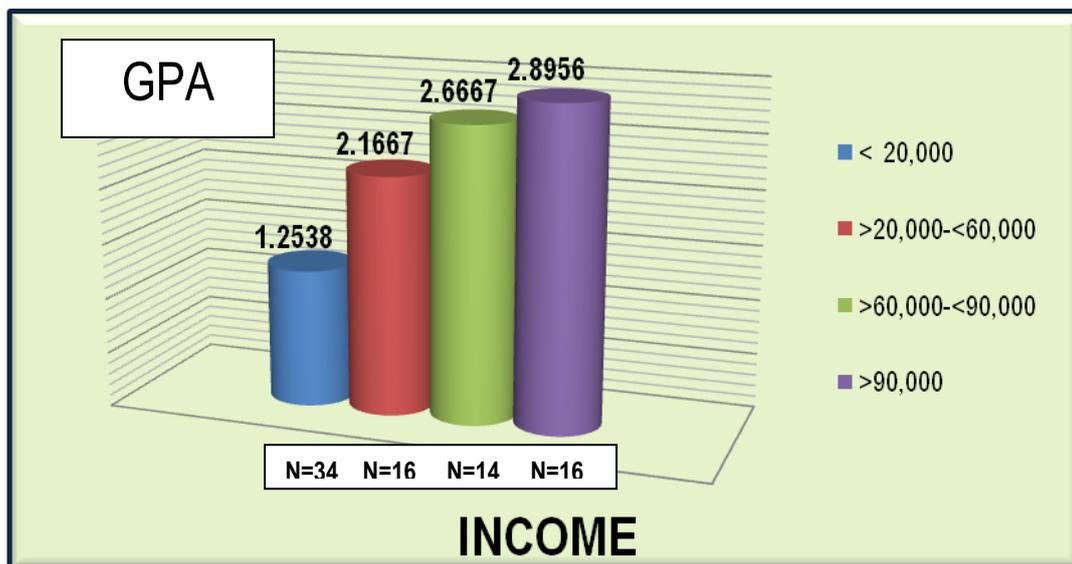


Figure 5

## LIMITATIONS, IMPLICATIONS AND CONCLUSIONS

Meaningful institutional support of students' academic work - including the roles of academic advising and faculty-student interaction to name only two - can help students achieve academic success in general. Martin, Harrison, Stone & Lawrence (2010) recognize that academic advising is a broad task which is not consistently defined nor documented across collegiate institutions. When university academic support programs lack consistent standards or practices, it becomes more difficult to determine the degree of correlation between athletes' academic performance and academic support programs. In addition, studies show significant gains in learning and in the communication skills of athletes when there is "interaction with faculty" (Gayles & Hu, 2009). Harrison, et al., (2006) reported GPA increases correlating when positive student athlete-faculty relationships existed, with faculty encouraging, challenging, showing respect to collegiate athletes, and assisting athletes in obtaining personal goals. This type of positive academic advising has resulted in athletes being motivated toward academic achievement (Harrison, et al., 2006, Martin et al., 2010, McKenna & Dunstan-Lewis, 2004).

Strategies to address reading comprehension, critical thinking, and writing are warranted for a number of collegiate athletes, as well as other students, who have literacy skills below the required benchmark levels. Among the services that colleges and universities already provide, or may provide, to assist at-risk students are: courses in basic writing, courses in basic reading, literacy support centers (reading or writing centers) that provide individualized tutoring for all students whether they are academically "at-risk" or not. Courses in basic writing often engage students who speak or write in dialects of English that do not translate easily into polished, edited academic writing—or who are coming from other countries and learning English as a second language while they are playing a sport. Literacy support centers, such as Writing Centers, provide individualized instruction for students at all levels and proficiencies; as such, these centers are well-positioned to work with at-risk students. Tutors can work on a daily or weekly basis with students until the students demonstrate measurable improvement in their literacy.

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# THE EFFECT OF IT ABILITY ON SOCIAL CAPITAL, KNOWLEDGE SHARING AND STUDENT RETENTION

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## ABSTRACT

*Student retention is of compelling interest to colleges and universities as they seek to continually improve the learning environment for students, meet the expectations of their constituent groups and legislative bodies, and demonstrate their institutional effectiveness. At the same time, the burgeoning of technology in our society and the rapid adoption of technological solutions in every aspect of education may necessitate a paradigm shift in our understanding of the college experience. The surge of the use of IT in educational offerings and its impact mediating factors that influence student retention has not been examined to a great extent. This paper suggests that online interaction can increase most forms of social capital, including those that facilitate knowledge sharing. The main objective to contribute to a better understanding of how social capital and information and knowledge sharing leveraged by IT ability are anchored to each other and to explore their consequences on student retention in a university setting. The study will assess both students' perceptions of social capital and knowledge sharing as well as IT ability. Furthermore, students' intention to remain through the next year in their respective school program will be examined. A theoretical model, developed based on extant literature review will be tested and the relevance and implications of the results discussed. The results could be useful in two ways: 1) Policies related to IT applications could be developed to enhance social capital if the results indicate there is a positive influence of IT ability on retention. In the same vein, a knowledge sharing culture could be promoted to leverage social capital resources and consequently impacts on retention.*

**Keywords:** Social Capital, Knowledge Sharing, Information Technology, Student Retention.

## INTRODUCTION

Many students who endeavor to earn a college degree fail to persist until graduation. Although institutions have responded to student retention issues by implementing programs and services, retention rates have not improved (Seidman, 2005). The typical six-year graduation rate for most public institutions in the United States ranges between 50 – 56% (Berkner, He and Cataldi, 2002; Crosling, Thomas, and Heagney, 2008; Mortenson, 2005). Low retention rates not only impact students and institutions that must bear the economic burden connected to premature departures, but also the ability of a nation to “compete in a global economy” (Friedman, 2005; Seidman, p. xi, 2005). Now more than ever, higher education administrators must be cognizant of the reasons why students depart from institutions of higher learning prematurely and what can be done to help students overcome these barriers so they can achieve their academic and career goals. Additional research is required to determine strategies to address this issue (Tinto, 2005).

## Problem Statement

Student retention is a leading issue in post-secondary education today. Many students who endeavor to earn a college degree fail to persist until graduation. Although institutions have responded to student retention issues by implementing programs and services, retention rates have not improved (Seidman, 2005). The typical six-year graduation rate for most public institutions in the United States ranges between 50 – 56% (Berkner, He and Cataldi, 2002; Crosling, Thomas, and Heagney, 2008; Mortenson, 2005). Low retention rates not only impact students and institutions that must bear the economic burden connected to premature departures, but also the ability of a nation to “compete in a global economy” (Friedman, 2005; Seidman, p. xi, 2005). Now more than ever, higher education administrators must be cognizant of the reasons why students depart from institutions of higher learning prematurely and what can be done to help students overcome these barriers so they can achieve their academic and career goals. Additional research is required to determine strategies to address this issue (Tinto, 2005). There

is surprisingly little research, up until now, examining the determinants of retention beyond factors such as teaching assessment and instructional delivery methods. Nonetheless, it is likely that with the rapid emergence of technological innovations in information and communication, social capital and knowledge sharing could have a significant impact on student retention.

## **Research Objectives**

Successful program completion is a combination of many factors such as learner attributes, the university's focus on meeting the needs of the students, and providing a quality educational product. This paper focuses on use of IT and its effects on a university's social capital, knowledge sharing and the student's retention intention. The main objective is to investigate relevant social capital resources which can be put into place to best yield high course and program completion rate and consequently provide financial stability for the institution.

## **Implications and Relevance of the Study**

The goals of educators are to graduate students who are competent to for career jobs and who will maintain their skills through self-directed, life-long learning. In an effort to understand student retention we propose that in a university setting, social capital (e.g., resources such as academic advising, social connectedness, involvement and engagement, faculty and staff approachability, business procedures, learning experiences, and student support services (or social capital) may impact student retention. At the same time, the increasing investments ICTs in education may have effects on social capital and knowledge sharing. In particular, the rapid growth of social networking sites such as Facebook and Myspace suggests that individuals are creating a virtual-network consisting of both bonding and bridging social capital.

This study will have both theoretical and practical contributions. With the proliferation of technology-based initiatives in education, studies analyzing the impact IT on an outcome such as retention policies complement existing attempts to evaluate students' learning and overall college experience. Data-informed decision making helps higher education institutions know whether they are achieving their missions, including expanding access to higher education and increasing student success. Such insight can be used for diagnostic purposes and for the planning and management for technology-based initiatives that can leverage knowledge sharing and retention. For example, based on the findings of this study, IT applications that are suitable for social networks and knowledge sharing can be used to identify at risk students and intervention strategies implemented to prevent early dropouts. From a theoretical perspective, the research will add to the literature dealing with mandatory adoption of technical innovations. The research also contributes to the general adoption literature by studying the theoretical validity and empirical applicability of the proposed model.

What follows is a literature review and description of the study variables, methodology, major findings, and the implications using data gathered from students in a four-year college. Practical recommendations are included so that institutions can use these results immediately to impact their policies and practices.

## **LITERATURE REVIEW**

Existing studies have suggested that social capital has considerable benefits for a range of economic and sociological outcomes. Similarly, studies of knowledge sharing, which is the means by which an organization obtains access to its own and other organizations' knowledge, has emerged as a key research area from a broad and deep field of study on technology transfer and innovation. Literature on student retention have largely centered on factors (e.g., academic preparedness, campus climate, commitment of educational goals, social and academic integration, financial aid) affecting retention.

### **Social Capital**

There has been considerable and increasing interest in social capital theory in recent years, evidenced by its application to various disciplines and numerous subject areas. Social capital is about the value of social networks, bonding similar people and bridging between diverse people, with norms of reciprocity (Dekker and Uslaner 2001;

Uslaner 2001). Sander (2002, p. 213) stated that 'the folk wisdom that more people get their jobs from whom they know, rather than what they know, turns out to be true'.

Social capital does not have a clear, undisputed meaning, for substantive and ideological reasons (Dolfsma and Dannreuther 2003; Foley and Edwards 1997). For this reason there is no set and commonly agreed upon definition of social capital and the particular definition adopted by a study will depend on the discipline and level of investigation (Robison et al. 2002). For example, while others define social capital as 'a resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors' (see Belliveau et al., 1996, p. 1572) Baker referred to it as 'an individual's personal network and elite institutional affiliations' (Baker, 1990, p. 619). Yet according to Bourdieu (1986) social capital is the resources that individuals and potentially groups have access to through their social networks. The social network can be seen as the structure or system of connections between nodes. Bourdieu and Wacquant (1992) define social capital as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (p. 14). In a university setting such resources may include academic advising, social connectedness, involvement and engagement, faculty and staff approachability, business procedures, learning experiences, and student support services.

It is, thus, a fair supposition that the recent growth and popularity of Web 2.0 technologies such online social networks which has created a new world of collaboration and communication will have an impact on social capital and knowledge sharing. More than a billion individuals around the world are connected and networked together to create, collaborate, and contribute their knowledge. Despite the importance of online social networks, there is relatively little theory-driven empirical research available to address its impacts on factors such as institutional social capital. Grossman (1999) indicated that educational techniques and policies are being adopted prior to a full understanding of all of the consequences. With the brisk pace of adoption of information technology, more work is needed. Malhotra (2002) calls for researchers to develop empirical evidence that would support a better understanding of the use of technology in the classroom.

## **Knowledge Sharing**

Many researchers use the terms knowledge and information interchangeably, emphasizing that there is not much practical utility in distinguishing knowledge from information in knowledge sharing research (see Bartol and Srivastava, 2002; Huber, 1991; Makhija and Ganesh, 1997). We adopt this perspective by considering knowledge as information processed by individuals including ideas, facts, expertise, and judgments relevant for individual, team, and organizational performance (e.g., Alavi and Leidner, 2001; Bartol and Srivastava, 2002). Knowledge sharing refers to the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures (Cummings, 2004; Pulakos, Dorsey, and Borman, 2003). Knowledge sharing can occur via written correspondence or face-to-face communications through networking with other experts, or documenting, organizing and capturing knowledge for others (Cummings, 2004; Pulakos et al., 2003). Although the term knowledge sharing is generally used more often than information sharing, researchers tend to use the term "information sharing" to refer to sharing with others that occurs in experimental studies in which participants are given lists of information, manuals, or programs.

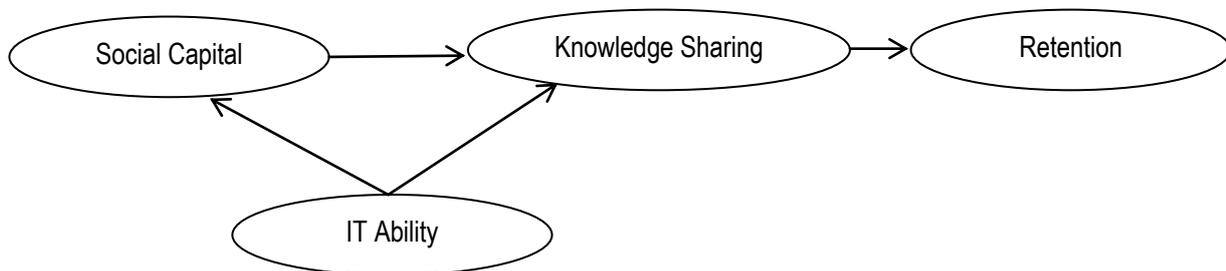
The study of knowledge sharing has its roots within the technology transfer and innovation literature. The research in this area has focused on explanations for different nations' successes or failures in fostering economic growth through technological development. Majority agree that successful knowledge sharing results in firms mastering and getting into practice product designs, manufacturing processes, and organizational designs that are new to them (Nelson, 1993). Increasingly, knowledge-sharing research has moved to an organizational learning perspective. Indeed, experience and research suggest that successful knowledge sharing involves extended learning processes rather than simple communication processes, as ideas related to development and innovation need to be made locally applicable with the adaptation being done by the 'incumbent firms' (Nelson and Rosenberg, 1993) or 'the local doers of development' (Stiglitz, 1999) for the ideas to be successfully implemented.

## Educational Retention

Some previous researches have investigated the link between student retention and social capital. For example, Coleman and Hoffer (1987) found from a longitudinal research that social capital in students' families and communities attributed to the much lower dropout rates in Catholic schools compared with the higher rates in public. Huber (2009) further highlighted a development of the family structure indicator suggested by Coleman by taking into account a detailed counting of family structure, consisting not only with two biological parents or stepparent families, but also with types of single-parent families with each other (mother-only, father-only, never-married, and other). They also contribute to the literature by measuring parent-child interaction by the indicators of how often parents and children discuss school-related activities. Others have found no impact of social capital on educational performance. In their journal article "Beyond social capital: Spatial dynamics of collective efficacy for children", Sampson et al (1999) stress the normative or goal-directed dimension of social capital. They claim, "resources or networks alone (e.g. voluntary associations, friendship ties, organizational density) are neutral – they may or may not be effective mechanism for achieving intended effect"(Sampson et al., 1999, p.235 cited in Chen et al., 2002).

## RESEARCH MODEL

The hypothesized model presented in Figure 1 integrates variables from the literature review on social capital, knowledge sharing, IT ability and retention.



**Figure 1:** Integrates social capital, knowledge sharing, IT ability and retention

## Proposition

Information Technology ability has a direct influence on both social capital and knowledge sharing. Social capital directly impacts knowledge sharing which in turn influences student retention. Specific hypothesis are based on this general proposition.

## METHODOLOGY

A survey technique will be used to collect data. First, a pilot study on will be conducted to find out any ambiguous items in the survey questionnaire. The subjects will consist of students from a major 4-year university in the U.S. And then the pre-test will include senior and junior undergraduate students and graduate students who are familiar with the university and had good knowledge concerning major operations of the university.

## Scale Development

The survey includes several multi-item measurement scales to assess the constructs of interest, as well as questions on demographics. All of the multi-item scales will be measured using a 7-point Likert type scale anchored with the statements "Strongly Disagree" = 1, "Strongly Agree" = 7, and "Neutral" as the mid-point. The majority of scales will be drawn directly from previous research or adapted to meet the requirements of this study (Oliver, 1980; Arora, 1982; Hermans, Haytko, and Mott-Stenerson, 2009).

## Plan Analysis and Results

The research model will be subject to the data analysis by employing structural equation modeling (SEM). SEM is a statistical technique for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions.

SEM allows both confirmatory and exploratory modeling, meaning they are suited to both theory testing and theory development.

Results of the research can be discussed in three different areas: construct validity, reliability, and correlation. Straub et al. (2004) suggested multiple validation guidelines for the information system research. For the current study, coefficient factor analysis will be used to determine the convergent and discriminant construct validity. Cronbach's Alpha will also be employed to assess the internal consistency reliability.

## Limitation

Of course, to be fair, the challenge of student retention and persistence is complex. Not all students are alike, nor are institutions. Even though resources play a huge part in the ability of a campus to provide the support services necessary to engage and save students, social capital may only be a part of it. In addition, many forms of social capital exist, and the challenge is to locate and mobilize those forms that can contribute to knowledge sharing and student retention. It also has to be acknowledge that students most certainly bring with them baggage from home and community. Many students come to college for the first time psychologically unprepared to navigate the murky waters of higher education, and so their background may have confounding effects in this study. Thus, more replication of this study will be needed across different institutions and incorporating confounding effects.

## CONCLUSION

In this paper we intend to examine the impacts IT ability, social capital, knowledge sharing on student retention. Literature review show there could be significant linkages between these constructs. We have developed a proposed model to be tested. A confirmation of these expectations will have impacts for both university policy design and academic theory development.

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# ASSESSMENT LEARNING STYLE CONSIDERATIONS FOR ONLINE PROFESSIONAL SCIENCE GRADUATE PROGRAMS

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## ABSTRACT

*World environmental issues like the BP oil spill have increased interest on world environmental degradation and the study of Environmental Science. To meet the industry demand, more colleges and universities must develop new academic programs. The challenge is that chaos in the economy has diminished the availability of funds for new facilities and Environmental Science programs. A possible option for developing new skills and international knowledge collaboration has been the growth and emergence of on-line Professional Master of Science (PSM) Degree programs, which provide the benefit of class learning environments of students from different backgrounds, fields, industries, professions, geographical areas, and levels of experience. Before universities can actively advance into on-line learning for professional science graduate programs they must develop an understanding of learning styles in order to most effectively offer programs that provide the most effective learning communities for knowledge transfer and knowledge collaboration, which is critical for the development of effective environmental and professional applied scientists.*

**Keywords:** *Distance Learning Science Programs, Professional Master of Science.*

## INTRODUCTION

Based on shrinking financial resources and the on-going chaos in the world economy, universities are attempting to develop new programs that are responsive to sustainability, environmental protection, science innovations, and workforce development needs and the need to develop new channels for revenue. Universities are also trying to find creative ways to increase tuition revenue and grow student enrollments without increasing campus physical facilities. Several established colleges have developed on-line science related programs as a tool to develop future leaders for the industry and upgrade the knowledge base of existing professionals in the field.

The increase of environmental issues, sustainability based industries, and science based industries in areas of public health, emergency response, biotechnology, and homeland security have increased the demand for scientists and continuing education for industry professionals. Traditionally, universities met the demand through their production of Ph.D. chemists, biologists, physicists, and computer scientists, most of who worked in research and development. More recently the rise of industries based on the convergence of scientific field has increased the need for new means of developing professionals in the field. There has also been an increased need to help professionals in various industries retool their careers through the development of new academic knowledge (National Research Council, 2008).

The current university approach for producing industry scientists is that it is costly and inefficient. Graduate programs in science and mathematics are organized by discipline and focus on producing Ph.D.-level researchers. It now takes eight or nine years in addition to the bachelor's degree to earn a Ph.D. in science market (National Research Council, 2008). In the life sciences most students land their first permanent job at age 33 (National Research Council, 2008). The process of degree attainment is has several significant implications in the expensive, time spent, and lost income from not being in the workforce. These implications also discourage promising undergraduate math and science majors who cannot afford a protracted delay of their entry into the labor market (National Research Council, 2008).

The Professional Science Master's (PSM) degree represents an effective answer to both these problems. The America Competes Act has outlined these programs as a critically effective way to expand the scientific workforce through the quick and efficient production of applied scientists that many government agencies and industries need.

Many jobs in these sectors, especially those outside the lab, require more than a bachelor's degree but not a Ph.D. PSM curricula at schools across the country incorporate scientific content and business-related "plus" components. The plus components vary with the program but typically include topics such as communications, business fundamentals, project management, and intellectual property (National Research Council, 2008).

The Professional Science Master's (PSM) degree is an innovative two-year graduate degree designed to allow students to pursue advanced training and excel in science while simultaneously developing highly-valued business skills. PSM programs prepare students for science careers in business, government, or nonprofit organizations, where workforce needs are increasing (National Research Council, 2008).

Programs are developed in concert with industry and are designed to dovetail into present and future professional career opportunities. Graduates are equipped to manage the breakthroughs that are created by the research teams. They can interact between researchers and managers, especially in the marketing, finance, and legal departments (National Research Council, 2008).

The PSM degree is meant to supply intermediate-level professionals for the scientific workforce, largely in business and industry. It is a professional rather than a research degree and is intended to be equivalent to a law or business degree for young people who major in the sciences and mathematics as undergraduates. Unlike the typical science and engineering master's degree program, PSMs are not consolation prizes for those who drop out of Ph.D. programs. Instead they are terminal degrees designed in close cooperation with regional industries to prepare applied scientists and mathematicians for work in new and emerging industries (National Research Council, 2008).

PSM degree programs offer bachelor's degree holders a direct path to industry. The programs are attractive to students because they prepare them for work in a variety of cutting-edge fields and yield a highly marketable degree after just two years of postgraduate study (National Research Council, 2008).

Because of their quicker employment payoffs, PSM degree programs can encourage more college science majors to pursue postgraduate degrees. The benefits can also encourage more college students to major in science and more high school students to take science courses. Similarly, the rewards should make careers in math and science more appealing to women and minorities; indeed, 40 percent of current PSM students are women (Crawford, 2006).

According to the National Professional Master's Association ([www.npsma.org](http://www.npsma.org)) PSM programs are in fields such as:

- Biotechnology
- Forensic Science
- Environmental Public Health
- Nanoscience
- Environmental Science
- Biosecurity
- Biotechnology studies
- Sustainability
- Bioenergy
- Science Entrepreneurship

Several universities have developed innovative PSM environmental science programs. Virginia Tech University has a 16 month executive masters in Environmental Natural Resources Management and Sustainability, The University of Maryland- University College has an on-line Masters in Environmental Sciences, and Duke University has an executive Master's in Environmental Leadership

Other innovative programs focused on the innovative development of environmental scientists include, Prescott College's distance learning PhD in Sustainability and Environmental Education, A.T. University's low cost on-line

Doctor of Health Education in Environmental Health, and Marylhurst University's 18 month on-line "Green" MBA in Sustainability and Environmental Development.

Several other universities are focusing on the development of on-line degree programs focused on the development of professional environmental scientists as a means to recruit new students and generate new enrollment revenue. Before these universities can successfully engage in the development of on-line programs, it must understand the challenges of various learning styles and the benefits of on-line learning as a knowledge sharing and knowledge collaboration tool.

What is powerful about the benefits of on-line degree programs is that they allow science professionals that travel extensively or that work in remote locations to have access to professional development degree programs 24 hours a day through accessing the Internet (Junco & Mastrodicasa, 2007). On-line learning can foster the development of national and international learning communities that engage in knowledge development, knowledge collaboration, and knowledge sharing through the development of learning communities of practice. The concept, diverse global community of practice, refers to online communities with diverse organizational members sharing knowledge nationally and internationally through student membership from different genders, ages, races, cultures, and countries (Hildreth, 2004). On-line and e-programs create opportunities for professionals to have access to education through the development of communities (Kamenetz, 2009). These communities of students do not exist in the traditional sense, interacting with classmates through weekly face-to-face class meetings. The implication of these communities is an eclectic and diverse learning environment that benefits from collective knowledge and the broadest range of students, from a variety of ages, industries, backgrounds cities, countries, organizations, and professions.

According to Tapscott and Williams (2008, p. 153), people's ability to collaborate, innovate, and use technology to develop new processes and inventions is often a key driving force behind the kind of developments that keep citizens, businesses, and commerce from languishing. In the past, before the "world became flat" (Friedman, 2007), organizational and community stakeholders operated in closed, individualistic, rigid, inbred, and hierarchical systems where decisions were strategies were developed and implemented in a vacuum absent of peer benchmarking and review. Collaboration and technological innovation are critical to innovative, global, multinational, and knowledge driven economies (Friedman, 2007). Knowledge can build more rapidly within shared and collaborative networks of community stakeholders that use technological innovation to communicate, distribute ideas, benchmark, and share lessons learned from both successes and failures (Brown & Duguid, 2000).

As more universities develop on-line programs it is critical to consider the importance of learning platforms and curriculum development in relation to learning styles. Because on-line programs do not have the benefit of face-to-face lectures, the understanding of learning styles is a critical aspect of on-line program development and delivery especially how it relates to sciences. These universities and professional science master's program directors should understand that everyone has their own "style" for collecting and organizing information into useful knowledge, and the online environment can be particularly well suited to some learning styles and personality needs. For example, introverted students often find it easier to communicate via computer-mediated communication than in face-to-face situations (Diaz, & Carnal, 1999). Also, the online environment lends itself to a less hierarchical approach to instruction, which meets the learning needs of people who do not approach new information in a systematic or linear fashion. Online learning environments are used to their highest potential when there is consideration for the power of collaborative learning which complements many students' learning styles, and independent learners have also found online courses to be well suited to their needs (Diaz, & Carnal, 1999). Because learners have different learning styles or a combination of styles, online educators should design activities that address their modes of learning in order to provide significant experiences for each class participant (Diaz, & Carnal, 1999).

Maddux, Ewing-Taylor, and Johnson (2002) have suggested, for example, that one way to insure quality of online course design and positive student outcomes is through consideration of the relevance of student learning styles to design of instructional methods. Effective online distance education courses should be based on instructional design

decisions that will have the most impact on student learning. These may include decisions related to structure of course delivery, teacher-student communication, appropriate assignments and activities that are conducive to online learning, and effective use of online resources.

Steinbech (2000) illustrated that a consideration of learning styles has always been critically important to teaching and learning. Similarly, researching learning styles of adults in the context of a technology driven learning community can provide awareness of what has to occur to make the learning experience comprehensive and rich for adult students. Knowledge of compatible learning and teaching styles is essential to the development of course content, teaching approaches, and learning assessments. Administrators, faculty members, and course developers that develop a framework of understanding of adult learning styles can influence the impact knowledge acquisition, knowledge transfer, and knowledge application when teaching adult students.

Developing an understanding of adult learning styles is important in face-to-face classroom educational communities in general, but using technology to deliver course content on line adds another dimension and challenge to student success. Mackeracher (2003) outlined that students grasp and retain information more effectively and efficiently when they are taught with methods that match their preferred learning styles. Through the use of particular teaching methodologies geared toward the specific learning styles of adults enrolled in on-line technology driven courses, it may be possible to enhance the learning experiences of adult students. Developing staff, faculty, and organizational dexterity in understanding adult learning styles is critical for colleges and universities that are moving from serving traditional age college students to working adult students (Mackeracher, 2003).

Working adult students or adult learners are not characterized by age but are illustrated by the possession of adult learner traits: self motivation, curiosity about learning, extensive work and life experiences, critical thinking skills, the aptitude to learn in groups, the capability to engage in reflection and introspection, the capacity to engage in self directed learning, and the ability to articulate and apply their perspectives and experiences to course content is what makes teaching them both challenging and unique (Wynn, 2006). Adult learners share similar personas; they approach their learning with dissimilar backgrounds and levels of preparedness (Diaz & Carnal, 1999; Claxton & Murrell, 1987). In addition, adults connect to their learning experiences based on their learning preferences and learning styles (Claxton & Murrell, 1987). This is similarly true whether adults are learning in a traditional face-to-face classroom or in a technology driven on-line course atmosphere (Buckley & Smith, 2007).

In the best interest of a successful transformation from a traditional classroom based learning community for recent high school graduates to a technology driven learning community offering on-line courses to working adults, it is critical to understand the range of variables and teaching methods that are critical to successfully engaging and connecting to adult students (Diaz & Carnal, 1999).

As faculty and curriculum developers move from traditional face-to-face classroom environments to technologically driven on-line classroom delivery methods, there must be considerable alteration to learning community teaching and instructional approaches. Gee (1990) outlined several studies that have supported the idea that student engagement and success is positively influenced when teaching approaches are geared towards preferred learning styles. Higher education administrators, faculty members, and curriculum developers should be mindful of the needed alterations to teaching and content delivery that is required when commencing new technology driven environments as a means of entering new markets for students and tuition revenue (Hanna, 1998.)

## LITERATURE REVIEW

In terms grasping a clear meaning of learning styles, Merriam and Caffarella (1991) describe learning style as an "individual's characteristic ways of processing information, feeling, and behaving in a learning situation" (p. 176). Diaz and Carnal (1999) outlined that a learning style is a student's preferred way of absorbing and understanding new information: "It does not have anything to do with how intelligent you are or what skills you possess; it has to do with how your brain works most effectively to learn new information" (p. 130). In synopsis, a student's learning style

is determined by the means in which new data attainment is maximized, retained, and comprehended most successfully (James & Gardner, 1995, p.21).

One of the most influential theorists on adult learning is Malcolm Knowles who developed the concept called andragogy. Malcolm Knowles developed a conceptual framework that distinguishes the key differences between how adults and children learn. His theory of andragogy could be defined as the proficiency and discipline of how adults learn. His theory contrasted with pedagogy, which is the proficiency and discipline of how children learn (Knowles, 1984).

According to Knowles (1984) in the pedagogic model, teachers presuppose the duty for making decisions concerning what will be learned, the method used for learning, and the timing of the learning process. According to Knowles (1984) in the pedagogic model, teachers tightly control all aspects and variables of the learning process. Pedagogy is considered teacher-directed instruction, which places the student in a docile position necessitating deference to the teacher's directives. This methodology for teaching children is based on the supposition that students' minds are like an empty pitcher where the teacher pours knowledge and information into their head. The result is a teaching and learning state of affairs that keenly endorses heavy reliance and dependency on the teacher. In many ways the pedagogical model does not work well for adult learning (Knowles, 1984, P. 43).

According to Knowles (1984), andragogy is based on a number of beliefs about adult learners:

1. As a person matures, his or her self-concept moves from that of a dependent personality towards one of an independent and self-directed person.
2. An adult's collective life and professional experiences are a rich resource for knowledge transfer and learning.
3. The motivations and readiness of an adult to learn is closely related to developmental tasks that include successes and lessons learned from his or her social role.
4. There is a change in time perspective in learning as people evolve and mature in the manner that newly gained knowledge and theory can have the ability to be immediately applied in real world problem solving and analysis (Knowles, 1984, pp. 44-45).
5. The most powerful motivations for learning and the desire for knowledge acquisition are internal rather than external (Knowles, 1984).
6. Adults need to understand the applicability and practicality of why they need to learn something (Knowles, 1984).

In a similar vein to Knowles, Dr. John Sperling (1989) outlined some important theories about how adults learn in relation to younger students and used these principals to develop and create the University of Phoenix. His premise is based on the belief that at traditional universities all knowledge is assumed to reside with the professor, whose job is to transmit it to the passive and inexperienced students. The form of teaching is a faculty lecture where students take notes to prepare for exams where the students are expected to regurgitate back the professors own words on exam as a determination of the student's learning (Sperling, 1989, p. 73). While this method may be acceptable to youthful students with little professional experience, it frustrates and hampers the motivation of working adult students because the methodology discounts the knowledge and experience that they can add to the discussion (Sperling, 1989, p. 73).

"Because of their broad professional work experience, adult learners react with frustration or boredom or antagonism to teachers that have spent their academic lives in a professional cocoon of just being on campus, doing research, and not working professionally in the fields that they teach in. Knowing little of the related professional activities in the professional practice world by the campus walls, and lacking real world reference points, faculty present knowledge of their discipline in an academic vacuum; what is being taught frequently has no application to what is happening in the working world. Applied knowledge is not viewed as important as theoretical knowledge, and there is no requirement to apply theoretical knowledge to the world beyond the academy. Rather than viewing the academic disciplines as tools to solve practical, interdisciplinary problems, professors view mastery of a discipline as an end in itself (Sperling, 1989, p. 73).

Kemp, Morrison, and Ross (1998) outlined that the andragogical model of instruction is heavily focused on presenting methods for assisting students with the acquisition and retention of new knowledge and skills. In this mode, the teacher arranges a set of activities for engaging students with strategies that include establishing a community favorable to learning; devising content that will facilitate education; crafting a blueprint of learning experiences; performing these learning occurrences with appropriate procedures and content; and appraising the accomplishment of learning results and revising approaches as necessary. According to Gibson (1998) a prominent factor in teaching successfully online to adults is making sure that “the learner is, for most part, in charge of what gets learned” (P. 65).

Learning styles are so assorted that no solitary theory can sufficiently tackle in totality the diverse perspective adults bring to a learning community. However this has not prevented theorists from offering their own perspectives to the discussions about the nature and nuances of adult learning styles. This exploration is necessary if universities developing on-line Professional Master of Science degree programs that are the most effective in developing new applied scientists.

## **Kolb**

Kolb's (1985) provided a framework of learning styles and developed the following four categories of adult learning styles: convergers, divergers, assimilators, and accommodators. Convergers collect knowledge by thinking and evaluating and then practically applying new ideas and perspectives. The aptitude to practically apply fresh concepts is this learner's maximum competence. Convergers classify data through hypothetical deductive and logical oriented interpretation (Kolb, 1985).

Divergers acquire new data via their insight and intuition. Individuals with this chosen style of learning draw upon their imaginative competence and their aptitude to observe multifaceted circumstances from a mixture of vantage points and contexts. Divergers also enjoy the ability to effectively amalgamate information into coupled contexts. Divergers' imaginative talent is their utmost learning proficiency (Kolb, 1985).

Assimilators' possess significant capacity to construct theoretical models and critically think inductively. Assimilators learn most effectively by thinking, assessing, reflecting, and planning. Assimilators focus chiefly on the expansion of constructs and theories to a spot that often ignores facts that contradict the foundations of those theories and constructs (Kolb, 1985).

Accommodators, unlike assimilators, will cast off constructs and theories if the facts do not match. Accommodators do exceptionally well in scenarios where they have to apply constructs to a specific state of affairs. Their peak strength is their ability to complete tasks and to become fully involved in fresh occurrences. Accommodators approach problems in an intuitive, trial and error manner, and they obtain information from others rather than from their own critical assessment capabilities (Kolb, 1985).

Kolb's learning model sets out four distinct styles, which are based on a four-stage learning cycle that offers a unique way to understand different learning styles. Kolb believed that the four-stage cycle of learning was a central principle of his experiential learning model. In this cycle the learner goes through the following four emotions: experiencing, reflecting, thinking, and acting. Each of the emotions depends on the next to achieve the optimum experience (Kolb, 1985).

Kolb's (1985) model therefore works on two levels: a four-stage cycle and a four-type definition of learning styles:

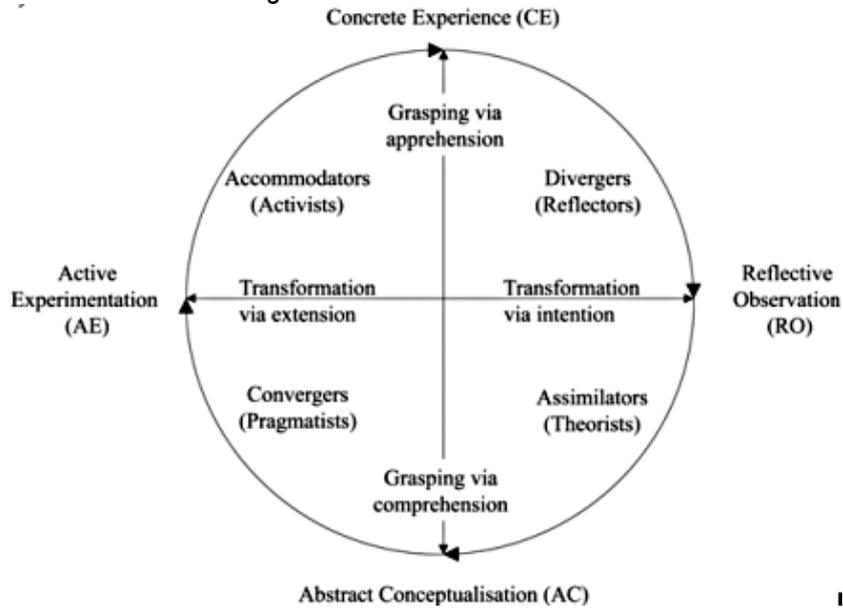
Four-stage cycle:

1. Concrete Experience - (CE)
2. Reflective Observation - (RO)
3. Abstract Conceptualization - (AC)
4. Active Experimentation - (AE)

Four-type definition of learning styles:

1. Diverging (CE/RO)
2. Assimilating (AC/RO)
3. Converging (AC/AE)
4. Accommodating (CE/AE)

And when put together becomes the following model:



### Myers-Briggs

The Myers-Brigg personality indicator is based on Carl Jung’s learning model. This indicator has been used in educational settings to find the best instructional fit for the adult learner. The results of the indicator are broken down into four personality stages and each stage is broken down into two opposites to create one of 16 combinations (Baron, 1998).

The Myers-Briggs stages are as follows:

Extraversion	Introversion
Sensing	iNtuition
Thinking	Feeling
Judging	Perceiving

The Myers-Briggs combinations are as follows:

ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ

The way that the adult learner rates on the stages of Myers-Briggs will determine how they will react in the world. Educators are encouraged to tailor the delivery of the material to the student's identifier because learning will be halted if the delivery is not compatible (Baron, 1998).

Aslanian and Brickell (1980) outlined that adults do not learn for learning sake or the as a check-the-box experience, rather they do so to adapt to change and to be more competitive professionally. The more life changing events that adults encounter, the more motivated they are to seek new learning experiences.

Keefe (1989) outlined adult learning styles into four distinct categories: cognitive styles, affective styles, physiological styles, and interpersonal styles. Cognitive styles relate to receiving, forming, and retaining information. Affective styles refer to attention and motives for learning. Physiological styles refer to learning behaviors related to physical or physiological factors. Interpersonal styles refer to learning behaviors related to social or relational variables. All of these categories contribute to the learning styles of adults in their own respective areas.

## **LEARNING STYLES AND ON-LINE LEARNING**

Instructors need to take learning styles into account due to the fact that technology is part of the educational environment (Buch & Bartley, 2002). The instructor needs to know the learning styles of the students in order to effectively deliver the course content. The instructors also need to utilize a variety of teaching, learning, and assessment methods to enhance new knowledge development (Zapalska & Brozik, 2007). According to Kelly (2006) when it comes to teaching adults, the instructor needs to be flexible and able to adapt the material to real life examples to which the adult learners can relate. There are six factors that motivate adult learners: attitude, need, stimulation, affects, competence, and reinforcement (Kelly, 2006).

Technology is enhancing access to learning for students (Li & Edmonds, 2005). As a result of on-line learning many adult learners are benefiting from being educated through technology (Diaz & Carnal, 1999). A 2011 study revealed over 6.1 million students enrolled in an online course in fall 2010, a 10.1% increase over the previous year (Lytle, 2011). Data further shows growth in online learning exceeds higher education growth and academic executive's view online learning as an integral part of a universities long-term strategy (Lytle, 2011).

The fastest growing online discipline gaining momentum is healthcare. Business and computer information sciences have also shown an increase in enrollment over the years while education and psychology declined in enrollment in 2010 (Lytle, 2011). The report acknowledged that 67% of academic executives rated the superiority of online learning as being comparable to traditional classroom instruction; an increase from 57% in 2003, when the rating was originally published (Lytle, 2011).

Online proponents posit online learning promotes critical thinking and improves problem-solving skills through discussions, online activities, and instructor interaction (Blake, 2000, as cited in Yang, 2005). The argument is made that online learning also fosters a non-bias learning environment since factors like race or physical characteristics are never present (Palloff & Pratt, 1999, as cited in Yang, 2005).

Based upon research findings the role of the online instructor differs from traditional lecturers. Online instructors become facilitators or mentors. As a facilitator, the instructor must adjust teaching methods to support the new mode of delivery (Ascough, 2002). Information must be selected and dissected to create engagement through thought-provoking discussions (Kettner - Polley, 1999, as cited in Yang & Cornelious, 2005).

Although there are many positives to technology, there has been negative feedback from the introduction of technology to education (Buckley & Smith, 2008). Acceptance of technology in various academic communities has been varied. While some colleges have embraced on-line learning as an innovative wave of the future, others have questioned its value and creditability (Buckley & Smith, 2008). There have been concerns regarding cost and complications of technology as well (Gibson, Harris & Colaric, 2008).

Online opponents also assert the online format is a profit making business that utilizes instructors who have not earned a doctorate degree or failed to implement an instructional design that promotes students' critical thinking (Brown & Green, 2003, as cited in Yang & Cornelious, 2005). Other critics conclude that the online format does not maintain academic honesty. Concerns include plagiarism and cheating (McAlister, Rivera & Hallam, 2001).

Technology is advancing at such a rapid rate that it is a necessity for colleges to stay competitive in their ability to provide educational opportunities to the most diverse spectrum of students. Technology is not cheap and it is tapping into already limited resources of the colleges and universities (Gibson, Harris, & Colaric, 2008). There is a need for better planning and collaboration to stay current with not just technology but the best ways to reach and teach adult students. According to Ascough (2002) for the online system to be effective in teaching students, interaction between student and instructor is critical. Research, discussions, and reflection ensure deeper learning and engagement. Consequently, the instructor and student are accountable for the students' learning outcomes being achieved.

In addition to the business side of education, the academic side has had negative feedback as well (Metzger, 2001). The virtual environment has issues that cause a negative experience for both the instructor and the student. According to Dykman and Davis (2008), the need for consistency, clarity and knowledge are just a few issues that are critical for a virtual environment to work. Deubel (2003) posit the instructors' attitude, level of commitment to the online format, and the instructors comfort with technology are factors that have the potential to undermine a quality virtual program.

## CONCLUSION

The growth of new services and products in environmental and biotechnological sciences and the emergence of global environmental health disasters like the B.P. oil spill and the nuclear plant emergency in Japan have increased the need for more environmental scientists. This need for new professionals also comes at a time when colleges and universities are facing shrinking financial resources and limited classroom facilities. On-line learning degree programs and innovative environmental science degree programs have the ability to meet the world's tremendous workforce development needs, assuming that these on-line degree programs are developed with the full consideration of the learning styles of diverse students and adult learners.

Identifying the learning styles of students in an online format resides with the instructor. As a facilitator and mentor, the instructor must intersect with students; adjust his or her attitude to accommodate the needs of the student and the challenges of the online format since online instruction differs from traditional learning. Technology expertise and the ability to create engagement is equally important to ensure the students' learning outcome is achieved.

The Professional Science Master's (PSM) degree is an innovative two-year graduate degree designed to allow students to pursue advanced training and excel in science while simultaneously developing highly-valued business skills. What is powerful about the benefits of on-line degree programs is that they allow science professionals that travel extensively or that work in remote locations to have access to professional development degree programs 24 hours a day through accessing the Internet. On-line learning can foster the development of national and international learning communities that engage in knowledge development, knowledge collaboration, and knowledge sharing through the development of learning communities of practice.

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# TEACHING TAX EFFECTIVELY USING THE AICPA'S MODEL TAX CURRICULUM

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## ABSTRACT

*The American Institute of Certified Public Accountant's (AICPA's) vision statement outlines that a practicing accountant cannot deliver value to a company without a foundation in tax. To help educators determine what, exactly, the AICPA deems this foundation in tax to be, the AICPA has created a Model Tax Curriculum outlining tax topics that tax educators should cover in their undergraduate tax classes. The AICPA's goal is to ensure that "all accounting students obtain the fundamental tax knowledge they need to begin careers in accounting or tax regardless of the path that a student might take to obtain a degree." The Model Tax Curriculum furthers that goal by breaking the study of taxation into core components that include: 1) the role of taxation in economic decision making and financial reporting; 2) the fundamental tax laws and essential tax-planning concepts; and 3) the breadth of existing tax issues and their impact on a variety of taxpaying entities. This paper reviews the AICPA's Model Tax Curriculum and concludes that it provides a comprehensive overview of tax subjects that students need to enter the accounting profession. It outlines effective teaching methods that can be gleaned from the Model Tax Curriculum. Consequently, tax educators – particularly those who are teaching income tax at the university undergraduate level – should incorporate the AICPA's Model Tax Curriculum into their teaching plans. The Model Tax Curriculum recommends teaching students more information than can be covered in a single semester, however. Thus, tax educators and universities also should compel students to take multiple tax courses to ensure that the students are exposed to the full breadth of information that they will need to pursue careers in taxation.*

**Keywords:** *Tax, Curriculum, Teaching Methods, Tax Foundation, Tax Educators, Model Tax Curriculum, Critical-Thinking Skills.*

## INTRODUCTION

Income tax accounting is statutory-based and highly regulated. In theory, this rigidity compels uniform treatment of similar taxation issues in all cases. In practice, however, multiple tax professionals addressing the same questions may reach varying answers about proper tax treatment, or may reach identical conclusions, but for different reasons. Even a single tax professional may advise multiple clients to treat similar tax questions differently, depending on considerations unique to each client. Indeed, the hallmark of a successful tax professional is the ability to employ critical-thinking skills to handle tax issues in a manner that is simultaneously consistent with the tax code and the client's business or personal objectives.

Just as tax professionals may follow multiple paths to resolve outstanding tax questions, so too tax educators may choose from numerous methods to teach income tax theory and practice to their students. Well-established teaching methods include a forms-based approach, a research and code-based approach, a strict problem-based approach, and a life-cycle approach. Each method has its strengths and weaknesses, but they share a common goal: to develop students with a substantive knowledge of and approach to the practice of income tax.

Without a doubt, the teaching method that a tax educator chooses will influence how his or her students evaluate and manage the tax issues they face. Regardless of which method we employ, however, our task as tax educators is to provide our students with a broad-based understanding of the tax code and the skills to implement it in our global economy.

The American Institute of Certified Public Accountants (AICPA), which governs accounting professionals, has created a Model Tax Curriculum outlining tax topics that tax educators should cover in their undergraduate tax classes. The AICPA seeks to ensure that "all accounting students obtain the fundamental tax knowledge they need to begin careers in accounting or tax regardless of the path that a student might take to obtain a degree." The Model

Tax Curriculum pursues that goal by breaking the study of taxation into a string of components from the basic, such as “comprehend the rationale for tax laws,” to the complex, such as the ability to “communicate tax conclusions and recommendations in a clear and concise manner.” In between, the curriculum asks educators to expose their students to a broad range of tax issues and their impact on a variety of taxpaying entities. It further contemplates educators developing their students’ ethical, interpersonal, and technological skills.

Tax educators who wish to prepare their students to succeed as tax and accounting professionals would be well served to follow the Model Tax Curriculum. Regrettably, while the AICPA has invested substantial resources into developing the Model Tax Curriculum to develop future CPA’s core competencies, it has not widely publicized it. Thus, tax educators who want to prepare their students for professional accounting careers according to the AICPA’s guidelines must seek out the Model Tax Curriculum on their own. The materials are available on the Accounting Education Center page of the AICPA’s website.

## **THE AICPA WEIGHS IN**

The AICPA is the national professional organization for all American Certified Public Accountants. Among its many activities, the AICPA supports the development of outstanding academic programs to help students begin careers in tax and accounting. Specifically, the AICPA recognizes that a student’s positive exposure to tax and accounting concepts “has a key role in attracting students toward careers as tax professionals.”

The AICPA has created a Model Tax Curriculum to help tax educators instruct future CPAs in a manner befitting the profession. The AICPA Mission Statement describes the value that CPAs deliver to their clients as having multiple parts:

- Communicating the total picture with clarity and objectivity,
- Translating complex information into critical knowledge,
- Anticipating and creating opportunities, and
- Designing pathways that transform vision into reality.

The AICPA further recognizes that fulfilling this vision in the future requires tax educators to impart a solid tax foundation to their students:

Because taxation is pervasive, complex and critical to decision-making, we recommend that accounting faculty carefully examine the tax component of their curricula to ensure that all accounting students obtain the fundamental tax knowledge they need to begin careers in accounting or tax regardless of the path that a student might take to obtain a degree.

Consequently, the Model Tax Curriculum offers tax educators recommendations about the content of their tax programs “so that the AICPA’s vision and its tax section’s mission can be maximized.”

The Model Tax Curriculum breaks down the study of taxes into three main pieces: 1) the role of taxation in economic decision making and financial reporting; 2) the fundamental tax laws and essential tax-planning concepts; and 3) the breadth of existing tax issues and their impact on a variety of taxpaying entities. These three components, in turn, include subparts that each might comprise a series of lectures, and that suggest analytical and problem-solving discussions. Moreover, the Model Tax Curriculum identifies tangential skill sets, including technological skills, interpersonal skills, and communication skills that future CPAs should hone as part of their tax education. Finally, the Model Tax Curriculum sets forth additional teaching materials such as sample case studies and simulations. These pieces, when reviewed by a professor and used in a tax class setting, add benefits to a class. Each skill set is valuable to today’s Certified Public Accountant.

Notably, the Model Tax Curriculum does not provide specific lesson plans or substitute for an individual educator’s class preparation. By way of example, the Model Tax Curriculum endorses teaching students to “apply analytical reasoning tools to assess how taxes affect economic decisions for all taxpaying entities,” but leaves to the

educator's discretion the most efficient means to prepare and present that information. As such, the Model Tax Curriculum articulates what savvy tax educators already know: that the key tax concepts that they present to their students link to the functional and analytical "core competencies" that the students need to pursue tax and accounting careers. Indeed, perhaps the most useful part of the Model Tax Curriculum is its extensive matrix that correlates broad-based tax subjects with the students' personal and professional development competencies and with the technical tax skills crucial to tax and accounting professionals.

Consistent with its "big picture" approach, the Model Tax Curriculum does not promote any single tax-teaching method over another. Thus, tax educators can and should adopt the Model Tax Curriculum whether they follow a forms-based approach, a research and code-based approach, a strict problem-based approach, and a life-cycle approach. The Model Tax Curriculum does, however, encourage tax educators to "use an approach that integrates planning, research, and financial accounting concepts from a decision-making perspective." This edict lends itself to tax educators following a hybrid teaching approach that parallels the variety of methods available for evaluating and resolving tax problems.

## **THE CHALLENGE FOR TAX EDUCATORS: TEACH YOUR STUDENTS TO THINK**

At its core, the Model Tax Curriculum recognizes that successful tax educators do more than teach their students rules for rote tax preparation. Given the ever-changing tax rules, and the need to evaluate even small tax issues in the context of a client's overall financial objectives, successful tax educators provide their students with a framework in which to review a tax problem, identify the underlying tax issue, research the tax law, and then apply the facts to the law in a manner that best satisfies both the tax code and the client's individual needs. Teaching students to think critically is, of course, more difficult than asking them to memorize various sections of the tax code. But our tax students and future accountants will benefit far beyond their grade in a single tax course if they learn the framework for dealing with potentially complex and unique issues, rather than just memorizing the rules. Absent such a framework, the students will lack the flexibility to recognize that sometimes they have to set aside "the way we've always done it" in the face of a more advantageous approach.

The Model Tax Curriculum's goal of helping students "understand the fundamental tax law" and apply the law to essential tax planning concepts illustrates the need for tax educators to teach their students critical-thinking skills. The Federal Tax Law – Title 26 of the United States Code – is a long, convoluted set of laws that covers thousands of pages. And it is subject to change at the whim of legislators, regulators and courts. Tax educators who say that their students, after only a few weeks of study, understand the fundamental tax law are simply wrong. Students may grasp certain concepts of the law, such as the basic definition of income, but they do not understand the fundamental tax law. To help them obtain that understanding, thus, tax educators must give their students the background to identify tax issues and research existing resources for answers. They must help them to recognize when existing resources do not have the answer to the specific pending question. This guided research will aid students in the future when a question does not fit neatly into a tax form box.

Indeed, once the students have critical-thinking skills in place, they can use those skills to become effective tax planners and productive members of an accounting practice. No one wants to pay more taxes than necessary. Clients seeking an accountant today are looking for someone who can help them with tax planning to minimize taxes in their business and personal lives. Because every client's situation is different, an accountant must be armed with critical-thinking skills to work with an array of clients to answer an array of questions and be an effective tax planner.

Along these same lines, the Model Tax Curriculum asks tax educators to focus their students' attention on the fact that all business decisions are in some form or fashion related to taxes. Thus, for example, tax educators cannot be content with teaching their students how to calculate depreciation on equipment; they must also give the students a framework for advising a client on the long-range financial ramifications of the proposed equipment purchase. A company that is considering a new line of products needs professional assistance to evaluate not only if the product fits its "brand" or if the new product would sell in the marketplace, but also, what tax consequences will the company incur by purchasing the equipment needed to produce the new product? How will the sales of this new product

affect the company's bottom line and thus the company's income taxes? Will the company need to hire new employees? What will this mean to the company's payroll and income taxes? Clearly, each of these economic decisions must be studied from a tax standpoint as well as from a business standpoint before the decision is finalized. Teaching our students the calculation of taxes is not enough; educators should strive to also teach the relationship between taxes and the economic decisions business leaders face every day.

## THE ROADMAP FOR UNIVERSITIES: TWO IS BETTER THAN ONE

The Model Tax Curriculum proposes a vast amount of information for tax educators to present to their students. It is far too extensive to give due consideration in a single undergraduate semester course. One semester of class amounts to 43 hours of class and test time. Any tax educator who purports to present a complete tax overview in that time frame necessarily gives short shrift to at least some of the suggested topics. This is particularly true of large lecture courses. Indeed, the Model Tax Curriculum recognizes that full tax-oriented development "cannot be accomplished via a single individual income tax-oriented course which is exclusively lecture-based." A single semester is simply not enough to even introduce the federal tax code as it applies to individuals, much less business entities.

Consequently, the AICPA contemplates compelling students to take more than one semester of taxation courses, and also identifies alternative opportunities for students to develop their tax knowledge. These suggestions are forward-thinking. Most colleges and universities divide the study of income tax into Income Tax I, which covers individual income tax, and Income Tax II, which covers the study of corporations, partnerships, trusts, payroll taxes, and other entity tax issues. But the institutions typically require that students take only the first semester course. Thus, students who pursue the mandated course load will forego the opportunity to learn how taxation affects the business and economic decisions of entities, as opposed to individuals.

A mandatory second tax class, focusing on the interpretation and application of tax issues to entities, would help ensure that future accountants have the skills and knowledge necessary to become effective business leaders. This conclusion is clear with regard to students who wish to pursue a career in accounting or taxation. But it applies even more broadly. Colleges should compel all business students to take a second tax course to reinforce the notion that tax issues have a day-to-day impact on the financial and economic decisions of every business entity; that is, that taxes are not simply an individual issue, but also a business issue.

We reviewed the current accounting degree requirements for six of the major universities in South Carolina. While each of the major public universities in South Carolina offers its accounting students a course covering taxation of business entities, none of the universities requires the students to take the second course to graduate. Therefore, many students may graduate without a comprehensive knowledge of taxation of business entities, only learning the basics of individual taxation. The table below synthesizes some South Carolina undergraduate accounting program requirements:

University Name	Accounting Program Offered	Individual and Business Income Tax Classes Offered Separately?	Are Both Required?
Lander University	Yes	Yes	No
University of South Carolina	Yes	Yes	No
Clemson University	Yes	Yes	No
Francis Marion University	Yes	Yes	No
Winthrop University	Yes	Yes	No
College of Charleston	Yes	Yes	No

Although it may be a large undertaking to change a university's internal curriculum to require a student to take two semesters of income tax to graduate with a degree in accounting, according to the AICPA's Model Tax Curriculum, it is necessary. Therefore, we as professors should encourage our students to enroll in both semesters of income tax

to make sure the students are introduced, as the objective states, to “a broad range of tax issues and their impact on a variety of taxpaying entities.”

## CONCLUSION

The Model Tax Curriculum encourages tax educators to “enhance students’ tax knowledge while developing their communication, intellectual, and interpersonal skills.” Although not all classes will fit neatly into the Model Tax Curriculum, it is a starting point to prepare students who will become practicing accountants with a uniform tax-knowledge base and the skills needed to succeed in their profession.

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Accounting program information:

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2. [www.usc.edu](http://www.usc.edu)
3. [www.clemson.edu](http://www.clemson.edu)
4. [www.fmarion.edu](http://www.fmarion.edu)
5. [www.winthrop.edu](http://www.winthrop.edu)
6. [www.cofc.edu](http://www.cofc.edu)

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Federal Tax Code, Title 26, United States Code (26 U.S.C.).

# RELATING ONLINE FLOW EXPERIENCE WITH INTERNET ADDICTION

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## ABSTRACT

*In the past decade, research has accumulated suggesting that excessive Internet use can lead to the development of a behavioral addiction. Internet addiction has been considered as a serious threat to mental health and the excessive use of the Internet has been linked to a variety of negative psychosocial consequences. Some Internet users may develop an emotional attachment to on-line friends and activities they create on their computer screens. Internet users may enjoy aspects of the Internet that allow them to meet, socialize, and exchange ideas through the use of chat rooms, social networking websites, or virtual communities. This study examines the impact of flow on internet addiction. Several authors have suggested that the concept of flow is useful for understanding consumer behavior in computer mediated environments, (Csikszentmihalyi, 1990; Trevino and Webster, 1992; Hoffman and Novak, 1996). It has also been suggested that Internet flow seems to prolong Internet and web site usage leading as to propose a connection between flow and internet addiction. In this paper we developed a research model and propose a methodology test the model.*

**Keywords:** *Flow, Internet Addiction, Challenge, Concentration, Curiosity, Control, Enjoyment.*

## INTRODUCTION

Definitions vary, but it has been suggested that the concept of Internet addiction is a compulsive-impulsive spectrum disorder that involves online and/or offline computer usage (Dell'Osso et al., 2006; Hollander and Stein, 2006) and consists of at least three subtypes: excessive gaming, sexual preoccupations, and e-mail/text messaging. All of the variants share the following four components: 1) excessive use, often associated with a loss of sense of time or a neglect of basic drives, 2) withdrawal, including feelings of anger, tension, and/or depression when the computer is inaccessible, 3) tolerance, including the need for better computer equipment, more software, or more hours of use, and 4) negative repercussions, including arguments, lying, poor achievement, social isolation, and fatigue (Block, 2007; Beard and Wolf, 2001). Most of these symptoms relate to concept of flow online. However, in spite of such possible relationships, much of the original research on Internet addiction and use was based largely on exploratory research methodology, often with no clear hypothesis or rationale backing them. Coming from a non-theoretical approach has some benefits, but also is not typically recognized as being a strong way to approach a new disorder. More recent research has expanded upon the original surveys and anecdotal case study reports and has begun to take a theoretical approach to examine Internet addiction.

## Study Objective

The aim of this study is to 1) propose and evaluate a model that explains the link of flow online and Internet addiction. A systematic literature search, provide compelling evidence for a connection between flow and online behaviors, and 2) analyze the moderating effects of socio-demographic variables in these relationships. Depending on their socio-demographic characteristics, users may internalize different levels flow experience in order to become addicts to the Internet.

## LITERATURE REVIEW

### Internet Addiction

Past research suggests that 1.4 percent to 17.9 percent of adolescents are addicted to the Internet, with percentages higher in Eastern nations than in Western nations (McMillian, 2009). In the survey of 2,293 seventh-grade students in Taiwan, 10.8 percent developed an Internet addiction, which was determined by a high score on an Internet addiction scale. After a series of 10 cardiopulmonary-related deaths in Internet cafés (Choi, 2007) and a

game-related murder (Koh, 2007), South Korea considers Internet addiction one of its most serious public health issues (Ahn, 2007). Using data from 2006, the South Korean government estimates that approximately 210,000 South Korean children (2.1%; ages 6–19) are afflicted and require treatment (Choi, 2007). About 80% of those needing treatment may need psychotropic medications, and perhaps 20% to 24% require hospitalization (Ahn, 2007).

Since the average South Korean high school student spends about 23 hours each week gaming (Kim, 2007), another 1.2 million are believed to be at risk for addiction and to require basic counseling. In particular, therapists worry about the increasing number of individuals dropping out from school or work to spend time on computers (Choi, 2007). As of June 2007, South Korea has trained 1,043 counselors in the treatment of Internet addiction and enlisted over 190 hospitals and treatment centers (Ahn, 2007). Preventive measures are now being introduced into schools (Ju, 2007).

### **The Concept on Flow on the Internet**

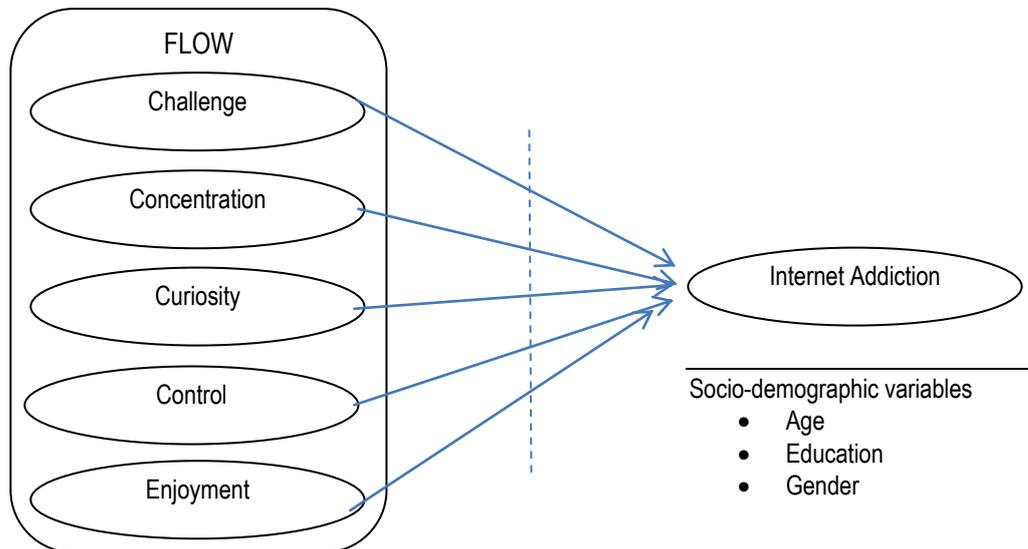
Hoffman and Novak (1996) identify flow as a key characteristic of consumer behavior on the Internet, “flow is the ‘glue’ holding the consumer in the hypermedia Computer Mediated Environment.” (p. 57). Hoffman and Novak (1997) also apply the concept to repeat usage and stated “Research can determine the variables that relate to a consumer’s propensity to enter the flow-state, and such information can be used to develop marketing efforts....since repeat visits to a particular web site will be increased if the environment facilitates the flow state” (p.51). Commercially, the concept of ‘stickiness’ is a crucial element of web design; this includes features like regularly updated content and online diaries which increase the frequency and duration of web site visits; design which encourages flow should increase stickiness, but not all ‘stickiness’ is due to flow. This paper explores the nature of the experience of flow and the possible impact of Internet addiction. Csikszentmihalyi (1975) originally identified four flow components: control, attention, curiosity, and intrinsic interest.

Other conceptualizations of the flow experience in human-computer interactions include those by Ghani and Deshpande (1994), Ghani, Supnick, and Rooney (1991), and Hoffman and Novak (1996). Ghani, Supnick and Rooney (1991) in their study of computer-mediated interaction found control and challenge predicted flow. Control and flow also predicted exploratory use, which in turn predicted extent of use. Trevino and Webster (1992) fit an alternative causal model in their study of workers’ perceptions of flow during email and voice mail interactions.

They used a different operational definition of flow that consisted of four items measuring control, attention focus, curiosity and intrinsic interest. Novak, Hoffman and Yung (2000) conceptualize flow on the Web as a cognitive state experienced during navigation that is determined by (1) high levels of skill and control; (2) high levels of challenge and arousal; and (3) focused attention; and (4) is enhanced by interactivity and telepresence. As formative, these dimensions are represented as antecedents and as reflective they are represented as factors. Collectively, these conceptualizations affirm the key role played by the flow experience in shaping individual behaviors towards the target information technology. Given these two possible representation flow, Siekpe (2005), in using a survey sample of Internet users and structural equation modeling for analysis indicated that the reflective conceptualization of flow with respect to the dimensions of challenge, concentration, control, and curiosity outperform the formative model in data fit and explanation of behavioral intentions.

### **Research Model**

In this study we examine flow with a focus on its application to the Internet environment. As indicated earlier, Hoffman and Novak (1996) proposed that Web designers should add flow experience to Web sites we propose that the degree of flow assessed through dimensions of challenge, concentration, curiosity, control, and enjoyment has a positive direct relationship to Internet addiction.



### Moderation effects

We recognize that the causes of Internet addiction could be moderated by a combination of several factors. For example, a recent report by Nielsen, a provider of online audience and behavior ratings and metrics, shows that while men and women make up a comparable portion of Internet users, the amount of time they spend on the Internet varies. This report shows that men were more likely to go online, spend more time online and view more Web pages. Similarly, a study by Forrester Research, a provider of consumer insight, technology and business marketing research, expands on generational differences in online behavior. Generations X (ages 29-42) and Y (ages 18-28) use the Internet for interactive purposes at similar rates, though their personal purposes vary. They are both more likely to read blogs, watch Internet videos and spend more than 9 hours online a week for personal purposes than other generations, however, Generation X is more likely to go online to for transactional purposes than Generation Y. Unlike all other generations, generation Y spends more time online – for leisure or work – than watching TV. This leisure time includes playing games online and visiting social networking sites more frequently than other generations. Generation Y is also most likely to access the Internet away from the home and work. Other studies have also pointed to differences in education. According to a Pew Internet survey (2012) as of 2011, internet use remains strongly correlated with age, education, and household income, which are the strongest positive predictors of internet use among any of the demographic differences we studied.

### METHODOLOGY

Conventional flow research has adopted two main methodologies, the flow questionnaire, which explains the concept and asks respondents to describe similar previous experiences, and the Experience Sampling Method or ESM (Larson and Csikszentmihalyi, 1983), which interrupts respondents at random intervals. We adopt the former methodology in this study.

### Measures

The main dimensions of contention associated with flow, from the literature review are: concentration, control, challenge, curiosity, and enjoyment and thus are considered in this study. This study adopts measurement scales for concentration, challenge, curiosity, and control based on flow measurement proposed by Ghani and Desphande (1994). These scales comprise of a three-item challenge and control semantic and four-item concentration, curiosity and enjoyment semantic differential measurement scale. These scales were found to have acceptable reliabilities in previous studies (Koufaris, 2002). The other latent constructs, Internet addiction was equally operationalized with established scales. The Internet addiction scale (IAS) is a modification of the earlier 8 item scale, Young’s Diagnostic Questionnaire (Young, 1996) which Views Internet addiction as an impulse-control disorder. The IAS is the most widely used Internet addiction scale. The term “Internet” as used in this study refers to all types of on-line activity and measures the degree to which the Internet affects aspects of one’s daily life (E.g., Daily routine, sleep pattern, productivity, social life, feelings)

## Data Collection and Analysis

The data collection was accomplished through an online survey method. In the questionnaire respondents were presented with a web link (in a self-completion questionnaire) and asked to voluntarily participate. The scales were tested for reliability and multicollinearity. Our intended technique for data analyses is to apply structural equation modeling for model testing and multiple regression analysis for testing moderating effects.

## CONCLUSION

This paper presents a conceptual proposed model linking flow dimensions to Internet addiction. We incorporate the possible moderating effects of relevant socio-demographic variables on the relationship between flow and Internet addiction. The results of this study will have potential implications, both academic and theoretical. For example, our results could point out the dimensions of flow that most detrimental in Internet addiction. Such dimensions could be used as guides for designing websites.

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# RELATIONSHIP BETWEEN THE EXPERIENCE OF DEATH OR SERIOUS INJURY/ILLNESS AND THE PRESENCE OF DSM-IV CRITERIA-BASED GENERALIZED ANXIETY AMONG OLDER ADULTS

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## ABSTRACT

**Background:** Since 1900, the percentage of Americans 65+ has tripled (from 4.1% in 1900 to 12.4% in 2006), and the number has increased twelve times. Some type of disability, to include mental disability, was reported by 52% of older persons in 2002. The prevalence of DSM-IV based generalized anxiety and a comprehensive medical measurement is needed given the drastic rise in the elderly population and their propensity to experience environmental death and/or serious illness and injury (DSI/I).

**Objective:** To analyze the likelihood of having DSM-IV criteria-based generalized anxiety when experiencing DSI/I of a family member or close friend within the last twelve months. Specifically, this study utilized a medical model approach by positively screening the elderly sample while utilizing the exact criteria as outlined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

**Methods:** This study is a cross sectional study and secondary data analysis of the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). A stratified sampling design was required to evaluate those within the NESARC data set who were 65 years of age or older. The data was initially processed with SAS in conjunction with SAS callable SUDAAN to account for the complex design of the survey. Frequency distributions were completed for independent variables by generalized anxiety diagnosis criteria. Bivariate analyses were used to compare DSM-IV criteria-based major depression diagnosis with the independent variables. Multivariate analyses were conducted to assess the relationship between the outcome variables and independent variables while adjusting for covariates.

**Results:** Older persons who had experienced either DSI/I of a close family member or friend within the past 12 months were no more likely to have generalized anxiety than those who did not experience DSI/I of a close family member or friend within the past 12 months. Similarly, older persons who had experienced both DSI/I of a close family member or friend within the past 12 months were no more likely to have generalized anxiety than those who did not experience DSI/I of a close family member or friend within the past 12 months. DSI/I were inconsistent throughout the multivariate analysis when utilizing modeling procedures and controlling for effects associated with demographics, resources, heritage, and symptoms (Table 3).

**Conclusion:** The DSI/I and its environmental effects on the older population are apparent while diagnosable accounts of DSM-IV criteria-based generalized anxiety remain insignificant for those who experience DSI/I. The mixed findings between Models 1-5 suggest that further research is needed given the limited sample size and the variation in results for generalized anxiety within the elderly population and DSI/I.

**Keywords:** Anxiety, Depression, Elderly, Death, Injury, Illness, Caregiving and Stress.

## INTRODUCTION

The critical combination encompassing disability and cost stimulates the focus of concern on the elderly population and its growing numbers within the United States. Since 1900, the percentage of Americans 65+ has tripled (from 4.1% in 1900 to 12.4% in 2006), and the absolute number of older persons has increased twelve times (from 3.1 million to 37.3 million) ("A Profile of Older Americans: 2007," 2007). The elderly population's massive growth is a tribute to technological and medical advances, however the increases in age allow for longer periods of chronic and disabling diseases. Some type of disability (sensory disability, physical disability, or mental disability) was reported by 52% of older persons in 2002 ("A Profile of Older Americans: 2007," 2007).

Moreover, the elderly adult also has an increased likelihood to suffer multiple types and quantities of human loss during their lifetime. About 30.3% (10.7 million) of all non-institutionalized older persons in 2006 lived alone (10.7 million elderly) ("A Profile of Older Americans: 2007," 2007). Many elderly adults suffering from loneliness also play victim to economic and financial hardships. For all older persons reporting income in 2006 (34.8 million), 23.2% reported less than \$10,000, only 32.5% reported \$25,000 or more, and the median income reported was \$17,045. This "formulary of disaster" consisting of population explosion, loneliness, potential for disability, and income levels at or below the poverty level, catalyze the potential for mental disorders and psychological disturbances.

The purpose of this study is to determine whether or not an older adult faces a greater chance of suffering from DSM-IV based generalized anxiety if a close friend or family member dies or if a close friend or family member is suffering from a serious illness or injury or a combination of either or both episodes. The variable that combines death and serious illness/injury will be referred to throughout this article as DSI/I.

## **BACKGROUND**

### **Gaps in the Literature**

A complete and thorough literature review has yet to be complete although the NESARC accounts for additional covariates, such as DSI/I, which represent a more accurate account of DSM-IV criteria-based generalized anxiety than those datasets who do not control for factors such as demographics, resources, heritage, and symptoms. The purpose of a screener is to identify those elements, which provide substantial evidence supporting the diagnosis in question, and refer the patient to a mental health provider for further evaluation and treatment. The NESARC dataset allows for the screening criteria needed in order for access point personnel to recognize the symptomatic characteristics and refer patients to specialty care as so screened through a medical model approach to major depression.

### **Area of Original Contribution**

The purpose of this study is to identify the positively screened portion of the older population (> 64 years of age) within a nationally representative sample population and identify whether or not the older population are more susceptible to generalized anxiety if they have experienced the following: a death of a close family member or friend in the last 12 months, a serious illness or injury of a close family member or friend in the last 12 months, or the combination of both measurements. Additionally, the study will aim to determine if an older person having each of the instances or both of the instances happen is either more or less likely to suffer from generalized anxiety.

There are significant contribution factors associated with this study. First, the study follows a medical model approach by utilizing the criteria from the DSM-IV to identify those elderly persons who suffer from generalized anxiety. This is quite different from the subjective questioning of the patient given that the exact diagnostic criteria determine the patient's diagnosis and not the subjective response of the patient. The study will provide medically significant intervention rationale, focusing on the referral process, if an increased likelihood for generalized anxiety is identified. This anxious identification focuses on the increased likelihood that the patient will experience death, and/or serious illness/injury from either a close friend or family member within the previous 12 months.

The study hypothesizes that older persons who experience either DSI/I or both DSI/I over the last twelve months will be more likely to experience generalized anxiety than those older persons who do not experience DSI/I over the last twelve months.

## **METHODS**

### **Data Source and Study Population**

Data from the National Epidemiological Survey on Alcohol and related Conditions (NESARC) 2001-2002 were used to conduct the analysis. NESARC is a nationwide household survey designed and conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). NESARC used a representative sample of the civilian, noninstitutionalized adult population in the United States, including all 50 States and the District of Columbia. The

fieldwork for the survey was completed under NIAAA's direction by trained U.S. Census Bureau Field Representatives who interviewed 43,093 respondents, 18 years of age and older in face-to-face household settings. The population of interest in this study consisted of persons age 65 years and greater ( $n=7,793$ ). The household response rate for the NESARC was 89 percent, and the person response rate was 93 percent, yielding an overall response rate of 81 percent. ("National Epidemiologic Survey on Alcohol and Related Conditions," 2001-2002)

### **Dependent Variable**

Per the DSM-IV, a respondent must have either 1] excessive anxiety and worry for at least six months or 2] a difficulty in controlling the worry to be diagnosed with generalized anxiety. If this requirement is met, the respondent then must respond positively to at least three of six criteria in order to screen positively for generalized anxiety. There were two questions which addressed the excessive anxiety and worry criteria: "Have you ever had a time lasting at least six months when you felt tense, nervous, or worried most of the time?" and "Have you ever had a time lasting at least six months when you felt very tense, nervous, or worried most of the time about everyday problems?" The second criteria were met if the respondent positively responded to any of the following five questions: "Worry a lot about things you usually didn't worry about?", "Find it difficult to stop being tense, nervous, or worried?", "Worry about things that were very unlikely to happen?", "Think about things that weren't really serious?" and "Think that your worrying was excessive?" A positive response to any of these questions was coded as affirming that the individual has difficulty controlling worry.

The next ten questions addressed the DSM-IV diagnostic requisite for a diagnosis of generalized anxiety within the following six areas of interest: 1] restlessness or feeling keyed up or on edge [2] being easily fatigued [3] difficulty concentrating or mind going blank [4] irritability [5] muscle tension [6] sleep disturbance. Of these six areas, positive screen must be identified within three areas for the participant to have generalized anxiety. The ten questions were "Get tired easily?", "Become startled easily?", "Have tense, sore or aching muscles?", "Become so restless that you fidgeted, paced, or couldn't sit still?", "Feel keyed up or on edge?", "Having trouble concentrating or keeping your mind on things?", "Feel irritable?", "Have trouble falling asleep or staying asleep?", "Having times when you forgot what you were talking about or your mind went blank?" and "Have trouble catching your breath or feel like you were smothering?" (Table 4)

Coding was conducted while following the DSM-IV requirements for generalized anxiety diagnosis. The DSM-IV states that "three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past six months); at least two of the criteria are [1] excessive anxiety/worry and [2] difficult to control worry." SAS coding was conducted to ensure that either criteria one and two were met while including that at least three of the remaining standards were also deemed positive by the respondent. This allowed for the positive screening of major depression within the older population surveyed by the NESARC study.

### **Independent Variable**

Death, Serious Illness/Injury (DSI/I) was the independent variable of interest. DSI/I is a hybrid variable, which takes into account the potential for generalized anxiety given the impact of death or serious illness/injury of a close family member or friend within the previous 12 months. DSI/I is a combination of variables to include "death" and "injury" questions, which were associated with the NESARC survey. The particular question regarding death extracted from the NESARC survey was "Any family members or close friends die in the past twelve months?" Likewise, the specific question associated with illness/injury was "Any family members or close friends had serious illnesses or injuries in the past twelve months?" SAS coding was conducted to capture the significance of either of these instances of occurring. DSI/I is divided into three levels of measurement: none, either, or both.

### **Control Variables**

The multiple logistics model controlled for seventeen differing independent variables as it relates to generalized anxiety. The following variables were maintained in their original dichotomous state: sex, origin of birth, living arrangement, employment, financial hardship, mother's history of depression, father's history of depression, worry about being alone, and dependency on others.

The place of birth variable identified whether the respondent was born within the US or outside the boundaries of the fifty states. Race/Ethnicity was coded into the following categories: Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Other. All categories inconsistent with selections within the NESARC survey were distributed into the Non-Hispanic Other category. Multicultural results were limited to the response given by those surveyed.

Sex identified whether the respondent was male or female.

Age was stratified into the following three levels: 65-74 years, 75-84 years, and 85+ years of age. The region variable divided the geographical area of the US into four areas of interest: Northeast, Midwest, South, and West.

Health status evaluated the subjective account of current health within the following five levels: excellent, very good, good, fair, and poor. This evaluation was based on the respondents' perceptions of health and not a medical evaluation.

The employment variable was addressed by the NESARC survey by asking the following question, "Present situation includes working full time (> 35 hours per week)?" This variable is limited, as it does not account for the older population working less than thirty-five hours per week.

Education was re-coded into the following four levels of educational achievement: some high school or less, completion of high school, some college, and college graduate. The original question stratified the sample into fourteen different academic standards. However, the cross sectional nature of this study required the recoding of levels in order to maintain sample sizes significant enough to provide accuracy.

The "income level" variable was based on total personal income and not family income. The NESARC survey stratified total personal income into seventeen identifiable categories. The cross sectional representation of this study required the limiting of categorical levels, thus personal income was adjusted into five levels to include the following: \$0-10,000, \$10,001-\$20,000, \$20,001-\$30,000, \$30,001-\$40,000, and \$40,001.

"Financial hardship" was a dichotomous variable that asked, "Experienced major financial crisis, bankruptcy, or unable to pay bills on time in last 12 months?"

"Living arrangements" were re-coded to produce a dichotomous variable capturing "living alone" or "not living alone".

Heritage variables examined the presence of a family history of depression. The NESARC survey question addressed stated "Blood or natural mother ever depressed?" and "Blood or natural father ever depressed?" Responses were expressed as either a "yes/no" for both questions.

The symptom variables included characteristics focusing on areas of depression, dependence, and alcoholic tendencies and utilization. The question concerning whether the respondent "felt depressed over the past four weeks" was coded into five categories: [1] all the time [2] most of the time [3] some of the time [4] little of the time [5] none of the time.

The "depend on others in life" question asked, "Depend on others to handle important areas in life?" and was coded using a "yes/no" response option.

"Drinking status" divided into three levels of interest: current drinker, ex-drinker, and lifetime abstainer.

"Alcohol intoxication" was re-coded while utilizing the following three levels of interest: not drinking right now, never drank in last twelve months, and 2-11 times per week. This was primarily done to avoid small sampling sizes that were produced following the cross sectional nature of this study.

## Analysis

Analytic procedures were conducted by utilizing SAS statistical analysis software (Cary, North Carolina) to emulate the requirement within the DSM-IV. Frequency distributions were compared prior to and after recoding variables to ensure that proper alterations were similar to those originally intended within the NESARC survey. Additionally, SUDAAN was used to account for the complex weighted sampling structure of the NESARC.

The bivariate analysis of each variable, as it related to generalized anxiety, was conducted while using both SAS and SUDAAN and the cross-tabulation procedure. Statistical measures accounted for both characteristics and prevalence rates as they are associated with DSM-IV criteria-based generalized anxiety. Chi-squared tests were also conducted to establish the relationship between characteristics and DSM-IV criteria-based generalized anxiety (Table 1). Logistics regression was utilized to produce bivariate odds ratios for major depression (Table 2).

Multiple logistics regression analysis was conducted using an incremental approach to modeling. Five models were analyzed (Table 3) while providing stabilizing results associated with demographics, resources, heritage, and symptoms. The five models demonstrated the relationship between DSI/I and having or not having generalized anxiety.

## RESULTS

### Population Characteristics

The prevalence rate for generalized anxiety is 4.5 percent. The older population sampled by the 2001-2002 NESARC Survey, exceeding 32 million older persons through national representation (Table 1), identify that more than nearly 1.5 million of those older persons suffer from generalized anxiety as indicative by the DSM-IV criteria.

The total older population who experienced injury or illness of a close family member or friend was more than 30 percent (Table 1) while there was a significant difference ( $p=0.0245$ ) between those who experience generalized anxiety and DSI/I and those who do not experience generalized anxiety and DSI/I.

More than 73 percent of those who experienced generalized anxiety were female while only 57 percent of those who did not experience generalized anxiety were female.

Of those with generalized anxiety, 19 percent of them reported poor health status while those without generalized anxiety contained only 9 percent of those within the poor health status category.

While 56 percent of those positively screened for generalized anxiety are also living alone, only 41 percent of those without generalized anxiety are living alone.

Only 22 percent of those who positively screen for generalized anxiety have no reported depressive symptoms over the past four weeks while over 55 percent of those without generalized anxiety report have no depressive symptoms.

24 percent of those who screen positive for generalized anxiety report a biological mother who had depressive symptoms while only 9 percent of those who do not have generalized anxiety report a biological mother with depressive symptoms.

Likewise, nearly 16 percent of those who screen positive for generalized anxiety report a biological father who had depressive symptoms while only 4 percent of those who do not have generalized anxiety report a biological father with depressive symptoms.

16 percent of those who screen positive for generalized anxiety report a dependence on others while only 8 percent of those who do not screen positive for generalized anxiety depend on others in life.

**Table 1:** Characteristics of the population 65 years and older, 2001-02 NESARC

	Total n=7,793 N=32,140,717 %(se)	No Generalized Anxiety n=7,420 N=30,681,794 %(se)	Generalized Anxiety n=373 N=1,458,922 %(se)	p-value
DSI/I**				0.0245
None	46.57 (0.75)	46.95 (0.78)	38.30 (2.98)	
Either	30.38 (0.66)	30.17 (0.69)	34.68 (2.81)	
Both	23.06 (0.64)	22.87 (0.65)	27.02 (2.47)	
Place of birth				0.5949
U.S. born	90.56 (1.30)	90.60 (1.31)	89.65 (2.07)	
Non-U.S. born	9.44 (1.30)	9.40 (1.31)	10.35 (2.07)	
Race/Ethnicity				0.9221
Non-Hispanic White	83.48 (1.28)	83.49 (1.27)	83.33 (2.54)	
Non-Hispanic Black	7.80 (0.56)	7.83 (0.56)	7.26 (1.33)	
Hispanic	5.39 (0.77)	5.36 (0.75)	5.95 (1.69)	
Non-Hispanic other	3.33 (0.69)	3.32 (0.67)	3.45 (1.55)	
Sex**				< 0.0001
Male	42.38 (0.66)	43.15 (0.68)	26.12 (2.64)	
Female	57.62 (0.66)	56.85 (0.68)	73.88 (2.64)	
Health status**				0.0003
Excellent	13.32 (0.59)	13.56 (0.61)	8.17 (1.56)	
Very good	22.78 (0.59)	22.97 (0.60)	18.78 (2.45)	
Good	32.25 (0.62)	32.47 (0.64)	27.75 (2.66)	
Fair	21.79 (0.62)	21.61 (0.63)	25.57 (2.70)	
Poor	9.86 (0.43)	9.39 (0.43)	19.73 (2.61)	
Education				0.5055
Some high school/less	27.59 (0.71)	27.40 (0.72)	31.56 (2.91)	
Complete high school	34.53 (0.77)	34.55 (0.77)	34.18 (2.98)	
Some college	15.34 (0.53)	15.41 (0.54)	13.81 (2.28)	
College graduate	22.53 (0.67)	22.63 (0.68)	20.45 (2.36)	
Region**				0.0169
Northeast	20.76 (3.51)	20.96 (3.54)	16.43 (3.54)	
Midwest	23.38 (2.86)	22.99 (2.87)	31.62 (3.83)	
South	35.45 (3.03)	35.66 (3.06)	31.11 (3.88)	
West	20.41 (2.98)	20.39 (3.03)	20.84 (3.50)	
Age				0.6162
65-74	54.62 (0.73)	54.49 (0.74)	57.47 (3.12)	
74-85	35.52 (0.67)	35.65 (0.68)	32.80 (2.99)	
85+	9.85 (0.39)	9.86 (0.40)	9.73 (1.61)	
Income level**				0.0042
\$0-\$10,000	13.81 (0.51)	13.66 (0.51)	17.04 (2.11)	
\$10,001-\$20,000	25.11 (0.60)	24.90 (0.61)	29.52 (2.66)	
\$20,001-\$30,000	19.32 (0.53)	19.50 (0.56)	15.48 (2.15)	
\$30,001-\$40,000	13.91 (0.50)	14.18 (0.52)	8.10 (1.69)	
\$40,001-higher	27.85 (0.79)	27.76 (0.78)	29.85 (2.85)	
Living arrangement**				< 0.0001
Alone	42.45 (0.73)	41.80 (0.72)	56.17 (3.00)	
Not Alone	57.55 (0.73)	58.20 (0.72)	43.83 (3.00)	
Employment				0.8212
Employed	12.23 (0.44)	12.25 (0.46)	11.79 (1.93)	
Not employed	87.77 (0.44)	87.75 (0.46)	88.21 (1.93)	
Felt depressed (over past 4 weeks)**				< 0.0001
All the time	2.02 (0.19)	1.74 (0.18)	7.95 (1.46)	
Most of the time	22.78 (0.59)	4.32 (0.31)	19.12 (2.57)	
Some of the time	32.25 (0.62)	15.45 (0.52)	26.69 (2.73)	
Little of the time	21.79 (0.62)	23.15 (0.64)	23.37 (2.63)	
None of the time	9.86 (0.43)	55.34 (0.82)	22.87 (2.64)	
Financial hardship (last 12 months)**				0.0004
Yes	2.96 (0.24)	2.68 (0.24)	8.89 (1.63)	
No	97.04 (0.24)	97.32 (0.24)	91.11 (1.63)	
Mother depressed**				< 0.0001
Yes	9.75 (0.44)	9.09 (0.45)	24.12 (2.75)	
No	90.25 (0.44)	90.91 (0.45)	75.88 (2.75)	
Father depressed**				0.0004
Yes	5.19 (0.35)	4.72 (0.35)	15.68 (2.76)	
No	84.81 (0.35)	95.28 (0.35)	84.32 (2.76)	
Depend on others in life**				0.0020
Yes	8.55 (0.48)	8.19 (0.49)	16.13 (2.19)	
No	9.45 (0.48)	91.81 (0.49)	83.87 (2.19)	
Drinking status				0.0824
Current drinker	45.57 (0.91)	45.75 (0.93)	41.90 (3.21)	
Ex-drinker	28.24 (0.69)	27.94 (0.70)	34.61 (2.83)	
Lifetime abstainer	26.19 (0.87)	26.31 (0.87)	23.50 (2.76)	
Alcohol intoxication (last 12 months)				0.3305
Not drinking now	54.53 (0.91)	54.36 (0.93)	58.32 (3.21)	
Never in last 12 months	43.20 (0.89)	43.41 (0.91)	38.76 (3.20)	
2-11 times per week	2.27 (0.18)	2.24 (0.18)	2.92 (0.94)	

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 2:** Risk factors for Generalized Anxiety, persons 65 and older, 2001-02 NESARC

	No Generalized Anxiety n=7,420 N=30,681,794 %(se)	Generalized Anxiety n=373 N=1,458,922 %(se)	Generalized Anxiety OR (LBL,UBL)
DSI/I			
Total	95.50 (0.29)	4.50 (0.29)	-
None	96.30 (0.41)	3.70 (0.41)	1.00
Either**	94.87 (0.49)	5.13 (0.49)	1.41 (1.04,1.90)
Both**	94.73 (0.57)	5.27 (0.57)	1.45 (1.07,1.95)
Place of birth			
U.S. born	95.52 (0.31)	4.48 (0.31)	0.90 (0.61,1.33)
Non-U.S. born	95.03 (0.86)	4.97 (0.86)	1.00
Race/Ethnicity			
Non-Hispanic White	95.47 (0.34)	4.53 (0.34)	1.00
Non-Hispanic Black	95.78 (0.65)	4.22 (0.65)	0.93 (0.65,1.33)
Hispanic	94.99 (1.01)	5.01 (1.01)	1.11 (0.71,1.74)
Non-Hispanic other	95.29 (1.58)	4.71 (1.58)	1.04 (0.50,2.16)
Sex			
Male	97.21 (0.33)	2.79 (0.33)	1.00
Female**	94.19 (0.43)	5.81 (0.43)	2.15 (1.63,2.83)
Health status			
Excellent	97.22 (0.56)	2.78 (0.56)	1.00
Very good	96.26 (0.52)	3.74 (0.52)	1.36 (0.83,2.22)
Good	96.10 (0.47)	3.90 (0.47)	1.42 (0.88,2.28)
Fair**	94.67 (0.67)	5.33 (0.67)	1.96 (1.24,3.12)
Poor**	90.91 (1.43)	9.09 (1.43)	3.49 (2.08,5.85)
Education			
Some high school/less	94.82 (0.59)	5.18 (0.59)	1.27 (0.91,1.78)
Complete high school	95.51 (0.49)	4.49 (0.49)	1.09 (0.79,1.52)
Some college	95.92 (0.70)	4.08 (0.70)	0.99 (0.63,1.55)
College graduate	95.89 (0.49)	4.11 (0.49)	1.00
Region			
Northeast	96.41 (0.69)	3.59 (0.69)	0.77 (0.46,1.29)
Midwest	93.87 (0.62)	6.13 (0.62)	1.35 (0.90,2.00)
South	96.02 (0.44)	3.98 (0.44)	0.85 (0.57,1.28)
West	95.37 (0.73)	4.63 (0.73)	1.00
Age			
65-74	95.23 (0.40)	4.77 (0.40)	1.07 (0.73,1.57)
74-85	95.81 (0.46)	4.19 (0.46)	0.93 (0.62,1.40)
85+	95.52 (0.75)	4.48 (0.75)	1.00
Income level			
\$0-\$10,000	94.41 (0.66)	5.59 (0.66)	1.16 (0.82,1.64)
\$10,001-\$20,000	94.67 (0.55)	5.33 (0.55)	1.10 (0.81,1.49)
\$20,001-\$30,000	96.37 (0.57)	3.63 (0.57)	0.74 (0.51,1.08)
\$30,001-\$40,000**	97.36 (0.59)	2.64 (0.59)	0.53 (0.32,0.88)
\$40,001-higher	95.14 (0.57)	4.86 (0.57)	1.00
Living arrangement			
Alone	94.00 (0.42)	6.00 (0.42)	1.00
Not alone**	96.55 (0.36)	3.45 (0.36)	0.56 (0.44,0.71)
Employment			
Employed	95.63 (0.76)	4.37 (0.76)	0.96 (0.65,1.41)
Not employed	95.44 (0.31)	4.56 (0.31)	1.00
Felt depressed (over past 4 weeks)			
All the time**	82.11 (3.27)	17.89 (3.27)	11.07 (6.95,17.62)
Most of the time**	82.58 (2.46)	17.41 (2.46)	10.71 (6.72,17.08)
Some of the time**	92.40 (0.89)	7.60 (0.89)	4.18 (2.92,5.99)
Little of the time**	95.41 (0.57)	4.59 (0.57)	2.44 (1.68,3.55)
None of the time	98.07 (0.27)	1.93 (0.27)	1.00
Financial hardship (last 12 months)			
Yes**	86.36 (2.45)	13.64 (2.45)	3.55 (2.27,5.54)
No	95.74 (0.30)	4.26 (0.30)	1.00
Mother depressed			
Yes**	89.10 (1.43)	10.90 (1.43)	3.18 (2.29,4.41)
No	96.29 (0.30)	3.71 (0.30)	1.00
Father depressed			
Yes**	87.13 (2.33)	12.87 (2.33)	3.75 (2.39,5.88)
No	96.21 (0.30)	3.79 (0.30)	1.00
Depend on others in life			
Yes**	91.41 (1.31)	8.59 (1.31)	2.16 (1.51,3.09)
No	95.83 (0.29)	4.17 (0.29)	1.00
Drinking status			
Current drinker	95.83 (0.43)	4.17 (0.43)	1.03 (0.73,1.44)
Ex-drinker**	94.45 (0.55)	5.55 (0.55)	1.39 (1.01,1.91)
Lifetime abstainer	95.93 (0.51)	4.07 (0.51)	1.00
Alcohol intoxication (last 12 months)			
Not drinking now	95.16 (0.40)	4.84 (0.40)	1.00
Never in last 12 months	95.94 (0.44)	4.06 (0.44)	0.83 (0.63,1.10)
2-11 times per week	94.18 (1.85)	5.82 (1.85)	1.22 (0.60,2.45)

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 3:** Factors associated with a positive screening value for generalized anxiety among population 65 years and older, NESARC 2001-2002.

Table 3 (Variable)		Model 1 n=7,753 N=32,010,496 %(se)	Model 2 n=7,741 N=31,974,319 %(se)	Model 3 n=7,738 N=31,965,146 %(se)	Model 4 n=6,451 N=26,952,705 %(se)	Model 5 n=6,418 N=26,815,136 %(se)
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Hypothesized IV DS/II						
	None	1.00	1.00	1.00	1.00	1.00
	Either	1.41 (1.04,1.90)**	1.39 (1.03,1.87)**	1.35 (1.00,1.81)**	1.37 (0.98,1.92)	1.33 (0.94,1.88)
	Both	1.45 (1.07,1.95)**	1.38 (1.03,1.85)**	1.30 (0.97,1.75)	1.22 (0.87,1.71)	1.04 (0.74,1.46)
Demographics						
Place of birth						
	U.S. born		0.97 (0.60,1.56)	0.99 (0.60,1.62)	0.92 (0.50,1.71)	1.13 (0.57,2.22)
	Non-U.S. born		1.00	1.00	1.00	1.00
Race/Ethnicity						
	Non-Hispanic White		1.25 (0.54,2.88)	1.34 (0.58,3.09)	1.48 (0.39,5.62)	1.80 (0.37,8.63)
	Non-Hispanic Black		0.95 (0.39,2.33)	0.95 (0.39,2.36)	1.18 (0.30,4.55)	1.48 (0.31,7.19)
	Hispanic		1.21 (0.49,3.00)	1.25 (0.50,3.17)	1.28 (0.33,4.93)	1.69 (0.39,7.38)
	Non-Hispanic other		1.00	1.00	1.00	1.00
Sex						
	Male		0.52 (0.39,0.70)**	0.50 (0.37,0.67)**	0.56 (0.40,0.79)**	0.58 (0.41,0.82)**
	Female		1.00	1.00	1.00	1.00
Age						
	65-74		1.58 (1.06,2.37)**	1.47 (0.97,2.22)	1.38 (0.84,2.27)	1.38 (0.83,2.28)
	74-85		1.08 (0.70,1.66)	1.06 (0.69,1.65)	1.11 (0.66,1.85)	1.07 (0.62,1.83)
	85+		1.00	1.00	1.00	1.00
Region						
	Northeast		0.78 (0.45,1.35)	0.79 (0.46,1.37)	0.77 (0.40,1.46)	0.71 (0.38,1.32)
	Midwest		1.38 (0.90,2.12)	1.45 (0.94,2.23)	1.35 (0.83,2.19)	1.35 (0.83,2.21)
	South		0.79 (0.51,1.23)	0.83 (0.53,1.30)	0.78 (0.47,1.28)	0.77 (0.47,1.27)
	West		1.00	1.00	1.00	1.00
Health status						
	Excellent		1.00	1.00	1.00	1.00
	Very good		1.30 (0.79,2.12)	1.35 (0.82,2.22)	1.35 (0.77,2.35)	1.17 (0.67,2.05)
	Good		1.32 (0.82,2.14)	1.38 (0.86,2.21)	1.27 (0.74,2.17)	0.90 (0.52,1.55)
	Fair		1.86 (1.16,2.98)**	1.88 (1.15,3.07)**	1.90 (1.08,3.35)**	1.23 (0.68,2.21)
	Poor		3.47 (2.04,5.91)**	3.53 (2.04,6.12)**	3.87 (2.05,7.28)**	1.61 (0.84,3.07)
Living arrangement						
	Alone		1.59 (1.24,2.04)**	1.58 (1.22,2.04)**	1.51 (1.15,2.00)**	1.52 (1.13,2.03)**
	Not Alone		1.00	1.00	1.00	1.00
Resources						
Employment						
	Employed			1.18 (0.77,1.79)	1.32 (0.80,2.16)	1.46 (0.90,2.39)
	Not employed			1.00	1.00	1.00
Education						
	Some high school/less			1.09 (0.72,1.65)	1.26 (0.78,2.03)	1.14 (0.67,1.93)
	Complete high school			1.09 (0.76,1.58)	1.19 (0.79,1.78)	1.15 (0.75,1.76)
	Some college			0.97 (0.61,1.53)	0.98 (0.59,1.63)	1.01 (0.59,1.72)
	College graduate			1.00	1.00	1.00
Income level						
	\$0-\$10,000			0.62 (0.39,0.98)**	0.58 (0.33,1.02)	0.59 (0.34,1.03)
	\$10,001-\$20,000			0.76 (0.53,1.10)	0.79 (0.52,1.21)	0.80 (0.52,1.24)
	\$20,001-\$30,000			0.57 (0.38,0.84)**	0.57 (0.35,0.93)**	0.56 (0.34,0.92)**
	\$30,001-\$40,000			0.46 (0.27,0.78)**	0.38 (0.21,0.70)**	0.38 (0.21,0.70)**
	\$40,001-higher			1.00	1.00	1.00
Financial hardship (last 12 months)						
	Yes			3.00 (1.93, 4.69)**	3.04 (1.76,5.25)**	2.07 (1.13,3.79)**
	No			1.00	1.00	1.00
Heritage						
Mother depressed						
	Yes				2.44 (1.45,4.12)**	2.26 (1.33,3.82)**
	No				1.00	1.00
Father depressed						
	Yes				2.43 (1.31,4.53)	2.06 (1.10,3.87)**
	No				1.00	1.00
Symptoms						
Felt depressed (over past 4 weeks)						
	All the time					11.08 (5.88,20.86)**
	Most of the time					9.86 (5.55,17.54)**
	Some of the time					3.89 (2.52,6.00)**
	Little of the time					2.21 (1.38,3.54)**
	None of the time					1.00
Depend on others in life						
	Yes					1.61 (1.00,2.59)**
	No					1.00
Drinking status						
	Current drinker					1.42 (0.91,2.22)
	Ex-drinker					1.44 (0.95,2.17)
	Lifetime abstainer					1.00
Alcohol intoxication (last 12 months)						
	Not drinking now					1.00
	Never in last 12 months					1.00 (1.00,1.00)
	2-11 times per week					1.53 (0.66,3.56)

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 4:** Coding of generalized anxiety criteria among population 65 years and older, NESARC 2001-2002.

Diagnostic indicator	Criteria or Subset	Question (s)	Coding
<b>Excess anxiety/worry</b>	1/1	"Have you ever had a time lasting at least six months when you felt nervous, or worried most of the time?"	Yes
			See Criteria 2
			No
			See Criteria 1/2
<b>Excess anxiety/worry</b>	1/2	"Have you ever had a time lasting at least six months when you felt very tense, nervous, or worried most of the time about everyday problems?"	Yes
			See Criteria 2
			No
			No generalized anxiety
<b>Control of worry</b>	2/1	"Worry a lot about things you usually didn't worry about?"	Yes
			See Criteria 3
			No
			See Criteria 2/2
<b>Control of worry</b>	2/2	"Find it difficult to stop being tense, nervous, or worried?"	Yes
			See Criteria 3
			No
			See Criteria 2/3
<b>Control of worry</b>	2/3	"Worry about things that were very unlikely to happen?"	Yes
			See Criteria 3
			No
			See Criteria 2/4
<b>Control of worry</b>	2/4	"Think that your worrying was excessive?"	Yes
			See Criteria 3
			No
			See Criteria 2/5
<b>Control of worry</b>	2/5	"Worry about things that weren't really serious?"	Yes
			See Criteria 3
			No
			No generalized anxiety
<b>Easily Fatigued</b>	3/1	"Get tired easily?"	Yes
			Positive Criteria 3/1
			No
			Negative Criteria 3/1 (Must be positive for at least three subsets)
<b>Muscle Tension</b>	3/2	"Have tense, sore, or aching muscles?"	Yes
			Positive Criteria 3/2
			No
			Negative Criteria 3/2 (Must be positive for at least three subsets)
<b>On Edge</b>	3/3	"Become startled easily"	Yes
			Positive Criteria 3/3
			No
			Negative Criteria 3/3 (Must be positive for at least three subsets)
<b>Restlessness</b>	3/4	"Become so restless that you fidgeted, paced, or couldn't sit still?"	Yes
			Positive Criteria 3/4
			No
			Negative Criteria 3/4 (Must be positive for at least three subsets)
<b>Keyed Up/On Edge</b>	3/5	"Feel keyed up or on edge?"	Yes
			Positive Criteria 3/5
			No
			Negative Criteria 3/5 (Must be positive for at least three subsets)
<b>Concentration</b>	3/6	"Have trouble concentrating or keeping your mind on things?"	Yes
			Positive Criteria 3/6
			No
			Negative Criteria 3/6 (Must be positive for at least three subsets)
<b>Irritability</b>	3/7	"Feel irritable?"	Yes
			Positive Criteria 3/7
			No
			Negative Criteria 3/7 (Must be positive for at least three subsets)
<b>Sleep Disturbance</b>	3/8	"Have trouble falling asleep or staying asleep?"	Yes
			Positive Criteria 3/8
			No
			Negative Criteria 3/8 (Must be positive for at least three subsets)
<b>Mind Going Blank</b>	3/9	"Have times when you forgot what you were talking about or your mind went blank?"	Yes
			Positive Criteria 3/9
			No
			Negative Criteria 3/9 (Must be positive for at least three subsets)
<b>Muscle Tension</b>	3/10	"Have trouble catching your breath or feel like you were smothering?"	Yes
			Positive Criteria 3/10
			No
			Negative Criteria 3/10 (Must be positive for at least three subsets)

\*\* represents all significant variables with a p-value less than or equal to 0.05

## **Bivariate Characteristics**

The odds that a person would screen positive for generalized anxiety were higher when the individual had experienced either DSI/I (OR 1.41 LBL 1.04 UBL 1.90) or both DSI/I (1.45 LBL 1.07 UBL 1.95).

The odds were higher that an older female would positively screen for generalized anxiety than an older male (OR 2.15 LBL 1.63 UBL 2.83).

The odds that a person in both fair (OR 1.96 LBL 1.24 UBL 3.12) and poor (OR 3.49 LBL 2.08 UBL 5.85) health status experience generalized anxiety is higher than an individual who is experiencing excellent health status.

The odds that a person between the \$30,001-\$40,000 income level would screen positive for generalized anxiety is lower than that compared to someone earning \$40,001 or above (OR 0.53 LBL 0.32 UBL 0.88).

The odds that a person would screen position for generalized anxiety were higher at all five levels of depression felt over the previous four weeks than that of an individual who self-reports experiencing no feelings of depression over the previous four weeks (Table 2).

The odds that a person would screen positive for generalized anxiety were higher if the individual self-reports experiencing financial hardship over the previous 12 months (OR 3.55 LBL 2.27 UBL 5.54).

The odds that a person would screen positive for generalized anxiety were higher if the individual reports either their biological mother experienced depressive symptoms (OR 3.18 LBL 2.29 UBL 4.41) or their biological father experienced depressive symptoms (OR 3.75 LBL 2.39 UBL 5.88).

The odds that a person would screen positive for generalized anxiety were higher if the individual reports that they depend on others within their life (OR 2.16 LBL 1.51 UBL 3.09).

The odds that a person would screen positive for generalized anxiety were higher if the individual reports being an ex-drinker than that of a lifetime abstainer (OR 1.39 LBL 1.01 UBL 1.91).

## **Multivariate Findings**

The lifetime prevalence rate for DSM-IV based generalized anxiety within the older population was 4.5 percent (Table 2). However, the relationship between DSI/I and generalized anxiety had mixed results within Models 1-5.

Bivariate comparison found a significant likelihood of experiencing anxiety if both DSI/I factors were present, as compared to not having experienced DSI/I (OR 1.45 LBL 1.07 UBL 1.95). DSI/I also demonstrated significance if the respondent suffered from either DSI/I characteristics (OR 1.41 LBL 1.04 UBL 1.90) than if not experiencing either of the DSI/I characteristics.

**Model 2** controlled for origin of birth, race/ethnicity, sex, age, region, health status, and living arrangements. Those respondents having both DSI/I characteristics were significantly more likely (OR 1.38 LBL 1.03 UBL 1.85) to experience DSM-IV based generalized anxiety than those who did not experience DSI/I. Additionally, persons surveyed who had either DSI/I characteristic were more likely (OR 1.39 LBL 1.03 UBL 1.87) to experience DSM-IV based generalized anxiety than those who had no DSI/I. Demographics had a minimal effect on the odds ratios and significance of DSI/I within the older population. Place of birth was not significantly linked to generalized anxiety. Race/Ethnicity was not significantly linked to generalized anxiety. Male respondents had a significantly decreased likelihood (OR 0.52 LBL 0.39 UBL 0.70) of suffering from DSM-IV based generalized anxiety than did females. The young old (ages 65-74) had a higher likelihood of experiencing DSM-IV based major depression than did the oldest old (ages 85 and greater). Members within the older population who had either "fair" (OR 1.86 LBL 1.16 UBL 2.98) or "poor" (OR 3.47 LBL 2.04 UBL 5.91) health statuses were significantly more likely to experience DSM-IV based generalized anxiety. Those persons living alone had a higher likelihood of developing generalized anxiety (OR 1.59 LBL 1.24 UBL 2.04) than those who did reside with someone in the home.

**Model 3** controlled for both demographics and the following resource variables: employment, education, income level, and financial hardship. The resource variables that proved significant within Model 3 were income level and financial hardship. Those persons having both DSI/I criteria had no significant difference (OR 1.30 LBL 0.97 UBL 1.75) to experience DSM-IV based generalized anxiety than those who met neither of the DSI/I criteria. However, respondents who had either DSI/I characteristic were more likely (OR 1.35 LBL 1.00 UBL 1.81) to suffer from DSM-IV based generalized anxiety than those with neither characteristics of DSI/I. The impact of controlling for demographics and resources created variation on the significance of DSI/I. After controlling for resources, males continue to be less likely than females to experience generalized anxiety. However, the young old were no longer more likely to suffer from generalized anxiety than the oldest old. Health status remained significantly more likely for those in “fair” (OR 1.88 LBL 1.15 UBL 3.07) or “poor” (OR 3.53 LBL 2.04 UBL 6.12) health than those in “excellent” health, as it related to the potential experience of DSM-IV based generalized anxiety. Those who made a personal incomes of \$0-\$10,000 per year, \$20,001-\$30,000 per year, and \$30,001-\$40,000 were less likely to experience generalized anxiety than those who made a personal income of \$40,001 or higher. Moreover, those how responded as having financial hardships were significantly more likely (OR 3.00 LBL 1.93 UBL 4.69) to suffer from generalized anxiety than those who did not experience financial hardship.

**Model 4** controlled for demographics, resources and heritage. The following levels of demographics and resources remained relatively constant as reported in Model 3 (Table 3): place of birth, race/ethnicity, sex, age, region, health status, employment, education, financial hardship, and living arrangement. DSI/I was significantly affected by heritage as all categories of DSI/I became insignificant as it relates to generalized anxiety. Additionally, those who made \$0-\$10,000 per year were more likely to suffer from generalized anxiety, however, after controlling for heritage, there is no longer a significant difference amongst this income level. The “heritage” category evaluates the biological anxiety levels of both the mother and the father. Those older persons whose mother was reported as having a history of depression were significantly more likely (OR 2.44 LBL 1.45 UBL 4.12) to experience generalized anxiety than those whose biological mother was not “depressed”. Likewise, those older persons whose biological father was reported as “depressed” were highly likely (OR 2.43 LBL 1.31 UBL 4.53) to suffer from generalized anxiety than those who did not report historical accounts of “depression” from their father.

**Model 5** includes the following control categories: demographics, resources, heritage, and symptoms. The final model supports inconsistencies with relation to DSI/I and Models 1-5. Those persons with either DSI/I or both DSI/I have no significant increase in likelihood to suffer from generalized anxiety than someone who has no DSI/I (Table 3). All control variables within the categories of demographics, resources, and heritage (Model 4) remained similar. Those persons who experience self reported feelings of depression have an increased likelihood of suffering from generalized anxiety at all levels than does someone who has not had any self reported signs of depression over the past four weeks. Additionally, those persons who are dependent on others in life are more likely to experience generalized anxiety than those who do not depend on others in life (OR 1.61 LBL 1.00 UBL 2.59).

## DISCUSSION

### Limitations

Differential Diagnoses is accurately done by assessing the client and “ruling out” all of those diagnoses that are “not correct” and does not support the decreased reliable practice of diagnostic measurement by starting with the suspected diagnoses. Moreover, the DSM-IV based generalized anxiety variable does not account for other contributing mood disorders or medical conditions. The purpose of the measure is only to identify those in need of further examination by mental health professions, and therefore, in not an instrument that takes the place of the clinician.

The sample was also limited by the cross-sectional application needed for older population identification, which limited the nationally representative strength of the initial NESARC data set. However, SAS callable SUDAAN was utilized to ensure national representation as it weighted the sample as a nationally representative population estimate.

## **Future Research**

Anxiety seems to appear earlier in life, while little is being done to understand and treat mental health at the earliest stages of onset. Research in anxiety, as well as other areas of mental health, needs to focus on the age of average onset and appropriate treatment methodologies for generalized anxiety.

Another area of future research relates to having health insurance, what type of insurance and the rural versus urban disparities. A barrier to mental health services is the lack of insurance coverage for such services. Insurance coverage influenced reported effects from depressive symptoms as 36 percent of rural residents with private insurance experienced interference with life activities while nearly 65 percent of rural residents with public insurance experienced it, and 56 percent of those with no insurance experienced interference with life activities. (Probst et al., 2006) Rural health should become a focus of mental health. A large portion of the significant effects of major depression (health status, financial hardship, biological effects, dependence on others, etc) is more prevalent within the rural communities.

Additionally, more biological research is needed as the effects of either the biological mother and father being depressed significantly increased the likelihood of the respondent to be positively screened for generalized anxiety. The biological relationships appear to have an influence on generalized anxiety as well as other mental illnesses.

One must also consider the costs associated with the treatment of mental health screening and referral, and if it is necessary. Some would suggest that depressive symptoms are inconsistently recorded over time as individuals relate short-term life experiences to depression scales. In some cases, this may be true; however, recurring instances could provide both physical and mental disturbances that are significantly more costly than a few visits to a therapist. (Reynolds et al., 2006) Additionally, physician visits are much more costly than therapy and the prescriptive measure of care requires the patient to continually return for "follow-up" and the re-administering of psychotropic medication - a short-term resolution itself. However, the most effective form of treatment remains, a mixture of medications and therapy.

## **CONCLUSION**

The purpose of this article was to determine whether or not the effects of death, serious illness/injury of a close friend or family member would have an impact on the likelihood of experiencing DSM-IV based generalized anxiety within the older population.

DSI/I had mixed results between the five multivariate models tested. Within Models 4 and 5, DSI/I was not a significant indicator of generalized anxiety.

Mental health and the elderly population is a growing concern within the United States. The prevalence of these disorders within the elderly is bound to skyrocket as the exponential increases in the elderly population grow and the technological advances continue to further sustain life. However, this life sustainment often comes at an increased period of time in which the elderly will continue to live, but the extension in life will follow longer periods of life living with some type of disability. Mental health efforts should be addressed in the near future to account for the sociological changes, which are bound to sooner or later affect the majority of the population.

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# IS ETHICS EDUCATION NECESSARY?

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## ABSTRACT

*Ethics education is now a requirement for management leaders. It is now a regular part of curriculum for business degree programs. This is a recent addition to business programs due to the changes in business in the past few years. Cases such as Enron have caused Ethics to become such a growing trend that it making organizations and institutions ask the question, "Is Ethics Education Necessary?"*

**Keywords:** Business, Diversity, Education, Ethics, Management, Teaching.

## INTRODUCTION

Ethics is the branch of philosophy dealing with values relating to human conduct, usually taught in management disciplines especially in accounting. The premise of teaching ethics in management disciplines to give future executives the foundation needed to legally run a successful organization. Even with ethics being a regular in business and management curriculums it is a proven fact that executives are being regularly incarcerated due to the unethical choices they chose to make to develop a successful organization. As the years go by the amount of executives using unethical practices are rising at a staggering rate. Many of these unethical executives were taught at top business schools equipped with ethics curriculum. This fact has raised many eyebrows to the fact that ethics is unused and unvalued. By using research spanning from 1988 to present, the question "Is Ethics Necessary?" will be proven.

## THE DEVELOPMENT OF ETHICS EDUCATION

There have been many debates on ethics education and the major concern is can ethics be taught effectively. The reason for this concern is the fact that ethics can become controversial due to the different interpretations of ethics. From the curriculum to the teaching styles to the literature used for study ethics is very opinion based which means you will not receive the same information from program to program. It has been suggested that having a standard curriculum across the board will eliminate many of these concerns. Then comes the question of who would design the curriculum? How much money and time would it take to integrate the new curriculum into all of the business programs across the country? Would the curriculum be effective and efficient for all of the business programs? All of these questions and more would come into play when developing a standardized curriculum for ethics.

According to Geary and Sims (1994), they used the example of setting up an ethics module for an accounting curriculum. They believe that the first step to developing a new curriculum is to get the faculty to agree on the education goals and how to incorporate those into the standards of accounting. Once that is done then the next step is to make the goals operational by developing a conceptual framework and applying the concepts the day to day practices. They recommend using Kohlberg's framework to help the faculty develop the level of study for the Undergraduate and Graduate curriculums. The success of a program using this framework will depend on the commitment, materials and instruction used to deliver the curriculum to the students. Once the framework is developed then the debriefing process has to be developed. Finally an assessment should be developed to evaluate the effectiveness of the delivery of the curriculum. The authors suggest using an action-based model to formulate the questions for the assessment such as the one developed by Daft. The assessment should be structured to show where the curriculum and instruction is succeeding and where it is failing. The data will be valuable when restructuring the curriculum for the next round of students.

According to Kullberg (1998), since the 80's there has been a need for ethics case study experience in the curriculum. During this time there was a 71 percent dissatisfaction rate with business executives. This was due to

the lack of ethical training the professionals were receiving in college. It was determined that ethics was a major part of organizational policy.

According to Barlas et al (2002), ethics education has improved greatly since the 60's and 70's. More business schools are raising the required amount of ethics education to at least 10 hours which consists of one ethics class and several classes with ethics components. In the 90's the authors of "Ethics in the Workplace" conducted a survey to find the ethical issues and to find if the educators and professionals find the same things important. This survey helped to developed curriculum by training the future managers in the areas that are important to business professionals.

Clark (2003) suggests that ethics education should have sensitivity training as a component. The problem with this is that there is little literature that supports this subject. There is also a need to re-examine the present ethical behavior by journaling and use what is learned to create a creative learning environment for the students.

According to Watkins and Iyer (2006) the AAA and NASBA conducted a survey to show the amount of separate ethics courses and courses with ethics in the course description were available in school with separate accreditation from AACSB International. The results showed that out of 162 schools, 30 percent of Undergraduate programs and 15 percent of Graduate programs offer separate ethics courses.

As of 2007 while it is agreed that ethics is an important part of business education the implementation of ethics into the curriculum is slow. Many schools are far behind in their development and it is increasing the gap between knowledge and interest in the subject matter.

## **IS ETHICS RELEVANT TO THE STUDENTS?**

In the article by Geary and Sims (1994), they talk about ways to engage students in the study of ethics. Tactics such as inviting real world speakers and analyzing published papers help the students relate with ethical and unethical practices and help them to learn the difference. The student that has had that hands-on experience will be more likely to think about researching the company versus just accepting the company's offer without having background knowledge of the organization. They also point out that group work using real life case study that will show real life outcomes to the given issues. Current event discussions also make the curriculum more engaging and help to heighten the awareness of the students for their future positions.

According to Simerson and Neal (1993), when being unethical become a problem, the first place people look is to the school and business training of the person in question. It was determined after debate that all of the training contributes to the ethical action of the professional. The results of the survey proved that universities are ready to train their students for the dilemmas that will come up in day to day practice.

According to Bean and Bernardi (2005), because of the Enron scandal accounting students are being required to not only have ethics during school but also required to have continued ethics education. The opposers of the addition ethics education feel that it is undue burden and want a study done to prove the necessity of the additional education courses. The courses are to be taught by accounting ethics faculty but at this time there is a shortage of faculty qualified to teach these courses. In 2006, the NASBA had withdrawn the proposal but according to Hurt (2006), the subject of ethics in accounting still needed to be addressed. The fact is that "the one size fit all" approach no longer works there is a great need for assessments to prove that the students are receiving the education they need for real life practice.

According to Barlas et al (2003), MBA students believed that they were not properly prepared to handle the ethical aspects of their future positions. They also believed that the priorities of the school and the priorities of their future positions were not the same. The greatest fear is that the ethics education does not meet the student interest in ethics.

Due to the research of Swanson (2005) there is a new rule that if accepted will require three hours of both accounting and business ethics in order to take the CPA exam. They are both pushing for more ethics courses in the accounting curriculum and now 34 states require ethics courses in the curriculum.

It would greatly benefit business students especially accounting majors to enroll in as many ethics courses as possible. It is always important to stay informed of current events involving ethics and to get as much hands-on experience in ethical practices.

## **ETHICS AND DIVERSITY**

Education is seeing a change in many populations that affect it such as aging faculty, more diverse faculty, more diverse students, and a more diverse workforce. Therefore, ethics is an issue that must be addressed in the realm of diversity. Robbins (2003) poses the discussion that organizations have always included members of diverse groups. However, these groups were a small percentage of the workforce and were largely ignored. These groups were left to blend in and assimilate. The bulk of the pre-1980s, U.S. workforce were male Caucasians working full-time to support unemployed wife and school-aged children. However, currently 47% of the U.S. labor force is composed of women and minorities, and immigrants make up 23 percent (Census Bureau, 2000). An increasing proportion of workers are unmarried, with no children. The education environment consequently reflects the workforce. Thus, workforce diversity has important implications for ethical management practices. For instance administration have to shift their philosophy from treating everyone alike to recognizing differences and responding to those differences in ways that ensure employee retention and greater productivity while, at the same time, not discriminating (Robbins, 2003). This shift includes, for instance, providing diversity training for faculty. A result of faculty development in diversity is increased creativity and innovation in organizations as well as improved decision making providing different perspective on problems creates this result. However, when diversity is not managed properly, there is a potential for higher turnover, more-difficult communication, and more interpersonal conflicts (Robbins, 2003).

Faculty development presents yet a new challenge in its requirement for innovation. Pressure for innovation comes from those who set out to serve the needs of new and diverse student populations leading to the belief that traditional means of instruction are inadequate (Swenson, 2003). In addition to meeting the needs of a changing student population, faculty are also changing and thus organizations must prepare for a more diverse faculty workforce as the current workforce ages. With a large number of faculty retirements expected in the coming years, many higher education administrators are scrambling to fill the void with minority faculty (Kayes & Singley, 2005). An increase in minority faculty will help match the diverse workforce in the community. In addition, women have worked to gain recognition, access, and visibility in the leadership ranks of higher education (Nidiffer & Bashaw, 2001). The current leadership crisis facing education may provide opportunities for women to advance and to play a significant role in shaping this sector during the 21st century. Researchers, therefore, must continue to investigate the work lives of women at all levels of the organization. As long as women remain underrepresented in senior leadership positions, it is important to understand the participation rates, experiences, and the possible barriers facing future women leaders (VanDerLinden, 2004). With the increase of women leaders, leadership development is required.

As well, to the role of women leadership in faculty development, the faculty overall have been aging: between 1975 and 2000, the median age increased from just over forty to forty-five years; the modal age went from thirty-three to forty-nine (Cohen, 2003). Meaning faculty require development to meet the needs of a changing workforce.

The mission to recruit faculty becomes more pressing as the gap between a multicultural student body and a homogenous faculty becomes more of an educational, social and political problem (Kayes & Singley, 2005). Education shares the challenges of diversity with business and industry. When it comes to producing an educated community and labor force, it's apparent that organizations and areas of education rely on each other (Burke & Christ, 2004). Education can pattern faculty development after business. Because business is probably the most influential establishment in society today, to bring about a fundamental change, business is a good place to begin. It is a good place to demonstrate what is possible (Senge, 2000). Colleges have an exceptional opportunity not only to

become far more effective at their core business of teaching and learning but also to play major roles in education and workplace reform (Jacobson, 2005). To continue to service the business community, colleges must continue to develop along with business. Changes that are being considered in business will probably not be sustainable without parallel changes in public education (Senge, 2000). Accordingly, private industry will strengthen its incentives to draw individuals out of higher education to accommodate its needs for quality. Education is in a unique position to be affected by this scenario, especially within its technical-vocational areas (Fugate, 2000). Community colleges should fulfill the intrinsic need of faculty for development (Robbins, 2003) or consequently, faculty will go to private industry to fulfill the intrinsic need for development. The future of education and academic programs depends in part on successful recruitment efforts (Winter & Munoz, 2001).

## DOES ETHICS EDUCATION BENEFIT ORGANIZATIONS

According to Nyberg (2002), there has been an outbreak of ethics courses since the incarcerations began. The courses are targeted to CFOs as a refresher course. The problem is that the CFOs are not responding to the classes. They do not want anyone to know that they might not be as proficient in the ethics subject matter as they might need to be. They rather avoid the course that to raise any red flags.

According to Barlas et al (2002), most of the culprits of unethical practice are upper level executives and Enron helped to put the spotlight on these culprits. These executives let greed motivate them and they are who the up and coming executives are looking up to for guidance. It also opened the eyes of the SEC and made them more watchful of policy. Barlas et al (2002) believes that this turn of events was started by a disregard of ethics. Simerson and Neal (2003) indicate that ethics is a perceptual problem as well. Society's expectations are higher than business executives and it is hard to keep up with the change in expectations. The change has been influenced by the recent outburst of stories from the media. Ethics education could also be beneficial to consultants. Ethics will greatly benefit any business whether large or small. It will help with policy, profits and employee morale. If the businesses follow the principles of ethics then your company will be on the right path to success.

## CONCLUSION

According to Clark (2003), ethics might not be the problem but the person attitude to ethics is the problem. If the person can just change their thought process they will get a better understanding of the subject. It has been proven that there is a serious need for ethics in business both in the school as well as the workplace. With the past scandals of upper level executives it is critical that the future professionals, teachers and consultants are trained properly in ethics so that society will not have to relive the past.

There is a need for a new style of ethics curriculum. There is need for more ethics courses with hands-on experience and more assessments to prove that learning is being achieved. There should also be continued learning classes for recertification of licenses. With these changes in education in a few yeas society should start to see the benefits such as honest executives and secure employees.

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# AUTISM AND THE CRIMINAL JUSTICE SYSTEM: INCOMPATIBLE DIFFERENCES

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## ABSTRACT

*Autism is a life-long neurodevelopmental disorder expressed by deficits in communication, behavior and social interaction. The numbers of individuals identified with autism is growing at an alarming rate with very little insight into the cause for the rise in prevalence. One area of American society that is adversely affected by this increase is our Criminal Justice System (CJS). A literature review into why this population creates problems for the CJS was conducted. While the literature does not indicate that people identified with autism engage in more criminal activity, it does say that certain characteristics contribute to this problem. Wandering (a tendency to elope), poor communication and listening skills along with poor social skills contribute to the problem. This may also contribute to the perception of suspicious behaviors within the CJS. The literature suggests that inadequate training for police on the characteristics of people with autism may place them at a disadvantage. As more and more individuals are identified with autism and are actively participating in the community, a real need exists for policy improvements, advocacy and preemptive supports for these individuals, their families and members of the CJS. The advisability and sagacity of the educational community assisting in these proactive ventures need to be actively investigated.*

**Keywords:** *Autism, Autism Spectrum Disorder, Asperger's Syndrome, Criminal Justice System, Police.*

## AUTISM AND THE CRIMINAL JUSTICE SYSTEM: INCOMPATIBLE DIFFERENCES

Autism is a 'triad of impairments' that involves qualitative differences in social interaction, communication, and behavior. These differences create a vulnerability that is of great significance when individuals with autism come into contact with the criminal justice system (CJS). Police officers are also vulnerable when it comes to their interactions with individuals on the autism spectrum. Their vulnerability may stem from a lack of sufficient training and/or familiarity with the disorder as well as the daily risks associated with their job. They are tasked with a need to make quick decisions and protect themselves as well as those that they serve. This review of the literature will examine the risks and vulnerability for the individual with autism and the risks and vulnerability of the police. In addition, it will examine the implications of this research and propose an agenda for further investigation and change.

### Autism

The term autism has a Greek origin from the word 'autos' which mean 'self'. In its earliest usage, the label was coined to describe individuals who exhibit a preoccupation with their own world and isolation from the world of others. In the middle of the Twentieth Century, two individuals are credited with introducing autism in its modern day usage. In the late 1930s, Austrian Hans Asperger spoke of autistic psychopathy in describing some of his patients. The individuals he described lacked the expected delays in cognitive development and language that we see in individuals diagnosed with autism today. Language differences, however, were very apparent. We now use the term Asperger's syndrome to describe individuals who fit this description. In 1943, Leo Kanner, an American psychiatrist and physician used the term infantile autism when he described some of the children in his practice. The term has gradually evolved and we refer to individuals with the disorder as being on the autism spectrum.

Autism is referred to as a spectrum disorder because of the variability in the way it presents. Autism is a life-long neurodevelopmental disorder that usually presents prior to age three. Individuals with autism typically have strengths in visual processing but deficits in auditory processing. Although the diagnostic criteria are based on observable behaviors, numerous differences exist in the way that the disorder is expressed and its severity. There is also considerable variability in the academic performance of individuals on the spectrum.

The American Psychiatric Association (APA) publishes a Diagnostic and Statistical Manual of Mental Disorders with the most current being the fourth edition (DSM-IV). The DSM's definitions impact research, treatment, and insurance decisions for numerous medical conditions (Carey, 2012). Currently, to qualify for a diagnosis of autism an individual must exhibit two qualitative impairments in social interaction that involve impairments in nonverbal behaviors (e.g., eye gaze, posture, gestures, facial expression), difficulties developing peer relationships, lack of shared interest and enjoyment with others and a lack of reciprocity, social or emotional. In addition, the individual must exhibit qualitative impairments in communication that might include a delay or absence of social communication, difficulty initiating or sustaining conversation, stereotyped or echolalic language, and a lack of make-believe play. The individual must also exhibit at least one restricted repetitive and stereotyped pattern of behavior such as restricted patterns of interest, insistence on routine or sameness, stereotyped motor movements, and preoccupation with parts of objects. Currently, the autism spectrum includes Autism, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Rett syndrome, Childhood Disintegrative Disorder and Asperger's syndrome (DSM-IV, 1994).

In order to receive a diagnosis of Asperger's syndrome, the individual must demonstrate qualitative impairments in social interaction and restrictive repetitive patterns of behavior that are consistent with the diagnosis of autism. However, there is no expectation of a general delay in language or cognitive development. Differences may be seen in the use of language and in adaptive behavior involving social interactions. PDD-NOS is diagnosed in individuals who do not meet the full criteria for Asperger's syndrome or autism. Rett syndrome is a neurodevelopmental disorder that affects girls. In the early stages, individuals with Rett syndrome exhibit autistic-like behaviors. It is characterized by normal growth and development in the early years. The child gradually starts showing signs of apraxia or limitations in purposeful movement including motor and speech. While there is no cure for Rett syndrome, treatment focuses on controlling the symptoms and therapies deal with the deterioration of motor and academic skills (NINDS, 2009). Childhood disintegrative disorder (CDD) is a developmental disorder that is included on the autism spectrum because of similar issues with language, social and motor skills. Also known as Heller's disease, children with CDD develop normally for a short time (ages from two to ten). It was placed on the spectrum because there has been no medical or neurological cause found to date.

**Definition changes.** Currently, the APA is attempting to distinguish between abnormal and unusual behavior by refinements to the autism definition. Results of the APA's efforts are expected to be announced with the release of the fifth edition of the DSM (DSM-V) in December of 2012. The proposed changes in the DSM-V would consolidate the three diagnoses under the category of ASD. Asperger's syndrome and PDD-NOS would be eliminated as separate areas. In addition, the menu of behaviors that must be exhibited to qualify will be significantly narrower. Under DSM-IV criteria there are 12 qualifying behaviors and a diagnosis requires six or more to be exhibited with at least two in the area of social interaction and at least one in both communication and restricted interests. Diagnosis under DSM-V would require that the person exhibit three deficits in communication and social interaction along with two repetitive behaviors. Advocates for individuals on the spectrum are concerned that it will be more difficult for many, especially the higher functioning, to get health, educational and social services. Views on why the diagnosis is shifting and the impact of this shift suggest that it is an attempt to narrow the diagnosis and to ultimately end the surge that we are currently experiencing. Many professionals believe that the surge is due to vague criteria and feel that the change is necessary (Cashin, 2009).

**Prevalence.** According to the latest CDC estimates (2012), that between 1 in 80 and 1 in 240 children in the U.S. has an Autism Spectrum Disorder (ASD). This is an average of 1 in 110 children being diagnosed. Boys are at a significantly higher risk (5:1) for being diagnosed with autism with a prevalence rate of one in 54, while girls have a prevalence rate of one in 252. ASD occurs in all racial, ethnic, and socioeconomic groups and could potentially affect more than one million children and teens in America.

A project sponsored by the Centers for Disease Control and Prevention (2012) consisted of a survey conducted on a nationally representative group of school aged children with special health care needs. Their findings indicated that over 50% of the children did not receive a diagnosis of ASD until age 5 or older. In addition, over 50% of children on the spectrum were treated with medications intended to deal with a mental disorder (psychotropic

drugs). These drugs included stimulants, anti-anxiety or mood stabilizers, and antidepressants. The Centers for Disease Control and Prevention's (CDC) reported on the findings in their 2011 Survey of Pathways to Diagnosis and Services. The report found that less than 20% of children with autism were diagnosed before age two.

Rice (2009) reported on surveillance efforts conducted by the Autism and Developmental Disabilities Monitoring (ADDM) Network in 2006. These were compared to corresponding results from 2002. The subjects chosen were eight years of age because this was thought to be a time to monitor peak prevalence rates of autism. The average prevalence was found to increase by 57% in the 10 participating study sites between the two dates. The investigators reported that improved identification can account for some of the increase but that a true increase in the numbers cannot be ruled out. They also found that ascertainment of autism was occurring at earlier ages even with persistent delays. Despite the very large spike in prevalence rates, the CDCs tracking system is not believed to be overestimating the numbers. There is instead a concern that they are likely not counting some children.

**Etiology.** The cause of autism is subject to considerable debate. Researchers know that there is a strong genetic link. Studies indicate that the incidence of autism increases significantly in twins and even when a sibling has autism (CDC, 2012). However, researchers have not been able to identify a single 'autism gene'. Researchers investigating Rett syndrome have identified a gene that controls the functions of other genes. In almost all cases of Retts, this gene does not function properly due to mutation (NIND, 2009). Therefore, it has been postulated that autism is due to an interaction between genetics and the environment. An epigenetic theory has also been espoused attributing autism to environmental factors such as iatrogenic drugs, infections, heavy metals and vaccines that are routinely given in childhood. Because parents often begin to notice the symptoms of autism in young children, there has been considerable fear that these routine vaccinations are the cause. While some posit that there is no nosological validity ascribed to these theories, the Inter-Agency Autism Coordinating Committee continues to work on this issue with the National Vaccine Advisory Committee.

### **Autism and Criminal Behavior**

Gomez (2010) investigated claims that individuals with autism are overrepresented in the CJS and are at greater risk for involvement in criminal behavior. The author looked at studies from numerous countries including the United Kingdom (UK), United States (US), Sweden, and Japan. While finding that these studies imply an increased prevalence of ASD in the criminal population, the author reports that these claims are difficult to substantiate. Instead, certain characteristics and comorbid mental health issues (e.g., personality disorders, depression and psychosis) are risk factors for these individuals. In addition, the studies were confounded by methodological differences, small sample sizes and the often unrepresentative nature of the samples. For example, some of the samples came from highly specialized secure forensic settings and may not be representative of the general population of offenders.

Circumscribed interests are obsessive pursuits that are restricted to those that are of particular value to the individual. This pursuit limits social interactions and restricts social interests. Individuals on the spectrum often have these types of interests. An example would be a preoccupation with fire or trains. Woodbury-Smith et. al., (2010) conducted a study in the UK that looked at self-reported circumscribed interests of individuals with ASD who had come into contact with the CJS (offenders) and compared this to 'non-offenders'. The researchers were interested in determining if the circumscribed interests of the offender population had more violent overtones. They defined violent interests as those that could result in harm to others (warfare, weaponry, fires). While these researchers found that the 'offenders' were significantly more likely to report violent interests, it was very difficult to determine the exact relationship between their interests and the actual illegal offense with which they were charged. They noted that their study was confounded by two factors, the first being the participants difficulty describing the amount of time consumed by their interests and their use of force-choice options and rating scales was less productive than the use of open-ended questioning. They concluded that violent circumscribed interests increase the likelihood of an individual with ASD encountering the CJS. They also noted that these interests were established in early childhood suggesting that early identification and intervention could be helpful. Further research into this area was recommended.

Gomez (2010) postulated that circumscribed interests may contribute to the likelihood of individuals with Asperger syndrome being involved in criminal activity. Charges such as those involving arson, sexual offences, or criminal damage were listed as offenses that could be tracked to obsessional interests. Allen et al., (2008) provided several theoretical reasons why individuals with Asperger's are more likely to engage in offending behavior. These include being socially misunderstood, having poor impulse control, and demonstrating a lack of empathy and social understanding. In addition, they often fail to recognize the implications of their behavior.

Despite the lack of support that offending is a significant problem, there remains a concern that the encounters these individuals do have with the CJS create potential problems. According to Debbaudt (2008) and Edworthy and Hylton (2010), children with developmental disorders such as ASD in the UK are seven times more likely than neurotypical individuals to come in contact with the CJS. Chown (2009) and Modell and Mak (2008) report that individuals on the spectrum are between four and 10 times more likely to become victims of criminal activity. Debbaudt and Rothman (2001) and Kelley (2007) reported that individuals that are developmentally disabled are approximately seven times more likely to come into contact with law enforcement than the neurotypical population and autism is the third most common developmental disability.

While approximately 80% of patrol responses do not involve criminal activity, police contact with individuals with ASD may occur anywhere and anytime in the community. These individuals may be victims, perpetrators or witnesses. The increasing emphasis on inclusion increases their exposure. Difficulties can be expected when these individuals do break the law or come into contact with the CJS. They can be expected to struggle as they attempt to negotiate that system.

## **METHODOLOGY**

The methodology used in this article is in the form of a literature review. This approach was chosen to examine the concept of vulnerability as it pertains to the population of individuals with autism and to professionals in the CJS, especially the police. This review was seen as the initial step in an investigation into identifying a mechanism for change that would address the often incompatible differences that these groups experience in their encounters.

### **Risk Factors/Vulnerability of Individuals with Autism**

There is an extensive list of behaviors that contribute to the vulnerability of individuals on the spectrum when encountering the CJS. Some of these are related to the communication difficulties experienced in this population. For example, 50% of the individuals on the spectrum are non-verbal. When language is present, it is often described as pedantic, formal or stilted. They may speak in a monotone voice or engage in echolalia which involves repeating verbatim what they have just heard. For instance, if the police asks them 'who are you?' they may respond 'who are you?' These types of language differences may lead the policeman to believe that the individuals on the spectrum are on impaired or under the influence of intoxicants. Furthermore, the behavior may be viewed as disrespectful or defiant and therefore considered to be resistive.

Individuals with ASD may have poor listening skills especially when something in the environment is distracting them or frightening them. Communication problems may result in them focusing on only a portion of a question so asking questions that force a choice may result in the wrong answer. For example, Debbaudt (2001) states when asked a forced choice question such as 'were you going home or to the park', they may choose park because it was the last choice they heard. Inaccurate or inconsistent responses may heighten the officer's suspicion of criminal activity.

Deficits in social interaction may result in obsessional or circumscribed interests. While some researchers believe that this contributes to criminal behavior and recidivism (Browning & Caulfield, 2011; Burdon & Dickens, 2009; Gomez de la Cuesta, 2010; Hiscoke, Langstrom, Ottosson & Grann, 2003; Mayes, 2003) others are concerned that these obsessions can leave the impression of misbehavior. Even when the specific obsessional interests are identified and addressed, they still have difficulty with controlling these impulses and may be seen as engaging in

misconduct. An example could be an incident where an individual was believed to be sexually harassing a woman, when in fact he was mesmerized by her jewelry.

Poor social and interpersonal skills often include a lack of social empathy that may leave the impression that the individual with ASD is not concerned about the consequences of their actions or the situation. Because of an insistence on routine and structure, coping with change is difficult and can lead to aggression. They may exhibit a loss of emotional control when frustrated. This coupled with difficulty predicting the consequences of their actions or not seeing the danger in a situation leads to behaviors that are often misconstrued. Social naivety makes individuals on the spectrum susceptible to the manipulation of others. They may be drawn into a criminal activity or become victims due to the criminal exploitation of others.

A major characteristic of individuals on the spectrum is their sensitivity to lights, noise and touch. Encounters with the police are associated with an assault on the senses. The sirens, flashing lights, K-9 partners, loud voices repeating verbal commands, the use of physical control techniques and the use of handcuffs or restraints are all extremely stressful especially for the person with autism. Chown (2010) describes three types of responses that can be expected from an individual on the spectrum. These are fight, flight or fright. While fight and flight are easy to describe and problematic, fright is a variation in behavior that may be misunderstood as flight. For the individual on the spectrum, it is a desire to escape to a place that makes them feel safe. They may also engage in restrictive or repetitive behaviors (e.g., dropping to the ground and rocking, hand flapping and finger flicking) to increase their feeling of safety which may be viewed as resistive (Cashin & Newman, 2009; Chown, 2010; Debbaudt, 2008; NAS, 2011).

Wandering is a behavior of particular importance in the autism community. *Autism After 16* is a website on issues for adults with autism, their parents and caregivers (<http://www.autismafter16.com/>). It features a helpful article about the parent of a child with autism who is also a police lieutenant titled *Surviving the Wandering Nightmare* describing wandering as a parent's worst nightmare (Turning, 2012). While the dangers of wandering decrease significantly for neurotypical children after the ages of five or six, they may never go away for the individuals on the spectrum. These episodes often involve the CJS as members of a search or when these individuals encounter people in the community who exploit them or misinterpret their behavior.

Behavioral differences also make them vulnerable as suspects in any criminal investigation. Some of these include difficulty with time relations; problems differentiating their own actions from that of others; a tendency toward misinterpretation of what they see or hear, difficulty in unfamiliar environments, problems misjudging relationships, undue compliance and rigidly sticking to an account, and a willingness to accept an authority figure's version of events even if untrue (Chown, 2010) These behaviors may inhibit the officers' determination of events surrounding the crime and may lead to innocent suspects being the focus of an investigation.

### **Risk Factors/Vulnerability of Police Officers**

"Unless police respond appropriately to them, a person with autism may suffer extreme stress, officers may be unable to do their job effectively, disability discrimination legislation may be breached, and there will be a risk to the safety of the person with autism and to the officer(s)" Chown, p.257). As the chosen interventionists by society, the police deal with all levels of competency in interpersonal skills. This interaction by police responders tends to require a strong capacity to convey verbal and non-verbal interpersonal skills that express respect and that inspire cooperation. Yet, there is no clear documentation that police officers receive routine training in interpersonal skills, or how the mastery of these skills is assessed (Hulse & McDermott, 2012).

According to the *Autism After 16* website, many things change for individuals on the spectrum after their 18<sup>th</sup> birthday. These changes include legal rights, appropriate and available services, and financial options. Two major pieces of civil rights legislation do apply to the adult population. These laws are the Americans with Disabilities Act (ADA) and Rehabilitation Act. Title II of the ADA and Section 504 of the Rehabilitation Act require that individuals with disabilities who are victims of crime have an equal opportunity to benefit from and participate in all services, programs, and activities provided to those without disabilities. The only exception to any accommodations would be

that they cannot fundamentally alter the service, program or activity provided by the agency (NSA, 2008). Police officers must provide accommodations that make for effective communication and make reasonable modification to practices, procedures and policies.

Modell and Mak (2008) conducted a survey of police in the US and asked what the term autism meant to them. Twenty percent of the respondents identified autism as a social deficit and/or communication deficit, 80% were not able to identify accurate characteristics and more than 35% simply said “rain man” as their response. Although California law enforcement professionals in the police academy have received legislatively mandated training since 1990 that is described as extensive and broad-based, 48% had no recollection of that training.

Charged with the task of making life and death decisions in an instant, the police are often unprepared. While it is impossible to prepare anyone adequately for all the situations that they may encounter, they are often handicapped by a lack of and/or inadequate training. Some communities are attempting to come up with databases to inform first responders about the individuals in their community that they may encounter. Even with these initiatives, many do not have access to the databases and/or the technology to use them.

The problem with typical encounters may be exacerbated by the fact that many of the individuals on the spectrum do not exhibit outward signs of their difficulties (Wyllie, 2012a). Wyllie (2012b) estimates that the new numbers from the CDC mean that statistically an officer who answers 90 contacts a week could expect 50+ contacts a year with individuals on the spectrum.

## Implications

The National Policing Improvement Agency (NPIA) was formed in 2007 to work on the improvement of public safety in the UK. The website stresses the importance of recognizing signs of potential vulnerability. There is a stated concern that failure to see these warnings and take appropriate action can result in the death of a person in police custody, failure of a prosecution involving a vulnerable victim or the wrongful conviction of a vulnerable suspect who has not been given access to legal protection (NPIA, 2007). These consequences all point to a need for an informed approach when it comes to dealing with individuals on the spectrum.

There are numerous examples in the literature of initiatives to educate the public, in particular the CJS, about working with individuals on the spectrum. The problem is that these initiatives are not consistently provided to all who need the training. Additionally, the training is often limited to initial training in the police academy and not offered as on-going training and support. Officers are required to attend training for several high liability topics on an annual basis; however, failure to retrain officers in recognition and techniques for dealing with developmental disorders may create liability concerns for departments and officers alike. Modell and Mak (2008) recommended training that focuses on acceptance of diversity including disabilities, differentiation between mental illness and disabilities, and appropriate response to crime involving persons with various types of disabilities.

An example in the UK would be The National Autistic Society's (NAS) training and consultancy services (2007). In the UK, Debbaudt (2008) is heavily involved in training the police in the UK. The father of a son on the spectrum, he has developed a training manual and conducts training. The *Autism After 16* website has a reporter who is also a police officer. He offers insights to parents and caregivers from the perspective of the police on the website.

Mayes (2003) warns that in a ‘get-tough-on-crime’ climate, it is imperative that individuals with autism and those who work with them (i.e., caregivers and professionals) understand critical criminal justice concepts and their impact. This author touched on the legal concepts of competence to stand trial, capacity to commit a criminal offence (culpability), sentencing as a mitigating factor and evidentiary issues. Communication issues pose a challenge to the person with autism providing evidence.

## LIMITATIONS AND AREAS OF FUTURE RESEARCH

The limitation of this paper is that it is a literature review only. While it is recognized that efforts are being made to address the issues of incompatibility between individuals with ASD and the CJS, it is apparent that more needs to

be done in the US. A casual perusal of the internet using search terms such as autism and police encounters or police and autism reveals numerous articles from communities around the country detailing the problematic nature of such encounters. Wylie (2012b) commented that such encounters can become 'the next big thing' on YouTube. Future research could include a content analysis of the amount and type of training that is currently being conducted in the local area or region. Ultimately, a goal would be the development of technical assistance and/or training manuals that can be used to supplement and/or improve the current training. Strategies to improve interview approaches when individuals with autism are in the CJS would be one area of focus.

There is also a need for assistance to the families and caregivers of individuals on the spectrum. This could include basic advocacy assistance to include disclosure of the need for accommodations. Turning (2012) recommends being proactive and taking advantage of every opportunity to introduce the local police and rescue workers to your child and their needs.

Social skills training for the individuals on the spectrum should be an on-going process that is incorporated into their basic academic program. Usually, they are taught to acquire information about social interaction that is spoken or written rather than implied. Individuals on the spectrum are quite literal and have difficulty comprehending the nonverbal content of social interactions. Wenzel and Rowley (2010) suggest integrating the combined use of social stories, video-based instruction and personal experiences to increase comprehension of nonverbal social situations. The Individuals with Disabilities Education Act (IDEA) also mandates that, starting at age 14, the schools must provide transition planning. This means helping the individual to successfully matriculate from the school to the community. The options could include higher education, work, supported living, etc. these individuals should be taught self-advocacy.

For individuals with limited language skills, a pictorial toolkit or child-friendly pamphlet could be developed for members of the CJS to use with this population when interviewing them. Edworthy and Hylton (2010) suggests interviewing in the home using such materials that will build on their visual strengths.

The onus falls on the professionals and community to identify individuals with autism who may be likely to become perpetrators or targets (Mayes, 2003). This burden is increased by the fact that many offenders are not diagnosed until after incarceration. The development and availability of technology to provide this information in responders would facilitate understanding and improve the likelihood of a non-confrontational encounter. One example of such a program would be the Autism Society's *Take Me Home initiative* in Pensacola Florida, a voluntary, confidential, database that is maintained by the local police department that enables a police officer to return someone who does not communicate to their loved ones.

Police officers and responders work to create a safe environment for our society. Hulce and McDermott (2012) state that to achieve this, police must be able to verbally and non-verbally communicate using interpersonal skills that communicate respect, diffuse conflict, reduce violence and encourage cooperation. All this must be done with precise professionalism and skill. Police encounter conflict on two levels, physical and verbal. Physically, police are thoroughly trained in the handling of weapons, vehicles, self-defense and prevention or cessation of crime. These skills are enhanced or complicated by the police officers verbal skills. The police and the population, both general and special, have differing expectations and attitudes that can cause tensions and create challenges that interfere with completion of police duty and the rights of individuals. Hulce and McDermott (2012) suggest that these essential interpersonal skills that invite cooperation could be found within the counseling community. The counseling and other education communities are seen as proponents of collaborative learning and groups that entail the creation of cooperation and effective communication. These skills could be shared with the CJS.

Future research should also look into the need for the improvement of training in other branches of the CJS to include emergency responders, correctional facility staff and courtroom work group members. The increases are impacting other community services such as libraries, "entertainment and sports venues, medical clinics and others" (Wyllie, 2012b).

## RESEARCH RESULTS/SUMMARY

Problems can continue to be expected as more individuals on the spectrum are included into the community. Their new found freedom can be a double edged sword when proactive supports aren't provided. Mayes (2003) laments that individuals who were once routinely segregated are now expected to live in our communities, with or without appropriate and adequate supports. They are also expected to conform to society's norm including the norms that are embedded in the CJS. He described their increased inclusion in society as a 'cruel illusion'. Long (2009) suggests that our current support system of Medicaid and special education may not provide the comprehensive continuum required for individuals on the spectrum. She suggests we are failing to change a system in dire need of repair.

It is recommended that advocates investigate proactive options for dealing with these issues. These may include initiatives such as improving the education of law officers, preparing for autism emergencies, educating caregivers and educating individuals with autism. This could involve the development and use of training manuals for individuals working in the CJS and for caregivers, as well as the development and use of social stories for individuals on the spectrum. Social stories would be a way to build on visual strengths. Additionally, the IDEA mandated transition period from the school to the community would be an excellent time to provide support and reinforce training.

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# BODY MASS INDEX DIFFERENCES BETWEEN UNDERGRADUATE PHYSICAL EDUCATION MAJOR ATHLETES VERSUS PHYSICAL EDUCATION MAJOR NON-ATHLETES

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**Keywords:** *Body Mass Index, Physical Education, Athletes Versus Non-Athletes.*

## INTRODUCTION AND REVIEW OF LITERATURE

One of the most important jobs of a physical educator is to be a positive role model to students, patients, or clients. By leading a healthy and active lifestyle, competent physical educators are able to instill a positive attitude toward lifelong physical activity to the people they instruct. This can also help promote more of a positive, public perception of physical education professionals. Body Mass Index (BMI) has been used frequently over the past few decades to provide a quick prediction of excess fatness and disease risk (Hoeger and Hoeger, 2004). According to research conducted by Wengreen and Moncur, current obesity rates among all age groups are 2 to 3 times higher than they were 20 years ago.

Body Mass Index (BMI) is a method used to measure the relationship of a person's weight and height. This is determined by dividing a person's body weight in kilograms by the person's height in meters squared. The BMI method is currently preferred over traditional height/weight charts by the National Institutes of Health (NIH) to define normal weight, overweight, and obesity (in MedTerms Dictionary, 2008). However, it is important to take into consideration that some people have a greater amount of muscle, which weighs more, and therefore, they have a higher BMI without the associated health risks.

Obesity and individual quality of life have been a popular topic in today's literature, especially over the past decade.. Individuals with a BMI of 30 or above are considered to be obese. This is a major health concern due to the significant increased health risks. Obesity does not discriminate based on age, gender, or socioeconomic status. The CDC (2008) states that doctors and scientists have identified several health-related problems for children and teens who are overweight or obese. Some of these include: heart disease, which is caused by high cholesterol and/or high blood pressure, Type 2 diabetes, asthma, sleep apnea, and social discrimination. The effects of obesity reach farther than the physical realm of the person. Crosnoe and Muller (2004) discovered that adolescents with at risk BMI's were more likely to have lower academic achievement. Additional research suggests that adolescents with high BMI levels were subject to increased psychological stress due to being socially stigmatized leading to lower self-esteem, which can lead to lower academic and social functioning – much of which can worsen when they are adults (Swartz & Puhl, 2003). In addition the CDC (2008) estimated that many of these weight-related problems found at an early age most often follow an individual into adulthood.

There is a growing body of evidence that child obesity is a global epidemic (World Health Organization, 2002). "Preventing childhood obesity has become a top priority in efforts to improve our nation's public health" (Puhl & Latner, 2007). The data from NHANES studies (2003-2004) indicated that the number of overweight youth has increased in children ages 2-5 from 5% - 13.9%; for children ages 6-11 years an increase of 6.5% to 18.8% was indicated; and for those youth ages 12-19 years, an increase of 5% to 17.4% was found (Ogden, Flegal, Carroll & Johnson, 2002). The Health People 2010 reported that being overweight or obese is one of ten leading health indicators (National Center for Health Statistics, 2002). Unless the trend is reversed, obese children who later grow up to be obese parents will likely have obese children of their own. Obese and non-obese children under the age of 10 were twice as likely to become obese adults if they have obese parents (Whitaker, Wright, Pepe, Seidel & Dietz, 1997).

Obesity affects roughly one-fifth (9 million) of the children in the United States and it is the most prevalent nutritional disease of youth in the United States (Dietz, 1998). The latest “Shape of the Nation Report” (2006) indicated that “despite skyrocketing childhood obesity rates and calls from Congress, the Surgeon General and CDC for high quality daily physical education programs, most states receive a failing grade on their physical education requirements.” Their numbers indicated that 17% (more than 9 million) of children and teenagers from 6 to 19 years old are overweight, with 31% of the additional youth being at risk for being overweight.

The topic of Body Mass Index and obesity also extends past adolescence in to the college/ young adult stage of life. The transition from high school to college is an area of concern that often gets overlooked or labeled as the infamous “freshman 10”. According to Wengreen and Moncur, almost one quarter of all college students gain a significant amount of weight during the first semester of college. Hellmich's states that the majority of college females gain an average of 10 pounds per year whereas males gain an average of 14 pounds. This overwhelming evidence suggests that over an individual's life span there is a steady progression leading toward obesity.

## DESCRIPTION OF THE STUDY, SUBJECTS, AND METHODOLOGY

The purpose of this research project was to investigate the BMI of undergraduate physical education majors at Alabama A&M University. In addition, the researchers wanted to discover if there was a significant difference in the BMI of undergraduate physical education majors who are athletes versus those who are non-athletes and to determine the range and mean body mass index of all subjects.

The subjects were 67 undergraduate physical education majors at Alabama A&M University. Each student had height and weight measured, and BMI was calculated. The subjects included all willing undergraduate physical education majors at Alabama A&M University (n = 67). The sample included males (n = 52) and females (n = 15). Group 1 of the study consisted of non-athlete majors (n = 45), and Group 2 consisted of athlete majors (n = 22) from the following sports: baseball, basketball, football, soccer, softball, track and field, and volleyball).

Subjects were classified by disease risk and obesity level reflecting current standards (Figure 1).

BMI	Disease Risk	Classification
< 20.00	Moderate to Very High	Underweight
20.00 to 21.99	Low	Acceptable
22.00 to 24.99	Very Low	Acceptable
25.00 to 26.99	Low	Overweight
27.00 to 29.99	Moderate	Overweight
30.00 to 39.99	High	Obese
≥ 40.00	Very High	Obese

**Figure 1:** Disease Risk According to Body Mass Index (BMI)

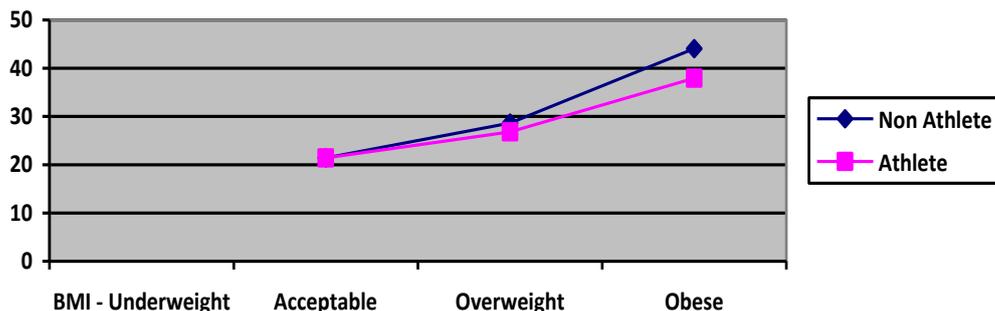
The instrument used to make height and weight measurements was a Health O Meter standard weighing scale with a height measurement apparatus, made by the Continental Scale Corporation, Bridgewater, Illinois. Calibration was made before and after each measurement was taken.

After signing a consent to participate form, each subject was weighed, and the measurement was recorded in pounds to the nearest half pound. Height measurement was then taken and recorded to the nearest quarter inch. Body mass index was calculated using the following formula:  $BMI = \text{body weight (pounds)} \times 705 \div \text{height (inches)} \div \text{height (inches)}$ . BMI score were rounded to the nearest hundredths place.

## RESULTS

The average BMI for all 67 subjects was 28.04, which falls under the *moderate* disease risk and is classified as *overweight*. The range of BMI scores was 22.64 (21.41 to 44.05) with a standard deviation of 5.06. The average BMI score for Group 1 (non-athletes) was 28.65, which is also classified as *moderate* disease risk and *overweight*.

The range for Group 1 was 22.55 (21.41 to 44.05), with a standard deviation of 5.21. The average BMI score for Group 2 (athletes) was 26.81, classified as *low disease risk* and *overweight*. The range for Group 2 was 16.51 (21.41 to 37.92) with a standard deviation of 4.51.



The researcher hypothesized that the average BMI score for athletes would be significantly lower than non-athletes because of the vigorous training and active lifestyle of student-athletes. An independent groups t-test was used to see if there was indeed a statistically significant difference between the two groups. With a degrees of freedom value of 65 ( $df = 65$ ), the critical table value of  $t$  at the  $p < 0.05$  level was observed to be 2.00 ( $t_{critical} = 2.00$ ). The calculated value of  $t$  was 1.39 ( $t_{observed} = 1.39$ ). Thus, the research hypothesis could not be supported, and the conclusion was that there was not a significant difference in the BMI of the two groups.

## CONCLUSION AND RECOMMENDATIONS

The results of this study show that the average BMI of undergraduate physical education students at Alabama A&M University is below the acceptable standard. The subjects, on average and regardless of athletic status, fell into the *overweight* classification, although several subjects did have BMI scores in the *acceptable* range. This data does raise some concerns. It can be argued that professional physical educators should lead active lifestyles and maintain a healthy level of body composition. A physical educator's physical appearance can have an impact on the attitudes toward physical education by the learners. It should be mentioned, however, that while BMI offers an easy method of measuring general levels of health based on body proportions, it does have its limitations. BMI is not a direct measure of body composition like hydrostatic weighing, bioelectrical impedance, or air displacement. Future study should be done using these or other direct measurement techniques to evaluate the health status of college physical education students and current practitioners.

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# CORRELATION OF STUDENT HOUSING AND ACADEMIC AND SOCIAL PERFORMANCE – A CASE STUDY

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## ABSTRACT

*This research addresses one of the important decisions facing most college freshman students – their housing option: living on-campus vs. off-campus. The arguments for both sides have been reported in the available literature. The results of this research based on collected empirical data support the arguments that students who live on-campus achieve greater academic and social success during their college life than their counterpart - students who live off-campus. Although an ample amount of literature on this subject has been previously published, this study supports the above arguments with the most recent and relevant statistics to demonstrate the positive correlation between university residence and overall student success. The three proposed hypotheses are tested all with a statistical significance and the related recommendations will provide some meaningful insights for future college students and their parents. The data used in this research are collected through both public university records and the results of a campus-wide comprehensive survey. Three performance criteria utilized in this research are academic success, social accomplishments, and overall student achievement.*

**Keywords:** *College Success, Student Housing Options, On-Campus Vs. Off-Campus, Empirical Study.*

## 1. INTRODUCTION

Most colleges and universities require their incoming freshman to live in University Housing for at least their freshman year to support the belief that living in residence halls provides greater academic support and additional social and extracurricular opportunities that off-campus residences don't offer. This paper is an attempt to investigate and examine the choices that college students have for student housing and the effect of their housing choice on their academic and social performance. A vast amount of literature has been reported that showcases the correlation between student residency and academic and social growth (Pascarella & Terenzini, 1980; Rinn, 2004). Numerous experiments have been conducted to suggest that living in college dormitories enhance the student experience (Araujo & Murray, 2010; Delucchi, 1993; Aitken, 1982). Studies show that students who live in on-campus housing have higher GPAs, greater campus involvement, stronger student-faculty relationships, and more opportunities for social development (Hountras & Brandt, 1970). Results from one study also showed that students living on campus have a lower drop-out rate than students that live off campus; thus having a greater chance of completing their degree (Pascarella & Terenzini, 1980).

On campus housing provides students with ample extracurricular and social activities giving students greater opportunities for social development. Another study showed that students living in university housing feel social safety because they associate themselves with a group (Rinn, 2004). Having group association with other students that live on-campus then results in the beginning of self-exploration because students feel safety in their environment. Another study revealed that students make their housing selection based on an internal formula and they take four factors into account when making their selection (Aitken, 1982). Students subconsciously choose their college housing based on current retention, academic satisfaction, living satisfaction, and academic performance (Aitken, 1982). Although there are many factors that affect students' academic and social performance, this paper is an effort to empirically investigate the correlation between student performance and living in university housing. The intended purpose for a brief literature review below is to offer insight to parents and high school students in the process of evaluating potential collegiate housing options.

## 2. LITERATURE REVIEW

Universities and colleges have utilized on-campus housing as a requirement for so long now that the related literature is extensive and provides much insight on the effects of campus residencies. This paper is an attempt to

explore the relationship between student academic and social achievement and on-campus housing and a vast amount of literature supports a positive correlation.

Reviewing various related academic journals and articles, it is noticed that many researchers suggest a psychological effect that takes place while living in on-campus housing. One belief is that students who live in residence halls feel as though they are part of a group and in turn makes them feel included and part of something bigger than themselves. When students associate themselves with other students in the residence hall they become part of an inclusive community. They feel social stability because of their group association and many students also experience “social safety” which is a feeling of comfort and belonging within their social settings. Once students experience “social safety” in the residence halls they will then begin the process of self-exploration. Self-exploration occurs when a student feels stability and confidence in their environment and group of peers and in return they begin to explore unfamiliar social territory and develop their personality and social skills as a growing member of society. This theory supports the positive correlation between university housing and social performance because students feel freedom in a comfortable setting to socially explore and let their real internal character be shown externally (Rinn, 2004).

More recent research also supports that on-campus housing assisted students with social development in a psychological way. Pascarella and Terenzini (1993) stated that students experience a gain in beneficial critical thinking and cognitive skills while living in on-campus housing. It can be assumed that when one gains these skills, they usually carry on with them and grow stronger through various life experiences. This leads to the believe that these social and thinking skills are not only developed and beneficial during college years but will also carry on to make students more successful in their future real world endeavors.

Another article claims that students are almost forced to experience positive social development while living in University Housing because of the atmosphere the on-campus residency provides (Delucchi, 1993). This article suggests that several studies have been shown that dormitory students who live on campus foster a greater social development because of the opportunities provided to them within their residence hall (Chapman & Pacarella, 1983). Most universities employ a hand-on approach to their residence halls where the advisors of the hall are available at almost any hour and programs and social activities are offered nearly every day of the week. Because students are provided with integrated social activities within their living arrangements they in turn experience social development partly because it would be hard to escape it. It is not difficult to predict that students feel included in an exclusive group because anyone who lives in a residence hall is automatically considered to be on the nonexistent “invite list” to that dorms social gatherings. Commuter students and off-campus students are required to establish their own social communities and activities because it is not often provided at off-campus locations in the same frequency that university dormitories provide. Commuter students, who are typically less connected to campus and extracurricular activities, have been reported to feel more isolated from their fellow students and have less social opportunities than students that live in University Housing (Lundgren & Schwab, 1979).

It is also suggested that students experience this social growth through an increase in self-concept (Pascarella & Terenzini, 1991). Self-concept is experienced by these students because they have forced exposure to their peers and to social activities. Thus, it can be assumed that the only way these students wouldn’t naturally develop social skills would be if they were to forcefully reject them. In fact, it is shown that students so value the social interaction they gain in residence halls that it is one of the main reasons why many students choose to remain in dormitories for the following year (Cleave, 1996).

Besides the enhanced social performance students gain from living in on-campus housing, current literature also shows that students achieve higher academic performance as well. In some recent published research works, one article reports that students living in campus dormitories have a lower dropout rate than students who lived off-campus (Hountras & Brandt, 1970). This article further suggest that you can distinguish where a student lives based on their academic performance. That is, there is a perception that in general that students who maintain a higher grade point average and excel academically would live on-campus whereas students who achieve lower grades and have a lower grade point average would reside in off-campus residencies.

Reviewing some most recent related research results, the similar conclusions are also reported. One study showed that students who live in university housing experience a greater persistence in their academic performance thus producing higher graduation rates (Chickering, 1974). It also reveals that even with other factors such as academic ability held constant, students who lived in campus dormitories were more likely to complete their degree than students who lived off-campus. Another studies indicates that while there are numerous factors that contribute to a student's academic success (academic ability, social skills, economic status, family attributions, motivation), it is estimated that 12% of the variation in completing an undergraduate degree can be attributed to living in a residence hall (Astin, 1977).

Furthermore, recent literature also supports a positive correlation between University Housing and student academic performance. For example, one study found that on average students who lived on-campus could expect to have a higher grade point average than off-campus students by .19 to .97 (Araujo & Murray, 2010). This study shows that students who lived in residence halls could achieve higher academic performance than off-campus students by up to almost one full letter grade. In the same article, Araujo & Murray (2010) further explain that while each study may produce different results because of the unique students involved, universities can encourage students to live in their own-campus housing with a supported claim that students will achieve a higher academic performance. Another study specifically focused on freshman students alone and found that these first year students were more likely to achieve greater academic performance and show higher retention than off-campus students (Thompson, Samiratedu & Rafter, 1993).

While most published reports in the current literature support a positive correlation between academic achievement and on-campus housing, there are some research pieces have provided different examples to explain the cause of a better student academic success. For instance, one article argues that the increased academic performance of on-campus students should be attributed not just to their residential environment but also what resources that environment offers (Toutkoushian & Curtis, 2001). Like, campus residence halls are generally known to provide students with ample resources to aide in their academic achievement. Other examples include in-hall tutoring services, residence hall study groups, academically minded activities, and technology resources. Many off-campus residences do not find it marketable but also do not have the funding to provide these types of extra benefits.

In summary, the primary purpose of this research is to empirically investigate the potential and possible relationships between students' housing choice and their college life success, so that to offer practical insights to parents and high school students in the process of evaluating potential collegiate housing options. The discussion in this section and a review of previous publications are an attempt to support the proposed research hypotheses that students who live in University Housing show higher academic and social performance than those living off campus. Earlier research has already presented the two unique sides of this argument. One side claims that there is no correlation between whether students live on campus or off campus with students' academic and social success. This view supports the claim that students will grow, adapt, and learn because of internal and external motivators that do not include where the students reside. The other side of the argument claims that students who live in University Housing achieve higher academic results and become more socially embedded because of their on campus environment. After reviewing the previously stated research and presenting historical literature on the related topic, evidence suggests that college students who reside in University Housing achieve greater academic and social success. However, while substantial research regarding this topic has already been published, there is clearly a demand for an up-to-date research, because earlier research does not reflect the time change and cultural and technological differences of today's society. The following section will briefly describe the research design and methodology used in this research.

### **3. RESEARCH METHODOLOGY**

In this study, all data are collected within the institution of the researchers. This is a typical mid-sized public university in the center area of the state of Georgia, with a student population around 6500. In addition, two dimensions of college students' experience are selected to measure the strength of correlation between student housing option and student success: (1) student overall academic performance and success, and (2) students' beneficial social engagements and activities. Combining these two factors then provides clear evidence to indicate

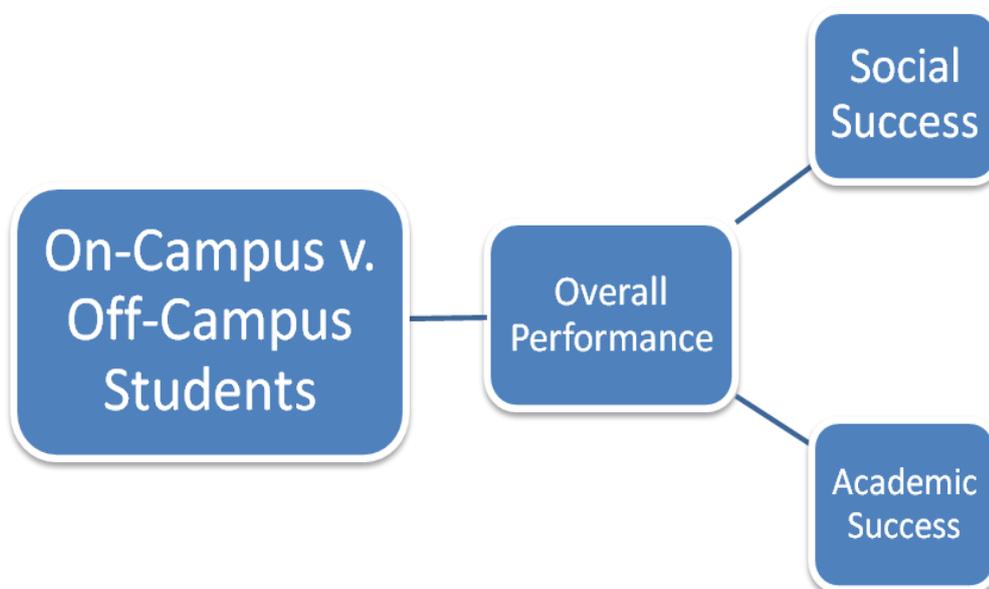
how student housing impacts overall student success, as shown in the proposed conceptual model in Figure 1 below.

As such, three hypotheses are proposed in this research and tested with the empirical data collected, as below:

**Hypothesis-1:** *The on-campus housing option will provide students a better and more positive and beneficial environment for their college life which will be more likely to result in a better and more successful academic performance and achievements for students.*

**Hypothesis-2:** *The on-campus housing option will provide students a better and more positive and beneficial environment for their college life which will be more likely to promote a better and more active and positive social engagements and extracurricular activities for students growth and maturity throughout their college life.*

**Hypothesis-3:** *The on-campus housing option will provide students a better and more positive and environment for their college life which will be more likely provide a better and more beneficial motivation to have an overall successful college life for students.*



**Figure 1:** *A Conceptual Model for Student Housing Option and Their College Performance*

More specifically, in this research, the students' academic performance is basically measured by the students' overall average GPA (compared on two separated samples: on-campus vs. off-campus), like in many published research, which has been well accepted as a valid measurement for college student academic performance in the related literature. It should be noticed that those data are collected through the services of the Institutional Research Department at the university, which has the access to all of the demographic information of current and past students and is able to compare anything from gender to GPA to campus involvement. For the academic success section of this study, Institutional Research ran reports on grade point average comparison between on and off campus students. For GPA comparison purposes, the most recent data (from 2006 to 2011) are used and compared.

To measure students' social success, a campus-wide comprehensive student survey results are utilized from a Georgia College Campus Activities and Student Involvement questionnaire distributed by the Institutional Research department. This survey was emailed to the entire undergraduate student body and response to the survey was optional. The survey consisted of 80 questions and had a total of 50 respondents. The survey was designed to

obtain data regarding how the student body as a whole felt about campus activities. For research purposes, the results were split into two separate samples: on-campus v. off-campus respondents. Many questions from the survey were utilized to demonstrate how engaged students are in campus activities and how their social skills have enhanced. For research purposes, we compared on and off campus students to determine if living situation was correlated with student involvement.

Lastly, overall performance was measured by student graduation rate and probation rate. For these two categories, data are collected again from university Institutional Research. For graduation rate, only those students who were able to graduate in the traditional four year period are analyzed. Graduation rates for students who graduated in four years from the class of 2008 to the class of 2011 were used for this same purpose. Similarly, students' probation statistics are compared from 2006 to 2011 to see whether more on-campus or more off-campus students had been placed on probation (includes academic and behavioral). The results are discussed in the section below.

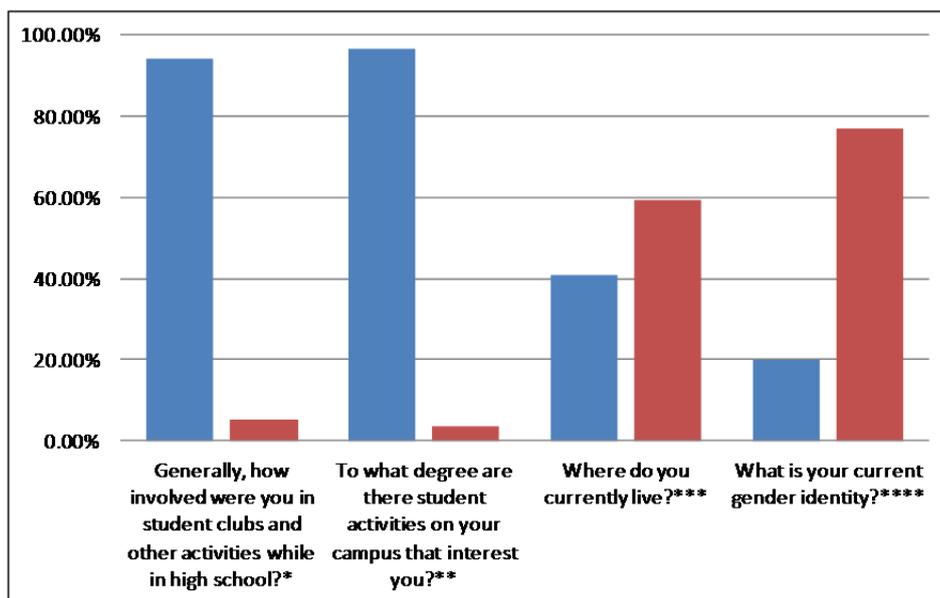
#### 4. RESULTS ANALYSIS

For this literature review, several outlets were utilized to gain information to statistically support the three hypotheses. The following is a statistical analysis that shows empirical evidence that on-campus students achieve greater academic and social success than off-campus students. The research provided indicates a direct correlation with student housing and overall student success.

The General Demographic Information Summary (Table 1 and Figure 2) gives an inside look into what the survey population looked like. From this data, it was important to include where students currently live, their gender, and how interested they are in extracurricular activities. In the first question, 94.03% of survey respondents indicated that they were active in extracurricular activities in high school. This is important data to know because one can assume that if a student was active in student activities in high school then it is likely they would continue the same level of activity throughout college. This indicates that students are looking to participate in extracurricular activities once they attend a University. Next, 96.58% of survey respondents indicated that there are extracurricular activities on campus that provoke their individual interest. This is also important information because it shows that there are ample activities on campus that students are interested in participating in. This information enhances the statistics later in this literature review because it proves that students do want to participate and there is ample opportunities for them to do so.

**Table 1:** *General Demographic Information Summary*

Question		
Generally, how involved were you in student clubs and other activities while in high school?	Active	94.03%
	Not Active	5.13%
To what degree are there student activities on your campus that interest you?	Interest	96.58%
	No Interest	3.42%
Where do you currently live?	On-Campus	40.63%
	Off-Campus	59.38%
What is your current gender identity?	Male	19.79%
	Female	77.08%



\* First column: Active; Second column: Not Active  
 \*\* First column: Interest; Second column: No Interest  
 \*\*\* First column: On-Campus; Second column: Off-Campus  
 \*\*\*\* First column: Male; Second column: Female

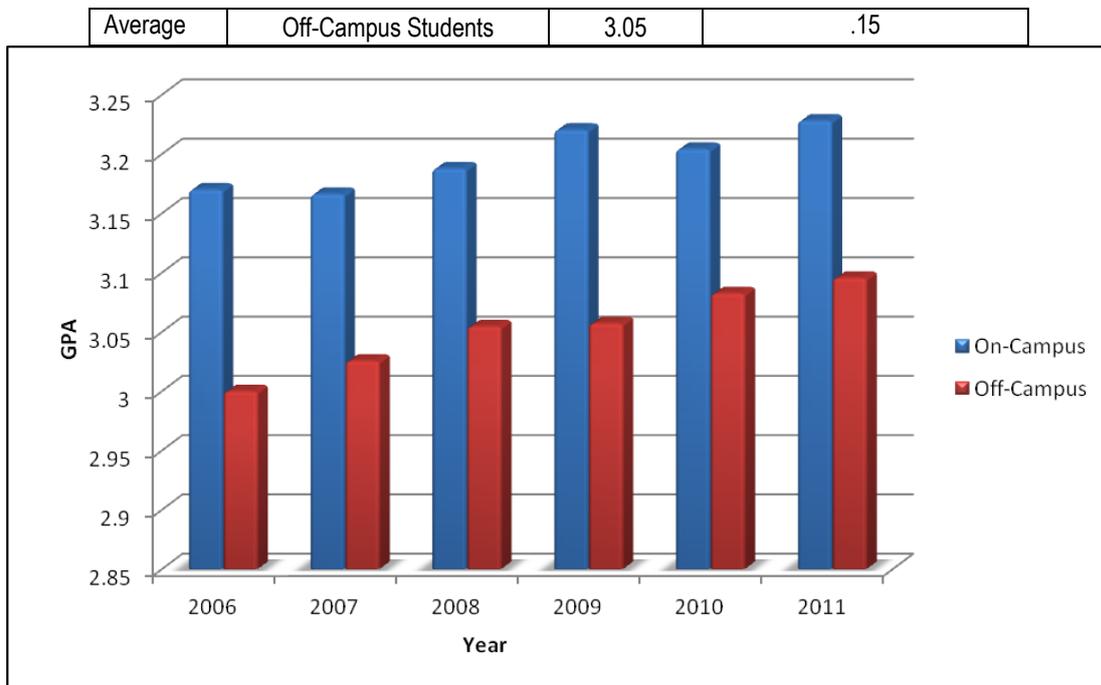
**Figure 2:** General Demographic Information Summary

For general survey information we also sought out the divide between on-campus and off-campus students. From the population of our survey respondents, 40.63% of students live on campus and 59.38% live off campus. Also, we determined that 19.79% of our survey respondents were male. However, this is representative of the university's population because it is a Liberal Arts college with a high female to male ratio.

In the first hypothesis for this literature review, we stated that on-campus students would show greater academic achievement than off-campus students. After we received historical data on GPA from the department of Institutional Research, we were able to determine that from 2006 to 2011 on-campus students have held higher GPAs than off-campus students each year. Table 2 and Figure 3 show the differences. The difference in GPA between on and off campus students was always at least .10. In some situations this could mean the difference between a 2.9 GPA and a 3.0. This data significantly supports Hypothesis 1 because it indicates that students who live on campus achieve greater academic success. By using the 2006-2011 difference in GPA average, it can be assumed that an on-campus student will have a GPA at least .15 higher than an off-campus student.

**Table 2:** GPA Comparison: On-Campus Students vs. Off-Campus Students

Year	Housing Option	GPA	Difference (On-Campus/Off-Campus)
2006	On-Campus Students	3.17	.17
	Off-Campus Students	3.0	
2007	On-Campus Students	3.17	.14
	Off-Campus Students	3.03	
2008	On-Campus Students	3.19	.14
	Off-Campus Students	3.05	
2009	On-Campus Students	3.22	.16
	Off-Campus Students	3.06	
2010	On-Campus Students	3.20	.12
	Off-Campus Students	3.08	
2011	On-Campus Students	3.23	.13
	Off-Campus Students	3.10	
2006-2011	On-Campus Students	3.20	

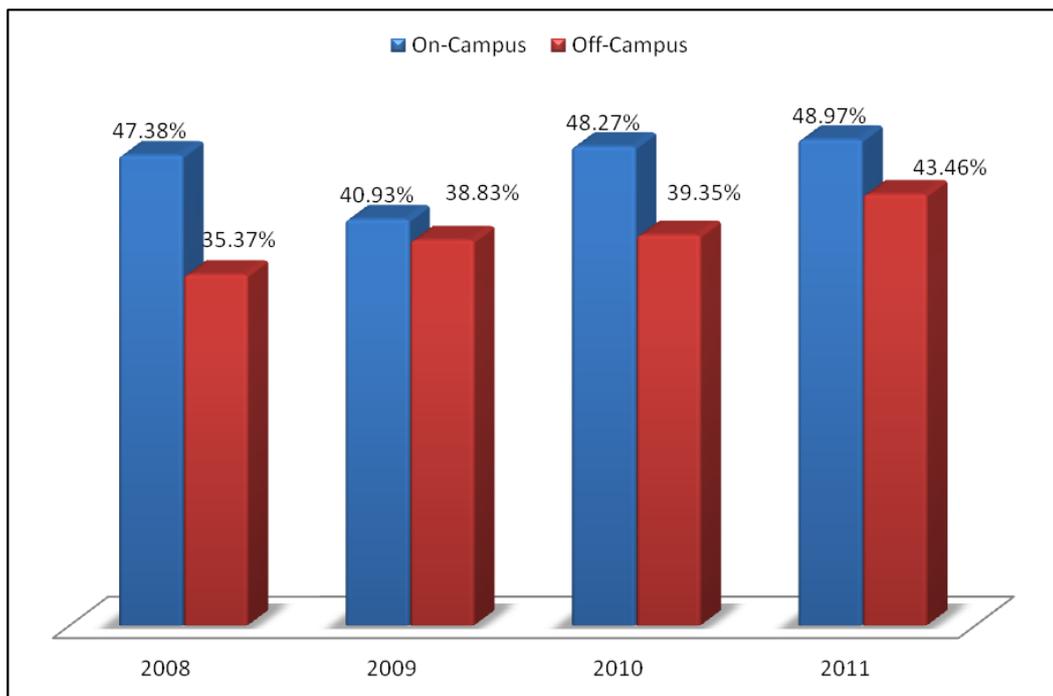


**Figure 3:** GPA Comparison: On-Campus Students vs. Off-Campus Students

Table 3 and Figure 4 showcase the difference in graduation rate between on-campus and off-campus students. This data was gathered from the department of Institutional Research and shows data from 2008 to 2011. The population in this data is students who graduated with their undergraduate degree in the tradition four years. As shown in the table, on-campus students have a historically higher 4-year graduation rate than off campus students.

**Table 3:** Graduation Rate Comparison: On-Campus Students vs. Off-Campus Students

Year	Housing Option	Percent	Difference (On-Campus - Off-Campus)
2008	On-Campus Students	47.38%	12.01%
	Off-Campus Students	35.37%	
2009	On-Campus Students	40.93%	2.1%
	Off-Campus Students	38.83%	
2010	On-Campus Students	48.27%	8.92%
	Off-Campus Students	39.35%	
2011	On-Campus Students	48.97%	5.51%
	Off-Campus Students	43.46%	
2008-2011 Average	On-Campus Students	46.39%	7.14%
	Off-Campus Students	39.25%	

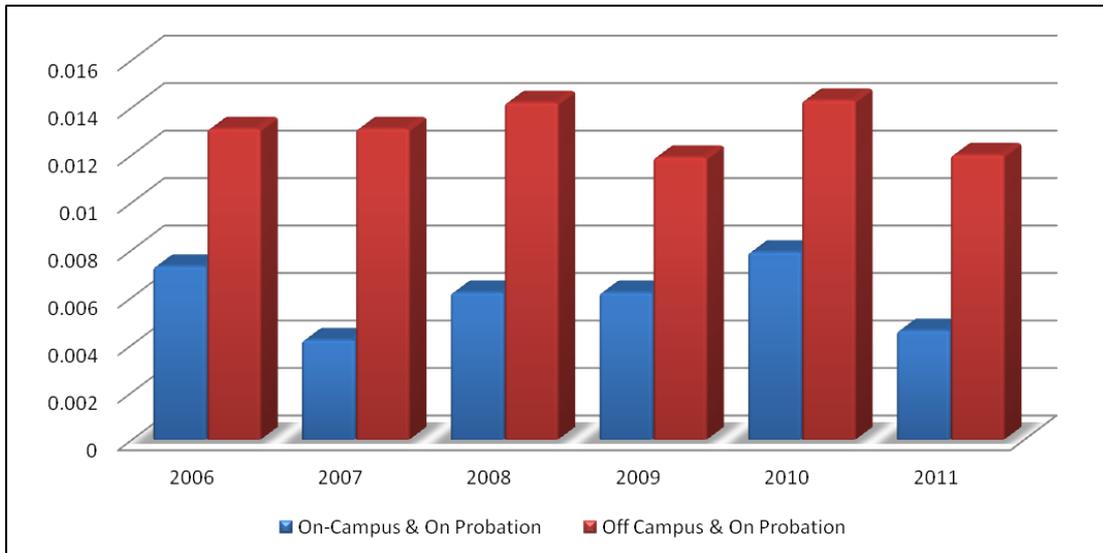


**Figure 4:** Graduation Rate Comparison: On-Campus Students vs. Off-Campus Students

Table 4 and Figure 5 demonstrate the difference in probation rate between on-campus and off-campus students from 2006 to 2011. This information supports Hypothesis 3 for overall success because probation can include academic or behavioral probation. The difference is clearly identified in Figure 5 that off-campus students historically hold higher probation rates. Each year from 2006-2011 the probation rate for off-campus students is higher than that of on-campus students.

**Table 4:** Student Probation Comparison: On-Campus Students vs. Off-Campus Students

Year	Housing Option	Percent	Difference (Off-Campus - On-Campus)
2006	On-Campus Students	.0073%	.0058%
	Off-Campus Students	.0131%	
2007	On-Campus Students	.0042%	.0089%
	Off-Campus Students	.0131%	
2008	On-Campus Students	.0062%	.008%
	Off-Campus Students	.0142%	
2009	On-Campus Students	.0062%	.0057%
	Off-Campus Students	.0119%	
2010	On-Campus Students	.0079%	.0064%
	Off-Campus Students	.0143%	
2011	On-Campus Students	.0046%	.0074%
	Off-Campus Students	.012%	
2006-2011 Average	On-Campus Students	.006%	.007%
	Off-Campus Students	.013%	

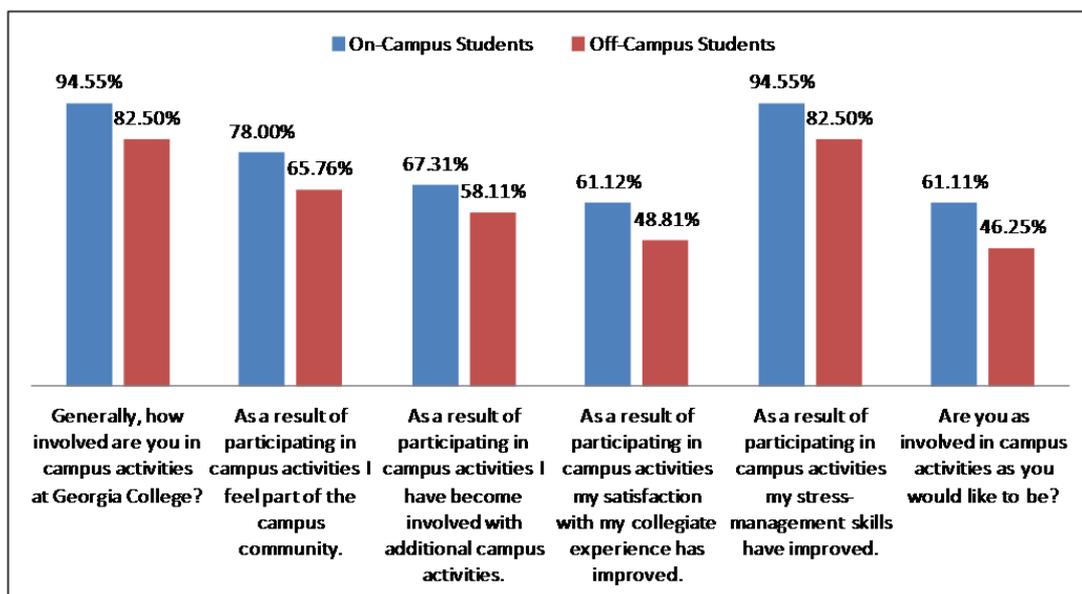


**Figure 5:** Student Probation Comparison: On-Campus Students vs. Off-Campus Students

In table 5 and figure 6, data supporting hypothesis 2 for social success is represented. This data is taken from a campus involvement survey distributed by the department of Institutional Research. Several questions are analyzed in the table 5 and figure 6 that showcase information which supports on-campus students achieving greater social success than off-campus students. The first question seeks to determine how involved students are in campus activities at Georgia College. Survey respondents showed that 94.55% of on-campus students are involved in campus activities, 12.05% more than off-campus students. To further support this data, the second question seeks to determine how being involved in campus activities has changed how students feel about their involvement within the community. According to the data, 78% of on-campus students answered that they feel part of the campus community as a result of participating in campus activities compared to only 65.76% of off-campus students who felt the same way. From here, we analyzed data to see if being involved in campus activities provoked students to join more extracurricular activities. Of on-campus respondents, 67.31% said they have become involved with additional campus activities as a result of participating in campus activities compared to only 58.11% of off-campus students. The next question asked respondents if their overall satisfaction with college has improved due to campus activities they participate in. The evidence here clearly supports our hypothesis that on-campus students achieve greater social success. Of on-campus students, 68.12% said their collegiate experience has improved due to extracurricular activities, 9.34% more than off-campus students.

**Table 5:** Social Success Comparison: On-Campus Students vs. Off-Campus Students

Question	Housing Option	Percentage	
Generally, how involved are you in campus activities at Georgia College?	On-Campus Students	94.55%	12.05%
	Off-Campus Students	82.50%	
As a result of participating in campus activities I feel part of the campus community.	On-Campus Students	78.00%	12.24%
	Off-Campus Students	65.76%	
As a result of participating in campus activities I have become involved with additional campus activities.	On-Campus Students	67.31%	9.2%
	Off-Campus Students	58.11%	
As a result of participating in campus activities my satisfaction with my collegiate experience has improved.	On-Campus Students	76.47%	9.34%
	Off-Campus Students	67.13%	
As a result of participating in campus activities my stress-management skills have improved.	On-Campus Students	61.11%	14.3%
	Off-Campus Students	46.81%	
Are you as involved in campus activities as you would like to be?	On-Campus Students	61.11%	14.86%
	Off-Campus Students	46.25%	



**Figure 6:** Social Success Comparison: On-Campus Students vs. Off-Campus Students

Next, we sought to determine how being involved with campus activities has improved students' stress-management skills. Only 82.5% of off-campus students confirmed that their stress management skills had improved compared 94.55% of on-campus students who felt the same way. This supports our theory that living on-campus has a direct correlation with student success. The last question asked survey respondents if they were as involved on campus as they would like to be. Of respondents, 14.6% more on-campus students answered that they were satisfied with their level of campus activity participation. From this we can also conclude that students that live on-campus are more likely to be involved on campus, especially because of the availability of resources. Overall, the evidence shown in figure 6 clearly supports the theory that students who live in on-campus housing have greater social involvement and success.

### 5. CONCLUSION AND RECOMMENDATIONS

High school seniors are often faced with the difficult decision of where to attend college. And upon that decision, they are then forced to decide where they will maintain residence in their new town. Many colleges and universities have a one-year on-campus housing requirement but are free to choose their residence after their freshman year. This literature review seeks to statically support our theory that on-campus housing produces more academically and socially successful students than that of off-campus housing.

A vast amount of research already exists on this topic but there was an evident need for more current statistics. Historical research supports the claim that on-campus students are more successful but little research exists that take into account the generational gap and changes in technology and lifestyle. The study's purpose was to present empirical research that statistically supports the theory that students who live on-campus have an overall more successful collegiate experience than students who live off-campus. The research included in this study was produced by the department of Institutional Research at Georgia College.

The research presented includes statistical evidence that showcases in many ways how on-campus students are more successful. Since 2006, on-campus students have consistently held higher GPAs than off-campus students demonstrating greater strength in the area of academics. On-campus students also demonstrate a higher four-year graduation rate indicated that they are more focused and driven during their collegiate years. Off-campus students have consistently shown a higher probation rate, which includes academic and behavioral violations. It is clear that on-campus students are provided with a higher quality environment that promotes and assists in achieving academic success.

Students who live in on-campus housing also demonstrate greater social success and involvement within the campus. The campus involvement survey shows empirical evidence that clearly demonstrates that on-campus students indicated that they feel more connected to campus, are satisfied with their involvement in activities, and have a more positive overall collegiate experience than off-campus students. On-campus students consistently rated their involvement in extracurricular activities and their connection with the campus community higher than off-campus students. It is evident that living on-campus increases a student's social success and involvement within the community.

This study provides clear and consistent evidence that there is a strong positive correlation between student academic and social success and living in an on-campus residence. The goal of this research was to provide current empirical evidence that supported this theory to help students make a more defined and educated housing decision. It is our conclusion and recommendation that based on statistical evidence alone, students who live on-campus will achieve far greater academic and social success than students who live off-campus.

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# THE BLACK CHRISTIAN STUDENTS: DIARY OF A SOCIAL MOVEMENT

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## ABSTRACT

*The concept of proclamation can be extended beyond the traditional meaning of preaching, testimony and witness. Proclamation can be communicated through individuals and institutions. The primary thesis of this paper is that institutions proclaim through individuals and individuals proclaim through institutions. To illustrate this point I intend to describe how a group of Black Catholic Students are attempting to make the religious experience relevant to themselves and their community through an institutionalized social action structure, the Black Christian Student Movement. We cannot understand the development as an organization like Black Christian Students unless we understand the parallel development of Black Power.*

**Keywords:** *Sociology, Juvenile Delinquency, Theology, Education, Criminal Justice.*

## BODY OF PAPER

The broad goal of the civil rights movement has always been equality for Negroes in all aspects of American life. Before the Supreme Court decision in 1954, the approach to civil rights advocates was educational and legal. Lawyers for the NAACP waged a twenty-year series of court cases culminating in the Brown vs. the Board of Education Supreme Court decision of 1954. Low educational levels, Black of economic and political power, and the lack of Negro leadership had kept the drive for equal rights in the hands of a few men. A major goal, legal desegregation of schools, had been achieved, but no one talked of a total desegregation movement.

Suddenly the elements needed for a broad social movement came together in Montgomery, Alabama. Here was created a simple and understandable goal, a religious philosophy, a strategy of action (tactics), a charismatic leader, and a sense of power. The goal was equal seating on buses. The philosophy was the non-violent principles of Ghandi. The religion was Christian love. The leader was the Reverend Martin Luther King, a symbol of the middle class goals for which many Negroes were striving. The strategy was seen in the Montgomery bus boycott, which gave Negroes all over America the image of a people with whom to identify in their aspiration. From a sociological point of view, the significance here was the penetration of the non-violent philosophy into the Negro consciousness as a way of thinking and acting. Non-violence was no longer simply a religious rite of the Hindus but a practical working concept.

The seeds for a full-blown movement were planted here in this local movement, which reached its limited goals and took on the institutional form of the Montgomery Improvement Association. "From 1956 to 1960 similar Improvement Associations were organized in other cities, and still other cities witnesses scattered direct action protests like that begun by the Negro lady in Montgomery who refused to give up her bus seat to a white man" (Laud, 1965). The movement formally began in February, 1960 when lunch counter sit-ins spread over the entire South in a few weeks. Four Negro students in Greensboro, North Carolina, had started it by confronting an everyday symbol of discrimination and inconvenience - the lunch counter at a dime store. The goal again was simple and easily understandable: sitting down until served, ejected or arrested. By the end of the school year in June, 1960, there had been non-violent demonstrations against segregation in some eighty cities in the South, including every city of more than 100,000 (Laud, 1965). Thousands of persons in the North and South picketed stores in more than 1,000 cities. Less than two months after the movement started, the NAACP had to broaden its official approach, and on March 17, 1960, its leaders called for a nationwide boycott of discriminatory chain stores and instigated sympathy demonstrations in many parts of the county (Laud, 1965).

As a result of this non-violent philosophy, by 1954, several changes had taken place in the American racial pattern. First, desegregation of thousands facilities (including lunch counters, theatres, hotels, etc.) had occurred in

approximately 200 Southern cities. Second, over 50 biracial committees were formed where no official form of communication between blacks and whites had existed before. Third, an Interstate Commerce Commission ruling was approved. This ruling effectively enforced equal treatment in interstate transportation terminals. Fourth, voter registration projects were established all over the South. This resulted in thousands of newly registered Negro voters. Fifth, there was a radical change in Negro-white relationships all over the United States, including the growth of more militant Negro leadership, the birth of new civil rights organizations, intense direct action protests against many forms of discrimination by various levels of the Negro community, and the major confrontation of the movement and the political power structure, which resulted in a major civil rights bill which was passed in 1965 (Laud, 1965).

The direct action non-violent movement against segregation differed from previous movements seeking Negro civil rights in its spontaneity, its unpredictability, and its charisma. But since February, 1960, there has been a constant interplay between spontaneity and institutionalization in the attempt to become organized. What had begun as an uncontrolled and rapidly spreading movement in the 1960s was soon practically taken over by various organizations as a program.

The purpose of direct action is to remain free and spontaneous and its function is that of a charismatic catalyst in a system of race relations where the white dominant group repeatedly moves into lethargy and paternalism. Just when the movement's members and various opponents feel that they can control the movement, a Birmingham-type incident breaks out and upsets the structure. So the urges and demands for structure and non-structure constantly pull at the movement. As individual human beings, the members oppose organization and institutionalization. "Direct action protestors do not read the rules of social movements, and would not follow them if they did, for a prime motive of non-violent direct action is to beat the system and the predictors, whether they be sociology and the sociologist or tradition and Southern policemen" (Laud, 1965).

The organizational phase is best described as a formalization process; money and members. There was an immediate need to organize for publicity, coordination of demonstrations, and negotiation with businessmen and city officials. Local movements, which had sprung up overnight, called on organizations like CORE, SNCC, and SCLC for guidance in non-violent philosophy and techniques. Workshops and training sessions were being held in Greensboro and Nashville under the direction of CORE and FOR (Fellowship for Reconciliation) professionals within a week after the first sit-ins. Within three months the movement had an organization of its own. Called together in Raleigh, North Carolina, in 1960, sit-inners from jails all over the South formed the Student Non-violent Coordinating Committee (SNCC) to serve as a clearinghouse for information and coordination of diverse student direct action campaigns. By June, 1960, the first year of the movement, the major organizations were meeting and issuing unity statements proclaiming their mutual respect for each other and their public belief that legal and educational approaches were needed as well as direct action.

By the time the March on Washington occurred (August, 1963), the civil rights movement had reached a stable phase. The organization of the movement as well as its ideology and tactics became more orderly and clear-cut. Out of this stability evolved the concept of black power. The precipitating incident was the Meredith March from Memphis to Jackson in June, 1966, but the slogan expresses tendencies that had been present for a long time within the movement and had been gaining strength in the Negro community. Black Power first set forth a mood rather than a specific program--disillusionment and alienation from white America and independence, race pride, and self-respect or black consciousness. The term has almost become a household phrase and many discussions have been generated as to its real meaning.

In politics, Black Power means independent action--Negro control of the political power of the black ghettos and its conscious use to better slum conditions. It does not mean just putting black faces into office. "Black visibility is not Black Power. Black Power means proper representation and the sharing of control. It means the creation of power bases of strength from which black people can press to change local or nationwide patterns of oppression" (Carmichael & Hamilton, 1967). It could take a form of organizing a black political party or controlling the political machinery within the ghetto without support of white politicians. Where predominantly Negro areas lacked Negroes

in elective office, whether in the rural Black Belt of the South or in the urban centers, Black Power advocates sought the election of Negroes by voter registration campaigns, by getting out the vote, and by working for re-drawing electoral districts. The basic belief was that only a well-organized cohesive bloc of Negro voters could provide for the needs of the black community.

Economically Black Power means creating independent and self-sufficient Negro business enterprises not only by encouraging Negro Businessmen but also by forming Negro cooperatives in the ghettos and in the predominantly black rural counties of the South. In the area of education, Black Power demanded local community control of the public schools in the black community. Throughout this entire notion of Black Power, the emphasis is on self-help, racial unity, and racial pride. Among the more militant, Black Power means retaliatory violence ranging from the legal right of self-defense to attempts to justify looting and arson in riots, guerilla warfare, and armed rebellion. Phrases like Black Power, Black Consciousness, and Black is Beautiful are very popular in the black community, with the NAACP, and among relatively conservative politicians but particularly among young intellectuals and Afro-American student groups on white college campuses. Expressed in its more extreme form by small fringe groups, the Black Power philosophy became associated with SNCC and CORE. Both civil rights organizations are regarded as the most militant. SNCC questions the value of political alliances with other groups until Negroes have themselves built a substantial base of independent political power and applauds the idea of guerilla warfare. To them, riots are rebellions. SNCC calls for totally independent political action outside the established political parties, as with the Black Panther Party. CORE has been more flexible. CORE approves of the SNCC strategy but its advocates working within the Democratic Party, forming alliances with other groups, and, while seeking to justify riots as the natural explosion of an oppressed people against intolerable conditions, advocates violence only in self-defense. Both groups favor co-ops but CORE has been more inclined toward job training programs and developing a new Negro business class based on the market within the ghetto.

In order to understand the depth of Black Power, one must analyze white power. The meaning of white power is twofold. First of all, white power means in politics indirect rule. "Colonial subjects have their political decisions made for them by their colonial masters and those decisions are handed down through the chiefs either directly or through a process of indirect rule" (Carmichael & Hamilton, 1967). Politically decisions which affect black people have always been made by the white power structure. When faced with the demands of black people, white people unite and present a common front. "This is especially true when the black group increases in number...a large Negro population is politically both an asset and a liability. A large Negro populace may not only expect to influence the commitments and behavior of a governor, but it also may expect to arouse the ears of many whites. The larger the Negro population, the greater the perceived threat (in the eyes of whites) and thus the greater the resistance to broad civil rights laws" (Wilson, 1966). Black demands threaten the whites' vested interests. Whites unite to protect interests which they believe are solely theirs to the exclusion of all others. The idea of indirect rule manifests itself in the so-called Negro Establishment. "Thus when one talks of a Negro Establishment in most places in this country, one is talking of an establishment resting on a white power base; of hand-picked blacks whom that base projects as showpieces out front. These black leaders are only as powerful as their white kingmakers will permit them to be" (Carmichael & Hamilton, 1967). A prime example of indirect rule is the late Congressman William O. Dawson of Chicago First Congressional District. Dawson became a tool of the white power structure and the Negroes no longer has anyone to fight for their rights. "Dawson surrendered more than he has obtained for the Negro community" (Carmichael & Hamilton, 1967).

Economically white power means exploitation of the ghetto by outsiders who bleed it dry and leave it economically dependent on the total society. "Their basic motivation is personal profit and their basic impact is the maintenance of racism" (Carmichael & Hamilton, 1967). Social welfare agencies both public and private practice paternalism. They pretend to offer services which will uplift the community, when in reality they dehumanize the individual and perpetuate his dependency. Out of a low income the black man pays exorbitant prices for cheap goods and he pays more for his housing than whites. "Most of Chicago's 838,000 Negroes live in a ghetto and pay about \$20 per month more than their white counterparts in the city" (Carmichael & Hamilton, 1967). "The white power structure has collaborated in the economic serfdom of Negroes by its reluctance to give loans and insurance to Negro business" (Carmichael & Hamilton, 1967).

In summary, the last 15 years in America have seen the thrust for desegregation turn into a full-scale social movement, with the initiative transferred from a relatively few men to a larger number of young blacks. The continuity of the movement has been maintained as much by that sense of "soul" built into every Afro-American as by any complex system of stratification and organization. The message of 15 years ago has been expanded by blacks who believe that they must stand up to "the man" in a fight for their rights. Black Power is the civil rights movement grown up. It seeks to thrust the entire white power structure out of the ghetto and establish black political, social, economic, and educational control.

The Blessed Sacrament Young Christian Students of the Chicago Federation learned an important lesson in black power at the 1968 Great Lakes Regional YCS Convention. The '68 convention was patterned after the Republican and Democratic National Conventions. The YCS students would divide into political parties; develop a platform around important issues, and present them to the general student body. The platform would then be discussed and voted upon.

From the beginning to the convention, the black community (students) felt it necessary to project themselves into the mainstream of the convention. On the first day of the convention, the black students presented their needs to the white community and found compassion. Sympathy, but not true understanding.

The black students drafted a platform basic to the needs of the black community. The essence of the platform presented their views on draft discrimination, the voting age, and the ghetto educational system. Convention turmoil was being created because the black voice was being stifled. Discussions continued far into the night regarding the platform demands of the black students and their position in the convention picture.

On the second day of the convention, the black students who would not normally have been expected to be so articulate, attempted to clarify their needs to the white community. The white students found it extremely difficult to understand the black person, his needs, and his soul, although they tried to explain their cultural heritage with a production called the LIFE OF SOUL. It presented something whites can't seem to grasp: the depth of the incommunicable spiritual and emotional frustration of an oppressed people.

By the time the moment of the drafting of the platform arrived, the white students had grasped the jargon but not the message and reality of black power and black pride. A party which was called the NOW party was fortunate enough to coax all the black students into it. The other party, the Christian Vision Party, was left with no blacks and was composed of a more intellectual and sophisticated group of students. Their platform contained a highly polished version of black power. Their only problem was a highly intellectual abstraction, devoid of emotion. The Christian Vision party was perplexed because the black students would not join their party but maintained allegiance to NOW whose platform was less polished. The blacks, however, campaigned militantly for NOW because it was theirs. As a solid group, the black students enthusiastically campaigned by staging marches, chanting, clapping, and cheering boisterously. Some of the white students became afraid and upset because they saw black power in action and didn't understand what they saw. At that point the issue became clear. On one hand was the intellectual platform of the Christian Vision Party. On the other hand, there was the emotional black group expressing raw, "gut", black power and unmoved by the words of the platforms. The whites, even some of those who had been committed to the NOW party, quite naturally gravitated toward the sophistication of the Christian Vision Party. Whites reacted intellectually. Black reacted emotionally.

When it came time to vote, some of the white members of the NOW party, lured by the intellectualism, switched to the Christian Vision Party, and left the blacks holding the bag. Some of the blacks felt that they had been sold out, when in actuality the whites were only playing the games of politics. Part of the reason for the sellout feeling was a lack of understanding of the electoral process (the popular vote, unknown to the blacks by the white man's game). After the vote was counted, some angry black students confronted the whole assembly and completely stunned the audience. This confrontation was real. Out of it came a movement which is destined to mark a historic turning point in the history of student movements. This movement is called BLACK CHRISTIAN STUDENTS.

I have detailed the origins of this movement at the Great Lakes Regional Convention simply to indicate what happened at St. Joseph's College happens over and over again in our white-dominated society. For the first time in their lives, this sense of frustration when confronted with the white power structure became a personal experience for the students at the convention. They lived through it in a very deep personal way; white racism was no longer an abstraction which they may have read about in the Kerner Report and heard about in their own black communities, but now it is a reality which they had experienced. Their response to this, therefore, in the form of a Black Christian Student Movement was genuine, from the grass roots, born out of a personal experience, not something imposed from the top. It was genuine in the best sense of the Young Christian Students - rooted in reality.

Some questions immediately come to mind in the face of this new development within the Young Christian Students. Is this not a move toward segregation and thus contrary to the very spirit of YCS? Isn't it more consistent with the YCS goal of a student community that black and white students be integrated in YCS groups and not have separate movements? These are valid questions to which I would like to address myself.

First of all, terms such as separatism, black power, white power structure, white racism are not pejorative terms in my mind. They do not indicate any racial overtones one way or the other, but they are objective, descriptive terms that instead tell it like it is today. When we talk about personal relationships between individual blacks and whites (relations, incidentally, which were very good and health at the Great Lakes Regional Convention) but we are talking about institutionalized racism built into the very structure of a society long dominated by whites in politics, in business, in housing, in practically all the institutions of our white middle class society. This is an objective fact of society which more and more black men are coming to realize. It is the kind of racism that can allow a white man to say in all good faith and honesty that he has nothing against blacks, that some of his best friends are black, but still in all realize that the social institutions in which his black friend participates are controlled by a white power structure. It is the latter - the institutionalized racism in white-America-that the resurgent black power movement, the move toward separatism, is addressing itself.

It is, therefore, the problem of the white power structure, the white racism built into Young Christian Student Movement to which the Black Christian Student Movement will address itself. It was the problem of the white domination of the Great Lakes Regional YCS Convention to which the black caucus addressed itself.

For years I have been working with black students on the West Side of Chicago within the framework of the high school Young Christian Student Movement. For years we have taken our blacks students to federation activities, conventions, etc. For years, my black students have felt uncomfortable in the YCS which is dominantly a white middle class movement and have felt an inferiority complex when involved with highly sophisticated high school students. For all practical purposes our group of black students has been the only all-black group in the Chicago Federation the only all-black group that took part in the Great Lakes Regional Convention. This kind of token participation in the YCS has not made the YCS attractive to the black students; my own members have stayed with it more out of personal loyalty to me as their moderator than out of any real conviction.

What happened at St. Joseph's College in August of 1968 was a kind of crystallization of feelings built up over years of frustration. When the idea of a Black Christian Student Movement presented itself, our black students grabbed on to it with enthusiasm and dedication, for they sensed immediately that this could be the end of their frustration within the YCS and an opportunity to go forth and develop their own movement, leaders, culture, liturgy, social action programs, not within the framework of the white power structure, but in a black power structure.

The gap between the sophistication, articulation, and leadership skills of the white student leaders and black student leaders was painfully evident at St. Joseph's College. The frustration of the forty black students, most of whom were from one ghetto parish in Chicago, when pitted against the variety of leadership skills of white student leaders representing a variety of cities, schools, and parishes in the Midwest, reinforced the idea of a Black Christian Student Movement in the minds of blacks. Over and over they said if we come back to another convention, we will come back with trained leaders representing more than one parish, or one school, or one city, but we will come back as equals at the leadership level. No more tokenism. And this is exactly what they have set out to do in launching an

organization drive throughout the Midwest of black student groups. If this smacks of separatism, then it must be viewed as a necessary phase which is taking place today throughout the black community in the attempt to develop black political leaders, black business leaders, black student leaders, and all of the other drives within the black power movement. This is the black's man response to white racism and to the white power structure. That it is happening within the Church, therefore, should not take us by surprise.

I like to think that it would be a tragedy to the Church if it did not happen here. There is a desperate need for the Catholic Church to relate to the black power movement taking place throughout the black community. There is a desperate need for black Christian teenagers to get themselves together within the total largely non-churched community of black youth; a need to bring the Gospel to bear on the problems of young people who more and more are looking up Christianity as another white institution used more often than not as a palliative for deep social sores in our society rather than as a response to these social evils.

The discomfort which black students have felt within YCS has not only been at the leadership level, but at the board cultural and liturgical level. As token representatives within YCS, black students have not been able to express their own culture--song, dance, music, poetry, drama--but have rather gone along with the cultural patterns of the white students. There is a particular need, I feel, for a genuine liturgical expression to come out of the black community, a liturgy which will incorporate their music, song, and dance into it. This expression will never take place in the beginning in an integrated situation in which the black student is a token representative; it needs to be experimented out within the black community first, then hopefully incorporated in the white man's liturgy which is dominantly European, Western, and certainly not African. Finally, the problems that need to be attacked by the Young Christian Student are radically different in middle-class white neighborhoods from those in the ghetto. Both need to be approached through social inquiries and action programs. But the painful fact is that the white student cannot solve the problems of the black student living in the ghetto any more than the black student can solve the problem of white racism on the white student living in suburbia. Each has their work cut out for them. To say this does not preclude an exchange, a dialogue, a confrontation within the Young Christian Students Movement, but it does mean that each group must get on with its own work, first of all, before any change or genuine understanding can take place.

This is why the Black Christian Student Movement is not a break-away from YCS but rather an intimate and vital part of YCS from the National headquarters on down through the Federation level; a close harmony of broad Christian goals, methods, working together. It is not an anti-YCS movement but a new direction that promises to bring new vitality to the Young Christian Student Movement in the United States.

Perhaps an analysis of the purpose, goals, methodology, and philosophy of BCS will give one an indication of how the movement fits into the totality of the black/white confrontation. The purpose of this movement is to develop black leaders through:

- a. An awareness of themselves as black students through identity,
- b. Developing their sensitivity to the needs of the black community both locally and nationally.
- c. Motivating them to be responsible by creating or participating in actions designed to bring about self-determination and human development for black people.

The dimensions of BCS extend beyond religious boundaries and will attempt to reach as many black students as possible. The movement will create through black power a viable philosophy for community growth. This philosophy will be a valuable tool in the hands of young black students.

## **I. Black Awareness**

The black man's resurgence into a conscious state of mind, prodded by the slogan Black Power, and shocked by the death of Dr. King, has opened his eyes to the full potentiality of his being. He has a stark realization of what the black experiences has been, and has devoted himself to developing creative ideas and action programs that will be fruitful to the black community as a whole. He has developed a perspective: black consciousness, black awareness.

In this aroused state, he now feels the pulse of the black community which includes the frightened, the lost, and the hopeless. He can see into the closed dungeons of white America; he knows the depth of their apathy, the crassness of their insincerity, and the absolute ignorance that abounds when it comes to the black man and his cause. (A black man knows that he and only he holds the true answer to the problems of black people). The call to blackness is a call to acute responsibility. All the elements must be visible and alive in the black man of today:

LEADERSHIP - of the community  
 UNITY - respect for the community  
 LOVE - help to the community  
 GROWTH - change for the health of the community

He must be the action-image of what black people should be about.

BLACK AWARENESS - What does it mean?

TO BE BLACK is

to know from whence you (plural, your community) came;  
 to understand where you are now; and  
 to direct where you will go.

TO BE AWARE is

to be real (which is to be honest);  
 to be alive (which is to feel)  
 to understand (which is to grow).

In order for black students to develop this type of perspective, a black awareness program has been developed. This program should be conducted in the form of seminars before the students become involved in BCS. The idea of seminars is to acquaint the student with himself; to present to him an area in which he has had very little time to develop positive, concrete ideas; to present a general picture of blackness through local speakers, films, records, publications, and any other means possible. It would be preferable if an active black student set up the seminars, and acted as host conductor in presenting speakers, films, materials, etc. Active students on a high school or college level can even conduct some of the seminars. The black awareness program would also help to stimulate and develop in black students a basis from which they can perceive and possibly determine their roles in changing the racist fabric of this society. It is primarily an educational process that will involve both the students and the speaker/moderator in meaningful deliberations and presentations that should help enlarge the the students perspective in relation to their immediate environment.

## II. Student Roles: Proclamation

As students in today's world, we have learned that more Christians exist outside of the institutional church structure than within it. We have learned to recognize a Christian by the quality of Christ's message he reflects to us in our everyday lives. His involvement, sincerity, honesty, and militant courage reveal the nature of his Christ-like being.

For too long the institutional church has side-tracked its responsibility to its members and the world by often ignoring and perpetuating cruel social injustices. The church has not delivered the words of Christ to his brethren in a manner that would reveal the paradoxical role it has in our society. Its role has been largely one of not practicing what it preaches, one of being from the social ills lie in the attitudes of the very people the church so actively serves. Also, the church in its barest definition is the people. And, the dominant hierarchy of the church structure many times reflect the schizophrenic attitudes of the congregation.

If the church is to reverse its past frenetic behavior, then a change must occur from within as well as with pressure from outside. That is, if we are concerned about the truthfulness and relevancy of the 20th century church, then we have a definite responsibility to demand this truthfulness and to help to develop this relevancy.

Through our insights as students we must assume the responsibility of challenging the present church structure for its inadequate performance in developing real Christians and of destroying the racism that permeates it. We must actively confront all institutions, schools, seminaries, etc., where relevancy and truthfulness on the issues of our times do not exist.

And, in our efforts to develop a more Christian response to the needs of man, we will grow in our likeness to Christ. We will become more Christian.

Black power is the fruits created with the people, by the people, and for the people of the black community. The art of blackness, then, for the individual person is the realization of a personal responsibility to his community. He had the freedom to determine through what manner of activity he will initiate or participate in that which will best exemplify his love and responsibility to his community, thus preparing the whiteness of his own human qualities which function as an important unity in developing that Black Destiny.

The ultimate destiny of black people in America may very well be dependent on the direction and scope that today's black students provide. On a local level, the quality of education provided for black children will be determined by the degree of responsibility exercised by black students and supporting adults. Responsibility is the key word here. Black students must realize that in revamping the educational process, they are working for the benefit of the total black community rather than for the benefit of the single black student.

The political spectrum which has been entered by many concerned blacks in the past ten years is a critical area demanding the involvement of today's black youth. Black students must be a catalyst for the creation of a new type of political leader in the black community. What we need are black men who are both radical and realistic; radical enough to create a type of programs fundamental to the needs of the black community and realistic enough to function within the political sphere.

The essence of our being as black men and women is our culture. This culture is the mirror of our souls; it clarifies our totality as persons and directs our growth as a black nation.

Today, black culture has taken on a new dimension; the Black Arts Movement. This is because the black community is in the process of defining itself. Black artists in the past chose only to direct their works to the white consciousness; that is, presenting the vicious relationship between blacks and whites and seemingly pleading for reconsideration and reconciliation.

However, the Black Renaissance has given the black artists, writers, and poets a responsibility primarily to the black community: shaping, directing, and enriching the black consciousness and giving voice to the black experience. Therefore, the Black Arts Movement is actually the involvement of a people with themselves. Black students should acquaint themselves to the reflective messages of today's black prophetic playwrights, poets, and writers. They must see the self-images that are projected through black arts. These images will serve as catalysts for personal reflection and group perception of blackness.

Also, within our local community we will probably find many black organizations that are attempting to deal with our problem. From the Black Panthers to the NAACP, the spectrum is broad, the ideologies varied – they all have a place. The local involvement of these groups is probably stimulated by local attitudes in the black community. Students in BCS should be aware of the community organizations in their area. They should know who is doing what and why. This will help to add cohesiveness to community efforts on different projects. Many times we can and should lend our support and ideas to projects initiated by another group. On the other hand, some groups may not be worthy of our support but need our leadership and advice. Here it is important that we carefully think about the role of the different organizations in our local areas, and what we can do that will advance the cause of black people through unity.

Economically, the black community must begin to flex its buying power, Black people must make black dollars count in the struggle for freedom and self-determination. We should direct our dollars where we get the desired result. We can't spend money it took twice as long to earn on items that cost us twice as much to buy. We must begin to direct the relationship we have as consumer with those who are exploiting us. Students can spotlight and expose the exploitation practices of neighborhood merchants and chain supermarkets. We have a definite responsibility to one another in directing the economic growth and stability of our community. We must begin to exercise "Christian Moral Superiority" which would not allow us to be content in buying bad meat or accepting high prices or see these injustices applied to other people.

### III. Taking Care of Business

The method of the BCS follows is the simple social inquiry method of observing, judging, and acting. It is simple because it is the natural process of human problem solving. Yet the dimensions of most problems call for a deeper and more sensitive response. An in-depth observation, rational judging, and direct action are called for. Observing-judging-action is the movement technique that sparks growth and develops sensitivity.

CHECKIN' IT OUT - Ripping the covers off, exposing the problem for what it is. Take a good look. Feel the problem. Know it in all its aspects.

BREAKIN' IT DOWN - Is it right, is this the way it's supposed to be, should this continue to exist?

T.C.B. - This is the way it's going to be.....

#### **"CHECKIN IT OUT"**

The problem should be explored in depth. That is, the question why should arise with every superficial answer received in examining the problem. This is extremely important because the problems we are confronted with today (in the black community) began with racist attitudes which are perpetuated through institutions and are reflected in over-all conditions. And, in order for the student to arrive at a responsible action-decision, he must see and understand all aspects of the problems: the causes and the effects.

#### **"BREAKIN IT DOWN"**

To arrive at a judgment one must be sure he has acquainted himself with all the facts. To make a judgment without exhausting all the whys of the questions will result in ineffective action. Therefore black students should be intellectual enough to reason and rationalize the good and the bad of situations. Judging is a part of our everyday existence. We make decisions to do things based on our needs and ideas. In BCS students will be making decisions about the problems and needs of the black community. Students must remember that it is the problem. Conditions, and situations we are judging and not the people involved. We look beyond what is in deciding what should be.

#### **T.C.B.**

It is now time to "take care of business". We must move from reflection and discussion to action. This is the most important part of the methodology. The creative part.....changing, moving, and growing. Action. Bringing about that which should be. An action may include supporting and working with a locally based community organization, become the action-arm of a community group, or forming a coalition to bring about a new program. Action means putting yourself on the line as individuals and a group. It means devotion to the cause of black liberation: economically, educationally, politically, and culturally. Group Dynamics: Growing through Blackness.

In order that the group may work better as a unit, and at the same time, recognize and develop the full potential and abilities of its members, the students have to become sensitive to other as persons; that is, being able to observe their own life styles, examining their personal conflicts, reflecting upon time, and acting upon them. Growing through and with each other by using the OJA method on a personal encounter or experience to the rest of the group to be felt, understood, and discussed. Each student can become more deeply sensitized to the realities of being a person. The honest presentation of feelings by students can lead to changes in attitudes and ideas. In our day-to-day lives, many times we forget to look at ourselves and, yet maybe see "what type of mess we're putting down". We

sometimes do not see the realness of the people around us. In reviewing our lives, through the eyes and experiences of our friends, we may become better equipped to act upon the need of others.

#### **IV. Philosophy: SOUL POWER through Proclamation**

Our philosophy is one of black action through Christian precepts. Responsible action prompted by Christian love. In aligning ourselves with the virtues of Christ, it becomes mandatory that we practice them as well. We become Christians through our belief in the goodness of man, and in working to make this a force in our world today. Because each of us has an individual uniqueness, we will never unite on a human basis. However we can each recognize and appreciate one another's qualities through Christian love and understanding. From this basis we can work together united as brothers and sisters in Christ. Therefore our work in the BCS movement will be built with the strength that comes from love. We will allow every man to be what he is and not what we want him to be. Hence, we will become more humanly responsive through our awareness of a Christian bond.

We will be continuously developing one another as leaders and supporters of the growth of the black community. This is our role. To the white community, we will be educators as to what will be done and we will help them define the response of white America to the black revolution. Through BCS we will add to the dimensions of the black change. Beginning with ourselves we hope to effect a change in the minds and hearts of men around us. This change is essential for black survival.

In order that we might do this we must develop an intellectual awareness of events around us. We must educate ourselves to the world we live in by reading books, going to plays, having discussions, and viewing movies that deal with the black experience in white America. We must understand the warped relationship that exists between white Americans and black Americans if we are going to attempt to change it. We cannot rely upon adult moderators to guide our total growth; we must assume some of the responsibility. Once this awareness has been developed, a BCS group can be started by students who feel that they would like to move within the movement structure.

Three action guidelines have been developed to help student activists apply the BCS philosophy. They are: (1) ripping the covers off, (2) militant imposition, (3) Christian unity.

##### ***I. RIP THE COVERS OFF!***

Tell it like it is. Expose the problems that stifle the growth of our people, and prevent the process of self-determination. Wherever dishonesty and exploitation exist we must take the lead in exposing it. We must be prepared to offer concrete solutions to the problems we are concerned with. We must be prepared to follow through on our commitments to black people and to developing a more Christian world.

##### ***II. MILITANT IMPOSITION***

As black students we realize the cruel crux of our existence in a white society: all its limitations and frustration. Today we are no longer asking for freedom, justice, and self-determination of our people, but we are demanding, supporting, and implementing programs that will bring these ends into reality. We are here whether white America likes it or not, and we will define our growth and existence at the present time for ourselves as individuals and as a people. We will not allow the creativity of our people to be smothered because the rest of our nation cannot understand it.

##### ***III. CHRISTIAN UNITY***

We must always be open to one another in a spirit of Christian love, so that we can always be united. We must teach one another through our own realizations of responsibility and purpose that we can bring about self-determination and human development for our people as well as for the oppressed peoples of the world.

As Christians we do have the responsibility of being aware of the suffering that exists in the world. We will deal with all people in Christian manner, so that we can perpetuate the strength and unity of the BCS movement on a local level as well as on a national one. As black students we represent the hopes and aspirations of our fore parents; we

are the vanguard of the black revolution, and we are the redeeming force for America. We are it. We must be relentless in our efforts to bring about the growth and development of black people in our country, and, hopefully, we will enrich and educate the lives of the whites who are open enough to see.

Thus far, in this paper we have focused our attention on the meaning of blackness in the Black Christian Students. We have discussed black identity. Black consciousness, black awareness, black heritage, history and culture. Really, this is what the Black Christian Students are all about. This is why we have had our own convention, why we have become a separate movement within the Young Christian Student Movement.

We use the word separate and not the word segregated. Had we wanted to be segregated from the Young Christian Student Movement, we would not be a part of their movement at all. We would have broken off and formed something completely new on our own. And had we done this, we probably wouldn't be Christian either. By organizing ourselves as Black Christian Students, we have indicated our desire to develop a movement for black students which is something much more than a humanitarian movement, a protest movement, a civil rights movement, a youth movement. We have added a very special and unique dimension to our work, our goals, our motivation, our objectives, our directions. We have added the word Christian. It is this Christian dimension that I want to explore.

First of all, we call this movement Black Christian Students, Black Catholic Students. In saying this we are aware that we are organized and structured under the auspices of the Catholic Church as a part of the national Young Christian Student Movement. But we use the word Christian, not Catholic, for a special reason. We don't want to be parochial in all this, we want to place our emphasis more on our relationship to Christ than on our relationship to the Church; and we want to be open to all young blacks who might be attracted but may not necessarily be Catholic. We add an ecumenical dimension here. We do not restrict our membership to Catholics, and hopefully we will be able to work with all black Christian youth organizations as times goes on, whatever denominational persuasion they might be. We want a Christian movement, because we believe the person of Christ adds a unique and special direction to our work.

The idea of what we call a specialized movement for Black Christian Students is really not a new nor should it be a surprising development within social action movements. Actually, the Young Christian Students is a specialized movement for students, and we might add, for white students. The YCS had it origins from a specialized youth movement called the Young Christian Workers which was started some 75 years ago in Europe for young oppressed workers.

The Young Christian Workers--now an international movement--was started by a young Belgian priest who was appalled by the working conditions of young boys and girls in factories--child laborers, underpaid, overworked. He had the great vision that only young workers can reach young workers, just as only young students can reach young students, or young families can reach young families. This is what he meant by specialized Catholic Action--like to like, worker to worker, student to student, family to family.

Now we are adding another specialization to this vision. We are saying that young blacks must reach young blacks, that young blacks must help one another, must discover Christ in one another, and must join together to bring about reform of oppressive social conditions in our society. This is what the Black Christian Students is all about. It is a Christian social action movement addressing itself especially to student problems and specifically to black student problems at the high school level.

The young Belgian priest fostered a working-class consciousness in his youth-pride in being young, pride in being workers; this work should not be humanly degrading, but that work had dignity, and in fact, it is a part of God's plan for man's salvation. Anything, therefore, that dehumanized young workers was unchristian. And so we now are trying to foster a black consciousness, a black mentality--pride in being young, pride in being black; that blackness should in no way degrade a human person, or make him less a person, dehumanize him, but that in reality blackness also is a part of God's plan for mankind. And we add to this a black student consciousness--pride in being

a black student, and that no school or educational institution should in any way degrade any black student, treat him less than a human person because he is either black or a student.

We observe then that just as the Church was not reaching young workers, so it is really not relating to young blacks, and this is what we are all about too: to make the church relevant to black youth, to make black youth at home within the church, to develop leaders who will be the future of the Church—strong Christian leaders, involved leaders, who not only have black identity but also Christian identity.

Christian identity is really the dimension I want to stress. I have observed in working with our Black Christian Students that along with a pride in being black, they have also developed a pride in being Christian. It is the person of Christ we want our young blacks to relate to, for if we are related to the person of Christ, then we can relate to other persons. Our like-to-like movement—young blacks to young blacks to young blacks is a very demanding kind of outgoing to others. It requires a real involvement with them and the structures that affect their lives; real compassion, real concern, real dedication, real self-giving, real moving outward from our own self-centered egos to get into relationships with others, not only on a person-to-person basis, but through concrete services that we organize from them through BCS—things like a black convention, projects at school in black identity and black culture, social actions where conditions are oppressive and discriminatory. Young blacks must be able to relate to each other, not only as persons but through the structure of the Black Christian Student Movement—the structure of solidarity and unity across the United States.

But to do all this—to overcome our own narrow, egotistical desires to rise above ourselves and reach outward to other—requires a certain model for us to imitate, and here we turn to Christ. This is precisely the kind of life Jesus lived when he was on earth—a life of love, sacrifice, dedication, self-giving, compassion for persons—Peter, and John, Mary Magdalene, Lazarus, the leper, Peter's mother-in-law, the woman by the well—concrete persons. The Gospels tell us of love stories between Christ and individual persons by name.

Through all this persons dimension of His life, Jesus was also at work with building a team, a leadership core who would carry on His work and communicate His message of love after His death and resurrection; a small leadership team at first which would develop a movement, really, a church, a Christian community of like-minded people who believed in Christ and committed themselves to Him. Two thousand years later that community of Christians still exists on a world-wide basis, and we have been baptized into it; we call it the Christian Church.

To the extent that we take on the mentality and heart of Jesus will we be able to communicate Jesus to others, and more than this, discover Jesus already in our brothers.

We all know something about friendship: what it means to have a friend, how a friend is really never very far from our thoughts, how he or she jumps in and out of our minds often during the day, how we search out little ways to express that friendship. Our friendship with Jesus should have a similar quality. In fact, the person of God our Father, Jesus our brother, and the Holy Spirit, our energizer, should be in our consciousness, our awareness, never too far from our thoughts, popping in and out, giving meaning to our BCS work and our involvement with persons.

What I am saying is this: in the Black Christian Students, because we have underlined the word Christian, Christ is present in all we do, the Spirit is involved in all we do, in every encounter with another person on an institution, in every action, in every encounter with school. Christ should be present, active, working out the will of the Father. This is what I mean about Christian awareness, Christian consciousness, in whatever we do. You see how this lifts us off the simple humanitarian, do-gooder plane of action; how it adds a dimension which other student movements won't add, at least consciously. We want to develop this Christian awareness, even those who have been baptized. There is a certain and discouraging alienation of young people from organized religion, from church, if not from God, but especially from the structure of the Church, which they identify as essentially an adult institution, and in the case of blacks, as essentially a white institution—something which Christ never intended it to be.

This is why we go back to Christ as a starting point, because--and make no mistakes about it--young black Christians will bring blackness into the Church, or it will not be brought there. Young Blacks will make the Church relevant to black people. White Christians will not make the Church relevant. And the Church--something the white church has not yet to discover--will not survive without blackness. So the very survival of the Church is in our hands.

They say that each generation must re-read the Scriptures and underline those passages which have meaning today. I believe black people are now re-reading the Scriptures and are underlining ideas and values relevant to them. They are no longer reading what the white Christian has underlined for them.

Thus we want blacks to read the Scriptures--those inexhaustible words of God speaking to the hearts of men--and to point out what for them has meaning. We know the white guilt of the past, to cite of trying to impose their reading of the Gospels on blacks, their ideas on what Christianity means. We know the white of the past, to cite an example, of underlining for blacks the idea that salvation and happiness is in the future life, so therefore be tolerant and long-suffering and patient of all the social injustices we have imposed on you now. Today blacks are telling whites that the kingdom is already begun here on earth; that they will not accept the promise of deliverance in eternity as an excuse for discrimination and oppression; that religion shall not be used as a pacifier to keep blacks resigned to the poverty, the hunger, the bad housing, the inferior education whites have imposed on them; blacks want no part of a slave Christianity.

Blacks are telling whites that all forms of discrimination and oppression must be removed today; that redemption begins here in the gutty social ills of the moment, and that this work must be done to the point of suffering and death for those in need. In this blacks are underlining the words suffering and death in the Scriptures for whites, not as the inevitable will of God but as identification with the oppressed. In this blacks are already teaching whites the real meaning of Christianity.

The real Church of Christ is that which identified with the suffering of the poor by becoming one with them. It is that group with a demonstrated willingness to die for the prevention of torture of others. This is to lay hold on the salvation which is already at hand, and to give up everything for it. This is the test we have to put to both the black and white Church. While the Church does indeed look to eternal life after death, it must relate here and now to the suffering of men. Peace with God means conflict with the world.

In the past too often the white Church when speaking to black people, underlined the word love; but whites qualified it and made that love paternalistic, condescending, love that looked down on blacks, gave them handouts, all in the name of Jesus (what a blasphemy). Now blacks have told whites the real meaning of the world love; it means respect, equality, dignity, justice, and it means all these things now, not in some indefinite tomorrow.

And interestingly enough, through our great leader, Rev. Dr. Martin Luther King, we preached to whites the gospel of non-violence, and in this message again we have told white Christians that love, not hate, is the essence of Christianity.

So already we see some important and refreshing Christian themes emerging from black Christians: themes of love, not hate, suffering and death for social justice, not toleration of injustice, not patient submission; themes of self-respect, dignity, justice, equality, not paternalism.

Already we see the impact of blackness on theology. We see blacks striving to make Christianity relevant to their own ancestral root, heritage, history, music, poetry, art and dance, and we know that out of this will come new modes of prayer, of worship, of preaching, and these new modes will one day revitalize our present white expression of Christian worship. Our black theologians have told us that there is in black religion an aliveness, intensity of joy and ecstasy, which infectious because it is uninhibited. This is reflected in this paraphrase of St. John's Gospel:

*“In the beginning was the black church, and the black church was with the black community, and the black church was the black community. The black church was in the beginning with black people; all things were made through the black church, and without the black church was not anything made that was made. In the black church life, and the life was the light of the black people. The black church still shines in the darkness, and the darkness has not overcome it.”*

Just as the black movements today will make a respected contribution to American culture, so too, the black Christian movement will contribute to religion in America. We no longer talk about a melting pot in America, but now rather we dream of a mosaic of various cultural patterns in America, with cross fertilization, resulting in a rich cultural diversity which can and should make this the most exciting nation in the world.

We don't talk about a common denominator American anymore, because blacks have shown whites that what they meant by integration really meant absorption of identity. Blacks had to emphasize their identity dramatically to whites in order for them to realize that this is what we should all be striving for: our own self-identity, awareness, consciousness, pride, and that out of this alone will come respect and equality for everyone.

Well, this is my dream for the Black Christian Students: that their emphasis on blackness will result in a new relationship of mutual respect and equality in our schools between blacks and whites, not in token integration, not in absorption, and if we achieve this through Christian leadership and black leadership, then we will have made a great contribution to our nation.

## **REFERENCES**

Provided upon request

# RELATIONSHIP BETWEEN THE EXPERIENCE OF DEATH OR SERIOUS INJURY/ILLNESS AND THE PRESENCE OF DSM-IV CRITERIA-BASED MAJOR DEPRESSION (MDD) AMONG OLDER ADULTS

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## ABSTRACT

**Background:** Depression is the leading cause of disability as measured by Years Lived with Disability (YLDs) and the fourth leading contributor to the global burden of disease in 2000. Since 1900, the percentage of Americans 65+ has tripled (from 4.1% in 1900 to 12.4% in 2006), and the number has increased twelve times. Some type of disability, to include mental disability, was reported by 52% of older persons in 2002. The prevalence of DSM-IV criteria-based major depression and a comprehensive medical measurement is needed given the drastic rise in the elderly population and their propensity to experience environmental death and/or serious illness and injury (DSI/I).

**Objective:** To analyze the likelihood of having DSM-IV criteria-based major depression when experiencing DSI/I of a family member or close friend within the last twelve months. Specifically, this study utilized a medical model approach by positively screening the elderly sample while utilizing the exact criteria as outlined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

**Methods:** This study is a cross sectional study and secondary data analysis of the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). A stratified sampling design was required to evaluate those within the NESARC data set who were 65 years of age or older. The data was initially processed with SAS in conjunction with SAS callable SUDAAN to account for the complex design of the survey. Frequency distributions were completed for independent variables by major depression diagnosis criteria. Bivariate analyses were used to compare DSM-IV criteria-based major depression diagnosis with the independent variables. Multivariate analyses were conducted to assess the relationship between the outcome variables and independent variables while adjusting for covariates.

**Results:** Older persons who had experienced either DSI/I of a close family member or friend within the past 12 months were more likely (OR 1.56 LBL 1.21 UBL 2.00) to have DSM-IV criteria-based major depression than those who did not experience DSI/I of a close family member or friend within the past 12 months. Similarly, older persons who had experienced both DSI/I of a close family member or friend within the past 12 months were more likely (OR 1.89 (LBL 1.45 UBL 2.46) to have DSM-IV criteria-based major depression than those who did not experience DSI/I of a close family member or friend within the past 12 months. DSI/I were consistent throughout the multivariate analysis when utilizing stepwise modeling procedures and controlling for effects associated with demographics, resources, heritage, and symptoms (Table 3). Additionally, 48 percent of those negatively screened for DSM-IV criteria-based major depression had not experienced DSI/I, while only 35 percent of those positively screened for DSM-IV criteria-based major depression had not experienced DSI/I (Table 1).

**Conclusion:** The DSI/I and its environmental effects on the older population are apparent while diagnosable accounts of DSM-IV criteria-based major depression remain significant for those who experience DSI/I. The finding that older persons were more likely to experience DSM-IV criteria-based major depression (Models 1-5) if they had some experience of DSI/I warrant further investigation on this subject matter.

**Keywords:** Depression, Elderly, Death, Injury, Illness, Caregiving and Stress.

## INTRODUCTION

Depression is a global disorder, which extends its reach to both the social and economic impact with disregard to geographic boundaries. The World Health Organization (WHO) reports that depression is the leading cause of disability as measured by Years Lived with Disability (YLDs) and the fourth leading contributor to the global burden of disease in 2000 ("Report on Mental Illness," 2001). By the year 2020, depression is projected to reach second place of the ranking of Disability Adjusted Life Years (DALYs) calculated for all ages and for both sexes ("Report on

Mental Illness,” 2001). Currently, the National Alliance on Mental Illnesses (NAMI) reports that four of the ten leading causes of disability in the United States are mental illnesses (“What is Mental Illness: Mental Illness Facts,” 2007a). Economically, depression displays similar crippling statistics as it relates to businesses and their ability to sustain productive employees. Depression results in more absenteeism than almost any other physical disorder and costs United States employers more than \$51 billion per year in absenteeism and lost productivity, not including high medical and pharmaceutical bills (“The Societal Promise of Improving Care for Depression,” 2004).

The critical combination encompassing disability and cost stimulates the focus of my concern on the elderly population and its growing numbers within the United States. Since 1900, the percentage of Americans 65+ has tripled (from 4.1% in 1900 to 12.4% in 2006), and the number has increased twelve times (from 3.1 million to 37.3 million) (“A Profile of Older Americans: 2007,” 2007). The elderly population’s massive growth is a tribute to technological and medical advances, however the increases in age allow for longer periods of chronic and disabling diseases. Some type of disability (sensory disability, physical disability, or mental disability) was reported by 52% of older persons in 2002 (“A Profile of Older Americans: 2007,” 2007). Moreover, the elderly adult also has an increased likelihood to suffer multiple types and quantities of human loss during their lifetime. About 30.3% (10.7 million) of all noninstitutionalized older persons in 2006 lived alone (10.7 million elderly) (“A Profile of Older Americans: 2007,” 2007). Many elderly adults suffering from loneliness also play victim to economic and financial hardships. For all older persons reporting income in 2006 (34.8 million), 23.2% reported less than \$10,000, only 32.5% reported \$25,000 or more, and the median income reported was \$17,045. This “formulary of disaster” consisting of population explosion, loneliness, potential for disability, and income levels at or below the poverty level, catalyze the potential for mental disorders and psychological disturbances.

The purpose of this study is to determine whether or not an older adult faces a greater chance of suffering from DSM-IV criteria-based major depression if a close friend or family member dies or if a close friend or family member is suffering from a serious illness or injury or a combination of either or both episodes. The variable that combines death and serious illness/injury will be referred to throughout this article as DSI/I.

## **BACKGROUND**

### **Incidence/Prevalence**

The National Alliance on Mental Illness suggests “Depression in its many forms affects more than 6.5 million of the 35 million Americans who are 65 years or older.” (“What is Mental Illness: Mental Illness Facts,” 2007a) Additionally, this article represents a national sample similar to the elderly population within the United States (33,381,363). “Estimates of the prevalence of major depression vary widely, depending on the definition and the procedure used for counting persons with depression. (“Mental Health: A Report of the Surgeon General (1999): Department of Health and Human Services) Additionally, prevalence is based primarily on the instrument of choice and the datasets utilized by health researchers. The World Health Organization (WHO) recommended the Composite International Diagnostic Interview and the lifetime prevalence rate for major depression was 16 percent for those in age ranges between 18 and above. (Kessler et al., 2003) It was also determined that all age ranges below 60 years of age were more likely to experience lifetime major depression than those 60 years and above. (Kessler et al., 2003) Moreover, another study also suggested the lifetime prevalence of major depression was 17 percent, however, the age ranges used were 15-54 years of age. (Blazer, 1994) A separate study focused on nursing home patients while producing a major depression prevalence rate of 17 percent. (Davison et al., 2007) However, another study, represented by primary data collection, identified the lifetime prevalence of major depression within the age group between 64-100 years of age to be 20 percent. (Steffens, 2000) It is important to note that this study took place in Utah, and is not constitute national representation. However, among those older subjects with major depression, nearly 36 percent were taking antidepressants and 27 percent were taking sedatives or hypnotics. (Steffens, 2000) While other studies identify point estimates, 30-day prevalence rates, and 12-month instances of major depression, the focus of this study is on the older population, and the lifetime prevalence rates of major depression as it related the DSM-IV criteria-based measurements.

## **DSI/I**

More than two thirds of family members visiting intensive care unit (ICU) patients have symptoms of anxiety or depression during the first days of hospitalization (Pochard et al., 2005). More than five hundred family members completed the Hospital Anxiety and Depression Scale and 75 percent of family members and 83 percent of spouses had symptoms of anxiety and depression (Pochard et al., 2005). Furthermore, symptoms of depression were more prevalent in family members of nonsurvivors (48%) than of survivors (32%) (Pochard et al., 2005). The spouse of the severely injured family member was more than twice as likely to experience symptoms of depression if the family member died as a result of the serious injury (Pochard et al., 2005). Similarly, older adults are at increased risk when they suffer from a disabling disease such as traumatic brain injury (TBI). Although major depression may be less common in older adults as compared with younger adults in general and following TBI, significant depressive symptoms are present in one-third of older adults (Rapoport, Kiss, & Feinstein, 2006). Major depression was persistent at one year in more than half of those depressed at the TBI baseline following the injury, despite antidepressant treatment (Rapoport et al., 2006). Major depression in the first few months after TBI in older adults has persisting adverse effects on outcome and suggests early attention to treatment (Rapoport et al., 2006). DSI/I has a significant impact on the likelihood that those family members and close friends involved in the events and will exhibit symptoms of depression following the experience.

## **Nursing Homes**

Approximately 40 percent of older people residing in residential care have significant symptoms of depression (Lyne et al., 2006). Additionally, nearly 17 percent of those residing in nursing homes were diagnosed with major depressive disorder while less than half of these cases had been detected or treated (Davison et al., 2007). Nursing home participants with moderate cognitive impairment were 81 percent more likely to be depressed than participants with mild cognitive impairment or normal cognitive function (Davison et al., 2007). Further, significant risk factors associated with major depression within nursing homes include pain, functional limitations, visual impairment, stroke, loneliness, lack of social support, negative life events, and perceived inadequacy of care (Jongenelis et al., 2004). The prevalence of depression rates found were three to four times higher in nursing homes than in the community-dwelling elderly (Jongenelis et al., 2004). Clinically significant improvements in depression scores were associated with implementation of care-planning intervention methods and staff training efforts in identifying risk factors (Lyne et al., 2006). Optimal physical treatment and special attention towards psychosocial factors must be major goals in developing care programs for the aging population (Jongenelis et al., 2004).

## **Caregiving**

Experiences of unexpected death put bereaved spouses at risk for depression (Burton, Haley, & Small, 2006). Conversely, high-stress caregiving are at heightened risk for social isolation during bereavement (Burton et al., 2006). Strained caregivers were twelve times more likely to use antidepressant medications following the death of a loved one than the nonstrained caregiver (Schulz et al., 2001). The strained caregiver group experienced significant improvement in health risk behaviors following the death of their spouse (Schulz et al., 2001). The impact of losing one's spouse among older persons varies as a function of the caregiving experience s that precede the death (Schulz et al., 2001). Noncaregivers have an increase in weight loss and depression following the lose of their spouse (Schulz et al., 2001).

## **Comorbidity**

Social phobia was the most common comorbid disorder among elderly with depression, and depression was the most common comorbid disorder among the elderly with any of the anxiety disorders (Cairney, Corna, Veldhuizen, Herrmann, & Streiner, 2008). Although comorbid relationships exist and are well documented between depression and physical health conditions and dementia, comorbid relationships also exist with regards to anxiety in the elderly population (Cairney et al., 2008). Comorbid anxiety disorder diagnoses were present in nearly 51 percent of patients with major depression (Fava et al., 2000). Comorbid anxiety disorders both precede and follow major depression while their influence on depression remains apparent (Fava et al., 2000). Causality, from an epidemiological

standpoint, is difficult to identify given the subjective diagnosis within psychological evaluation. It is important to recognize that comorbid psychological effects exist within diagnosis without particular understanding of causality.

### **Underdiagnosis/Misdiagnosis**

Depression in the elderly community and primary care populations has a poor prognosis, is perhaps chronic or relapsing or both, and is probably undertreated (Cole, Bellavance, & Mansour, 1999). Less than 20 percent of the depressed elderly population are detected or properly treated within the primary care setting (Cole et al., 1999). It is commonly thought and taught that most psychiatric disorders other than dementia are much less prevalent among the elderly (Jeste, Blazer, & First, 2005). A consequence of these misconceptions is that clinically significant and potentially treatable mental illnesses might be overlooked, misdiagnosed, and mistreated in elderly patients (Jeste et al., 2005). These findings support efforts to develop detection and treatment programs for depression in the elderly population (Cole et al., 1999).

### **Treatment**

Elderly patients with major depression, including those having a first episode, are at high risk for recurrence of depression, disability, and death (Reynolds et al., 2006). Elderly patients receiving a placebo who were depressed were 2.4 times more likely to relapse than those receiving paroxetine while monthly maintenance of psychotherapy alone proved ineffective (Reynolds et al., 2006). Further, late-onset, recurrent depression takes longer to respond to treatment than late-onset, single episode depression and is more strongly associated with cognitive and functional impairment (Driscoll et al., 2005). A combination of clinical therapy and pharmaceutical intervention methodology is the optimal standard of practice.

### **Patient Health Questionnaire-9 (PHQ-9)**

The validation of the PHQ-9 depressive treatment instrument is sufficient for the use of primary care physicians and the initial identification of depression in patients. More importantly, the PHQ-9 as a lifetime measure may be used to compliment or replace more costly and timely interview assessments (Cannon et al., 2007). Additionally, both the PHQ-9 and the SCL-20 change scores accurately differentiated between patients with persistent depression, partial remission, and full remission (Lowe, Unutzer, Callahan, Perkins, & Kroenke, 2004). The PHQ-9 also scored in the excellent range with regards to test-retest reliability (Lowe et al., 2004). The instrument is responsive to treatment, as well as its brevity, makes it an ideal tool for gauging response to treatment in individual patient care (Lowe et al., 2004). Conclusively, the PHQ-9 instrument has also been demonstrated as both reliable and valid when utilized via telephone administration (Pinto-Meza, Serrano-Blanco, Penarrubia, Blanco, & Haro, 2005).

### **Cost of Health Services**

Patients with chronic medical illnesses have a high prevalence of major depressive illness (Katon, 2003). As a result, depression is associated with an approximately 50 percent increase in medical costs of chronic medical illness, even after controlling for severity of physical illness (Katon, 2003). Depression is associated with increased morbidity and mortality for such illnesses as diabetes and heart disease (Katon, 2003). Likewise, depression is a leading cause of disability worldwide, but treatment rates in primary care are low (Schoenbaum et al., 2001). During a two-year study, intervention training within primary care increased employee workdays due to suppression of depression between nearly 18 to 22 days (Schoenbaum et al., 2001). Additionally, the estimated costs per quality-adjusted life years (QALY) gained were between \$15,000 and \$37,000 for QI-meds and \$9,000 and \$22,000 for QI-therapy (Schoenbaum et al., 2001). Moreover, it is estimated that depression alone cost the US \$43 billion a year due to medical treatment and lost productivity. ("World Health Organization (2001): Regional Office for South-East Asia)

### **Gaps in the Literature**

The national representative older population sampled by the 2001-2002 NESARC dataset provides a near replica of the older US population (33 million) while accounting for the particular DSM-IV criteria-based major depression screening. There seems to be a variety of instruments and datasets being utilized while the NESARC dataset asks

the specific questions associated with the DSM-IV and provides an adequate sample size to fully represent the older population within the US. Additionally, the NESARC accounts for additional covariates, such as DSI/I, which represent a more accurate account of DSM-IV criteria-based major depression than those datasets who do not control for factors such as demographics, resources, heritage, and symptoms. The purpose of a screener is to identify those elements, which provide substantial evidence supporting the diagnosis in question, and refer the patient to a mental health provider for further evaluation and treatment. The NESARC dataset allows for the exact screening criteria needed in order for access point personnel to recognize the symptomatic characteristics and refer patients to specialty care as so screened through a medical model approach to major depression.

### **Area of Original Contribution**

The purpose of this study is to identify the positively screened portion of the older population (> 64 years of age) within a nationally representative sample population and identify whether or not the older population are more susceptible to major depression if they have experienced the following: a death of a close family member or friend in the last 12 months, a serious illness or injury of a close family member or friend in the last 12 months, or the combination of both measurements. Additionally, the study will aim to determine if an older person having each of the instances or both of the instances happen is either more or less likely to suffer from major depression.

There are significant contribution factors associated with this study. First, the study follows a medical model approach by utilizing the exact criteria from the DSM-IV to identify those elderly persons who suffer from major depression. This is quite different from the subjective questioning of the patient given that the exact diagnostic criteria determine the patient's diagnosis and not the subjective response of the patient. The study will provide medically significant intervention rationale, focusing on the referral process, if an increased likelihood for major depression is identified. This depressive identification focuses on the increased likelihood that the patient will experience death, and/or serious illness/injury from either a close friend or family member within the previous 12 months.

## **METHODS**

### **Data Source and Study Population**

Data from the National Epidemiological Survey on Alcohol and related Conditions (NESARC) 2001-2002 was used to conduct the analysis. NESARC is a nationwide household survey designed and conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). NESARC used a representative sample of the civilian, non-institutionalized adult population in the United States, including all 50 States and the District of Columbia. The fieldwork for the survey was completed under NIAAA's direction by trained U.S. Census Bureau Field Representatives who interviewed 43,093 respondents, 18 years of age and older in face-to-face household settings. The population of interest in this study consisted of persons age 65 years and greater (n=8,205). The household response rate for the NESARC was 89 percent, and the person response rate was 93 percent, yielding an overall response rate of 81 percent. ("National Epidemiologic Survey on Alcohol and Related Conditions," 2001-2002)

### **Dependent Variable**

Major depression was defined by utilizing diagnostic criteria identified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and the specific questions outlined within the NESARC survey. The diagnostic screening for major depression consists of nine criteria in which one of the symptoms present must be either depressed mood or loss of interest or pleasure (Table 4).

The first of question which addressed the depressed mood criteria required a response to the following: "In your entire life, have you ever had a time when you felt sad, blue, depressed, or down most of the time for at least two weeks?" A positive response to this question generated a coded justification for requisite one regarding depressed mood. Criteria two questioned by asking "In your entire life, have you ever had a time, lasting at least two weeks, when you didn't care about the things that you usually cared about or when you didn't enjoy the things you usually enjoy?" A positive response to this question generated a coded claim affirming a loss of interest or pleasure as identified by the definition of major depression specified by the DSM-IV. The respondent must have had a positive

response to either depressed mood or a loss of interest or pleasure in order to be diagnosed with major depression per the DSM-IV. If this requirement is met, the respondent then must respond positively to at least four of the remaining seven essentials in order to be positively screened for major depression.

The third identifier was evaluated by a series of four questions which include, "Lose at least 2 pounds a week for several weeks or at least 10 pounds altogether within a month other than when you were physically ill or dieting?", "Lose your appetite nearly every day for at least two weeks?", "Gain at least 2 pounds a week for several weeks or at least 10 pounds altogether within a month (other than when you were growing or pregnant)?", and "Find that you wanted to eat a lot more than usual for no special reason, most days for at least two weeks?" If the respondent identified that any of the four questions were applicable, they were positively coded for standard three. These four questions were addressed attempting to capture the requisite in the DSM-IV, which states "significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day." It is also noted by the DSM-IV that children should be considered when they fail to make expected weight gains.

The fourth criteria was captured within the NESARC survey by asking the respondent the following three questions: "Have trouble falling asleep nearly every day for at least two weeks?", "Wake up too early nearly every day for at least two weeks?", and "Sleep more than usual nearly every day for at least two weeks?" If the respondent identified that any of the three questions applied, they were positively coded for standard four. These questions attempted to respond to the DSM-IV requirement for measure four, which suggests "insomnia or hypersomnia nearly every day."

The fifth measure addressed three questions in order to comply with the DSM-IV requirement for diagnosis. The questions were "Move or talk much more slowly than usual, most days for at least two weeks?", "Become so restless that you fidgeted or paced most of the time for at least two weeks?", and "Become so restless that you felt uncomfortable for at least two weeks?" The related DSM-IV criterion state that "psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)" must be met in order to meet the requisite needed for diagnosis.

The NESARC survey asks the following question to meet the sixth criteria for major depression: "Feel tired nearly all of the time or get tired easily most days for at least two weeks, even though you weren't doing more than usual?" The DSM-IV suggests that "fatigue or loss of energy nearly every day" must be met in order to meet the requirements under criterion six.

The seventh measure for major depression was evaluated by asking the following two questions: "Feel worthless nearly all of the time for at least two weeks?", and "Feel guilty about things you normally wouldn't feel guilty about, most of the time for at least two weeks?" Again, if the respondent answered positively for either of the questions, it was coded as meeting the requirement for criterion seven. The DSM-IV measurement for criteria seven stated "feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).

The eighth standard was captured by the NESARC survey by asking two questions: "Having trouble concentrating or keeping your mind on things, most days for at least two weeks?", and "Find it harder than usual to make decisions, most of the time for at least two weeks?" A positive response for either question was coded as a positive association with requirement eight. The DSM-IV identifies the eighth measurement as "diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).

The final requisite for major depression is identified by the NESARC survey by asking four questions: "Attempt suicide?", "Think about committing suicide?", "Feel like you wanted to die?", and "Think a lot about your own death?" Any positive response to any of the four questions was coded as meeting the requirements for the ninth criteria. The DSM-IV identifies the ninth standard as "recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide."

Coding was conducted while following the DSM-IV requirements for major depression diagnosis. The DSM-IV states that “five (or more) of the listed symptoms have been present during the same two week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.” SAS coding was conducted to ensure that either criteria one or two was met while including that at least four of the remaining standards were also deemed positive by the respondent. This allowed for the positive screening of major depression within the older population surveyed by the NESARC study.

### **Control Variables**

The multiple logistics model controlled for seventeen differing independent variables as it relates to major depression. The following variables were maintained in their original dichotomous state: sex, origin of birth, living arrangement, employment, financial hardship, mother’s history of depression, father’s history of depression, worry about being alone, and dependency on others.

Death, Serious Illness/Injury (DSI/I) was the independent variable of interest. DSI/I is a hybrid variable, which takes into account the potential for major depression given the impact of death or serious illness/injury of a close family member or friend within the previous 12 months. DSI/I is a combination of variables to include “death” and “injury” questions, which were associated with the NESARC survey. The particular question regarding death extracted from the NESARC survey was “Any family members or close friends die in the past twelve months?” Likewise, the specific question associated with illness/injury was “Any family members or close friends had serious illnesses or injuries in the past twelve months? SAS coding was conducted to capture the significance of either of these instances of occurring. DSI/I was divided into three levels of measurement: none, either, or both.

The “origins of birth” variable identified whether the respondent was born within the US or outside the boundaries of the fifty states.

Race/Ethnicity was coded into the following categories: Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Other. All categories inconsistent with selections within the NESARC survey were distributed into the Non-Hispanic Other category. Multicultural results were limited to the response given by those surveyed.

Sex remained as identified within the NESARC survey. This variable identified whether the respondent was male or female.

Age was stratified into the following three levels: 65-74 years, 75-84 years, and 85+ years of age.

The “region” variable remained as intended by the NESARC dataset as it divided the geographical area of the US into four areas of interest: Northeast, Midwest, South, and West.

Health status evaluated the subjective account of current health within the following five levels: excellent, very good, good, fair, and poor. This evaluation was based on the respondents’ perceptions of health and not a medical evaluation.

The “employment” variable was addressed by the NESARC survey by asking the following question, “Present situation includes working full time (> 35 hours per week)?” This variable is limited as it does not account for the older population working, but employed less than thirty-five hours per week.

Education was re-coded into the following four levels of educational achievement: some high school or less, completion of high school, some college, and college graduate. The original question stratified the sample into fourteen different academic standards. However, the cross sectional nature of this study required the recoding of levels in order to maintain sample sizes significant enough to provide accuracy.

The “income level” variable was based on total personal income and not family income. The NESARC survey stratified total personal income into seventeen identifiable categories. The cross sectional representation of this

study required the limiting of categorical levels, thus personal income was adjusted into five levels to include the following: \$0-10,000, \$10,001-\$20,000, \$20,001-\$30,000, \$30,001-\$40,000, and \$40,001.

“Financial hardship” was a dichotomous variable that remained as intended by the NESARC survey. The question asked, “Experienced major financial crisis, bankruptcy, or unable to pay bills on time in last 12 months?”

“Living arrangements” utilized the NESARC survey to identify those who currently live with someone and those who live alone. The survey identified five levels of which we re-coded to study to capture those living alone and those living with a significant other within either a marital capacity or a “similar to” marital capacity. This was re-coded to produce a dichotomous variable capturing “living alone” or “not living alone”.

Heritage variables identified the biological nature of both the mother and the father. The NESARC survey question addressed stated “Blood or natural mother ever depressed?” and “Blood or natural father ever depressed?”

The “worry a lot about being alone” variable remained consistent with the NESARC survey. The particular question stated, “Worry a lot about being left alone to take care of self?”

Similarly, the “depend on others in life” variable was unaltered as it related to the NESARC survey. The question asked, “Depend on others to handle important areas in life?”

“Drinking status” also remained unchanged from the NESARC survey as it was divided into three levels of interest: current drinker, ex-drinker, and lifetime abstainer.

However, “alcohol intoxication” was re-coded given the existence of eleven levels of consumption. SAS was utilized in order to retain the following three levels of interest: not drinking right now, never drank in last twelve months, and 2-11 times per week. This was primarily done to avoid small sampling sizes that were produced following the cross sectional nature of this study.

### **Analysis:**

Analytic procedures were conducted by utilizing SAS statistical analysis software (Cary, North Carolina) to emulate the requirement within the DSM-IV. Frequency distributions were compared prior to and after recoding variables to ensure that proper alterations were similar to those originally intended within the NESARC survey. Additionally, SUDAAN was also used to account for the cross-sectional deviation in national representation between the original NESARC sample (n=43,093) and the stratified sample that pertained to those ages > 65 years (n=8,205).

The bivariate analysis of each variable, as it related to major depression, was conducted while using both SAS and SUDAAN and the cross-tabulation procedure. The order of the dependent and independent variables were reversed to account for both characteristics and prevalence rates as they are associated with DSM-IV criteria-based major depression. Chi-squared tests were also conducted to establish the relationship between characteristics and DSM-IV criteria-based major depression (Table 1). Additionally, logistic regression was utilized within the bivariate model in order to produce appropriate odds ratios as they relate to DSM-IV criteria-based major depression and the control variables for prevalence rates (Table 2).

A multiple logistic regression analysis was conducted using the stepwise approach to modeling. Five models were analyzed (Table 3) while providing stabilizing results associated with demographics, resources, heritage, and symptoms. The five models demonstrated the effects on DSI/I and having or not having DSM-IV criteria-based major depression.

**Table 1:** Characteristics of the population 65 years and older, 2001-2002 NESARC

	Total n=8,205 N=33,381,363 %(se)	No Major Depression n=7,148 N=29,203,055 %(se)	Major Depression n=1,057 N=4,178,308 %(se)	p-value
Origin of birth				0.4412
U.S. born	90.45 (1.28)	90.57 (1.32)	89.57 (1.52)	
Non-U.S. born	9.55 (1.28)	9.43 (1.32)	10.43 (1.52)	
Race/Ethnicity				0.1246
Non-Hispanic White	83.33 (1.25)	83.22 (1.28)	84.12 (1.57)	
Non-Hispanic Black	7.93 (0.57)	8.16 (0.60)	6.34 (0.80)	
Hispanic	5.46 (0.76)	5.45 (0.79)	5.49 (0.89)	
Non-Hispanic other	3.28 (0.66)	3.17 (0.65)	4.05 (1.02)	
Sex**				<0.0001
Male	42.06 (0.65)	44.14 (0.66)	27.39 (1.85)	
Female	57.94 (0.65)	55.86 (0.66)	72.61 (1.85)	
Health status**				<0.0001
Excellent	13.09 (0.58)	13.53 (0.62)	10.01 (1.07)	
Very good	22.53 (0.56)	23.34 (0.59)	16.86 (1.39)	
Good	32.16 (0.61)	32.50 (0.66)	29.74 (1.65)	
Fair	21.84 (0.59)	21.23 (0.60)	26.16 (1.69)	
Poor	10.38 (0.42)	9.41 (0.39)	17.23 (1.52)	
Education				0.9923
Some high school/less	27.81 (0.66)	27.74 (0.70)	28.28 (1.65)	
Complete high school	34.48 (0.76)	34.51 (0.81)	34.24 (1.63)	
Some college	15.16 (0.51)	15.17 (0.53)	15.15 (1.40)	
College graduate	22.55 (0.65)	22.58 (0.67)	22.34 (1.64)	
Region				0.2388
Northeast	20.86 (3.52)	21.25 (3.61)	18.08 (3.25)	
Midwest	23.24 (2.90)	23.17 (2.91)	23.75 (3.23)	
South	35.64 (3.07)	35.62 (3.08)	35.77 (3.51)	
West	20.26 (2.98)	19.95 (2.95)	22.40 (3.52)	
Age**				<0.0001
65-74	54.43 (0.74)	53.54 (0.80)	60.90 (1.72)	
74-85	35.41 (0.66)	35.81 (0.72)	32.59 (1.69)	
85+	10.13 (0.41)	10.65 (0.44)	6.51 (0.78)	
Income level				0.1974
\$0-\$10,000	14.00 (0.50)	13.81 (0.52)	15.31 (1.12)	
\$10,001-\$20,000	25.19 (0.59)	24.90 (0.63)	27.25 (1.62)	
\$20,001-\$30,000	19.31 (0.52)	19.46 (0.57)	18.22 (1.42)	
\$30,001-\$40,000	13.73 (0.48)	13.98 (0.51)	11.92 (1.22)	
\$40,001-higher	27.77 (0.76)	27.84 (0.78)	27.29 (1.82)	
Death**				0.0006
Yes	38.77 (0.67)	37.81 (0.71)	45.52 (1.83)	
No	61.23 (0.67)	62.19 (0.71)	54.48 (1.83)	
Injury**				<0.0001
Yes	37.62 (0.73)	35.69 (0.75)	51.13 (1.93)	
No	62.38 (0.73)	64.31 (0.75)	48.87 (1.93)	
DSII**				<0.0001
None	46.74 (0.73)	48.42 (0.80)	34.97 (1.76)	
Either	30.14 (0.64)	29.68 (0.68)	33.41 (1.84)	
Both	23.12 (0.61)	21.90 (0.60)	31.62 (1.88)	
Living arrangement**				<0.0001
Alone	42.89 (0.72)	41.03 (0.77)	56.00 (1.81)	
Not alone	57.11 (0.72)	58.97 (0.77)	44.00 (1.81)	
Employment				0.4781
Employed	12.20 (0.43)	12.30 (0.46)	11.49 (1.07)	
Not employed	87.80 (0.43)	87.70 (0.46)	88.51 (1.07)	
Felt depressed (over past 4 weeks)**				<0.0001
All the time	2.11 (0.19)	1.50 (0.17)	6.35 (0.86)	
Most of the time	5.27 (0.30)	4.01 (0.26)	14.06 (1.40)	
Some of the time	16.23 (0.51)	14.65 (0.49)	27.29 (1.61)	
Little of the time	22.99 (0.59)	22.51 (0.64)	26.35 (1.57)	
None of the time	53.39 (0.76)	57.32 (0.78)	25.95 (1.68)	
Financial hardship (last 12 months)**				<0.0001
Yes	2.97 (0.23)	2.21 (0.21)	8.30 (0.96)	
No	97.03 (0.23)	97.79 (0.21)	91.70 (0.96)	
Mother depressed**				<0.0001
Yes	9.93 (0.44)	7.47 (0.42)	27.44 (1.81)	
No	90.07 (0.44)	92.53 (0.42)	72.56 (1.81)	
Father depressed**				<0.0001
Yes	5.42 (0.36)	4.21 (0.32)	14.31 (1.67)	
No	94.58 (0.36)	95.79 (0.32)	85.69 (1.67)	
Worry a lot about being alone**				<0.0001
Yes	4.07 (0.28)	3.21 (0.25)	9.96 (1.05)	
No	95.93 (0.28)	96.79 (0.25)	90.04 (1.05)	
Depend on others in life**				<0.0001
Yes	8.73 (0.48)	7.96 (0.46)	13.98 (1.43)	
No	91.27 (0.48)	92.04 (0.46)	86.02 (1.43)	
Drinking status				0.1270
Current drinker	45.07 (0.88)	45.01 (0.91)	45.52 (1.78)	
Ex-drinker	28.47 (0.69)	28.13 (0.74)	30.88 (1.53)	
Lifetime abstainer	26.45 (0.86)	26.86 (0.89)	23.60 (1.75)	
Alcohol intoxication (last 12 months)				0.8904
Not drinking now	55.09 (0.88)	55.17 (0.91)	54.52 (1.78)	
Never in last 12 months	42.67 (0.86)	42.57 (0.89)	43.36 (1.78)	
2-11 times per week	2.24 (0.17)	2.25 (0.19)	2.12 (0.49)	

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 2: Risk factors for Major Depression, persons 65 and older, 2001-2002 NESARC**

	No Major Depression n=7,148 N=29,203,055 %(se)	Major Depression n=1,057 N=4,178,308 %(se)	Major Depression OR (LBL,UBL)
DSI/I			
Total	87.48 (0.45)	12.52 (0.45)	-
None	90.63 (0.55)	9.37 (0.55)	1.00
Either**	86.13 (0.78)	13.87 (0.78)	1.56 (1.28,1.90)
Both**	82.88 (1.75)	17.12 (1.75)	2.00 (1.64,2.43)
Origin of birth			
U.S. born	87.67 (0.47)	12.33 (0.47)	0.89 (0.67,1.19)
Non-U.S. born	86.41 (1.57)	13.59 (1.57)	1.00
Race/Ethnicity			
Non-Hispanic White	87.44 (0.51)	12.56 (0.51)	1.00
Non-Hispanic Black**	90.06 (1.07)	9.94 (1.07)	0.77 (0.60,0.99)
Hispanic	87.49 (1.49)	12.51 (1.49)	0.91 (0.73,1.14)
Non-Hispanic other	84.64 (2.64)	15.36 (2.64)	0.89 (0.72,1.10)
Sex			
Male	91.91 (0.59)	8.09 (0.59)	1.00
Female**	84.43 (0.65)	15.57 (0.65)	2.09 (1.73,2.53)
Health status			
Excellent	90.45 (1.02)	9.55 (1.02)	1.00
Very good	90.66 (0.78)	9.34 (0.78)	0.98 (0.73,1.31)
Good	88.45 (0.76)	11.55 (0.76)	1.24 (0.93,1.65)
Fair**	85.05 (1.00)	14.95 (1.00)	1.67 (1.26,2.20)
Poor**	79.28 (1.60)	20.72 (1.60)	2.48 (1.82,3.37)
Education			
Some high school/less	87.36 (0.82)	12.64 (0.82)	1.03 (0.81,1.30)
Complete high school	87.66 (0.72)	12.34 (0.72)	1.00 (0.82,1.23)
Some college	87.59 (1.12)	12.41 (1.12)	1.01 (0.77,1.32)
College graduate	87.69 (0.92)	12.31 (0.92)	1.00
Region			
Northeast**	89.23 (0.95)	10.77 (0.95)	0.76 (0.59,0.98)
Midwest	87.30 (0.86)	12.70 (0.86)	0.91 (0.73,1.14)
South	87.53 (0.75)	12.47 (0.75)	0.89 (0.72,1.10)
West	86.26 (0.95)	13.74 (0.95)	1.00
Age			
65-74**	86.10 (0.60)	13.90 (0.60)	1.86 (1.42,2.45)
74-85**	88.56 (0.72)	11.44 (0.72)	1.49 (1.12,1.98)
85+	92.02 (0.97)	7.98 (0.97)	1.00
Income level			
\$0-\$10,000	86.40 (0.91)	13.60 (0.91)	1.13 (0.90,1.42)
\$10,001-\$20,000	86.55 (0.88)	13.45 (0.88)	1.12 (0.90,1.39)
\$20,001-\$30,000	88.27 (0.96)	11.73 (0.96)	0.96 (0.74,1.22)
\$30,001-\$40,000	89.21 (1.12)	10.79 (1.12)	0.87 (0.66,1.15)
\$40,001-higher	87.79 (0.90)	12.21 (0.90)	1.00
Death			
Yes**	85.33 (0.80)	14.67 (0.80)	1.37 (1.17,1.61)
No	88.88 (0.49)	11.12 (0.49)	1.00
Injury			
Yes**	82.95 (0.88)	17.05 (0.88)	1.89 (1.61,2.21)
No	90.17 (0.46)	9.83 (0.46)	1.00
Living arrangement			
Alone**	83.77 (0.70)	16.23 (0.70)	1.83 (1.57,2.13)
Not alone	90.42 (0.54)	9.58 (0.54)	1.00
Employment			
Employed	88.30 (1.13)	11.70 (1.13)	0.93 (0.74,1.15)
Not employed	87.47 (0.46)	12.53 (0.46)	1.00
Felt depressed (over past 4 weeks)			
All the time**	62.28 (4.37)	37.72 (4.37)	9.34 (6.39,13.66)
Most of the time**	66.58 (2.88)	33.42 (2.88)	7.75 (5.69,10.54)
Some of the time**	78.95 (1.16)	21.05 (1.16)	4.11 (3.37,5.03)
Little of the time**	85.65 (0.94)	14.35 (0.94)	2.58 (2.11,3.17)
None of the time	93.91 (0.42)	6.09 (0.42)	1.00
Financial hardship (last 12 months)			
Yes**	65.10 (3.32)	34.90 (3.32)	4.00 (2.94,5.45)
No	88.18 (0.44)	11.82 (0.44)	1.00
Mother depressed			
Yes**	65.87 (2.05)	34.13 (2.05)	4.69 (3.76,5.84)
No	90.05 (0.47)	9.95 (0.47)	1.00
Father depressed			
Yes**	68.37 (3.11)	31.63 (3.11)	3.80 (2.83,5.11)
No	89.15 (0.45)	10.85 (0.45)	1.00
Worry a lot about being alone			
Yes**	68.99 (2.75)	31.01 (2.75)	3.33 (2.55,4.35)
No	88.12 (0.45)	11.88 (0.45)	1.00
Depend on others in life			
Yes**	79.71 (1.71)	20.29 (1.71)	1.88 (1.48,2.38)
No	88.06 (0.49)	11.94 (0.49)	1.00
Drinking status			
Current drinker	87.45 (0.60)	12.55 (0.60)	1.15 (0.94,1.41)
Ex-drinker**	86.52 (0.81)	13.48 (0.81)	1.25 (1.01,1.55)
Lifetime abstainer	88.91 (0.83)	11.09 (0.83)	1.00
Alcohol intoxication (last 12 months)			
Not drinking now	87.67 (0.58)	12.33 (0.58)	1.00
Never in last 12 months	87.34 (0.61)	12.66 (0.61)	1.03 (0.89,1.19)
2-11 times per week	88.20 (2.66)	11.80 (2.66)	0.95 (0.57,1.59)

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 3:** Factors associated with a positive screening value for major depression among population 65 years and older, NESARC 2001-2002.

Table 3 (Variable)		Model 1 n=8,094 N=33,381,363 %(se)	Model 2 n=8,081 N=33,341,895 %(se)	Model 3 n=8,075 N=33,323,217 %(se)	Model 4 n=6,624 N=27,638,418 %(se)	Model 5 n=6,543 N=27,303,463 %(se)
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Hypothesized IV DS/II						
	None	1.00	1.00	1.00	1.00	1.00
	Either	1.56 (1.28, 1.90)**	1.58 (1.29, 1.94)**	1.55 (1.26, 1.90)**	1.61 (1.26, 2.07)**	1.56 (1.21, 2.00)**
	Both	2.00 (1.64, 2.43)**	1.99 (1.62, 2.44)**	1.90 (1.54, 2.34)**	1.96 (1.51, 2.55)**	1.89 (1.45, 2.46)**
Demographics						
Origin of birth						
	U.S. born		0.92 (0.69, 1.22)	0.93 (0.70, 1.24)	0.89 (0.64, 1.25)	0.90 (0.64, 1.26)
	Non-U.S. born		1.00	1.00	1.00	1.00
Race/Ethnicity						
	Non-Hispanic White		0.76 (0.59, 0.99)**	1.02 (0.70, 1.48)	0.68 (0.39, 1.06)	0.65 (0.43, 0.98)**
	Non-Hispanic Black		0.91 (0.72, 1.15)	0.56 (0.35, 0.87)**	0.40 (0.25, 0.64)**	0.42 (0.26, 0.69)**
	Hispanic		0.85 (0.68, 1.05)	0.81 (0.51, 1.30)	0.64 (0.39, 1.06)**	0.58 (0.34, 0.98)**
	Non-Hispanic other		1.00	1.00	1.00	1.00
Sex						
	Male		0.56 (0.45, 0.68)**	0.53 (0.43, 0.65)**	0.55 (0.44, 0.70)**	0.54 (0.42, 0.69)**
	Female		1.00	1.00	1.00	1.00
Age						
	65-74		2.94 (2.22, 3.89)**	2.77 (2.09, 3.67)**	2.95 (2.08, 4.19)**	3.25 (2.26, 4.69)**
	74-85		1.83 (1.37, 2.44)**	1.78 (1.33, 2.39)**	2.09 (1.45, 3.02)**	2.25 (1.54, 3.29)**
	85+		1.00	1.00	1.00	1.00
Region						
	Northeast		0.76 (0.59, 0.99)**	0.78 (0.61, 1.01)	0.86 (0.66, 1.14)	0.85 (0.64, 1.13)
	Midwest		0.91 (0.72, 1.15)	0.94 (0.74, 1.20)	0.95 (0.73, 1.24)	0.95 (0.72, 1.24)
	South		0.85 (0.68, 1.05)	0.88 (0.71, 1.09)	0.97 (0.76, 1.25)	1.01 (0.78, 1.31)
	West		1.00	1.00	1.00	1.00
Health status						
	Excellent		1.00	1.00	1.00	1.00
	Very good		0.97 (0.71, 1.31)	0.98 (0.73, 1.33)	0.86 (0.62, 1.21)	0.85 (0.61, 1.20)
	Good		1.23 (0.91, 1.65)	1.25 (0.93, 1.69)	1.18 (0.85, 1.63)	1.13 (0.82, 1.57)
	Fair		1.72 (1.29, 2.28)**	1.72 (1.28, 2.31)**	1.50 (1.08, 2.09)**	1.44 (1.03, 2.01)**
	Poor		2.64 (1.91, 3.65)**	2.66 (1.91, 3.71)**	2.55 (1.72, 3.77)**	2.26 (1.50, 3.39)**
Resources						
Employment						
	Employed			1.04 (0.82, 1.33)	1.01 (0.76, 1.36)	1.01 (0.75, 1.36)
	Not employed			1.00	1.00	1.00
Education						
	Some high school/less			0.91 (0.69, 1.21)	0.89 (0.65, 1.22)	0.93 (0.68, 1.27)
	Complete high school			0.98 (0.78, 1.24)	1.00 (0.76, 1.31)	1.00 (0.76, 1.32)
	Some college			0.94 (0.70, 1.26)	0.92 (0.67, 1.27)	0.93 (0.68, 1.29)
	College graduate			1.00	1.00	1.00
Income level						
	\$0-\$10,000			0.70 (0.53, 0.93)**	0.72 (0.51, 1.03)	0.79 (0.55, 1.12)
	\$10,001-\$20,000			0.85 (0.66, 1.10)	0.93 (0.69, 1.25)	1.00 (0.74, 1.35)
	\$20,001-\$30,000			0.81 (0.62, 1.05)	0.84 (0.61, 1.16)	0.87 (0.63, 1.22)
	\$30,001-\$40,000			0.81 (0.61, 1.09)	0.79 (0.56, 1.11)	0.86 (0.61, 1.21)
	\$40,001-higher			1.00	1.00	1.00
Financial hardship (last 12 months)						
	Yes			3.38 (2.45, 4.68)**	3.29 (2.28, 4.76)**	3.27 (2.23, 4.81)**
	No			1.00	1.00	1.00
Living arrangement						
	Alone			1.87 (1.56, 2.26)**	1.74 (1.41, 2.14)**	1.71 (1.39, 2.10)**
	Not alone			1.00	1.00	1.00
Heritage						
Mother depressed						
	Yes				3.91 (2.90, 5.28)**	3.78 (2.79, 5.11)**
	No				1.00	1.00
Father depressed						
	Yes				1.90 (1.30, 2.79)**	1.76 (1.17, 2.63)**
	No				1.00	1.00
Symptoms						
Worry a lot about being alone						
	Yes					2.43 (1.73, 3.41)**
	No					1.00
Depend on others in life						
	Yes					1.54 (1.11, 2.12)**
	No					1.00
Drinking status						
	Current drinker					1.47 (1.12, 1.93)**
	Ex-drinker					1.35 (1.01, 1.82)**
	Lifetime abstainer					1.00
Alcohol intoxication (last 12 months)						
	Not drinking now					1.00
	Never in last 12 months					1.00 (1.00, 1.00)
	2-11 times per week					0.99 (0.59, 1.67)

\*\* represents all significant variables with a p-value less than or equal to 0.05

**Table 4:** Coding of major depression criteria among population 65 years and older, NESARC 2001-2002.

Diagnostic indicator	Criteria or Subset	Question (s)	Coding
<b>Depressed mood</b>	1	"In your entire life, have you ever had a time when you felt sad, blue, depressed, or down most of the time for at least two weeks?"	Yes
			See Criteria 2
			No
			See Criteria 2
<b>Loss of interest or pleasure</b>	2	"In your entire life, have you ever had a time, lasting at least two weeks, when you didn't care about the things that you usually cared about or when you didn't enjoy the things you usually enjoy?"	Yes
			Meet at least 4 of 7 criteria below
			No (Yes, Criteria 1)
			Meet at least 4 of 7 criteria below
			No (No, Criteria 1)
<b>Weight</b>	3		No major depression
			At least 4 of 7 positive
Lose Weight	3/1	"Lose at least 2 pounds a week for several weeks or at least 10 pounds altogether within a month other than when you were physically ill or dieting?"	Yes
			Positive Criteria 3
			No
Lose Appetite	3/2	"Lose your appetite nearly every day for at least two weeks?"	Check Subset 3/2-3/4
			Yes
Consistent Weight Gain	3/3	"Gain at least 2 pounds a week for several weeks or at least 10 pounds altogether within a month (other than when you were growing or pregnant)?"	Yes
			Positive Criteria 3
			No
			Check Subset 3/4
Excessive Eating	3/4	"Find that you wanted to eat a lot more than usual for no special reason, most days for at least two weeks?"	Yes
			Positive Criteria 3
			No
			Negative Criteria 3 if No to all Subsets (3/1-3/4)
<b>Sleeping Patterns</b>	4		
Trouble Sleeping	4/1	"Have trouble falling asleep nearly every day for at least two weeks?"	Yes
			Positive Criteria 4
			No
Waking Early	4/2	"Wake up too early nearly every day for at least two weeks?"	Check Subset 4/2
			Yes
Excessive Sleep	4/3	"Sleep more than usual nearly every day for at least two weeks?"	Positive Criteria 4
			No
			Negative Criteria 4 if No to all Subsets (4/1-4/3)
			Check Subset 4/3
<b>Anxious Symptoms</b>	5		
Slowed Speech	5/1	"Move or talk much more slowly than usual, most days for at least two weeks?"	Yes
			Positive Criteria 5
			No
Restlessness 1	5/2	"Become so restless that you fidgeted or paced most of the time for at least two weeks?"	Check Subset 5/2
			Yes
Restlessness 2	5/3	"Become so restless that you felt uncomfortable for at least two weeks?"	Positive Criteria 5
			No
			Negative Criteria 5 if No to all Subsets (5/1-5/3)
<b>Fatigue</b>	6		
Fatigue/Lose of Energy	6/1	"Feel tired nearly all of the time or get tired easily most days for at least two weeks, even though you weren't doing more than usual?"	Yes
			Positive Criteria 6
			No
<b>Worthlessness/Guilt</b>	7		
Worthlessness	7/1	"Feel worthless nearly all of the time for at least two weeks?"	Negative Criteria 6 if No to Subset 6/1
			Yes
			Positive Criteria 7
Guilt	7/2	"Feel guilty about things you normally wouldn't feel guilty about, most of the time for at least two weeks?"	No
			Check Subset 7/2
			Yes
			Positive Criteria 7
			No
			Negative Criteria 7 if No to all Subsets (7/1-7/2)

**Table 4:** Coding of major depression criteria among population 65 years and older, NESARC 2001-2002  
(Continued)

<b>Cognitive Ability</b>	<b>8</b>		
Concentration	8/1	"Having trouble concentrating or keeping your mind on things, most days for at least two weeks?"	<b>Yes</b>
			Positive Criteria 8
			<b>No</b>
			Check Subset 8/2
Decision-making	8/2	"Find it harder than usual to make decisions, most of the time for at least two weeks?"	<b>Yes</b>
			Positive Criteria 8
			<b>No</b>
			Negative Criteria 8 if No to all Subsets (8/1-8/2)
<b>Suicide</b>	<b>9</b>		
Attempted	9/1	"Attempt suicide?"	<b>Yes</b>
			Positive Criteria 9
			<b>No</b>
			Check Subset 9/2
Considering	9/2	"Think about committing suicide?"	<b>Yes</b>
			Positive Criteria 9
			<b>No</b>
			Check Subset 9/3
Feeling of positive death	9/3	"Feel like you wanted to die?"	<b>Yes</b>
			Positive Criteria 9
			<b>No</b>
			Check Subset 9/4
Think of own death	9/4	"Think a lot about your own death?"	<b>Yes</b>
			Positive Criteria 9
			<b>No</b>
			Negative Criteria 9 if No to all Subsets (9/1-9/4)

## RESULTS

### Population Characteristics

The prevalence rate for those older persons suffering from lifetime, DSM-IV criteria-based major depression is nearly 13 percent. The older population sampled by the 2001-2002 NESARC Survey, exceeding 33 million older persons through national representation (Table 1), identify that more than 4 million of those older persons suffer from major depression as indicative solely by the DSM-IV criteria.

DSI/I was statistically significant as it relates to DSM-IV criteria-based major depression ( $p < 0.0001$ ). Greater than 65 percent of those suffering from DSM-IV criteria-based major depression have had either or both DSI/I while only 50 percent of those not suffering from DSM-IV criteria-based major depression have had either or both DSI/I. Additionally, nearly 32 percent of those who had experienced DSM-IV criteria-based major depression had also experienced both DSI/I while almost 22 percent of those who experienced both DSI/I did not screen positive for DSM-IV criteria-based major depression. Additionally, the total older population who experienced both DSI/I was 23 percent. Moreover, 35 percent of those who had DSM-IV criteria-based major depression did not have DSI/I while 48 percent of those who did not have DSM-IV criteria-based major depression did not have DSI/I. The total older population who did not experience DSI/I was 47 percent (Table 1).

The injury variable was also statistically significant as it related to DSM-IV criteria-based major depression ( $p < 0.0001$ ). More than 51 percent of those having a seriously injured or ill close family member or friend had DSM criteria-based major depression (Table 1). Conversely, nearly 36 percent of those not having DSM-IV criteria-based major depression experienced the serious injury or illness of a family member or friend. The total older population who experienced injury or illness of a close family member or friend was nearly 38 percent (Table 1).

Nearly 49 percent of those not having a seriously injured or ill close family member or friend had DSM criteria-based major depression (Table 1). Conversely, 64 percent of those not having DSM-IV criteria-based major depression did not experience the serious injury or illness of a family member or friend. The total older population who did not experience injury or illness of a close family member or friend was more than 62 percent (Table 1).

The death variable was also statistically significant as it related to DSM-IV criteria-based major depression ( $p < 0.0001$ ). Nearly 46 percent of those having a death of a close family member or friend over the previous 12 months had DSM criteria-based major depression (Table 1). Conversely, nearly 38 percent of those not having DSM-IV criteria-based major depression experienced the death of a close family member or friend over the past 12 months. The total older population who experienced the death of a close family member or friend over the previous 12 months was almost 39 percent (Table 1).

Additionally, more than 54 percent of those who did not experience a death of a close family member or friend during the past 12 months had DSM criteria-based major depression (Table 1). Moreover, over 64 percent of those not having DSM-IV criteria-based major depression did not experience the death of a close family member or friend. The total older population who did not experience injury or illness of a close family member or friend was more than 62 percent (Table 1).

## **Bivariate Characteristics**

More than 17 percent of those experiencing DSM-IV criteria-based major depression suffered from both DSI/I characteristics. Inversely, nearly 83 percent of the older population who suffered from both DSI/I characteristics did not have DSM-IV criteria-based major depression (Table 2). Additionally, those who had both DSI/I were significantly more likely to suffer from DSM-IV criteria-based major depression than those who did not suffer from DSI/I characteristics (OR 2.00 LBL 1.62 UBL 2.43).

Nearly 14 percent of persons who positively screened for DSM-IV criteria-based major depression demonstrated either DSI/I characteristic. Conversely, 86 percent of the older population who suffered from either DSI/I characteristics did not have DSM-IV criteria-based major depression (Table 2). Those suffering from either DSI/I were significantly more likely to suffer from DSM-IV criteria-based major depression than those who did not suffer from DSI/I characteristics (OR 1.56 LBL 1.28 UBL 1.90).

More than 9 percent of persons who displayed positive results for DSM-IV criteria-based major depression demonstrated none of the DSI/I characteristics. Moreover, nearly 91 percent of the older population who did not experience a DSI/I characteristic did not have DSM-IV criteria-based major depression (Table 2).

Also, almost 15 percent of those who experienced a death of a close friend or family member during the previous 12 months had DSM-IV criteria-based major depression while less than 11 percent who suffered from the death of a close friend or family member during the past 12 months did not have DSM-IV criteria-based major depression (OR 1.37 LBL 1.17 UBL 1.61).

Injury or illness of a close friend or family also demonstrated significant results (OR 1.89 LBL 1.61 UBL 2.21). More than 17 percent of those experiencing a serious injury or illness of a friend or family member during the previous 12 months were positively screened for DSM-IV criteria-based major depression (Table 2) while more than 11 percent of those suffering from an injury or illness of a close friend or family member did not experience DSM-IV criteria-based major depression.

## **DISCUSSION**

### **Findings**

The lifetime prevalence rate for DSM-IV criteria-based major depression within the older population was almost 13 percent (Table 2). Moreover, DSI/I was a statistically significant for Models 1-5 after controlling for demographics, resources, heritage, and symptoms (Table 3).

The Model 1 bivariate comparison between DSI/I and DSM-IV criteria-based major depression expressed significant likelihood of experiencing DSM-IV criteria-based major depression if both DSI/I factors occurred as compared to not having DSI/I characteristics (OR 2.00 LBL 1.64 UBL 2.43). DSI/I also demonstrated significance if the respondent

suffered from either DSI/I characteristics (OR 1.56 LBL 1.28 UBL 1.90) than if not experiencing either of the DSI/I characteristics.

Model 2 controlled for the following demographic features: origin of birth, race/ethnicity, sex, age, region, and health status. Those respondents having both DSI/I characteristics were significantly more likely (OR 1.99 LBL 1.62 UBL 2.44) to experience DSM-IV criteria-based major depression than those who met none of the DSI/I criteria. Additionally, persons surveyed who had either DSI/I characteristic were more likely (OR 1.58 LBL 1.29 UBL 1.94) to experience DSM-IV criteria-based major depression than those display no signs of DSI/I. Demographics had a minimal effect on the odds ratios and significance of DSI/I within the older population. "Origin of birth" was the only control variable that did not demonstrate significance as it related to DSM-IV criteria-based major depression. Non-Hispanic Whites were slightly less likely (OR 0.76 LBL 0.59 UBL 0.99) to experience DSM-IV criteria-based major depression than Non-Hispanic Other. Male respondents had a significantly decreased likelihood (OR 0.56 LBL 0.45 UBL 0.68) of suffering from DSM-IV criteria-based major depression than did females. Both the middle old (ages 74-85) and the young old (ages 65-74) had a high likelihood of experiencing DSM-IV criteria-based major depression than did the oldest old (ages 85 and greater). Those residing in the Northeast had a slightly lower likelihood of experiencing DSM-IV criteria-based major depression than did the other three regions (Table 3). Members within the older population who had either "fair" (OR 1.72 LBL 1.29 UBL 2.28) or "poor" (OR 2.64 (LBL 1.91 UBL 3.65) health statuses were significantly or likely to experience DSM-IV criteria-based major depression.

Model 3 controlled for both demographics and the following resource variables: employment, education, income level, financial hardship, and living arrangement. The resource variables that proved significant within Model 3 were financial hardship and living arrangement. Those persons having both DSI/I criteria had an increased likelihood (OR 1.90 LBL 1.54 UBL 2.34) to experience DSM-IV criteria-based major depression than those who met neither of the DSI/I criteria. Also, respondents who had either DSI/I characteristic were more likely (OR 1.55 LBL 1.26 UBL 2.34) to suffer from DSM-IV criteria-based major depression than those with neither characteristics of DSI/I. The impact of controlling for demographics and resources had little variation on the significance of DSI/I. After controlling for resources, Non-Hispanic Blacks were significantly less likely (OR 0.56 LBL 0.35 UBL 0.87) to suffer from DSM-IV criteria-based major depression than were Non-Hispanic Other and Non-Hispanic Whites were no longer less likely than Non-Hispanic Others to experience DSM-IV criteria-based major depression. Males continue to be less likely than females to experience DSM-IV criteria-based major depression. Likewise, the middle old and the young old groups were significantly more likely to experience DSM-IV criteria-based major depression than the older old population. The Northeast region was no longer less likely to experience DSM-IV criteria-based major depression after controlling for resources. "Health status" remained significantly more likely for those in "fair" (OR 1.72 LBL 1.28 UBL 2.31) or "poor" (OR 2.66 LBL 1.91 UBL 3.71) health than those in "excellent" health, as it related to the potential experience of DSM-IV criteria-based major depression. Education did not demonstrate any level of significance in Model 3. Those who made a personal incomes of \$0-\$10,000 per year were more likely (OR 0.70 LBL 0.53 UBL 0.93) to experience DSM-IV criteria-based major depression than those who made a personal income of \$40,001 or higher. Moreover, those how responded as having financial hardships were significantly more likely (OR 3.38 LBL 2.45 UBL 4.68) to suffer from DSM-IV criteria-based major depression than those who did not experience financial hardship. Also, those who lived alone (without spouse or significant other) had a high likelihood (OR 1.87 LBL 1.56 UBL 2.26) or suffering from DSM-IV criteria-based major depression than those who were not living alone (with spouse or significant other).

Model 4 controlled for demographics, resources and heritage. The following levels of demographics and resources remained relatively constant as reported in Model 3 (Table 3): DSI/I, origins of birth, race/ethnicity, sex, age, region, health status, employment, education, financial hardship, and living arrangement. The only notable change was in related to income level. Previously (Model 3) those who made \$0-\$10,000 per year were more likely to suffer from DSM-IV criteria-based major depression, however, after controlling for heritage, there is no longer a significant difference amongst income levels. The "heritage" category evaluates the biological depression levels of both the mother and the father. Those older persons who mother was reported as having a history of depression were significantly more likely (OR 3.91 LBL 2.90 UBL 5.28) to experience DSM-IV criteria-based major depression than those whose biological mother was not "depressed". It is important to identify that nearly 73 percent of those

screening positive for DSM-IV criteria-based major depression were women while only 58 percent of the sample population were female (Table 1). Likewise, those older persons whose biological father was reported as “depressed” were highly likely (OR 1.90 (LBL 1.30 UBL 2.79) to suffer from DSM-IV criteria-based major depression than those who did not report historical accounts of “depression” from their father.

Model 5 includes the following control categories: demographics, resources, heritage, and symptoms. The final model demonstrates consistency with relation to DSI/I. Those persons having both DSI/I criteria had an increased likelihood (OR 1.89 LBL 1.45 UBL 2.46) to experience DSM-IV criteria-based major depression than those who did not meet either of the DSI/I criteria. Also, respondents who had either DSI/I characteristic were more likely (OR 1.56 LBL 1.21 UBL 2.00) to suffer from DSM-IV criteria-based major depression than those with neither characteristics of DSI/I (Table 3). All control variables within the categories of demographics, resources, and heritage (Model 4) remained similar, with exception to race/ethnicity. After controlling for symptoms, Non-Hispanic White, Non-Hispanic Black, and Hispanics were less likely to experience DSM-IV criteria-based major depression than Non-Hispanic Other groups.

### **Limitations**

“The principal limitation in the analysis is that prevalence estimates are based on answers to a screening measurement, rather than clinical diagnoses rendered by a mental health practitioner.” (Probst et al., 2006) Differential Diagnoses is accurately done by assessing the client and “ruling out” all of those diagnoses that are “not correct” and does not support the decreased reliable practice of diagnostic measurement by starting with the suspected diagnoses. Moreover, the DSM-IV criteria-based major depression variable does not account for other contributing mood disorders or medical conditions. The purpose of the measure is only to identify those in need of further examination by mental health professions, and therefore, is not an instrument that takes the place of the clinician. “However, absent extraordinary budgets, these limitations are unavoidable when examining a large population.” (Probst et al., 2006)

The sample was also limited by the cross-sectional application needed for older population identification, which limited the nationally representative strength of the initial NESARC data set. However, SAS callable SUDAAN was utilized to ensure national representation as it weighted the sample as a nationally representative population estimate.

### **Future Research**

There are several areas of future research implications that need to be addressed. First, primary care settings need to be further evaluated. Instruments such as the PHQ-9 and the measure developed within this article should be further identified as a practical, timesaving strategy that could both identify those in need of further evaluation while making effective use of the primary care provider’s time. Additionally, another professional could conduct such assessments (nurses, medical techs, etc) with an understanding that the referral process is the next step if the patient is positively screened for major depression.

Another area of future research relates to having health insurance, what type of insurance and the rural versus urban disparities. A barrier to mental health services is the lack of insurance coverage for such services. Insurance coverage influenced reported effects from depressive symptoms as 36 percent of rural residents with private insurance experienced interference with life activities while nearly 65 percent of rural residents with public insurance experienced it, and 56 percent of those with no insurance experienced interference with life activities. (Probst et al., 2006) Rural health should become a focus of mental health. A large portion of the significant effects of major depression (health status, financial hardship, biological effects, dependence on others, etc) is more prevalent within the rural communities.

Additionally, more biological research is needed as the effects of either the biological mother and father being depressed significantly increased the likelihood of the respondent to be positively screened for DSM-IV criteria-based major depression. The biological relationships appear to have an influence on major depression.

One must also consider the costs associated with the treatment of mental health screening and referral, and if it is necessary. Some would suggest that depressive symptoms are inconsistently recorded over time as individuals relate short-term life experiences to depression scales. In some cases, this may be true; however, recurring instances could provide both physical and mental disturbances that are significantly more costly than a few visits to a therapist. (Reynolds et al., 2006) Additionally, physician visits are much more costly than therapy and the prescriptive measure of care requires the patient to continually return for “follow-up” and the re-administering of psychotropic medication—a short-term resolution itself. However, the most effective form of treatment remains, a mixture of medications and therapy.

Finally, more nursing home studying need to be conducted as they relate to mental health and the treatment and access to care issues associated with residence. Mixed methodological approaches within nursing care facilities need to be conducted in order to identify “best practices” in care and the clinical methods being used by differing facilities to compensate for mental disorders. Too often qualitative analysis is being done on small, non-nationally representative studies while large quantitative studies are being done without an observational piece, which provides critical information while stemming the learning process of the health researcher.

## CONCLUSION

The purpose of this article was threefold: (1) determine whether or not the effects of death, serious illness/injury of a close friend or family member would have an impact on the likelihood of experiencing DSM-IV criteria-based major depression within the older population (2) not to diagnose major depression within the population, nor is it to develop a more accurate instrument for exact, scientifically based diagnostic accuracy, but it is an attempt to identify the subjective nature associated with the field of psychology (3) identify the need for specialty care within the field of mental health, and the referral process needed for accurate diagnostic measures similar to that which is practiced in medicine through specialty care.

DSI/I is significantly more likely to influence whether or not the older population will suffer from DSM-IV criteria-based major depression. An older person experiencing either characteristic of DSI/I or both characteristics, are significantly more likely to experience DSM-IV criteria-based major depression than those who do not experience DSI/I characteristics (Table 3). This was consistent in all five models, after controlling for demographics, resources, heritage and symptoms.

If a patient receives an evaluative measurement that captures the DSM criteria-based effects of major depression, he or she should be referred to mental health specialists through similar channels as demonstrated by the medical model. Other instruments have been developed containing significantly more information than that specified by the DSM-IV. This provides the potential for underdiagnosis, while the DSM-IV criteria-based screening methodology proposed within this article identifies a percentage of the older population in need of further evaluation. The National Alliance on Mental Illness states that “depression in its many forms affects more than 6.5 million of the 35 million Americans who are 65 years or older.” (“What is Mental Illness: Mental Illness Facts,” 2007a) Physicians consider healthcare provided as their best ability to “practice” medicine while psychologists, psychiatrists and other mental health providers have a far greater challenge in explaining the neuropsychological effects controlling things such as human functioning, thought processes, decision-making, cognitive impairment, etc. Medicine has a concrete foundation based on scientific knowledge developed throughout time, while mental health is still largely unknown, although many diagnostic methods can be conducted by specialty trained mental health providers. Physicians are currently using psychotropic medications to “dull” the therapeutic need, while many patients are being exposed to side effects and the potential for unexpected addiction. Currently, many who function within the healthcare system are being seen within primary care settings, emergency rooms, or not being seen at all given the rising expense of healthcare services. (Probst et al., 2006) The physician, therefore, becomes the “gatekeeper” to preventative mental health and is in need of a simplified approach that allows them to make the proper specialty referral and ensures that those who meet questionable criteria, as outlined by the DSM-IV, are referred accordingly.

*Achieving the Promise: Transforming Mental Health Care in America*, the report conducted by the President’s New Freedom Commission on Mental Health (July 2003), illustrates the importance of screening and referrals services

by stating the following goal, "Early Mental Health Screening, Assessment, and Referral to Services Are Common Practice." Additionally, a subgoal under this major heading states "screen for mental disorders in primary health care, across the life span, and connect treatment and supports." The recommendation within the report suggests that "collaborative care" models need to be implemented with reimbursement by both public and private insurers. Health policy thus becomes an important influence on the effectiveness of my article as policy drives influential factors and support for such referral initiatives.

Mental health and the elderly population is a growing concern within the United States. The prevalence of these disorders within the elderly is bound to skyrocket as the exponential increases in the elderly population grow and the technological advances continue to further sustain life. However, this life sustainment often comes at an increased period of time in which the elderly will continue to live, but the extension in life will follow longer periods of life living with some type of disability. Mental health efforts should be addressed in the near future to account for the sociological changes, which are bound to sooner or later affect the majority of the population.

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# A REVIEW OF CURRENT BULLY ETIOLOGY AND WHY SCHOOL BULLY INTERVENTIONS DON'T WORK

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## ABSTRACT

*Bullying has been a persistent worldwide psychosocial problem of childhood and does not show signs of waning. The defining behaviors of bullying include unwanted physical and verbal assaults. Some changes to the definition recently have occurred with the advent of technology and social media that easily can reach large audiences. This form of bullying has come to be known as cyberbullying. The effects of bullying can be severe and traumatic. Research indicates that schools are not properly intervening with bullying even though schools report that anti-bully programs exist. Reasons for the ineffectiveness of these school antibully programs are described. A more effective program for antibullying is addressed with BOSS.*

**Keywords:** *Bullying, Cyberbullying, Antibully Interventions, BOSS.*

## INTRODUCTION

“Sticks and stones will break my bones, but words may eventually kill me.” This article begins with a different and more contemporary version of this famous adage. In its original form, the adage suggests that “words” are relatively harmless. However, quite the contrary: words that elicit emotional pain can be much more hurtful to a human being than physical pain. This harsh and humiliating type of language has potentially severe emotional consequences to humans. Bullying often manifests with harsh or humiliating language. This type of assault can contribute to a human’s negative self-talk, acting as a virus for despair, depression, aggression, self-loathing, and loss of esteem.

Bullying has been a pervasive and serious psychosocial problem for children both in and out of school environments. Childhood bullying has escalated in recent years and received considerable media attention as a result. This is due to several reasons. First, the incidence of bullying has increased because of two factors: 1] increased awareness of bullying; and 2] new versions of bullying have appeared. The second variable responsible for increased bully attention is that the victims and bystanders of bullying are reacting with more lethal means.

Recent epidemiological data on bullying in schools indicates that bullying is a worldwide phenomenon (Dake, Price, & Telljohann, 2003; Dracic, 2009; Olweus, 1997). A study from central Europe showed that as many as 75% of adolescents have been the victim of bullying (Dracic, 2009). Based on the data, bullying has reached epidemic proportions across all ages.

Bullying is extremely common in elementary school and middle school. In the past, it has been speculated that bullying wanes during high school. However, recent investigation disputes this belief. For example, a recent survey of more than 43,000 high school students conducted in Los Angeles showed startling findings (Johnson Institute of Ethics, 2010). This survey revealed that 50% of high school students bullied another student within the past year. Nearly half of those students also stated that they were the victims of a bully within the same time period. Ten percent of those teens admitted to bringing a weapon to school for protection against bullying behavior. The study went on to conclude that the victims of bullying are poised to violently strike back at the perpetrators. Clearly, these data indicate that school anti-bully programs are not working.

Bullying is defined as a type of assault which causes psychological distress to the victim. Bullying often causes significant psychological distress to the onlookers [or bystanders] as well, but bystanders typically are ignored as part of anti-bully interventions. An imbalance of power often is part of the bully event. In other words, a bully typically targets a victim who is less physically threatening, has an unusual appearance or dress, or demonstrates some behavioral or speech anomaly. Basically, the bully is attracted to someone who is easily taken advantage of.

Repeated bullying events or episodes over time is another common aspect as a core component of bullying. Bullies tend to perpetrate their bully behaviors repeatedly upon the target victim[s]. However, this portion of the definition is no longer universally accepted since a cyberbullying event may occur in only one incident (Schoen & Schoen, 2010).

Bully behavior includes an array of assault-like behavior. Typical bully behaviors are physical acts like pushing and shoving, hitting, kicking, and other forms of unwanted physical contact [e.g.: purposely knocking books out of the hands of another student]. Male bullies more often resort to physical forms of bully behaviors versus female bullies. Bullying also is demonstrated with verbal behaviors. Common verbal bullying behaviors include ridicule, humiliation, and name calling. Both male and female bullies perpetrate verbal forms of bullying.

Females bullies often demonstrate another version of bullying which may or may not include direct verbal interactions. These forms of bullying include disseminating rumors about the victim. Isolating or ostracizing a student victim also is part of this form of indirect bullying. For example, this form of bullying occurs when a student or group of students prohibit the victim from sitting at a specific table in class, lunch, etc.

Recently, a newer version of bullying has been recognized and defined. This form of bullying is referred to as "cyberbullying". Incidents of cyberbullying have dramatically increased as a direct relationship to advances in internet and cell phone communication. Cyberbullying takes on a grand scale of escalation in bullying. For example, cyberbullying has the potential to reach a huge audience. Recent examples have shown how bully effects take on devastating proportions when students post photos and videos of the victims on the web, or spread various rumors about the victim on social websites such as Facebook. In some cases, the victims committed suicide because of the dramatic psychological distress they experienced.

The level of distress among bully victims is extremely serious and tantamount to "psychological rape" (Kumpulainen & Rasenen, 2000). In other words, the victim's ego is stripped away and assaulted without any reasonable defenses. This psychological aspect of bullying is what makes it so undeniably hurtful. Victims of bullies often experience changes in overt behavior and covert behavior [i.e. psychological functioning]. Victims can demonstrate school refusal or frequent absences to avoid confrontation with the bully. Victims experience psychosomatic complaints and symptoms like stomach aches and headaches. Even more serious, bully victims often develop loss of self-esteem, anxiety, and depression. In some cases, depression and anxiety symptoms can be severe enough to precipitate major depression and suicide. The term "bullycide" is often used to describe a suicide event as a result of bullying. Thus, it is apparent why bullying has seen wide exposure in the media.

The etiology of a bully is complex. There are a number of scenarios and events which ultimately "create" a bully. First, environmental factors can give rise to a child bully. It has been recognized that many child bullies are bullied by their parents. In these cases, parents bully their children with autocratic control and harsh, punishing environments. Many bullies receive corporal punishment and may be physically, emotionally, and verbally abused at home. Child bullies then simply play out this script in the company of other children. Part of this etiology also is related to anger and displacing that anger onto peers and other authority figures [e.g. teachers]. In other words, the child is angry at his parents for this maltreatment, but vents his anger upon others [since he or she likely is too fearful to appropriately vent to parents].

The other basic etiology of bullying behavior is genetics and personality variables. Personalities that are recognized as controlling and sociopathic in nature often begin their childhood with bullying other people [e.g. oppositional defiant disorder and conduct disorder] (Diagnostic and Statistical Manual of Mental Disorders, 2000). At the same time, these personalities can be somewhat deceptive and elusive. In other words, they work "behind the scenes" when authority figures are not watching or paying attention. This is exactly what many bullies try to accomplish: apply clandestine maneuvers to assault their victims. Many of these childhood bullies actually portray similar behaviors in adulthood. They can be very controlling and manipulative. These individuals can still carry out acts of willful emotional and physical assaults on others. Common adult examples are cruel supervisors in the workplace, spouse abusers and beaters; and in the worst case, rapists.

## **SCHOOL SYSTEM RESPONSES TO BULLYING**

An interesting enigma exists when it comes to the school system's responses to bullying. It appears that school systems have underreacted to the bully problems in educational settings (Schoen & Schoen, 2010). School systems typically display a reaction of denial or overconfidence when approached about bullying. This was seen in a well-publicized bullycide event in a metro Atlanta school. Denial is demonstrated when schools quickly and flatly deny that there are bully problems in their schools. Of course, this is a ludicrous statement since most bullying occurs behind the teacher's back.

The programs which most schools employ for anti-bullying are ineffective. There are a number of reasons and explanations for this allegation. First, children, especially younger children, don't process information in the same manner as mature, older humans. For example, children have weak temporal relationship abilities and lack psychological insight (Piaget, 1970). This is a fundamental child development concept. Thus, when the need to identify bully behavior arises, as in an intervention, young children may not realize that their own behavior in fact is bully behavior being described by a teacher. In other words, bully interventions which define bullying fall on "deaf ears" since bullies don't recognize themselves as bullies. Ironically, observers, bystanders, and victims more readily identify the bully and his or her bullying behavior.

Another problem with current bully interventions exists in schools. For example, schools often declare themselves as an "anti-bully zone" as a form of anti-bullying intervention. Obviously, this is a passive approach to anti-bully intervention. This type of anti-bully intervention typically is punctuated with a few posters or signs mounted in the hallways. These passive treatments for anti-bullying simply are not absorbed by children because of their immature cognitive status. In order for these posters to be effective, children would have to process these posters into changes in behavior. This type of passive intervention is weak even for adults.

These "school anti-bully zones" interventions do not work for another reason. This type of approach at learning is a violation of learning theory. For example, these interventions are essentially one-time treatments such as a discussion about not bullying, what a student should do when they feel they are bullied, etc. These treatments have essentially no longevity and do not generalize to a child's behavioral repertoire. Students forget, just like they forget the science lesson from several weeks ago, unless considerable practice, homework, readings, and review took place.

Another problem with typical bully interventions in schools is characterized by ignorant teacher reactions to bullying. Teachers often ignore bullying behavior, believing that it is a normal circumstance of child development, or perhaps even that bully events are a "rite of passage" in childhood. Thus, teachers dismiss bullying as if it were a nuisance behavior in the same category as students talking too loudly in the lunchroom. In this way, teachers actually perpetuate bully behavior by not properly addressing it. This is tantamount to reinforcing bully behavior.

Teachers also provide inappropriate remarks and feedback in response to bully behavior. Let's suppose the teacher just witnessed an episode of bullying. Instead of addressing the bully, the teacher addresses the victim with developmentally inappropriate remarks. For example, the teacher may state: "Just ignore him [the bully] and he will leave you alone." Obviously this is a ridiculous remark for several reasons:

1. The teacher is asking the victim to protect him or herself from the bully [i.e. the teacher is offering no assistance].
2. The teacher is expecting the child to utilize sophisticated coping skills to offset the psychological effects of bullying. Young children are not equipped with coping skills and often feel the full, intense brunt of bullying.
3. The teacher does not recognize that bully behavior is a repeated and sometimes ritualistic assault on the victim which will recur even if the child could ignore it.

The child suffers additional psychological effects when teachers respond in these naïve ways by not protecting the victims of bullying. The bully victim loses respect for the authority capacity of teachers since they present themselves as basically impotent against bully behavior. In addition, the child becomes more anxious and fearful in

the school environment when he realizes that he will not be adequately protected from the psychological distress of bullying. This is a very damaging reality to any human, let alone a child. The following is an analogy which illustrates the severity of this scenario:

*You are walking down a deserted street, and a police officer is standing across the way. All of a sudden, you are approached by a criminal and mugged. The police officer sees the entire event. After you collect yourself from the shock of the incident, you approach the police officer and ask: "Why didn't you help me; you saw what just happened?" The police officer smugly answers: "You need to learn how to deal with this type of situation on your own; try not to let it bother you!"*

It may seem that this scenario portrays an absurd event. Yet, this analogy aptly illustrates what occurs on a daily basis when teachers underreact to bullying in the schools.

Another serious deficiency with bully interventions in schools is that they are behaviorally weak. The interventions are basically reactive, punitive practices. For example, when a bully event occurs, only then does a teacher typically react to the bully behavior. So, effective proactive methods are largely ignored, and weak reactive practices are employed. When teachers do react to bully behaviors after they occur, the bullies universally are approached with punitive consequences. Punishers are weak motivators for behavioral change, and typically make the bully more clever by avoiding getting caught at their bullying behavior. Thus, these ostensible punishers essentially act as reinforcers and can intensify bullying (Maag, 2001).

The most effective anti-bully program is one that is embedded in a proactive classroom management program. When a classroom management program focuses on pro-social behaviors and provides opportunities for practicing these behaviors, bully behaviors can be significantly reduced (Ross, 2008). The BOSS program [acronym for "behavioral opportunities for social skills"] has been shown to virtually eliminate bully behaviors. At the same time, BOSS motivates students for demonstrating socially desirable behaviors. BOSS creates a positive social culture by actively promoting the practice of pro-social skills. When students are regularly engaged in demonstrating pro-social skills, little room is left to demonstrate anti-social behaviors like bullying. BOSS has clearly shown to be one of the most effective means to reduce and eliminate bully behaviors with lasting results (Ross, 2012).

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# THE BENEFITS OF E-LEARNING TO HIGHER EDUCATION IN PUBLIC HEALTH AND PUBLIC HEALTH RESEARCH

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## ABSTRACT

*Consider the complexity of public health problems like the nuclear accident in Japan and the earthquake in Haiti. Also consider the power that on-line learning and on-line degree programs have to unite the problem solving minds and intellects of students and scholars from all over the world in the same classroom and forum. This paper explores the value and utility of on-line learning with special emphasis on the ability for these platforms to develop problem solving communities of practice can advantage societal problem solving and academic research. The goal of this paper is not to reconstitute theory but provide a topic for engaging in practical discourse concerning the benefits of E-learning and on-line education in the world of teaching and learning and knowledge collaboration in public health related areas.*

**Keywords:** *E-Learning, Higher Education, Online, Public Health, Research.*

## INTRODUCTION

Consider the intellectual and knowledge sharing value of attending international academic conferences. The power of a public health research conference with national and international participants is that it allows professionals to share their research ideas, dialog, and explore the nature of discourse on a topic. In these forums ideas are pollinated from perspectives that are national, regional, and global based on the backgrounds and experiences of those in attendance. Well consider that in an on-line doctorate or graduate program in Public Health or Environmental Health that kind of knowledge incubation happens throughout the program because students can be from all over the world. Some of the most effective programs are being offered by universities like A.T. Still University in AZ, which has an on-line Doctor of Health Sciences and an on-line Master of Public Health. Strayer University in Washington DC has an on-line Master in Health Administration, the University of Derby in the UK has an on-line Master's in Environmental Health. Penn State University in PA has an on-line Master of Public Health in Homeland Security and Bio-defense. Georgetown University in Washington DC has an on-line graduate certificate in Bio-protection and Bio-defense.

Increasingly computer technology and the Internet are having major impact on educational programs. The development of the Internet, email, and virtual classrooms has allowed schools to connect with students from all corners of the world. Because of E-Learning many people that could not attend college due to class and work schedule conflicts now obtain college degrees. The inventions of online educational platforms such as Blackboard and E-Campus have made online class assignments and communication with students and instructors more efficient and effective (Palloff & Pratt, 2001). Technology has enhanced faculty diversity in many universities by connecting with specialists in various fields of study. Many faculty members are able to provide adjunct support to institutions that are at a distance. Due to E-learning students are now receiving a quality education that once was unavailable (Palloff & Pratt, 2001; Kramer, 2001).

Educational trends are changing at an accelerated rate in the 21<sup>st</sup> century. In a society where everything is ready in an instant, tradition education is becoming less relevant for many students. Institutions are being forced to conform to students' needs by developing options for online and hybrid education. On-line learning supports action learning by allowing students to engage in student centered case studies, activities, and collaborative problem solving assignments that create environments were participants develop learning competencies.

## BACKGROUND OF E-LEARNING AND DISTANCE EDUCATION

“What is distance education?” Distance can mean geographical distance, time distance, and possibly even intellectual distance. Second, the term distance education has been applied to a tremendous variety of programs serving numerous audiences via a wide variety of media. Some use print, some use telecommunications, and many use both. Finally, rapid changes in technology challenge the traditional ways in which distance education is defined.

Dan Coldeway (1998) provided a framework useful in helping to define the distinct ways in which education can be practiced. This framework, which considers the two variables of time and place, gives insight into different approaches to the practice of education and distance education. Combinations of time and place result in four approaches to education. The four are same-time, same-place education (ST-SP), different-time, same-place education (DT-SP), sametime, different-place education (ST-DP), and different-time, different-place education (DT-DP).

Consider that traditional education takes place at the same time in the same place. This is typically the regular self-contained classroom that most often is teacher-centered (McCombs & Whisler, 1997; Altan & Trombly, 2001). Different-time, same-place education means that individual learning occurs in a learning center, or that multiple sections of the same classes are offered so students can attend the class in the same place at a time they chose. This is education that is available at different times to students but in the same place, such as the media center or computer laboratory (Palloff & Pratt, 2001).

The last two categories focus on education occurring in different places. Instruction can take place in different places at the same time when telecommunications systems are used. Often, television is used to connect the local classroom with the teacher and students to learners at a distance (Kramer, 2001). Satellite, compressed video, and fiber-optics systems are increasingly used for sametime, different-place education. This approach is also called synchronous distance learning (Kramer, 2001). World Wide Web courses have been offered to learners anywhere they have access and whenever they choose. This approach is called asynchronous distance learning (Kramer, 2001; Bedford, 2007).

E-learning, or electronic-learning, is a type of education where the medium of instruction is computer technology; where in some instances no in-person interaction takes place. E-learning has become a normal way to take classes for both school and work. Many institutions and corporations are reaping the benefits of online education (Bedord, 2007). In institutions, e-learning is used as a mode to attend a class where the students do not use traditional training methods because they study online (Bedord, 2007). In companies, the employer uses the network to deliver training courses to employees. Developed in the early nineties, e-learning has been used in conjunction with online and hybrid learning. One of the reasons of the success of e-learning is the fact that people are being educated in the same way they are being entertained, by using the Internet (Bedord, 2007). Adapting education to an entertainment format has been essential to the success of many students in Virtual Learning Environments (VLE). E-learning has made great strides since the nineties. Many degree programs have been developed to be obtained solely online. Some programs require students to attend a few days or a week per year to maintain a residency. The use of multimedia such as video, PowerPoint slides, and online chats has improved the communication between the teacher and students. The ability of students to learn at their own pace in their own environments has improved the quality of education the students receive (Kramer, 2001).

On-line and e-programs create opportunities for professionals to have access to education through the development of communities (Kamenetz, 2009). These communities of students do not exist in the traditional sense, interacting with classmates through weekly face to face class meetings. The implication of these communities is an eclectic and diverse learning environment that benefits from collective knowledge and the broadest range of students, from a variety of organizations and professions from lawyers, to nurses, to government officials, to ministers, to social workers, to health educators, to community activists, to academics, to public policy advocates, to public health executives, to business professionals, to biologists, and etc. All of which with the sole purpose to engage in a collaborative learning community where learning happens from student peer to student peer and professor to student.

## ACTION LEARNING

Through discussion boards and group assignments, E-learning and distance learning public health programs promote action learning. Action learning is a powerful action-oriented problem-solving model that can be used to allow students and professionals to pool their knowledge, expertise, and experience to create a collaborative problem solving learning community (Raelin, 2008). According to Raelin (2008) in the Action learning community problems are solved through the exploration of ideas, tactics, and strategies, evaluating them, and modifying them to improve. Action learning teams take responsibility for delivering results by developing analyses, recommendations, and implementing strategies (Raelin, 2008). This process is a one of circular data collection, data evaluation, solution selection, progress evaluation, and starting over again. On-line learning programs through the use of group discussion boards and teamwork encourage action learning as a tool for collaborative research and skill development in students and faculty.

The action learning process of problem solving is an effective framework used on distance learning programs because it has the ability to:

1. Support collaboration
2. Encourage networking
3. Provide a framework for data collection
4. Provide a framework for data analysis.
5. Provide introduction to varying and diverse perspectives because the team members have different backgrounds, views, experiences, and ways of looking at a problem and its solutions.
6. Provide a framework for sharing and pooling knowledge.
7. Provide a framework for structured peer support.
8. Develop systems thinking, creativity, flexibility, and problem-solving skills.
9. Support innovation
10. Group success relies on active, open, and honest communication among participants (Coghlan & Brannick, 2005).

Action learning teams have the ability to function like Communities of Practice (COP). According to Wenger (1998) COPs have the following aspects:

1. Participants share the same goals and mutual interests.
2. Participants pool knowledge and ideas to help with problem solving and mutual goal accomplishment.
3. Participants seek further knowledge in the area of interest.
4. All participants are expected to actively participate on various aspects as leaders and follows as the team interacts and problem solve.
5. The rules of participation, expectations, and responsibilities of participants are clearly outlined (Wenger, 1998).

In the final analysis, collaborative action learning teams in e-learning courses can be effective in problem solving and learning because:

1. They allow a collaboration of resources by allowing problems to be solved collectively that might not be solved individually.
2. They allow more options because different people looking at the same problem will find different solutions by incorporating the best ideas that are developed by many people.
3. Allows flaws in solutions or missed considerations to possibly be exposed through the collective analysis of multiple people that might be missed by one individual (Kayser, 1995).

According to Tapscott and Williams (2008, p. 153), people's ability to collaborate, innovate, and use technology to develop new processes and inventions is often a key driving force behind the kind of developments that keep citizens, businesses, and commerce from languishing. In the past, before the "world became flat" (Friedman, 2007), organizational and community stakeholders operated in closed, individualistic, rigid, inbred, and hierarchical systems where decisions were strategies were developed and implemented in a vacuum absent of peer

benchmarking and review. Collaboration and technological innovation are critical to innovative, global, multinational, and knowledge driven economies (Friedman, 2007). Knowledge can build more rapidly within shared and collaborative networks of community stakeholders that use technological innovation to communicate, distribute ideas, benchmark, and share lessons learned from both successes and failures (Brown & Duguid, 2000).

Technology is often the driving force behind knowledge transfer, knowledge creation, change, progress, and innovation (Lipnack & Stampts, 1997). Consider how the internet and e-mail allows people with various backgrounds that are separated by geographical distances to collaborate, network, and even complete executive and academic education together (Junco & Mastrodicasa, 2007).

“Online education is nevertheless becoming more widespread. In 2007, more than 3.9 million students took at least one online course, a 12 percent increase from the previous year. That’s according to the Sloan Consortium, an online education advocacy group” (Choi, 2009).

Consider a university in Canada that wants to have a public health program that is truly global. The most effective way to do that might be through having a face to face program. Consider the implications on an on-line program where the best faculty can be recruited to teach each class from all over the world and students could be selected based on the geographical area of residence. The end result is public health is studied in a robust way with intellectual contributions from all over the world. Just in the nature of the course delivery, on-line learning has to potential to promote diversity by allowing students from all over the world to attend a program.

## **BENEFITS TO INSTITUTIONS**

E-learning has greatly benefited higher education by enabling institutions to expand their curricula and add new programs (Palloff & Pratt, 2001). In the past, schools grew by opening multiple campuses or erecting more buildings. With e-learning they can grow without physical expansion and the money saved by not expanding the campus can be used to improve the quality of the education through instructional design. Updated computers, faster network connections and better learning platforms are being purchased to enhance the program quality, which in turn expands the student enrollment of the institution (Palloff & Pratt, 2001).

Specialists in any field of study can now teach classes that were not possible in the traditional classroom, e.g., online platform reduces the costs for travel and lodging for instructors and speakers (Palloff & Pratt, 2001). Due to the increased faculty pool, there has been a boom in program innovation among the institutions and e-learning has played a large part in this development. The virtual classroom or online platform has improved greatly in the last few years. While there are many different online platforms, Blackboard has become the standard for most universities. Online platforms are usually centralized and supported by the institution’s IT department. Strong technology involvement requires a solid IT department and 24-hour helpdesk support. This department can prove invaluable to the institution, faculty and students (Bedord, 2007).

E-learning has many different ways to deliver the course information to the online student. The development of multimedia add-ins has only enhanced the online learning experience. The invention of video conferencing has given lecturers the capability to address an audience in multiple locations without leaving home. Institutions are now able to sponsor more conferences and workshops and invite specialists from all over the world. The video conferencing tool is also a great asset for institutions that still want to use the traditional classroom setting but want to use faculty expertise from other locations. Many faculty members are teaching abroad as well due to this technology (Palloff & Pratt, 2001).

E-learning has made it possible for institutions to reach millions of students that could not be served by traditional learning methods (Palloff & Pratt, 2001). There are many locations that do not have physical institutions but they do have internet access so now it is possible for these students to receive a quality education. Foreign students now obtain an American education without leaving their countries. Colleges and universities can now market their programs to a broader audience, which, in turn, brings greater educational opportunities to the masses. It helps institutions that have declining enrollments to reach out to people outside the local area.

E-learning programs need the support from the administration of the institution. They must be able to use, develop, and provide training for the technology that has been incorporated into the curricula (Lessen and Sorensen, 2006). Many institutions are now providing instructional designers to develop courses and to maintain the learning platforms. This is a way to keep the course information uniform and the faculty onboard with the program. There are also institutions that have decided to make a separate online division. This is where all programs that are offered online are handled in one department. This is a great way for traditional schools that are transitioning to online programs where only one area is directly affected in the implementing process. Each department will give feedback during the development process but it is the administration's responsibility to staff the online division with capable staff and faculty for insured success (Palloff & Pratt, 2001).

## **CHALLENGES**

Technology expansion has resulted in a need for system and technology department reliability, which may be critical for an organization (Brown, 2006). Information technology has an effect on every part of college campuses, from instruction and curriculum to student services and from business processes to faculty development (Leach, 2005). Online programs will provide greater access for an increased number of students as the restrictions of time and place are removed (Leach, 2005). In addition, colleges are increasingly providing services in the area of technology through non-credit classes that provide another challenge of quality.

Colleges will need to take steps to insure equal access to quality online instruction for students with disabilities, as well as find ways to effectively assess quality in courses delivered online (Leach, 2005). Technology itself offers a possible solution to the problem of large-scale training and follow-up. However, support is needed for implementation. For example, interactive technologies offer the possibility of supporting teachers as they work but staff is needed to load and maintain the software. Teachers in experimental writing and science projects use electronic networking to exchange information, develop lessons, and ask for help from their colleagues and project coordinators (Hasselbring, 1991). Faculty will face other challenges. An expansive range of opportunities such as such as learning new software which are associated with information technology have faced colleges in the past and will continue to do so in the future (Leach, 2005).

As technology advances, faculty must stay abreast of teaching trends. Currently, one of the primary areas for decision-making in the contemporary college is the role, use, and function of computer technology (Rice & Miller, 2001). Thus, faculty should be among the first to have access to training and development in technology. Because both automating previously manual systems and delivering courses on campus and at a distance, technology is one of the most challenging issues facing higher education (Rice & Miller, 2001). The failure to develop a framework for planning for the use and integration of technology has the potential to prove costly in both competitive and financial terms. Planning for the integration of technology is a necessity and must be addressed in two dominant areas: administrative uses of technology and instructional uses of technology (Rice & Miller, 2001).

Information technology will permit colleges to make student support services tasks more accessible from a distance, making it possible for students to apply for admission, financial aid, register for classes, receive academic advising, and pay for courses and fees without ever setting foot on campus (Leach, 2005). Again these technological services will require support of staff.

Even though colleges have been slow to adapt to business processes in certain areas, colleges are making changes in the workplace and learning in technology (Jacobson, 2005). Faculty will continue to develop as technology advances. As such, colleges have to take steps to insure equal access to quality online instruction for students with disabilities, as well as find ways to assess effectively quality in courses delivered online (Leach, 2005). Faculty who work with online students will have to be trained in online pedagogy.

Colleges will require technology experts to support the deployment of student access. As technology advances, questions still remain about the value of student support systems provided online, particularly as the next generation of online students becomes bigger and more diverse (Leach, 2005). In addition to making advances, information technology is not showing any signs of leveling off as everyday there are more and more innovations introduced into

the academic community. Thus, there is no determining how information technology will affect colleges in the distant future (Leach, 2005). Inevitably, colleges will face more changes in the future that will effect faculty development.

If the goal is the improvement of students learning, then how something is taught is every bit as important as what is taught (Cross, 1990). Therefore, development is a necessity to faculty development in the continued evolution of course delivery. As technologies have advanced over the past 30 years, they have provided new and improved ways for delivering instruction. However, there must be an understanding that improved delivery systems do not necessarily bring improved instruction. To the contrary, improved learning is dependent upon the quality of instruction and not on the medium with which it is delivered (Hasselbring & Tulbert, 1991). Thus, faculty members require training for the delivery of quality instruction.

It is clear that if technology is to have an impact on learning, there must be an effort to put its power directly into the hands of teachers and train them in how to use it (Hasselbring, 1991). Simply placing powerful technology in the hands of teachers is not enough. Training must become a priority if we are to have teachers who are both comfortable and competent with respect to the use of technology in their teaching. Faculty members should be given avenues to explore and integrate the newest technologies into their classrooms (Murray, 2004).

Training teachers to use technology effectively has unique requirements that distinguish it from traditional training activities. Teachers need well-equipped facilities and an environment that allows them to explore and master the technology. Administrators for these activities must appreciate teachers' special concerns regarding computers. Moreover, training should be conducted over years, not days, with ongoing front-line technical support while teachers are practicing what they have learned during training (Hasselbring & Tulbert, 1991).

## **BENEFITS TO FACULTY**

Many instructors have returned to teaching because of the flexibility of on-line teaching because e-learning allows instructors to teach a class in any time zone. However, this has caused some problems in the existing faculty pools. Online faculty fall into two categories: transitioning or up and coming. Transitioning faculty have a disadvantage when it comes to e-learning. Many of the teaching strategies that work in traditional settings do not always work online. The faculty member then becomes the trainee, having to learn how to integrate technology into their lesson plans and have to create innovative ways to present the course content. Time spent in course development is very critical. It takes faculty out of their need to develop computer skills to keep up with the changing educational formats and delivery systems. Some will embrace the challenge while some will resist. New faculty have a better advantage because they less to relearn and bad habits to break. Faculty, whether new or transitioning, should receive cutting edge training so that they get onboard with the program.

Eventually, most courses will be offered online and it will be the responsibility of instructors to adapt their curriculum and teaching style to accommodate the change in learning platforms. This might prove to be a refreshing change for traditional faculty that are stuck in the same routine. Being innovative can revive both the instructor and the course content being presented to the students. It can also provide relevance and rigor, which is very important to students that are being forced to rely on self-determination to get their work done. Faculty members have to learn both synchronous and asynchronous methods of teaching online and must be able to differentiate between the two to best fit the needs of the class (Bedord, 2007).

Online platforms provide faculty a chance to experiment with different forms of teaching. Teachers have a chance to step out of the comfort of the traditional classroom and embrace the virtual world of e-learning. It requires that faculty have more control of the content, assessments, and progress of the class. Because the instructors have limited or no face to face time with their students, the use of video, audio and PowerPoint links have been very beneficial to the teaching process. Many instructors are now sharing books, lectures and conferences with colleagues and students with the help of the online platforms.

Many specialists can now teach and lecture about their field and research without overtaxing their schedules with travel and time delays. E-learning helps specialists spread their knowledge and expertise to people who otherwise

would not have the opportunity to receive it. They can now collaborate with colleagues by the touch of a button from anywhere in the world. This is also true for many vocational school and community college faculty. Fulltime professionals outside academia now have the flexibility of having careers while sharing their expertise with students that are in need of their knowledge. Whether instructors love it or hate it, e-learning is here to stay and it is in the best interest of faculty to learn the necessary tools to navigate the system and become more valuable to the students and the institutions they serve. The time is coming when the traditional classroom will be obsolete and the only teaching opportunities will be online. What will traditional faculty do when they are faced with the choice of changing their teaching style or changing their careers?

## **BENEFITS TO STUDENTS**

E-learning is becoming an integral part of education for students. Most students have been involved with electronic technology in some form for a long time so it has become the logical direction to take today's education (Bedord, 2007). The use of laptop and desktop computers are rapidly becoming the norm in higher education as well as in businesses and households. There are some people who cannot function without their computers. In fact, 98.4 percent of students today either own a desktop or laptop computer (Guess, 2007). For those who do not, they use computers that are available at the public libraries.

Using computers for learning has proven to raise the comprehension and interest of students in subjects which in turn raises the scores achieved on tests and exams. Students tend to focus more on what is going on if there are different movements, scenes and colors to stimulate their minds. As long as you have Broadband access to the Internet you can enroll in school, take classes, and graduate without leaving your home. The method has been used by professionals and out of state students that do not have the means or the time to attend class in a traditional setting. Now that most students spend between 18 to 40 hours a week on the Internet there is no longer any excuse for getting an education if it is truly wanted. In fact, 60 percent of students say that technology improved their learning (Guess, 2007).

Students can learn at their own pace and they can communicate with instructors via email, forums and blogs. They are now exposed to many innovative and hands-on ways of learning. With the change to e-learning, students can now work as early or as late as they need to capitalize on their best motivational learning time and environment (Kramer, 2001). Some students just do not function in a traditional learning environment and many studies have proven that with the development of e-learning many of these students' needs are now being met.

There is a higher level of responsibility placed on students who take online classes because they have to be more focused, i.e., it is easier to get off track working online (Kramer, 2001). With 5 to 11 week classes, a degree can be completed in half the time. Books can be ordered online; research and tutoring are also available online. E-learning accommodates people with busy lives or students who cannot drive to the institution to attend their classes. Students have the opportunity to receive a quality education in spite of issues that come up due to work or home, especially for home bound students (Kramer, 2001).

The biggest benefit to students that use technology while in school is that they will have critical skills that today's employers want. Technical skills are invaluable in the job market so students should get as much exposure as possible. Most careers today involve some form of technology and this fact is what is keeping many people from getting the jobs that they want. Employers do not want to waste time teaching skills that should have been learned in high school and in college. It is the student's responsibility to acquire the skills needed for their chosen career.

## **CONCLUSION**

E-learning has greatly improved access to higher education: many people are getting an education that could not be reached by traditional methods, additional opportunities are available to faculty, and professionals wanting to teach, and institutions wanting to expand enrollments are able to offer more educational opportunities due to computer technology (Kramer, 2001). In order for E-Learning to continue to be effective in higher education it will depend on the collaboration of faculty, students, and administrators (Palloff & Pratt, 2001). Institutions will also need to monitor

cost and usage of their current technology. It is the institution's responsibility to make sure that all rights and policies are followed and that everyone is appropriately trained. Everyone must be open to the changes that technology will bring to the dynamics of the institution without losing control of the educational process. It is the faculty's responsibility to cover all of the essential material while engaging students in significant learning (Palloff & Pratt, 2001). Faculty must also learn how to integrate the technology and different software instruments with the learning needs of the students. Keeping communication lines open and available so students are involved in the learning process is not always made easier by technology even has the potential to hamper learning if students and faculty do not understand its functionality or its potential (Palloff & Pratt, 2001).

Finally, Amplified globalization, enlarged technology, and increased immigration can yield substantial benefits to solving public health problems and fostering global public health scholarship through on-line and E-learning programs. No one area of the country or the world had a monopoly on public health knowledge. New ideas are generated worldwide every day. On-line learning allows students with these diverse ideas to attend programs and courses together even though they may live in different geographical areas. Diversity of students both culturally and geographically brings differences in styles and in ways of looking at doing things can help organizations and universities find new breakthrough and new ways of problem solving in fields like public health and environmental health.

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# **SOME BUSINESSES HAVE BEEN ASKING: WHERE ARE THE PERSONAL DEVELOPMENT SKILLS SET TAUGHT IN HIGHER EDUCATION? YOUR AUTHORS MAY HAVE THE ANSWER**

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## **ABSTRACT**

*What type of sales and personal development skill sets have the business community been looking for and what entity should be supplying them? At least one part of the answer should have been obvious to all and that was formal college education courses and programs of learning. Yet, why has been that the general business community has consistently stated that too few college graduates seemed to possess the 'right' set of personal development skill sets? Lastly, why haven't colleges recognized that the majority of the skill sets that the business community has been asking for may actually reside in sales courses as core learning elements? These questions have brought forth a need study to the intrinsic value of sales education courses being taught at some universities and yet strangely, for only a limited number of students.*

**Keywords:** Sales, Personal Development, Educated Skill Sets.

## **RESEARCH PURPOSE**

The exploratory study has developed into the void personal skills sets desired business yet not fulfilled by most colleges and universities nation-wide. The purpose of this study has been to examine aspects of personal selling including: adaptability, communication, problem-solving and relationship management skills. The study has gauged the impact such personal skill set have had on the success of business professionals. This study has also determined the potential justification of incorporating personal selling course(s) for all college/university curriculums.

## **INTRODUCTION**

Firms are most interested in college graduates to fill their needs for salespeople. However, studies have shown that college seniors are reluctant to give sales a chance. For some, personal selling has raised some questions as to the ethical standards of the discipline. Despite the unwarranted negative perceptions of salespeople and sales careers as a profession, has been constantly changing, and, for the better. And, for those salespeople who have been highly trained, geared toward customer-orientation/satisfaction, as well as motivated, the aspect of professional opportunity remains strongly viable for college students to pursue. However, there is still a problem that exists, college education in the area of sales and sales management. This paper has shown a multitude of studies that shared base-level research findings and personal views that, for the most part, students have not been well prepared coming out of college for a sales career. It would seem almost obvious that offering course work geared towards gaining sales experience would have been vital to the students as a practical preparation as well as a long-run hedge for career shifts.

Slater & Narver's research noted that market conditions and competitive threats were never static; and, a high degree of market orientation was not achieved overnight but rather over time given adequate commitment from the firm's management and time for a supportive culture to develop (Slater & Narver, 1994). Clearly, that would mean that salespersons must have been well prepared to deal with the constant adjustments and market dynamics of America's business marketplace. The primary objective for most all selling skills and relationship marketing tactics has been to create a dedication-based relationship with the customer. Dedication-based relationships were, fundamentally, the mechanism that was built on trust. Berry (1995) affirmed that trust reduces the fear of opportunistic behavior by the other partner. Trust lowers the costs for safeguards and exit from the relationship.

Bendapudi and Berry (1997) asserted that the greater the trust, the deeper the relationship. "In today's highly competitive markets where competitors offer products that are largely homogenous, the effectiveness of the salesperson during customer interactions has been critical to success. More specifically, particular communication approaches employed by salespeople have been posited to exert direct influence on performance (Harris & Spiro, 1981; Szymanski, 1988)."

As researched before, sales consultants seek to enhance the value of the selling firm's product for current customers (Baber, 1997). Sales consultants seek to uncover customer latent needs (valuable cost reducing possibilities unknown to the customer) versus traditional salespeople who merely uncover explicit needs stated by the buyer in a selling interaction. Many customers do not have a clear understanding of their needs, the delivery of those needs or cost reduction/revenue enhancing possibilities (Pitta & Franzak, 1997).

The importance of sales-force customer oriented behaviors has been indicated by past studies (Franke & Park, 2006; Pettijohn, Pettijohn, & Taylor, 2007; Predmore & Bonnice, 1994; Ramsey & Sohi, 1997; Williams, 1998), which have documented the positive influence of salesperson adaptive selling, customer orientation and listening behaviors on customer relationship development and effectiveness. Also, previous researchers (Franke & Park, 2006; Pettijohn et al., 2007; Shoemaker & Johlke, 2002) have documented significant links between salesperson adaptive selling, customer orientation and listening behaviors. These behaviors were necessary in order for a salesperson to engage in behaviors designed to diagnose and solve customer problems (Pelham, 2008).

As suggested by Franke and Park's research, adapting to customers would entail focusing on their unique set of needs and problems, which could have led to a customer centered, problem-solving orientation (and the behaviors that implement that orientation). To justify this supposition, Franke and Park further studied the empathetic relationship between the salesperson and the customer may also result from the process of adaptive selling (Franke et.al.).

It was previously argued that in the process of attempting to adapt the interaction the salesperson would need to engage in active listening behaviors in order to adequately discover those needs and problems. Since the adaptive selling has required the ability of the salesperson to have made a perceptive observation of the selling situation and modify his/her response appropriately, the salesperson must have employed active listening techniques such as asking probing questions to secure information (Gengler, Howard, & Zolner, 1995), compared to non-adaptive salespeople whose reaction to customers was similar across situations, resulting in fewer questions and less listening. As a salesperson engaged in active listening, he/she has a greater ability to understand the unique set of needs and problems of the customer, which could have led to adaptive selling behaviors. The information gathered might have induced the salesperson to have increased customer oriented behaviors designed to better meet those discovered needs and problems (Pelham, 2008).

B.P. Alipio explained in his research that most businesses needed repeat customers as an essential part of their customer base. Repeat customers represented repeat and incremental sales. When implementing relationship marketing skills and tactics an organization could have experienced higher percentages of satisfied customers, greater customer loyalty, a perception of the selling firm's customers that a better quality product is being offered, increased profits to the selling firm because of the reduction in overhead selling and administrative expenditures.

Competitive pricing, superior products, and convenient distributing locations would not sufficiently drive customers to continue purchasing products and services from the same business organization (Alipio, 2004). Successful repeat businesses have relied upon increasingly talented marketers and salespersons, armed with the most up-to-date skills sets. According to Hawes and associates, repeat customers can be influenced by the personal behaviors of salespersons representing the business organization (Hawes, Mast, and Swan, 1989). Researched by Morgan and Hunt, forms of relationship marketing might very well have offered the contemporary marketing practice that to enable a selling firm to have gained greater insight into each individual customer's motivation for purchasing products (Morgan & Hunt, 1994). Relationship marketing was an approach that developed and enhances long-term relations with its customers (Aijo, 1996). Arndt (1979) attested that firms involved in mutually fulfilling long lasting

relations endure a competitive advantage. These cost reductions are the result of higher customer satisfaction, higher effectiveness of selling expenditures, lower customer turnover, and a lower service cost (Arndt, 1979).

Within the research conducted by Alipio, the author listed skills that might have been necessary for maximizing the business relationships. The fundamental assumption of this study is that strategic customers are influenced by transformational selling behavioral practices, which stress a trusting working relationship. In the process of developing a trusting working relationship, the salesperson engages in behaviors thought to be most successful in influencing the follower. Bass (1985) was cited in Alipio’s research in terms of having identified components of transformational and transactional behaviors:

**TRANSFORMATIONAL**

1. Idealized influence;
2. Inspirational motivation;
3. Intellectual stimulation; and
4. Individual considerate.

**TRANSACTIONAL**

1. Contingent reward;
2. Active management by exception;
3. Passive management by exception; and
4. Laissez-faire

Such transformational behaviors would have stimulated cooperative and collaborative activities between the parties. The transactional behaviors focused only on the exchange and not on the welfare of the other party. The two types of behaviors combined to offer primary factors for salespersons managing customer relationship.

**Table 1** offers a commonly understood set of functional skill sets for executives, of which many scholars would feel that today’s salespersons must also maintain in order to their job(s) more effectively:

**Table 1:** *Function Associated Skills for Today’s Executives*

Superb communication in both oral written
Develop listening networking
Foster interpersonal relationships
People Ability to hire/retain the right people through motivating others
Teach and mentor employees through empowerment
Having vision strategy creation through creating vision, mission, purpose
Make meaning for the organization by creating shared values
Ability to understand the big picture
Execution decisiveness through the ability to deal with fragmentation
Ability to work at a fast pace
Ability to deal with ambiguity
Ability to adapt to/exploit change
Ability to operate globally
Industry knowledgeable through being financially astute
Ability to gather, interpret, analyze, and synthesize data

*Source: Johnson, M. L. (2006). Executive skills and traits: What does the new executive need to know? Ann Arbor: ProQuest Information and Learning Company.*

Although this research was intended to provide insight into the usefulness of traits and skills on an executive level, it was relevant to the present research in that it showed which traits/ skills were important to executives when recruiting new employees and particularly salespersons, given that all field sales persons must represent themselves within the same mind-set and posture of their firm’s respective leadership.

**LITERATURE REVIEW (ANNOTATIONS AND SOURCES)**

The Literature Review has been presented in **APPENDIX-A**.

## PERSONAL SELLING AND SALES MANGEMENT SKILL SETS

According to Bonoma and associates, "Personal selling is a practice involving interaction, exploration of thoughts and feelings, the exchange of information and the development of new positions and relationships (Bonoma, Bagozzi & Zaltman, 1978)." That definition has been carried forth by Knowles and associates as well as Marshall as they wrote, "Successful salespeople should have the ability to sense and comprehend cues about customer needs, then rapidly develop a unique sales presentation (Knowles, Grove & Keck, 1994; Marshall, 1996)." Rich and Smith determined in their research that salespeople could be trained to use cues to classify customers according to the dimensions of responsiveness and assertiveness and then to adjust their communication style to match the customer (Rich & Smith, 2000). Such training could be conducted by professional trainers or by a college or university as part of their personal selling and/or sales management courses.

The Dwyer, Hill & Martin study performed an exhausted list of fifty-one selling skill attributes but found only twelve of the following aspects that met their rigorous survey findings as being the most important:

### ***Focusing on Prospecting***

1. Use "Cold Call" Specialists,
2. Centers of Influence,
3. Examine Records,
4. Public Exhibitions,
5. Now-Competing Salespeople, and
6. Pre-Notification ("Warm Call");

### ***Focusing on Presentation***

7. Help Prospect Visualize Offering,
8. Product-Benefit,
9. Approach, and
10. Partially Standardized Sales Presentation;

### ***Focusing on Overcoming Objections***

11. *Comparative Item Method* and *Closing- Single Obstacle Close* and *Use Silence*. High-performing salespersons were more likely to use the *Centers of Influence*, *Examine Records*, and *Public Exhibitions* techniques. Low performers were more prone to use the *"Cold Call" Specialists*, *Non- Competing Salespeople*, and *Pre-Notification ("Warm Call") Approach* techniques (Dwyer, Hill & Martin, 2000).

Those twelve critical success factors that were attributed to personal selling remain crucial to understand and acknowledge. In doing so, salespersons (or salesperson to be) could target their efforts towards using those more effective methods. The research described that top performing salespersons were those that took a more customer-oriented approach, and met the 'process needs' of their customers ((Dwyer, et.al.). It would seem that colleges and universities would be able to take full advantage of these authors work in establishing a 'minimum requirements' rigor for each personal selling class. Research conducted by Pettijohn and associates, which has been presented in **Table 2**, concluded that there were some key educational developmental elements that were needed to support the business community's sales candidates:

**Table 2: Skills/Behaviors and Sales Education**

Skill/Behavior	Overall Mean (sd)	Included Mean (sd)	NOT Included Mean (sd)
I always approach customers using the proper approach techniques	4.8 (1.5)	4.8 (1.5)	4.8 (1.5)
<b>Prospecting is a regular portion of activities</b>	<b>4.1 (1.5)</b>	<b>4.5 (1.4)</b>	<b>3.6 (1.6)</b>
Most of my prospects are gained thru referrals	4.1 (1.7)	4.4 (1.4)	3.8 (1.9)
<b>I am capable of resolving most customer's needs</b>	<b>5.1 (1.5)</b>	<b>5.6 (1.2)</b>	<b>4.6 (1.7)</b>
I try to figure out what a customer's needs are	5.4 (1.5)	5.6 (1.3)	5.2 (1.7)
Price should be used as a primary method of sales	3.8 (1.6)	3.9 (1.6)	3.6 (1.6)
I rarely waste time	4.3 (1.4)	4.5 (1.5)	4.1 (1.3)
I am always courteous toward my customers	5.5 (1.6)	5.6 (1.3)	5.5 (1.8)
*What I say is more important than what the customer has to say	3.0 (1.7)	3.1 (1.6)	3.0 (1.9)
<b>I know about the products that I sell</b>	<b>5.6 (1.6)</b>	<b>6.1 (1.1)</b>	<b>5.2 (1.9)</b>
I am available when customers need assistance	5.7 (1.5)	6.0 (1.1)	5.4 (1.7)
<b>I listen to what the customer has to say</b>	<b>5.7 (1.6)</b>	<b>6.0 (1.3)</b>	<b>5.3 (1.7)</b>
<b>*I don't really enjoy assisting customers</b>	<b>3.2 (1.8)</b>	<b>2.8 (1.5)</b>	<b>3.6 (2.1)</b>
*I only react and respond to customer requests	3.5 (1.4)	3.3 (1.2)	3.7 (1.5)
I know the answers to customers' questions	5.1 (1.3)	5.3 (1.3)	4.9 (1.4)
I ask questions to get them to talk	5.2 (1.5)	5.2 (1.3)	5.1 (1.6)
I try to learn as much as possible about needs	5.3 (1.5)	5.4 (1.3)	5.2 (1.6)
I use leading statements to get customers to talk	5.0 (1.5)	4.9 (1.6)	5.0 (1.5)
I help my customers understand and visualize	5.1 (1.5)	5.4 (1.5)	4.9 (1.5)
I make clear and complete presentations	5.0 (1.5)	5.1 (1.2)	4.4 (1.7)
I demonstrate products/services to the customer	4.9 (1.6)	5.1 (1.8)	4.8 (1.4)
I learn about needs prior to suggesting products	5.2 (1.6)	5.5 (1.2)	5.0 (1.9)
I often suggest complementary products	4.8 (1.7)	5.2 (1.4)	4.5 (1.9)
<b>I work to make customers feel appreciated</b>	<b>5.4 (1.5)</b>	<b>5.8 (1.0)</b>	<b>5.0 (1.8)</b>
*I am often snobbish and condescending	2.8 (1.7)	3.0 (1.8)	2.5 (1.7)

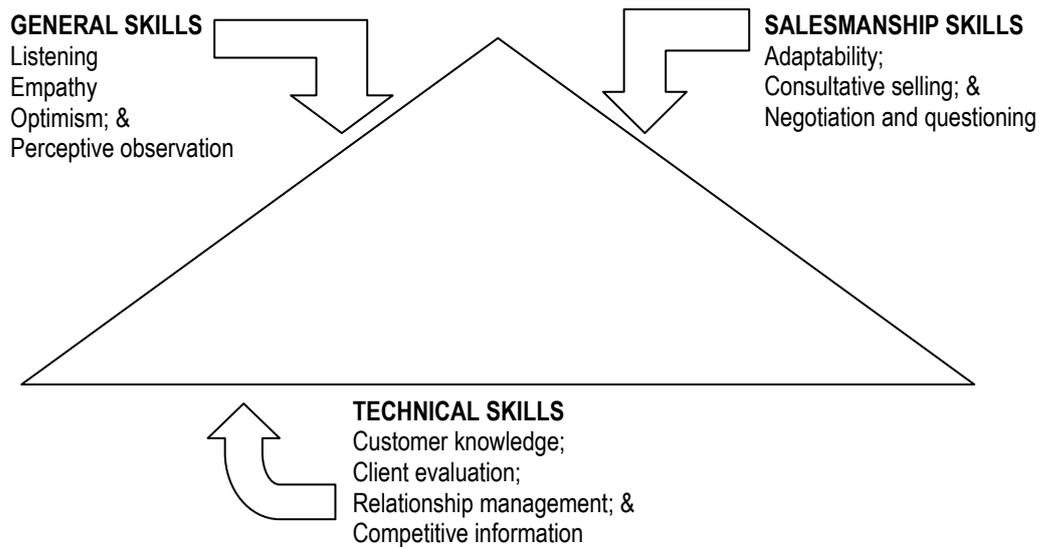
Source: Pettijohn, Charles E. & Linda S. Pettijohn (2010). *An Exploratory Analysis of Student Exposure to Personnel Selling: an MBA Perspective*.

The benefit of Pettijohn's work should offer colleges and universities essential guidelines for framing the core content of their personal selling and/or sales management courses.

Students exposed to selling in their classes were also significantly more likely to feel that they are capable of resolving most customers' needs. Third, students who had a selling module included in their marketing classes were more likely to indicate that they know the products they sell. Students who were exposed to sales in their marketing classes were also significantly more likely to indicate they listen to what their customers had to say. A fifth difference is based on the fact that students who had sales in their marketing classes were significantly less likely to state that they really don't enjoy assisting their customers. Finally, students who had sales included in their marketing courses were significantly more likely to work to make their customers feel appreciated (Pettijohn and Pettijohn 2010).

Levy and Sharma (1994) examined gender, age, sales experience, and education as antecedents of adaptive selling in a sample of retail salespeople. Since adaptive selling is a significant predictor of sales performance, demographic antecedents to the practice of adaptive selling should be of great interest to academicians and practitioners. Levy and Sharma's standardized regression coefficient of education was significantly positive ( $\beta = 0.152$ ,  $t = 1.921$ ,  $p < 0.10$ ), thereby providing support for their Hypothesis 4- Highly educated salespeople practice adaptive selling to a greater degree than their less educated counterparts.

Rentz and associates reported in their research that there existed a tri-component model of selling skills and linked their research to the development and validation of relationships between sales skills and sales performance. The fundamental skill-sets were presented in **Chart 1**:



**Chart 1:** Salesperson Skill Sets

Selling skills has been the single most important variable in forecasting sales performance. Rentz and associates created a scale for which to measure sales skills and their uses. With an accurate measure, highly skilled salespeople could be separated from the lesser skilled, thereby improving the overall make-up of the sales force.

Determining which skills were better to position students for managerial success would have been of great value to graduate management program administrators and faculty. Depending on the interpersonal and personal selling skills found, important college curriculum could have been changed and adjusted to insure the best 'tuned' design and delivery of courses. One of the more important skills researched in the Maellaro article was interpersonal skills. Interpersonal skills were considered to have been the skills individuals would employ when interacting with others. The article outlined the most important interpersonal skills for college graduates entering the business world today: Empathy; Influence; Communication; and Intellectual. The research determined that all respondents to the researcher's survey placed a high level of importance on these interpersonal skills (Maellaro, 2008).

Rentz, presented in **Table 3**, also determined the items reflect knowledge of customers' markets and products; knowledge of one's own company's procedures; knowledge of competitors' products, services, and sales policies; knowledge of product line; knowledge of customers' operations; and imagination in supplying products and services that meet the customers' needs:

**Table 3:** Salesperson's Needed Knowledge Areas**Interpersonal Skills:**

- Ability to express yourself non-verbally;
- Ability in general speaking skills;
- Awareness and understanding of the nonverbal communications of others;
- Ability to control and regulate nonverbal displays of emotion;
- Ability to present yourself socially, possibly through acting;
- Ability to manipulate others to control the situation; and
- Awareness and understanding the verbal communications of others.

**Salesmanship Skills:**

- Ability to prospect for customers;
- Ability to qualify prospects;
- Ability to open relationships with prospects;
- Ability to close the sale;
- Ability to present the sales message; and
- Ability to service the account.

**Technical Knowledge**

- Knowledge of customers' markets and products;
- Knowledge of your own company's procedures;
- Knowledge of competitors' products, services, and sales policies; Knowledge of product line, including product features and benefits;
- Knowledge of customers' operations, such as store and shelf layout, and employee training; and
- Imagination in supplying products and services that meet the customers' needs.

For all intents and purposes, the above-mentioned knowledge skill sets would more than likely represent the most significant factors to include in college-level sales classes.

## **WHAT'S HAPPENED to COLLEGES and UNIVERSITIES in FULFILLING BUSINESS NEEDS in SALES?**

As determined by many past researchers, more and more organizations, in this modern era, have been striving to adopt and implement the marketing concept and a customer orientation in their selling activities (Bristow, 2002: Kerin, Berkowitz, Hartley & Rudelius, 2006: Manning & Reece, 2004). In addition, it has been abundantly evident that increasing competition and long-term relationships in the sales process has fostered the need for professional education of sales and businesspersons. As such, the needs for colleges and universities to take on the demands of business and its sales skills have become more and more important. Increased education in the business environment and higher education such as college have increased employee satisfaction and increased employee motivation. Personal selling skills training have provided for a better career for any individual (Vitell, 2003).

Hammond and associates examined the use of the marketing orientation as it applied to colleges and universities. The project objective was to assist organizations in achieving "delivery of ever-improving value to students and stakeholders, contributing to education quality, as well as improvement of overall organizational effectiveness as well as organizational and personal learning. The authors examined the marketing orientation of colleges and universities, and determined they're primarily focused on meeting the needs of the students. Next aspect of the research was to better understand the future employers' needs of college graduates, and then finally to study the needs of parents (Hammond, Webster, & Harmon, 2006). The results of this study supported by the findings of previous researchers (Kotler and Levy, 1969a; 1969b: Lovelock, 1983; Narver & Slater, 1990) confirmed the theory of the marketing concept, along with customer orientation, and it showed strong implications in the use of non-profit organizations such as colleges and universities (Hammond et al. 2006).

The Hammond study was important because the analysis demonstrated that colleges and universities were primarily focused on the student's needs. To determine what the student's needs were, one must examine the motivation of the students at the specific attending college or university. Generally it was accepted that students

attend college in hopes of bettering their education and gaining the greater capacity to acquire a good job, post-graduation. However, to have achieved this goal, the students themselves must have met the needs of the potential future employers of those graduates. So, it was important, in the study, that colleges and universities should have taken high priority focus in examining what skills and attributes the businesses truly needed from the to-be college graduate employees (Hammond). Although obvious variances would occur from company to company, but in terms of firms with personal selling functions, the desire for a customer orientation and adaptive selling skills was consistently high. Academic goals of such criteria should have been to assist organizations in achieving delivery of ever-improving value to students and stakeholders, contributing to education quality as well as improvement of overall organizational effectiveness and organizational and personal learning (Hammond).

Unfortunately, business schools have been described as failing to offer an adequate number of personal selling courses (Michaels & Marshall, 2002). These authors base their contention on the fact that relatively few universities involved in the National Conference in Sales Management offered 'stand alone' courses in Personal Selling. Supporting that perspective has been research findings of a survey of 114 U.S. Colleges of Business Administration indicated more universities offer Sales Management courses (87%) than Personal Selling courses (71%) (Parker, Pettijohn, & Luke, 1997). This research also indicated 'only' a small percentage offered courses in both Personal Selling and Sales Management (17%) and a still smaller percentage (12%) offered a course titled Advanced Selling. These statistics indicated that sales coverage may not have been commensurate with demand from either the employers' or the students' perspectives.

According to a 1988 report, business schools need to improve the way they teach integral skills such as management, leadership and other interpersonal skills. Reiterating the fact that schools should reconsider their curriculum and what is taught that will better prepare the students for the real world. The basic premise was that many critics were quick to point out that the colleges of businesses were outdated and simply "out-of-touch" with what actually goes on in the real world. The MBA programs, consider to have been cream-of-crop education program, were additionally out of date and clearly need to remain relevant. To do this, education programs should try to teach *soft skills*, such as communication and leadership. Recruiters in the corporate world have placed high value on those skills ((Porter, & McKibbin, 1988). It would seem that not much has changed for many, if not most college-level business programs. Such views were shared by other researchers to include Pfeffer and Fong whom stated, "A substantial misalignment between the mastery of skills acquired in the MBA and the real-world impact of these skills (Pfeffer, & Fong 2002)"; as well as Bennis and O'Toole who wrote, "We believe that is because the curriculum is the effect, not the cause, of what ails the modern business school" (Bennis & O'Toole, 2005).

Webster and associates, determined in their research on business and education, that the higher education administrators reported lower levels of market orientation in their organization than did their business counterparts—a significant opportunity would seem to exist for schools that will put more effort into their market orientation. As students of the university may be viewed as the most visible of the numerous markets served, market orientation efforts focused at students would seem to have the potential for the fastest and highest payoff (Webster, Hammond & Rothwell, 2010).

## RESEARCH METHODOLOGY

The study was an exploratory project that focused on secondary support data from scholars and framed the need for primary research, via hypotheses and questionnaire. This study has identified sales skill set that would lend themselves for formal education training and development. Those elements were tested using the questionnaire. In addition, questions were posed to college-level educators and business persons as to their views and feelings about the potential benefits of incorporating sales education curricula in most colleges and universities as well as possibly expanding the course offerings beyond the traditional business school component. Hypotheses were formulated:

### HYPOTHESES:

- H1:** The business community was more educated on the value sales education programs being offered in college-level business schools in America.

- H2:** The educators would fall short in their appreciation for university-wide course offerings of sales classes.
- H3:** The following principle learned sales competency elements were well understood by both educators and business persons:
- H3a: Focusing on Prospecting** (*Use "Cold Call" Specialists, Centers of Influence, Examine Records, Public Exhibitions, Now-Competing Salespeople, and Pre-Notification ("Warm Call")*)
- H3b: Focusing on Presentation** (*Help Prospect Visualize Offering, Product-Benefit, Approach, and Partially Standardized Sales Presentation*)
- H3c: Focusing on Overcoming Objections** (*Comparative Item Method and Closing- Single Obstacle Close and Use Silence*)
- H3d: Interpersonal Skills** (Ability to express yourself non-verbally; Ability in general speaking skills; Awareness and understanding of the nonverbal communications of others; Ability to control and regulate nonverbal displays of emotion; Ability to present yourself socially, possibly through acting; Ability to manipulate others to control the situation; and Awareness and understanding the verbal communications of others)
- H3e: Salesmanship Skills** (Ability to prospect for customers; Ability to qualify prospects; Ability to open relationships with prospects; Ability to close the sale; Ability to present the sales message; and Ability to service the account)
- H3f: Technical Knowledge** (Knowledge of customers' markets and products; Knowledge of your own company's procedures; Knowledge of competitors' products, services, and sales policies; Knowledge of product line, including product features and benefits; Knowledge of customers' operations, such as store and shelf layout, and employee training; and Imagination in supplying products and services that meet the customers' needs)
- H4:** The methods of properly teaching sales classes were greatly appreciated by both educators and business persons.
- H5:** The structure and design of the sales-oriented classroom was only somewhat appreciated by both educators and business persons.
- H6:** There existed strongly positive views (strongest from business persons) towards sales education curricula being offered in most colleges and universities.

## RESEARCH LIMITATIONS

This study was exploratory in nature so there was still a need for even further exhaustive research in academic, business schools, specific qualifications from AACSB and other areas to have better understood the benefits of personal selling formal college-level education to meet the needs and expectations of the business community. Further research might explore additional methods in which the skills might have been best learned, including the classroom environment, as well as the specific student experiences that were most beneficial in fully absorbing each skill.

The research focus of this paper was to have identified key aspects of sales education deficiencies in colleges and universities, yet the research did not address the few, but important, success stories of various academic programs that met such challenges head-on. The research survey was prepared for online access and was tailored towards college-level educators and business persons. Neither targeted segment of the final survey results reflected the statistical sample size.

# THE IMPACT OF E-READERS ON COMPREHENSION AND READING INTEREST

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## ABSTRACT

*The purpose of this study was to increase the summer reading engagement of local high school students who were identified as struggling readers. This project was developed collaboratively between a small southeastern liberal arts university, a local community high school, and the public library. Funding was provided by the Alabama State department of Education Special Education Office. Twenty high school students struggling with reading were nominated by their teachers to participate in a summer reading program. Nominations were based on their previous summer reading success as determined by their Accelerated Reader (AR) and Standardized Testing and Reporting (STAR) reading test results. Nine students participated in the program. Participants attended an orientation in which they were provided with training to use the reading devices and additional parameters of the program, after which they were given a Kindle e-reading device to use for their summer reading. The summer reading books were downloaded onto their device prior to distribution. Each high school student met weekly for one hour with a university student mentor who was reading the same e-books. University mentors provided technical and reading comprehension support throughout the summer. The objectives of this project were as follows: to increase summer reading engagement and comprehension of participating high school students; to provide university students with the opportunity to support struggling readers in the community; and to identify the impact of reading books on an electronic device (i.e. Kindle) versus reading traditional books. Results indicated an increase in reading comprehension scores and motivation of high school students as compared to the previous summer. University students reported overall favorable experience with this community service learning opportunity. Anecdotal records indicated the e-readers were a good motivational tool for struggling high school students.*

**Keywords:** *E-Readers, Reading Comprehension, Reading Interest, Summer Reading Program, Secondary Education, Kindle.*

## INTRODUCTION

As educators, we know that attitude and motivation are crucial determinants of learning. For substantive learning to occur, students must have positive attitudes about themselves as learners and their ability to succeed in school. Students' reading ability will grow in direct proportion to the extent to which they see reading as an authentic and enjoyable activity that they can succeed. Engaging struggling readers in the reading process is therefore critical (Larson, 2009). If applied effectively, technology not only increases student learning, understanding, and achievement but also augments motivation to learn, encourages collaborative learning, and supports the development of critical thinking and problem solving (Schacter & Fagnano, 1999).

The effectiveness of e-reading devices on literacy instruction is in the infancy stage. Specifically e-readers have been cited as improving note taking skills, engaging readers in the text, motivating students to read and assisting students with learning disabilities. The body of research also cites features of e-readers that assist learners such as a variety of fonts and sizes, word search capability, note-taking, highlighting and built in dictionaries (Michael, 2010). Other benefits of e-readers include: light weight, portability, quick download and durability

Previous studies indicate positive student outcomes through the use of e-readers. According to Soard (2009), students who are reluctant readers became more interested in reading after using e-books. A California study by Morales (2010) found that students felt they read faster on the e-readers than with normal textbooks. Fasting & Lyster (2005) found that upper elementary and secondary students benefit from a reading program using electronic readers. The students who achieved the most improvement were considered to be struggling readers.

## METHODOLOGY

### Participants

Twenty high school students struggling with reading were nominated by their teachers to participate in a summer reading program. Nominations were based on their previous summer reading success as determined by their Accelerated Reader (AR) and Standardized Testing and Reporting (STAR) reading test results. Only nine students were able to participate in the program.

### Orientation

High school participants and university student mentors attended an orientation in which they were provided with training on how to use the reading devices and additional parameters of the program, after which they were given a Kindle e-reader to use for their summer reading. Features of the Kindle e-reader which were addressed in the orientation included: dictionary; my clippings, archived items, Kindle user's guide, font size options, words per line, text-to-speech option, screen rotation, highlighting, and note-taking. Students demonstrated competence with the e-reader at the end of the orientation.

### Procedures

Students chose two selections from the required grade level summer reading list. The books were downloaded onto their device prior to distribution. Each high school student met weekly for one hour with a university student mentor who was reading the same e-books. University mentors provided technical and reading comprehension support throughout the summer.

The objectives of this project were as follows: to increase summer reading engagement and comprehension of select high school students; to provide university students with the opportunity to support struggling readers in the community; and to identify the impact of reading books on an electronic device (i.e. Kindle) versus reading traditional books.

## RESEARCH RESULTS

The measures used to evaluate the impact of the project included a comparison between 9<sup>th</sup> and 10<sup>th</sup> STAR and AR reading scores from the summer prior to this pilot program and after the conclusion of this program.

### Results

	Pre- program	Post Program
STAR Reading average	5.84	6.91
AR Book Test average	46.42	66.25

Students were also given a survey as to their experience working with e-readers and a university mentor. Results were overall positive. Students found the devices motivating and helpful. Working with a mentor was helpful in keeping students on task and providing a discussion buddy to aid in comprehending the required readings.

## DISCUSSION

This project was intended as a pilot study to determine if this could be a viable summer reading program that would benefit both high school student and university students. The STAR reading scores showed modest gains of +1.07, the AR book test average rose +19.8, and attitudes expressed by participants were positive. These results indicate that this program is worthy of continuation. As a service learning experience, the university students mastered the learning objectives through their mentoring of their struggling readers.

The limitations of this study are the small sample size, lack of demographic information on the high school students, and funding for e-readers and e-books. Timing and location may have limited the number of high school participants.

The results of the study have led the researchers to believe that this project should continue and expand with modifications to the data collection and student selection. Difficulties in securing students during the summer due to scheduling issues have prompted the researchers to investigate the possibility of implementing the summer reading program as an after school program.

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# EVALUATING THE STUDENT LEARNING AND TEACHER EFFECTIVENESS IN ADULT HEALTH NURSING UTILIZING A JEOPARDY GAME

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## ABSTRACT

*Undergraduate nursing courses are generally heavy laden with content related to multiple disease processes and nursing care of clients with these disease processes. It becomes a challenge for nursing faculty to effectively increase student's retention of knowledge, maintain student's attention, and increase active student participation within the classroom setting. Gaming has been credited with the ability to achieve these goals (Cowen & Tesh, 2002). The use of games as an interactive teaching strategy in nursing education began in the 1980s (Royse & Newton, 2007). Jeopardy games were noted in the literature to be useful in learning new knowledge, applying concepts, and reviewing information (Cowen & Tesh, 2002). However, there are very limited data or research studies related to the effect of gaming on student's knowledge. Most nursing literature is limited to describing characteristics of the game (Duke, 1986, Montpas, 2004; Royse & Newton, 2007). The purpose of this presentation is to discuss some pertinent literature related to gaming in nursing, to identify advantages and disadvantages of utilizing a jeopardy game to review adult health nursing content, to identify student and teacher outcomes related to the use of a Jeopardy game in the classroom setting, and to outline steps for game construction and scoring.*

**Keywords:** Games, Gaming, Jeopardy Games, Nursing Education, Games in Nursing.

## INTRODUCTION

Undergraduate nursing courses are generally heavy laden with content related to multiple disease processes and nursing care of clients with these disease processes. Additionally, according to the National League of Nursing (2006), approximately 72% of undergraduate four-year degree nursing students are millennial students. It becomes a challenge for nursing faculty to effectively increase student's retention of knowledge, maintain student's attention, and increase active student participation within the classroom setting. Gaming has been credited with the ability to achieve these goals (Cowen & Tesh, 2002).

## REVIEW OF LITERATURE OF GAMES IN NURSING FROM 1999-2012

The use of games as an interactive teaching strategy in nursing education began in the 1980s (Royse & Newton, 2007). One of the formats for games in nursing education during the 1980s primarily involved the use of clinical simulations (Duke, 1986). Jeopardy games in nursing were identified much later in the literature as a useful strategy for learning new knowledge, retaining knowledge, applying concepts, and reviewing information (Cowen & Tesh, 2002; Hodges, 2008). More recent literature describes the effects of video games and virtual clinical simulations on the outcomes of students in nursing courses (Lewis, 2009; Flanagan, Nestel, & Joseph, 2004; Lynch-Sauer, VandenBosch, Kron, Gjerde, Arato, Sen, & Fetters, 2011). However, there continues to be very limited research studies related to the effect of gaming on retention of student's knowledge in nursing education. Most nursing literature is limited to describing characteristics of different types of games (Duke, 1986, Montpas, 2004; Royse & Newton, 2007).

## Advantages and Disadvantages of Games in Nursing Education

There have been many advantages and disadvantages cited in the literature related to gaming and education in general. Some of the benefits that have been identified include the fact that games can have a motivational effect on learning and help make learning fun (Walljasper, 1982; Basford & Downie, 1990). Games have also been shown to help develop teamwork and encourage communication between participants (Shuey & Hoaks, 1989; Basford & Downie, 1990). A game gives students the ability to test their knowledge in a non-threatening environment during

the gaming process (Crancer & Mavry-Hess, 1984). In general, games in nursing education can stimulate student involvement in the classroom, facilitate learning, provide for active problem-solving, and allow students to actively contribute to the teaching-learning process.

Several disadvantages, however, have been identified related to gaming and education. Some of these disadvantages include large class sizes make organization of the game more difficult and additional time required for construction of the game by the faculty member. In addition, it is easier to cover a large amount of didactic content in a lecture format, and chaos and noise may be associated with playing the game. Despite these disadvantages, the use of gaming is increasing in nursing curricula as faculty are challenged to provide a variety of teaching strategies to meet the needs of a diverse population of learners (de la Cour, 1994; Hodges, 2008).

### Directions for Creating a Jeopardy Game in Adult Health Nursing

Prior to playing the Jeopardy game, lecture should be given on a specific content that will be covered within the game. The Jeopardy game is generally played at the end of class after the lecture. The following steps outline the directions for creating a Jeopardy game in an adult medical-surgical nursing course.

1. Determine specific content to review via Jeopardy: A specific disease process was utilized from the lecture content in adult health nursing; for example—myocardial infarction
2. Develop five major categories and five questions under each category. The categories for the adult health nursing were as follows:
  - **Numbers:** All answers in this category had a number in it
  - **Definitions:** Definitions of words related to the specific disease process
  - **Diagnosis & Treatment:** Lab, radiology, and other diagnostic tests used for the diagnosis and/or treatment of the specific disease process
  - **General Information:** Miscellaneous category related to the specific disease process
  - **Nursing Process:** All answers were application-type related to the steps in the nursing process or development of a care plan
3. The point value of each question under the five major categories ranged from 100 to 500. The higher the point values of the question, the more difficult the question.
4. **Daily Doubles** were scattered throughout the board on selected questions for double point values.

### Nursing Jeopardy Game for Adult Health Nursing

**Table 1:** Jeopardy Board Construction

Numbers	Definitions	Diagnosis & Treatment	General Information	Nursing Process
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

The following steps outline the directions for playing the nursing Jeopardy game. One student from the class should be designated as a scorekeeper.

1. Students were divided into groups based on their clinical section (maximum of eight students per group) and were asked to put away all notes, books, etc.
2. Each group took turns selecting a major category and a question under that major category to answer.
3. The group members then collaborated with each other to determine an answer to the particular selected question. No other group could offer input to the answer, and no outside help could be elicited.

4. The faculty member functioned as the host of the game (Alex Trabeck or Alexis Trabeck) who asked the questions and gave the correct answers.

The following steps outline the directions for scoring of the nursing Jeopardy game.

1. The selected student kept the score for both the class and the faculty member.
2. If the student group answered the question correctly, then the **class** received the point value of the question; if the student group answered the question incorrectly, the **faculty member** received the point value of the question.
3. Points **were not** deducted from the class running total for incorrect answers—only added to the faculty member's total.
4. Incorrect responses from student groups were the only way the faculty member could accumulate points.
5. Incentives were given if the class total Jeopardy score was greater than the faculty score. Incentives given included bite size candy, #2 pencils, highlighters, bonus questions on the upcoming test, or helpful hints for the upcoming test.

The Jeopardy games were included during class time over several semesters with different groups of students. The following outcomes were identified based on student feedback and faculty observation.

1. Active student participation in the learning process was evidenced by . . .
  - a. Questions from students relating to rationales for the correct answers when questions were answered incorrectly
  - b. Random comments from students related to lecture comment for clarification
  - c. Interactions between group members in deciding which Jeopardy category to select, which point value to select, and the formulation of the correct answer to the Jeopardy questions
2. Improved teacher effectiveness in the teaching of content as evidenced by . . .
  - a. Student evaluations which consistently identify Jeopardy as one of the most effective activities for increasing student knowledge
  - b. Course evaluations which consistently identify Jeopardy an effective way to enhance learning of adult health nursing content
3. Increased enjoyment and decreased boredom within class as evidenced by . . .
  - a. Observed pleasant facial expressions during Jeopardy game
  - b. Positive comments from students at end of class after game played
  - c. Voluntary time by students after allotted class time to complete the game

## CONCLUSIONS & RECOMMENDATIONS

Very limited research has been done on the effects of gaming in nursing education and student learning and retention of knowledge. The outcomes listed in this paper were based on the written comments from students' evaluations of teacher effectiveness and evaluations for the course. Additional quantitative research needs to be conducted on different gaming techniques as compared to the traditional didactic lecture format for student learning. With the increase in technological usage, the advent of virtual environments and video games, faculty in nursing schools continue to be challenged to develop innovative strategies for teaching diverse, technologically-savvy nursing students. Gaming can be a worthwhile alternative teaching strategy to motivate these student learners, enhance communication between teacher and student, and to increase retention of nursing knowledge.

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# SOCIAL COMPARISON THEORY, MEDIA EXPOSURE, AND BODY DISSATISFACTION AMONG AFRICAN AMERICAN WOMEN AT A HISTORICALLY BLACK UNIVERSITY

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## ABSTRACT

*According to social comparison theory, differences in rates of body dissatisfaction among women of different ethnicities can be explained by differences in the body types of the women to whom they compare themselves. Social comparison theory would predict higher rates of body dissatisfaction among African American women who compare themselves unfavorably to thin actresses and models. It would predict lower rates of body dissatisfaction among African American women who are exposed to rounder, heavier actresses and models by watching television programs with predominantly African American casts. It would also predict lower rates of body dissatisfaction among African American women who do not compare themselves to thin European American models and actresses because they more strongly identify with African American cultural norms, in which fuller shapes are viewed more positively. The purpose of this study is to explore the relationship between body dissatisfaction and exposure to African American actresses, models, and cultural norms. The participants will include at least 115 African American women who attend a Historically Black College and University (HBCU). They will complete the Body Esteem Scale (Franzoi & Shields, 1984), the Beliefs About Attractiveness Scale-Revised (BAA-R; Petrie, Rogers, Johnson, & Diehl, 1996), a survey regarding their television viewing habits (Schooler, Ward, Meriwether, & Caruthers, 2004) and their exposure to television, movies, and magazines featuring African American and European American actresses and models. A multiple regression analysis will be used to determine the relationship between the dependent (criterion) variable (participants' scores on the BES) and the following independent (predictor) variables: (1) Participants' reported hours per month viewing television programs with predominantly Black casts (Hrs/Bl); (2) participants' reported hours per month viewing television programs with predominantly White casts (Hrs/Wh); (3) participants' scores on the BAA-R; and (4) the absolute value of the difference between the participants' actual BDI and ideal BDI.*

**Keywords:** *Body Image, Body Dissatisfaction, HBCU, Social Comparison Theory, African American, Media.*

## INTRODUCTION

Findings from the growing body of literature on eating disorders indicate that dissatisfaction with body size and shape is a significant problem among girls and women in many Western societies, particularly in the United States (e.g., Grabe & Hyde, 2006). There is some evidence that in comparison to White women, Black women report fewer body image disturbances in terms of attitudes (e.g. drive for thinness), affect (body dissatisfaction), and behaviors (e.g. bulimia). It has long been accepted that in comparison to White women, Black women report greater satisfaction with the size, appearance, and function of their body, and they are less likely to overestimate their weight (Roberts, Feingold, Cash, & Johnson, 2006). When African American women have indicated that they were displeased with their appearance, their dissatisfaction has been attributed to actual weight problems, rather than perceived societal pressures (Petersons, Rojhani, Steinhaus, & Larkin, 2000).

Although conventional wisdom and decades of research support the idea that body dissatisfaction is much more common among European American women than among African American women and other women of color, a recent meta-analysis suggests that ethnic differences are relatively small and complex (Grabe & Hyde, 2006). After compiling almost 100 studies, Grabe and Hyde (2006) found that while White women were reportedly more dissatisfied with their bodies than Black women, the difference was slight, with an effect size of only .29; an effect size of .2 is considered small, while .5 is considered medium.

Grabe and Hyde (2006) also found important moderating variables. For example, age made a difference. The greatest differences between Black and White women showed up in adolescence and early adulthood: Preteens and older women were more similar across ethnicities than teens and young adults. Testing conditions and characteristics also made a difference. For example, some types of body dissatisfaction tests were more sensitive to ethnic differences than others. A test that asked people to choose pictures that represented their current body shape and their ideal body shape generally found fewer differences between Black and White women than a body-dissatisfaction questionnaire.

Future studies may provide evidence that body dissatisfaction is, in fact, less common among Black women than among White women - just as we now believe. It is possible that the findings of the Grabe and Hyde (2006) meta-analysis reflect weaknesses in the ecological validity (Schmuckler, 2001) of the original 100 studies. The purpose of this study is to address the issue of ecological validity by increasing the presence of the participants' African American identity.

### **Ecological Validity**

Ecological validity is the degree to which the behavior that we capture in studies reflects the behavior that occurs in natural settings. Human action is always contingent on environmental context. To obtain valid results, humans must be studied in their natural environments.

Most of the studies were conducted on the campuses of Predominantly White Institutions (PWI's), where the tall, thin "European Model" body type is the ideal standard of beauty, but where the African American standards of beauty are, in effect, "out of sight, out of mind." Few studies have examined the rate of body dissatisfaction among African Americans on Historically Black College and University campuses. This study also will examine the impact of environmental influences by focusing on exposure to Black television programs among women who attend a Historically Black College and University.

### **Social Comparison Theory**

According to social comparison theory (Festinger, cited in Strahan, Wilson, Cressman, & Buote, 2006), people compare themselves to those that are perceived to be similar to them (e.g., same age, same gender); in upward social comparison, people compare themselves to those they consider to be better off, while in downward social comparison, people compare themselves to those they consider to be worse off (Strahan et al., 2006). Studies indicate that women are more likely than men to make upward comparisons by comparing their achievements or appearance to the unrealistically high standards seen in the media. As women see more media images, they perceive the "ideal" to be the norm, and, as a result, they feel less attractive. (Strahan et al., 2006).

A key component of social comparison is the element of perceived similarity; upward comparisons with people who are not similar to us would not have the same negative impact. This may explain why African American women are less likely to have negative reactions to thin actresses and models on television: The thin ideal is perceived to be irrelevant, or it may even be actively rejected. In a *New York Times* Op-Ed piece, the prominent African American writer Alice Randall (2012) wrote that "too many experts who are involved in the discussion of obesity don't understand something crucial about black women and fat: many black women are fat because we want to be. Chemically, in its ability to promote disease, black fat may be the same as white fat. Culturally, it is not." Randall goes on to say that what she calls "black fat" is different for two reasons: because it is perceived as beautiful, and because it is political. Black fat, she explains, is a form of resistance to oppression.

### **Media Exposure**

Ongoing exposure to unrealistic beauty ideals is thought to be an important risk factor for body dissatisfaction (Hargreaves & Tiggerman, 2003). Moreover, Blacks watch more television than Whites (Duke, 2002). This means that Black women witness numerous hours of TV promoting the message that to be beautiful one must be thin (Duke, 2002). However, there is a large media market geared toward African Americans that features only African Americans and that includes black oriented shows, magazines & movies (Chambers & Alexander, 1995). Greater

exposure to black oriented television has been associated with a stronger endorsement of positive beliefs about Blacks (Allen, Dawson, & Brown, 1989). In fact, despite the high levels of media use, Black women generally report more positive body images than do White women (Schooler et al., 2004). Black women gravitate to Black oriented media more frequently and tend to judge Black characters favorably and to identify strongly with Black female portrayals that are similar to themselves (Lokken, Worthy, & Trautmann, 2004).

It has been argued that the Black culture's greater acceptance of body weight, particularly heavier weight, provided Black women with some "protection" against the development of body dissatisfaction and eating disorders (Roberts et al., 2006). When looking at societal pressures it has been found that cultural influences--such as levels of racial identity--have been found to affect body image satisfaction, ideal body size, and eating/attitudes and behaviors (Abrams, 1993). These observations are consistent with the idea that African American culture may afford more protection against eating disorders (Petersons et al., 2000).

## METHODOLOGY

### Participants

Participants will include African American undergraduate women, age 18-25, who are enrolled at a southeastern Historically Black College and University. This HBCU is a midsize, urban, public university with a high proportion of African American students and a school culture that is strongly influenced by African American traditions. There will be 115-150 participants. A power analysis was conducted to determine the sample size. Based upon a medium effect size of .30 with a power of .95, a minimum of 115 participants are required.

### Instruments

*The Body Esteem Scale (BES; Franzoi & Shields, 1984).* This instrument will be used to assess the participants' satisfaction with their appearance. The BES includes 35 items, each asking the participant to indicate how the respondent feels about his or her body, using a scale ranging from 1 (strong negative feelings) to 5 (strong positive feelings). Internal consistency for the BES has been reported between .78 and .87 ( $p < .05$ ), and test-retest reliability has been reported between .75 and .93. ( $p < .05$ ) (Franzoi & Shields, 1984).

*Beliefs About Attractiveness Scale-Revised (BAA-R; Petrie, Rogers, Johnson, & Diehl, 1996)* This 19-item scale measures how women view attractiveness and thinness in society today. For each item, respondents indicate their level of agreement on a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scores are calculated by adding the individual ratings and dividing them by 9 (for 9 items) for BAAR-1 (Importance of Physical Fitness) and by 10 (for 10 items) for BAAR-2 (Importance of Being Attractive and Thin). This produces an overall score of 1-7 (1 being *low support* and 7 being *high support* of societal values of attractiveness).

*Television viewing instrument* (Schooler, Ward, Meriwether, & Caruthers, 2004). This instrument will evaluate the participants' television watching habits by providing a list of eighteen popular programs, including twelve programs with predominantly African American casts. The list of twelve programs with predominantly Black casts was compiled by the first author, who asked a group of her friends (who will not participate in this study) to list shows that they watch that include predominantly Black casts. Each participant will be asked to indicate how often she watched each program on a 5-point scale (1=*never/not this season*, 5=*every episode*). These programs will include both newer and older shows: *Real Housewives of Atlanta*, *Let's Stay Together*, *Basketball Wives*, *Tia & Tamera*, *LaLa's Full Court*, *T.O. Show*, *Tyra's Top Model*, *Bad Girls Club*, *Real Housewives of Orange County*, *Real Housewives of New Jersey*, *Texas Women*, *Jersey Shore*, *Single Ladies*, *Game*, *Girlfriends*, *Love & Hip Hop*, and *Basketball Wives*. The viewing responses will be scaled into *viewing hours per month*, by multiplying the frequency of watching by the length (half-hour or hour) of each program. For each participant, two *viewing hours per month* scores will be calculated: (1) hours per month viewing television programs with predominantly Black casts; and (2) hours per month viewing television programs with predominantly White casts (Schooler et al., 2004).

*Demographic Form.* In addition to questions about age, ethnicity, and year in school, the demographic form will include questions about height, actual weight, and perceived ideal weight.

## Procedure

The participants will be given a packet containing the informed consent form, demographic information form, the Body Esteem Scale, the Beliefs About Attractiveness Scale-Revised, and the television-viewing questionnaire. In each packet there will be instructions for completing each scale. The participants will complete the packet materials in the order listed above.

## Statistical Analysis

A multiple regression analysis will be used to determine the relationship between the dependent (criterion) variable (participants' scores on the *BES*) and the following independent (predictor) variables: (1) Participants' reported hours per month viewing television programs with predominantly Black casts (*Hrs/Bl*); (2) participants' reported hours per month viewing television programs with predominantly White casts (*Hrs/Wh*); (3) participants' scores on the *BAA-R*; and (4) the absolute value of the difference between the participants' actual *BDI* and ideal *BDI*.

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# ONLINE STUDENTS PREFERENCE IN LEARNING ACTIVITIES

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## ABSTRACT

*The purpose of this study was to determine if a particular method of instruction was considered more effective instruction by online participants. The methods used in this course included video lectures with closed captioning, voice over power points and discussion boards, along with the usual quizzes and tests. The instructor requested feedback from students each semester and the voice over power points and video lectures have been added to the course as a result of this feedback. The discussion boards are used to incorporate material that is outside the textbook such as: state laws, forms, regulations, advocacy group websites, and videos of leaders in this field lectures. The course was divided into sixteen modules. Each module contained a lecture, power point and discussion board for each week's topic. The voice over power points and video lectures required no interaction between students and were both passive learning situations with no assignments. The discussion boards required students to view sources outside the course and answer open ended questions and respond to other students' posts. Students were surveyed at the completion of the courses to determine if one of these methods was considered more effective. There were 93 participants enrolled in 4 classes. Ninety one completed the survey. All participants were juniors, seniors or graduate students enrolled in the College of Education of a small southeastern liberal arts university. The participants were given a Likert survey in which they rated each method on the effectiveness of the activity. They were also asked to rate the methods in order of effectiveness. Data analysis indicated that there was no statistically significant difference in the methods on the Likert scale, but when participants rated the activities, discussion boards were rated first by a large margin. This preference for an assignment that required interaction with other students and collaborative learning was supported by previous research.*

**Keywords:** *Online Instruction, Higher Education, Lecture Videos, Online Teaching Strategies, Collaborative Learning, Distance Education, Learner Motivation.*

## INTRODUCTION

Teaching online is a popular option at many universities. While students like the convenience of it, research supports the value it can have as well. "Quality learning environments include opportunities for students to engage in interactive and collaborative activities with their peers; such environments have been shown to contribute to better learning outcomes, including development of higher order thinking skills" (Brindley, Walti, and Blaschke 2009). Similarly, Williamson (2012) highlights the advantages of variety within e-learning. Despite the consistent tendencies of higher-education faculty to utilize single testing formats (i.e. essay or multiple choice), education research indicates effective assessment of student learning must incorporate multiple formats.

However, the online class has a very different set of problems in that everything must be delivered electronically and participants must use their own initiative to watch or read information to complete assignments. For the electronic generation, scanning through layers of documents and pages is a common learning style; but that does not mean it is a style that suits all learners. In order for instructors to effectively design e-based courses that match student expectations, they should consider that course activities based in knowledge sharing and multiple perspective taking (i.e., via collaborative online discussions) may run contrary to epistemological beliefs of many freshman and sophomores (Ravert and Evans, 2007). Similarly, for older returning students whose idea of a college class is lecture/test, it can be a completely foreign concept. These factors, combined with reluctance from some college faculty to adapt teaching styles, can polarize the online instructor in the eyes of students and result in skewed course evaluations.

Typically online students are expecting an active approach to learning with more involvement in the learning process. They are not content with the traditional model of being lectured. Students have found that their most profound learning comes through reflection and interactions with other students with the instructor as a guide or direction in the process. This promotes the development of critical thinking skills, creation of knowledge and meaning, reflection, and transformative learning (Palloff and Pratt, 2001). This learner centered activity requires students to share what they have learned through their readings, research, and life experiences to add to the knowledge base of the class (Berge and Collins, 1995).

The number of online courses offered at the postsecondary level is increasing at a rate greater than the increase in overall higher education enrollment, with approximately one of every four higher education students taking at least one course online (Allen and Seaman, 2009). From another perspective, as online courses become required within the curriculum, courses must also enlist adaptive technologies to meet the needs of ALL students. Without proper technology support, instructors are often ill-equipped to modify their online instruction.

## **METHODOLOGY**

### **Participants**

The study was conducted at a small liberal arts university in southeastern United States. The 93 participants were enrolled in the college of Education. Participants consisted of 35 undergraduate and 58 graduate students. Participants' majors included elementary, secondary, and special education, and counseling. The majority of the participants were female (65) although there were a noteworthy number of males (28). The students were enrolled in four classes of introduction to special education with an equal distribution of between 20 to 26 students in each class. Ninety one of the ninety three participants responded to the survey.

### **Variables**

This study compared students' perception of three activities as variables. Two of the variables were passive in which participants received visual and auditory stimulation but had no other required interaction with the instructor or other class members. These were power points with the instructor's voice giving a lecture and lecture videos with closed captioning. The third variable was interactive and required students to evaluate materials and answer open ended questions and respond to other students.

The power points are the same as those used when the class is taught in person with lectures. The voice was added due to requests by students with a preference for auditory learning. No assignment was required and students could choose to use these at their discretion. The university provides free downloads for viewing. The PowerPoint files open and close with the modules each week.

The lecture videos were added to the course because of requests by students with auditory disabilities. They were created on Screencast and closed captioned through this program. The closed captioning required extensive editing even after the program had been trained to the instructor's voice. The instructor appeared in a window with prompts and closed captioning behind her. The lecture could be viewed as many times as desired and stopped or forwarded as the student wished. The lecture was saved as an mp3 and can be played on multiple devices. The university provided free downloads if needed.

The discussion boards required students to view videos, web pages, and documents and answer open ended questions. The students must also reply to other students' posts. This assignment had very clear criteria and a rubric for grading. These were only open for one week to encourage students to interact with each other on the topic for the week. No late posts were permitted. The instructor then summed up the major points and clarified any misconceptions in a post the following week.

### **Instrumentation**

The demographic information gathered in this survey included gender and student status.

A Likert Scale was used in this study. Students were asked to rate each activity according to how much the activity helped them understand the topics. The activities included: Discussion boards, Voice over power points, and Video Lectures with closed captioning. The question read ; "I feel \_\_\_\_\_ added to my understanding of the topics in this course." The scale used the ratings of Strongly agree (4 points), Agree (3 points), Disagree (2 points) or Strongly Disagree (1 point). Participants were also asked to rate in order which of the methods was most effective. Participants were also asked to put the three variables in order of importance for their individual learning.

## RESEARCH RESULTS

### Likert Scale

Activity	Strongly Agree	Agree	Disagree	Strongly Disagree
Discussion Boards				
Male /Female	15/25	14/33	0/2	0/2
Undergraduate /Graduate	15/25	19/28	0/2	0/2
Voice Over Power Points				
Male/Female	7/13	16/39	7/8	0/1
Undergraduate /Graduate	9/11	18/37	7/8	0/1
Lecture Videos				
Male/Female	11/21	17/34	1/6	1/0
Undergraduate /Graduate	11/21	22/29	1/6	0/1

Participants were asked to rate in order the most effective assignment. Number of participants who placed this activity as most important to their learning.

Discussion Board	50
Lecture Video	28
Voice Over Power Point	13

## DISCUSSION

Based on the results of the study, the researchers have found that there was no statistical difference in the Likert scale ratings for the three activities when computed using SPSS. When participants were asked to rate in order the method that they found most helpful, the discussion boards were the most favored by a large margin. In this study collaboration is the preferred method of learning by a wide margin. Passive learning was not favored by subgroups of males or females and graduate or undergraduate students.

Research indicates that discussion boards are an effective online teaching strategy when they are designed and implemented correctly. The discussion questions should be part of the course curriculum and open ended so that they will promote discussion. Guidelines for length, format and timeframe must be clearly outlined. The goal for this activity is to promote higher level thinking and learning through the exploration of topics with no clear answer. Questions should be designed to be addressed through higher levels of Blooms Taxonomy. (Menchaca and Bekele, 2008; Palmer, Holt, and Bray, 2008; Timm and Stead, 1996)

The obvious limitations of this study is that it is limited the education department. More demographic information is needed to compare diverse populations learning preferences.

The results of the study have led the researchers to consider several avenues for further research. Other learner centered activities for online classes need to be studied.

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# THE CONTENT OF AN EMPOWERMENT PROGRAM FOR RETIRED VOLUNTEERS AT A SERVICE CENTER FOR THE ELDERLY

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**Keywords:** *Empowerment, Empowerment Program, Elderly, Retired Volunteers, Service Center.*

## INTRODUCTION

This presentation focuses on the development and content of an empowerment program for retired volunteers involved at a service center for the elderly. The need for such a program has been identified on the strength of the frustrations retired volunteers experience and their lack of knowledge about the tasks in which they can be involved, the relationship with staff members at the center and the general functioning of such a center.

## OBJECTIVE

The objective of this presentation is to develop and to implement an empowerment program for retired volunteers at a service center for the elderly in order to empower them with knowledge concerning the general functioning of a service center and to furnish them with skills on how to function in a team with staff members and to render effective services to the elderly.

## PROBLEM STATEMENT

This particular service center for the elderly experiences a lack of funds due to an inadequate subsidy from government and they have to generate their own funds to a large extent. The consequence is that there is a shortage of manpower and funds (DuBois & Miley, 2008: 99) to deliver a full service to all elderly persons, especially the housebound and frail elderly. Due to the increase in life expectancy a service center can make use of the services of retired volunteers for a longer period of time. According to Kleynhans (2009: 103) most elderly persons have a need for mental stimulation and to still feel needed by others in their community. Eckley (2010) adds that there is currently no such program available and that the development of an empowerment program will enhance the services of a service center and will also assist in keeping retired volunteers involved in meaningful activities.

## METHODOLOGY

The intervention research model (De Vos & Strydom, 2011: 476-489) was utilized in this study. For this part of the study phase 3 (design) and phase 4 (early development and pilot testing) of this model were used. Literature study, focus group discussions with staff and retired volunteers, and general observation had been done in order to develop the program. Twenty five staff members and 60 retired volunteers were recruited to do the needs assessment in order to compile the program. The program functions on a group work format in seven weekly sessions comprising an orientation, the aims of a service center, constitution, management and personnel structure, staff's expectations of retired volunteers, the variety of services in which retired volunteers can be involved and the policy regarding volunteers. A pre-test, after-test and postponed after-test were built into the program where the same quantitative and qualitative measuring instruments were used.

## RECOMMENDATIONS

The empowerment program had been presented to a group of retired volunteers and it will be published as a program to be used by other similar service centers utilizing the services of retired volunteers. In this manner the program will in time become a standardized program. This aim, however, falls outside of the ambit of this current presentation.

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# PREDICTORS OF PARENT AND PEER ATTACHMENT IN AFRICAN AMERICAN COLLEGE STUDENTS: FATHERLESS VERSUS DUAL PARENT HOMES

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## ABSTRACT

*Although previous studies have demonstrated that secure parental attachment is important in the development of infants, children, and adolescents, few have concurrently examined the relationship between parent and peer attachment and fatherlessness. The current research seeks to predict parent and peer attachment of college students with respect to those students who were reared in a fatherless home compared to those students reared in dual-parent homes. Other predictors of parent and peer attachment that will be examined are gender, ethnicity, father involvement, and the nurturing quality of fathers. Participants for this study include 120 college students, ages 18 years and older, at a Historically Black University in the Southeast. The participants will complete four questionnaires, including a demographics questionnaire, a questionnaire measuring parent and peer attachment (The Inventory of Parent and Peer Attachment; Armsden & Greenberg, 1987), and two questionnaires assessing their feelings toward their fathers (The Nurturant Father Scale and The Father Involvement Scale; Finley & Schwartz, 2004). The study will examine whether parent and peer attachment can be predicted by an individual's ethnicity, gender, absence or presence of the father in the home, life satisfaction, father involvement, and the nurturing quality of one's father. The main hypothesis is that participants reared in fatherless homes will report having a more secure attachment to their peers than to their parents.*

**Keywords:** Parental Attachment, Peer Attachment, Fathers, Parents, HBCU, African American.

## INTRODUCTION

Fatherlessness is a serious problem in today's society. In 2010, 23.1% of all American children lived in mother-only homes, while only 3.4% lived in father-only homes (United States Census Bureau, 2012). The problem is even more severe in the African American community. In 2010, 49.7% of African American children were reared in mother-only homes, while 18.3% of European American children were reared in mother-only homes (United States Census Bureau, 2012).

Scholars have debated the likely outcomes of individuals who were raised without a father in the home (Ellis, Bates, Dodge, Fergusson, Horwood, Pettit, & Woodward, 2003; Hawkins, Amato, & King, 2007; Jackson, 1999; Wampler & Downs, 2010). We know, for example, that children raised apart from their father are disadvantaged in numerous ways. They are more likely to be incarcerated, to abuse drugs and alcohol, to become teen parents, and to suffer physical, emotional, and educational neglect (National Fatherhood Initiative, n.d.). However, little attention has been given to the question of fatherlessness or father presence in the home as a predictor of one's attachment to parents and peers.

John Bowlby (1969) is credited with creating the theory of attachment. Attachment theory explains a basic social-emotional regulating course established in early development that involves both behavioral and affective regulation (Gullone & Robinson, 2005). Bowlby (as cited in Wampler & Downs, 2010) argued that early relationships with caregivers shape expectations for later relationships of friendship, parenting, and romantic love because these attachments in infancy and childhood have been internalized and provide a model for other attachments. Bowlby's focus was mainly on the importance of the child's secure attachment with the mother; he did not place much emphasis on children's attachment to their fathers (Bretherton, 1992). Since Bowlby introduced his attachment theory, many researchers have studied attachment in conjunction with different variables such as life satisfaction and adult romantic relationships (Gormley & Lopez, 2010; Ma & Huebner, 2008).

Many studies have been conducted regarding the different effects that absent fathers have on their children, but few studies have investigated the relationship between fatherlessness and parent and peer attachment. This study will address that question. In addition, the majority of the research reviewed was conducted with mainly European American participants. This study will include mainly African American students.

## Purpose of the Study

This study is designed to investigate the assumption that ethnicity, gender, life satisfaction, and the level of father involvement and the nurturing quality of fathers will have the greatest impact on parent and peer attachment--and not the physical presence of the father in the home, as past literature has indicated. Examining the influence of these variables on parent and peer attachment will add to the literature on fatherlessness.

The research questions are as follows:

1. Will parent and peer attachment be predicted by an individual's ethnicity, gender, absence or presence of the father in the home, life satisfaction, father involvement, and nurturing quality of fathers?
  - a. Is there a significant difference between the parent and peer attachments of college students reared in fatherless homes compared to those reared in dual parent homes?
  - b. Are there differences between African American and European American college students' attachment to their parents and peers?
  - c. Does ethnicity have a relationship with how securely attached you are with your mother, father, and peers?
    - i. Are African American students who were reared without a father in the home less attached to their parents than to their peers?
    - ii. Are European American students who were reared without a father in the home less attached to their parents than to their peers?
    - iii. Does ethnicity moderate the effect size?
2. Does gender influence one's attachment to parents and peers?
  - a. Are males more attached to their peers than to their parents?
  - b. Are females more attached to their parents than to their peers?
3. Do higher levels of father involvement positively correlate with parent and peer attachment?
  - a. Is living with a father in the home a bigger influence on parent and peer attachment than the level of father involvement and the nurturing quality of fathers?
4. Is one's satisfaction with life related to one's attachment to parents and peers?

## Review of Literature

### *Parent and Peer Attachment*

John Bowlby (1969) described attachment as the "lasting psychological connectedness between human beings." (p. 194). The term given to this theory is Attachment Theory, which was formed by John Bowlby and Mary Ainsworth. The theory of attachment began with Bowlby, but after Ainsworth found an empirical way to study Bowlby's theory, the two collaborated and created Attachment Theory (Bretherton, 1992). The majority of research conducted on attachment focuses on the mother-infant attachment relationship, in which Bowlby (as cited in Bretherton, 1992) believed that "to grow up mentally healthy, the infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute) in which to find satisfaction and enjoyment." In other words, if an individual is not securely attached to his mother, mother substitute, or other caregiver, then the psychological development of the individual may be skewed (Bretherton, 1992). Bowlby (as cited in Ma & Huebner, 2008) also believed that attachment is important because it involves a process of natural selection that generates survival advantage. Ma and Huebner (2008) note that:

*From early experiences between infants and caregivers, infants are believed to adapt to caregivers' behavioral patterns and to develop internal mental representations of themselves and their surroundings. In this manner, experiences with caregivers influence the degree to which infants become securely attached to their caregivers (p. 178).*

After Bowlby introduced his Attachment Theory to the world, many researchers began to connect attachment to other variables, such as a person's life satisfaction and identity development. Armsden and Greenberg (1987) later developed the Inventory of Parent and Peer Attachment (IPPA-R), which is a self-report measure used to assess an individuals' attachment to their mother, father, and peers. They incorporated the relationships between father-child and peer-peer as important relationships in a child's development. Armsden and Greenberg (1987) maintain that it is not just the attachment to an individual that is related to an individuals' psychological well-being, it is the quality of the attachment to that other individual. In their study of 88 adolescents, Armsden and Greenberg (1987) found that adolescents with anxious attachments to parents and peers were more vulnerable to the impact of negative life experiences. They also found that females scored higher on the peer attachment, mother utilization, and parent utilization measures than did males; they reported more negative life changes; and they were lower in their concepts of themselves. Similarly, Laible, Carlo, and Rafaelli's (2000) study on the *Differential Relations of Parent and Peer Attachment to Adolescent Adjustment* found that adolescents with both high peer attachment and high parent attachment were the best adjusted.

Ma and Huebner (2008) studied the relationship between parent and peer attachment and adolescent life satisfaction with a focus on adolescent gender differences and attachment relationships. The authors note that "research has highlighted the quality of interpersonal relationships such as attachment to parents and peers, which may serve as possible determinants of individual differences in adolescent life satisfaction" (pp. 177-178). In this study, Ma and Huebner (2008) used 587 middle school students in grades 6 through 8 as participants. Their results showed that both parent and peer attachment had a positive correlation with student life satisfaction; however parent attachment proved to be a stronger indicator of student life satisfaction (Ma & Huebner, 2008). In regard to gender, Ma and Huebner (2008) found, like Armsden and Greenberg (1987), that females reported higher levels of attachment to peers than males, but that there was not a significant difference between males and females in reported levels of attachment to parents. The authors also found that the students were more attached to mothers than fathers; this finding is consistent with prior research in finding a strong attachment to mothers among this age group (Ma & Huebner, 2008).

Some researchers have taken Bowlby's attachment theory and applied it to adults to measure the implications of a secure parental attachment into adulthood. The parental attachment relationship often serves as the foundation or model for fixture relationships (Perrone, Webb, & Jackson, 2007). Perrone and colleagues (2007) found that most of the participants in the study felt that the attachment to their parents had an influence on their romantic relationships so much that some of them stated that they wanted to have romantic relationships that were similar to their relationships with their parents.

### **Fatherlessness**

Fathers can be lost to families through divorce, emotional and physical separation, chronic illness, and death (Roth, 1997). The United Nations Children's Fund's (UNICEF) (1996) Progress of Nations Report identifies a link between absent fathers and economic pressures:

*Although many children are happier and better cared for in solo-parent families than in miserable marriages, separation and divorce are nonetheless associated with poorer school performance, greater risk of teen pregnancy, higher rates of delinquency, and a worsening of the mental health of both mothers and children.*

Within the same article the statistics given regarding the difference between Black and White children growing up without a father in the household was staggering. Of "White children born since 1980 in the U.S., about 50% will spend some part of their childhood in a single-parent family," whereas the percentage of Black children spending their childhood in a single-parent family will be about 80% (United Nations Children's Fund, 1996). UNICEF attributes the ethnic difference to the "rise in the number of Black children born outside of marriage (United Nations Children's Fund, 1996)." Carlson (2006) found in her study on *Family Structure, Father Involvement, and Adolescent Behavioral Outcomes*, that father involvement is most beneficial when the father actually lives with his children.

Jaffee, Caspi, Moffitt, Taylor and Dickson (2001) conducted a study predicting early fatherhood and whether young fathers live with their children. Participants were part of a longitudinal study of the health, development, and behavior of a cohort of children born between April 1972 and March 1973, in Dunedin New Zealand (Jaffee et al., 2001). The researchers concluded that some children tend to take on the characteristics of their parents, for instance male children born to a teen mother increases the likelihood that they will become a father at a younger age. Additional work in the literature focuses on the relationship between the mother and non-resident father (Jackson, 1999). Jackson (1999) found that the non-employed mother reported higher levels of depression symptoms and parental stress. Similarly, the employed mothers reported fewer behavior problems when the father of their child was present. Jackson (1999) found evidence that there are positive effects on maternal depression symptoms and problem behaviors exhibited by children when the nonresident father is involved in the lives of the mother and the child. The author noted that the employment status seems to have an important influence (Jackson, 1999). In Black families, father absence is often the consequence of the father's economic and social vulnerabilities (e.g., high unemployment, and incarceration rates).

There are notable differences in the parenting styles and lessons learned from both mother and father. Mothers are typically viewed as the caregiver, the safety net where children know they will receive comfort; mother's are there to reassure their children that everything will be okay (Paquette, 2004). On the other hand, Paquette (2004) finds that fathers play a different role. Whereas mothers are there to calm and soothe children when things go wrong, fathers are typically there encouraging children to become risk takers, while ensuring their safety, thus preparing children with the skills needed to be braver in unfamiliar situations, as well as showing them how to stand up for themselves (Paquette, 2004). Paquette (2004) maintains that the time has come to develop a better understanding of the damaging effects not only of father absence, but also of poor quality father-child interactions.

In the United States a child living in a single family household with a single mother is five times more likely to live below the poverty line (United Nations Children's Fund (UNICEF), 1996). However, McLanahan and Schwartz (2002) maintain that even among middle class families, the effect of fatherlessness can be felt and that the departure of the father from the household can trigger disruptions in household routines such as meals and bedtimes, and undermine discipline.

According to Bushfield (2004), both male and female fatherless children have an increased risk for incarceration, especially if their father is absent due to incarceration. Male children are perceived to be more deviant when there is an absence of a father in the home to model conventional adult male behavior and to deter deviance (Thomas, Farrell, & Barnes, 1996). In their study on *The Effects of Single-Mother Families and Nonresident Fathers on Delinquency and Substance Abuse in Black and White Adolescents*, Thomas, Farrell, and Barnes (1996) found that males reared in a fatherless home reported significantly more delinquency, heavy drinking, and drug use than females. Ellis, Bates, Dodge, Fergusson, Horwood, Pettit, and Woodward (2003) found in their study focusing on the relationship between father absence and daughters' sexual activity that there was consistent evidence that the effect the nonresident father has on his daughter is higher in the likelihood of increased sexual activity and teen pregnancy more than on any other area in her life (Ellis et al., 2003).

## **Conclusion**

This study will investigate the possible predictors of parent and peer attachment in African American vs. European American college students. College students are the focus of this investigation because this is the first time that many of them will be away from home and away from either parent, thus testing the strength of the attachment relationship between parents and their children.

## **METHODOLOGY**

### **Participants**

The participants for this study will be include 120 African American and European American male and female college students ages 18 years of age and above attending a midsize urban Historically Black University in the Southeast. Participants will be recruited from undergraduate classes through convenience sampling.

## Power Analysis

The software G\*Power was used to calculate the number of participants to be used in this study. Using a one tailed t-test with an effect size of 0.15, and an error probability level of 0.05, and a power set at .95, the calculated sample size is 74 participants, however to obtain more valid results the sample size will be 120 participants.

## Measures

*Demographic Information Questionnaire.* This instrument collects information about the participants' age, gender, level of classification in college (i.e. First-Year, Sophomore, etc.), ethnicity, and primary parent(s) (i.e., who they were raised by).

*Inventory of Parent and Peer Attachment-Revised (IPPA-R; Arnsden & Greenberg, 1987).* Attachment to parents and peers will be measured using the Inventory of Parent and Peer Attachment (IPPA-R), which has three 25-item subscales focusing on attachment to mothers, to fathers, and to peers. Respondents rate their answers to the statements on a five-point Likert scale with 1=*Almost Never or Never True*, and 5= *Almost Always or Always True*. There are also three subscales addressing trust, communication, and alienation (Arnsden & Greenberg, 1983). Below are three statements from the mother attachment subscale of the IPPA-R:

2. *I feel my mother does a good job as my mother*
3. *I wish I had a different mother*
5. *I feel it's no use letting my feelings show around my mother..*

The mother and father attachment scales have demonstrated strong internal consistency, with Cronbach's alpha coefficients ranging between 0.72 and 0.91 ( $p < .05$ ). Test-retest reliability measured through a sample of 18-20 year olds over a three week period, ranged from 0.86 for peer attachment to 0.93 for parent attachment (Arnsden & Greenberg, 1987).

*Nurturant Fathering Scale and Father Involvement Scale (NFS & FIS; Finley & Schwartz, 2004).* The NSF assesses the affective quality of fathering that participants perceived while growing up. An example question on the NSF scale is: *How much do you think your father enjoyed being a father?* Participants can choose from such possible answers as: *A great deal, Very much, Somewhat, A little, or Not at all.* The FIS assesses the extent to which participants perceived their fathers to have been involved in different domains of their lives during childhood and adolescence (Finley & Schwartz, 2004). The FIS consists of two subscales, reported father involvement and desired father involvement. The question being asked on the FIS reported father involvement subscale is *How involved was your father in the following aspects of your life and development?* And the question asked on the desired father involvement subscale is *What did you want your father's level of involvement to be compared with what it actually was?* Participants are to rate their responses on a 5 point scale with 5 = Always Involved and 1 = Never Involved on the reported father involvement subscale, and 5 = Much More Involved and 1 = Much Less Involved on the desired father involvement subscale. The questions focus on areas such as *Emotional Development, Career Development, and School/Homework.* The Cronbach alphas for the NSF revealed high internal consistency with the alpha levels set at .94. The internal consistency for the reported father involvement subscale revealed high Cronbach's alphas for all three subscales and total involvement ranged between .90 and .97 and the high Cronbach's alphas for all three subscales of the desired father involvement and total desired involvement ranged between .92 and .96 (Finley & Schwartz, 2004).

*Satisfaction with Life Scale (SWLS; Pavot & Diener, 1993).* The SWLS is a brief, five item assessment that measures an individuals' "global judgment of life satisfaction (Pavot & Diener, 1993)." The SWLS has an internal reliability coefficient of .87 and a test-retest stability coefficient of .82. This assessment was chosen due to its brevity and ability to assess the participant to use their own criteria to judge his or her life by measuring their overall satisfaction with every facet of their lives.

## Procedure

Each individual who is willing to participate will be asked to read over and sign the informed consent form. Participants will then be presented with an instrument packet. Upon completion of the packet, the responses will be transferred to SPSS, where the data will be analyzed using a Pearson product correlation procedure to examine the relationship between parent and peer attachment and fatherlessness.

## Study Design and Hypotheses

This research seeks to examine the predictors of parent and peer attachment. For Hypothesis 1, a Linear Multiple Regression will be used to predict parent and peer attachment based upon scores on the NSF, FIS, SWLS, ethnicity, and gender

The following hypotheses will be tested:

*Hypothesis 1:* Gender, ethnicity, life satisfaction, father involvement, and the nurturing quality of fathers will serve as predictors of parent and peer attachment more than the physical presence or absence of fathers in the home during the participant's upbringing.

*Hypothesis 2:* Participants who were raised in a fatherless home will be more attached to their peers as indicated by higher scores on the peer subtest of the IPPA-R than to their parents. Subsequently, participants reared in a dual parent home will be equally attached to their parents than to their peers.

*Hypothesis 2a:* Group mean differences for participants' parent and peer attachment scores on the IPPA-R will occur between African American and European American participants, specifically, European American participants raised with both parents in the home will report higher scores on the peer subtest of the IPPA-R, while African Americans reared in dual parent homes will report a closer attachment to parents than to their peers.

*Hypothesis 2b:* African American participants reared without a father in the home will be less attached to peers and fathers and more attached to their mothers as indicated by higher scores on the mother subtest of the IPPA-R. Moreover, European American participants reared without a father in the home will be more attached to their peers than to their parents as indicated by higher scores on the peer subtest of the IPPA-R.

*Hypothesis 2c:* European American participants will be more attached to their peers than to their parents, indicated by scores on the IPPA-R, when compared to their African American counterparts who I hypothesize will be more securely attached to their parents, more specifically their mothers.

*Hypothesis 3:* Participants who perceived their fathers to be highly involved and nurturing in their lives as measured by the total score on the FIS and NFS will have a higher score on the father attachment scale portion of the IPPA-R compared to participants who perceived their fathers as being less involved and nurturing in their lives.

*Hypothesis 4:* Female participants will be more attached to their parents than to their peers while male participants will be more attached to their peers than to their parents as indicated by the scores reported on the IPPA-R.

*Hypothesis 5:* Life satisfaction will be higher, as indicated by scores on the SWLS, for individuals who are securely attached to both parents and peers when compared to participants who are secured to parents OR peers.

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# YOUTH IN CONFLICT WITH THE LAW: A DIVERSION PROGRAM TO IMPROVE THEIR PSYCHO-SOCIAL FUNCTIONING

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## ABSTRACT

**INTRODUCTION:** South Africa is faced with the challenge of large numbers of young people guilty of or at the risk of committing offences. Section 28 of the Constitution of the Republic of South Africa (Act 108 of 1996) determines that no young person who gets into conflict with the law should be detained in prison or police custody, and that detention should be the last resort. The Department of Social Development is mandated by various Acts to provide diversion programmes for purposes of crime prevention, early intervention and alternative sentencing options. A non-governmental organization named Khulisa offers some alternatives for young offenders to ensure that they do not get criminal records.

**METHODS:** The aim was to evaluate the effectiveness of the diversion programme on the psycho-social functioning of the divertees. The purposive sample consisted of eighteen divertees, including boys and girls between the ages of 14-18 years. For the quantitative approach, the single-system method was used with a before and after measurement. The participants completed the Child Functioning Inventory scale for high school participants before and after the programme was presented. The purpose of the specific standardized scale of the Perspective Training College is to measure a person's psycho-social functioning, including self-perception, trauma dynamics, relationships and decision-making abilities. For the qualitative approach, the participants completed a self-developed measuring instrument designed to gather information about the experience and knowledge participants gained over the course of the programme.

**RESULTS:** From the overall results of the Child Functioning Inventory, it can be concluded that the overall improvement on all levels of functioning covered by the programme was 5.92%. This score shows that the life skills programme had an influence on the lives of the participants, but in all areas the participants would benefit from more intervention. From the qualitative results it was clear that the participants learnt community skills, discipline, self-respect and respect for others and to take responsibility for their actions.

**CONCLUSION:** The success and impact of the Khulisa diversion programme on the lives of youth in conflict with the law is a result of the holistic, intensive, practical, family-focused, child friendly, rehabilitative and integrated approach.

**Keywords:** Crime prevention, Diversion program, Offenders, Psycho-social and Youth.

# CODE OF MEDICAL ETHICS IN ISLAM: A CASE STUDY OF THE CODE OF MEDICAL ETHICS FOR MALAYSIAN MUSLIM DOCTORS

**Muhammad Amanullah**

*International Islamic University, Malaysia*

## **ABSTRACT**

*In order to perform duties excellently and deliver services to others efficiently and ethically, and to avoid inflicting of harms to them, specialists, employers, employees and workers of every profession must follow certain ethics. The profession of medical doctors is not an exception. Sometimes non-compliance of medical doctors with ethics causes severe harm to their patients. Islam prescribes sets of ethics for all professions including the profession of medical doctors. Analyzing relevant verses of the Qur'an and **ahadith** of the Prophet (p. b. u. h.), this paper intends to discuss the code of medical ethics in Islam. Likewise, it aims to evaluate the code of medical ethics for Malaysian Muslim Doctors in light of the code of medical ethics in Islam. Finally, it strives to provide some suggestions to improve the code of medical ethics for Malaysian Muslim doctors. This paper may conclude that Islam has a comprehensive code of medical ethics; and in order to make it a comprehensive code of medical ethics for Muslim doctors, the code of medical ethics for Malaysian Muslim doctors requires some improvement and modification.*

**Keywords:** *Islamic Ethics, Muslim Doctors, Evaluation, Suggestions.*

# HIGHER EDUCATION: TEETERING ON THE BRINK OF IRRELEVANCY

**Rodney Davis**

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## **ABSTRACT**

*There are at least 5 visible signposts that should serve as a warning to the entrenched institutions of higher education. We can ignore them at our own peril. Failing to take them to heart and change our programs we stand a good chance of being out stripped by our competition. For this paper competition includes foreign institutions of higher learning and the for-profit colleges and universities within the United States. The purpose of this paper was to explore the warning signs and examine what actions traditional higher education should take to reform itself to remain vibrant and an integral pathway to social mobility.*

**Keywords:** *Higher Education; Reform; Issues; Irrelevancy; Change; Globalization.*

# VIEWS AND PERCEPTIONS OF TENNESSEE STATE UNIVERSITY STUDENTS ON THE EFFICACY OF ONLINE COLLEGE COURSES AT TENNESSEE STATE UNIVERSITY

**Samad Dimbie-Mumuni**  
Tennessee State University, USA

## ABSTRACT

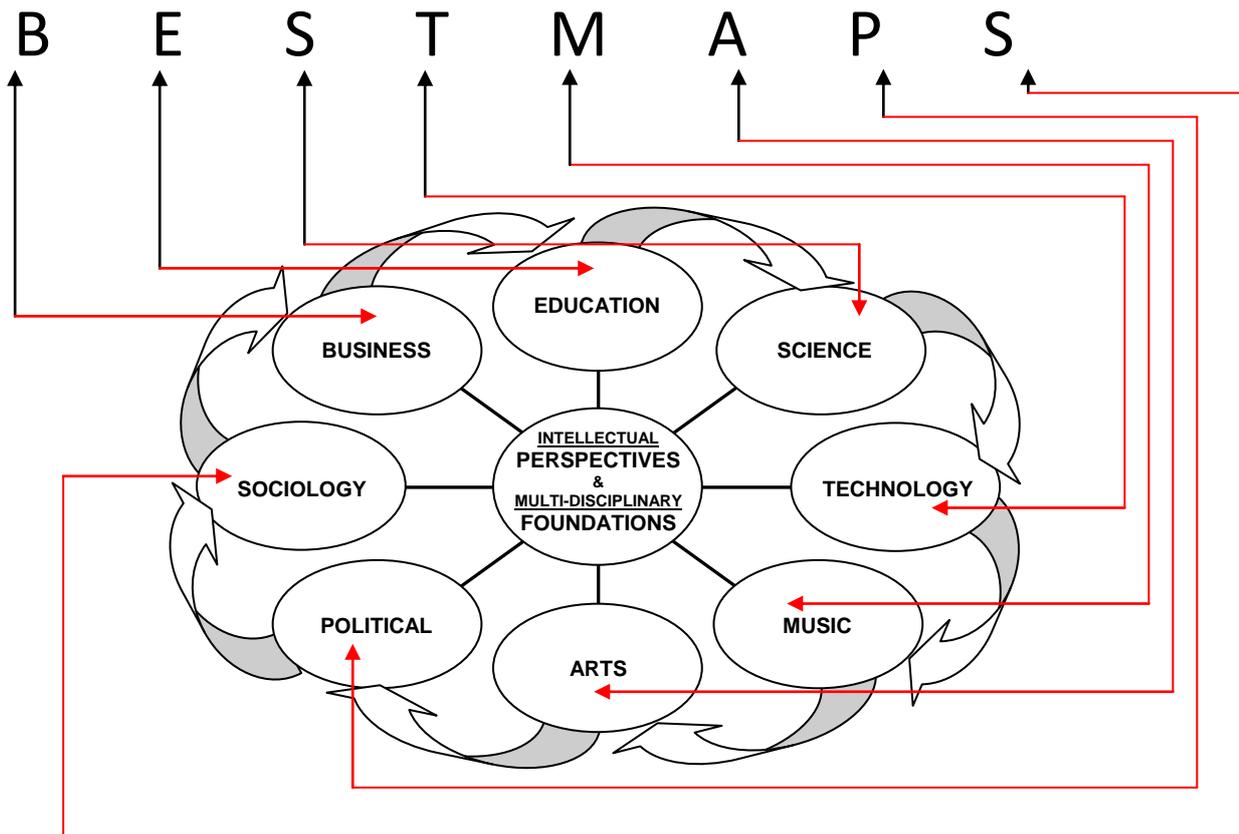
*For the past two decades, Tennessee State University (TSU) has embarked on a vigorous agenda to make higher education more accessible and convenient to as many learners as possible. The integration of technology, especially online teaching, has thus become an indispensable tool in the pursuance of this agenda. For many students within and outside of TSU, not only have online courses become a useful alternative to the traditional face-to-face method of instructional delivery, but also a completely new experience in higher education. This study examined the perceptions and views of TSU students with regard to their experiences, preferences and efficacy of online college courses vis-à-vis face-to-face instructional delivery. The study used a quantitative research design approach to gather and analyze the data. The quantitative approach involved students' surveys comprising open-ended and structured questionnaires to determine students' perspectives on a wide range of critical issues relating to the topic. Survey questionnaires were administered to approximately, 500 TSU students through the Qualtrics survey software. The results showed that even though there were some concerns, such as student-faculty interaction, students' attitude, etc., there was generally no statistical significant difference between online and face-to-face instructional delivery.*

**Keywords:** *Internet-Based Instruction and Learning; Discussion Board; Online Courses; Student-Faculty Interaction; Student Feedback, Telephone Communication, Face-to-Face.*



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## **JAGR - Journal of Applied Global Research**

The Journal of Applied Global Research provides a forum for academics, scientists, practitioners and decision makers to advance their presumptions in a scholarly exertion that has both national and international orientation. The journal is committed to articles that engage global research and philosophical judgment, with significant practical issues in a range of hard and soft sciences, which identify societal benefits and establishments. JAGR seeks research innovation & creativity and presents original topics. The focus of the journal is to substantiate professional practice, teaching and learning that exemplify global research and collaboration. The journal attracts ideas of high quality which explore the relationship between expertise in both interpretivist and positivist frames of reference.

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## **JGIP - Journal of Global Intelligence & Policy**

JGIP provides intellectual analysis on global intelligence and administrative policies. Typical papers present arguments, design and illustrations in the following themes: transparencies, immigration, social inequality, local and national security, threat-related concerns as well as environmental protection propositions. Challenges on vulnerabilities such as effective Knowledge Sharing and Information Transfer (KSIT) and successful Global Policy Implementation (GPI) are recognized. The journal uncovers conceptual frameworks, empirical data, and qualitative and quantitative methodologies, including triangulation approaches. Data-collection, data-merging, data assessment and cross-examination of both national and international practices are encouraged.

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## **JIBMR - Journal of International Business Management & Research**

The Journal highlights emerging research areas that pursue international analysis in: Accounting, Economics, Finance, Human Resources, Management Science, Information Systems and Marketing. The focus is to explore the inner workings of these knowledge systems, and the interrelationship with other disciplines that transcend continents and nations. Emphasis is on well-designed frameworks of international perspectives that strengthen conventional and contemporary studies in business disciplines. JIBMR provides research collaboration across national boundaries for greater synthesis of research into broader, more integrative frameworks and phenomenon. JIBMR offers content on international business competition and controversies in respect to research and development (R&D). Research perspectives and models that address contemporary issues of a particular field of knowledge, as well as significant international business practices are discussed.

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## **JISTP - Journal of Information Systems Technology & Planning**

The journal covers general topics in Information Systems Technology (IST) that has qualitative, quantitative or hybrid perspectives. JISTP examines contemporary topics with special interest to practitioners, governments and academics that pertains to organization infrastructure, management information systems, technology analysis, strategic information systems, communication transformation and decision support systems. Importantly, it highlights areas such as: (1) IST planning, technology innovation, technology models and technology services (2) Practitioners, academics and business leaders who have impact on information systems adoption, both inside and outside of their organizations, and (3) Businesses that examine their performance, strategies, processes and systems which provide further planning and prepare for the rapid technological changes.

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## **JKHRM - Journal of Knowledge & Human Resource Management**

The Journal of Knowledge & Human Resource Management (JKHRM) addresses several and various frameworks that have been under researched in human resource planning (e.g. challenging tasks at the micro or macro levels). Dynamic knowledge (implicit and explicit) analysis on strategic, operational and tactical human resource planning methodologies is emphasized in this journal. An abridgment of transition, from advanced management to knowledge-based management, has necessitated more research and therefore critical investigation is needed. The dynamics of knowledge and management models that will promote the design for optimum performance of knowledge and human resource management initiatives are encouraged.

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## **RHESL - Review of Higher Education and Self-Learning**

The Review of Higher Education will become and remain an authoritative and high-quality education reference point. The Review offers convenient information that scholars will need to meet the changing demands of the research and learning environments with self-assurance. The content (A) provides a review of the field of self-learning, (B) examines in detail, and illustrates examples of, self-learning in a range of teaching and teacher education contexts, (C) outlines understanding of the nature and development of self-learning, (D) explores the development of a professional knowledge base for teaching through self-learning, and (E) underscores self-learning through research and practice. It offers experience to the cutting edge of the profession with vital information to help educators explore the change from instruction-based practices to those that are knowledge-based and service learning oriented.

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## **RMIC - Review of Management Innovation & Creativity**

The review presents detailed theoretical explanations of original developments of managerial perspectives. The content is based on creative thinking, illustrated with real case studies and applied research. The manuscript involves innovative contributions, creative developments and descriptions, in a well-defined format with rich conceptual structures. The topography of management innovation is about the creative development of individual researchers engaged in creative endeavors, across a wide range of disciplines including but not limited to: the Social Sciences, Economics & Finance, Public Policy & Administration, Human Resources, Engineering, Business & Entrepreneurship, Supply Chain Management, Education, Science & Technology and the Arts. RMIC is intended for scholars who are interested in exploring and developing complex compositions that link incongruent elements to knowledge, and integrating them conceptually on a creative scale.

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## **IHPPL - Intellectbase Handbook of Professional Practice & Learning**

The Intellectbase Handbook of Professional Practice & Learning is an invaluable and exceptional reference for researchers, practitioners, specialists, educators, policy-makers, administrators and grant-writing applicants. The handbook addresses both conceptual and practical matters of education; it provides advanced, comprehensive design of key concepts, methods, and areas of relevance. This manual reflects the perspectives and experiences of leading international academics, reviewers and practitioners. References will be derived from a large group of distinguished authors introducing a wide-range of global frameworks

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## **IJEDAS - Intellectual Journal of Electronic Data Administration Security**

This journal outlines information technology development that is accelerated by global networks and relies extensively on higher-level management of information. Data administration has impact on society and therefore, the rise of electronic security is a key aspect of our knowledge and information society. The study and use of data, and the essential role of information and communication systems with its core elements of electronic processing, data, security and administration, are typical topics addressed by this journal. This journal provides research analyses on the rise of electronic networks from the perspectives of data administration and security. A delineation of the extraordinary features of security administration (e.g. information sensitivity, confidentiality, integrity, vulnerability and control) is needed to conform to intellectual legislation.

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## **JOIM - Journal of Organizational Information Management**

This journal provides contemporary arguments related to establishing a new field of study in management, organizational and information sciences. JOIM examines and enhances a variety of dynamics in organizational studies and applies viable business theories. Illustrations and insights about collaborative work are introduced in this premium journal along with a number of valuable new contributions, including organizational standards and accountability. The journal produces and provides practitioners, leaders and researchers with concise, up-to-date definitions of organizational competencies and strategic management theories. Also, revised and innovative case studies will exhibit Organizational Information Management (OIM) frameworks that will include, but not be limited to, the following unique decision support systems: business-learning, knowledge-acquisition, organizational-practice, people-competency and technology-based-information systems (TBIS).

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## **JWBSTE - Journal of Web-based and Socio-technical Engineering**

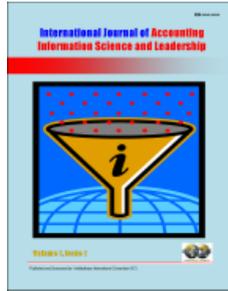
This journal is socio-technically focused and presents contemporary (state of the art) web based architecture, design and development to practitioners, governments, organizations and researchers. The task of this print is to produce, promote and integrate socio-technical research that surpasses the scientific traditions of engineering institutes. The following issues are emphasized in this journal: privacy protection, information and communication disclosures, global versus national policy applications, adaptations to technical revolution, bridging the web-engineering, architectural and infrastructure gap, knowledge sharing and information transfer, as well as web-multiculturalism. Perspectives and critiques on new technologies and relevant social themes will be included and discussed.

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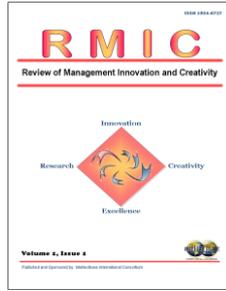
For information about Intellectbase International Consortium and associated journals of the conference, please visit [www.intellectbase.org](http://www.intellectbase.org)



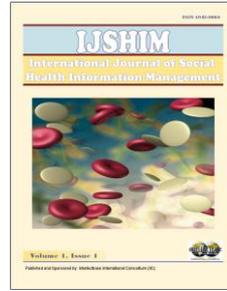
**JAGR**-Journal of Applied Global Research



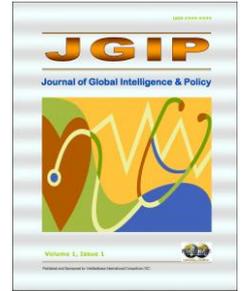
**IAISL**-International Journal of Accounting Information Science and Leadership



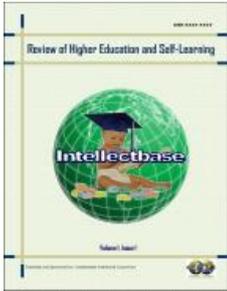
**RMIC**-Review of Management Innovation and Creativity



**IJSHIM**-International Journal of Social Health Information Management



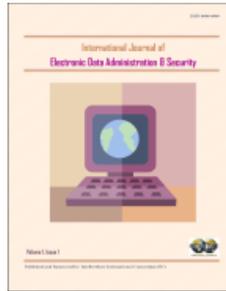
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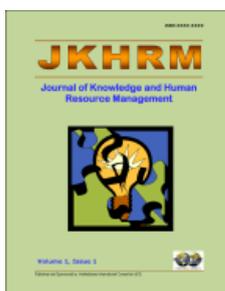
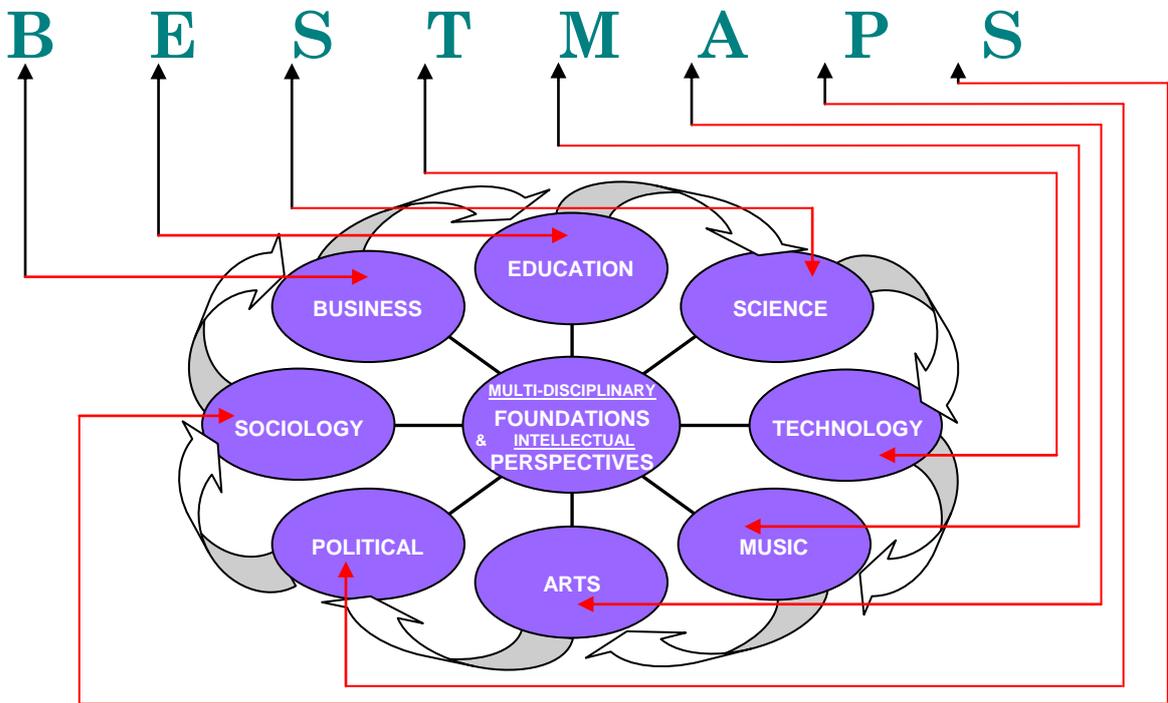
**UEDAS**-International Journal of Electronic Data Administration and Security



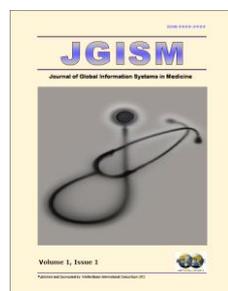
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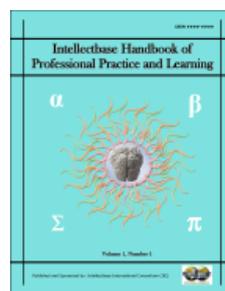
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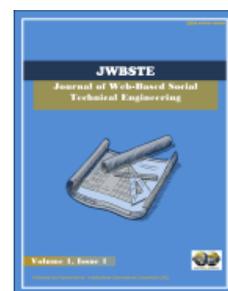
**JKHRM**-Journal of Knowledge and Human Resource Management



**JGISM**-Journal of Global Health Information Systems in Medicine



**IHPPPL**-Intellectbase Handbook of Professional Practice and Learning



**JWBSTE**-Journal of Web-Based Socio-Technical Engineering