## BAASANA LEADERSHIP

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Dear Friends and Colleagues,

It is my privilege to present to you the Proceedings of the 2014 BAASANA International Conference, hosted by the Anisfield School of Business, Ramapo College of New Jersey, USA. It has been a real honor and privilege for me to serve as the Program Chair for this year’s conference.

The organizing committee brought together a tremendous and rich diversity of authors and speakers from universities, governments and private sectors around the world to share ideas and new perspectives on a wide range of topics. As in the past, this conference has included a diversity of topics.

We at BAASANA believe that research is a cooperative enterprise among scholars and practitioners, which is why we are committed to providing a collaborative environment that fosters the free flow of constructive ideas among researchers, practitioners, and students. We would like to thank all the attendees whose contributions and participation are essential to creating a stimulating environment at the conference.

I would like to take this opportunity to thank the organizing committee that did an excellent job of putting this conference together. I am also indebted to our reviewers who reviewed the manuscripts, sometimes under extreme time constraints, and selected the best papers for this conference.

I hope you will find this year’s proceedings informative and enjoyable. I wish you a pleasant 2015, and look forward to receiving your constructive comments.

Best wishes,
John O. Okpara, Ph.D.
Professor and Chair,
Department of Management and Marketing
Bloomsburg University of Pennsylvania
2014 BAASANA International Conference Program Chair
Editor’s Introduction

It is once again our privilege and pleasure to present to you the proceedings of the 2014 International BAASANA Conference, held June 2014 in Mahwah, NJ at Ramapo College of New Jersey. The collection of scholarly works presented between these covers forms a body of significant contributions to research in business and science from around the world, with contributions ranging from international finance to business ethics to information technology to the practice of college advising to traditional Chinese medicine.

Special thanks and recognition go to BAASANA president Dr. M. Ruhul Amin, 2014 Program Chair Dr. John Okpara, and co-hosts Dr. Christina Chung and Dr. Kathryn Wood Zeno of host institution Ramapo College of New Jersey, along with the rest of the leadership and membership of BAASANA for their efforts on behalf of the conference and the association. Their hard work is instrumental for the success of the conference and the association.

In the opening contribution, Dayo Ade-Turton offers a compelling argument for entrepreneurship as the key to the future prosperity of Nigeria in “Can Entrepreneurs Save Nigeria? A Longitudinal Study.”

Sonia Amman and Christine Haririan, in “Lessons Not Learned: Ford, GM, and the NHTSA...Why?” discuss the need for stronger, more effective regulation from the National Highway Transportation Safety Administration and more attention to ethical conduct from automakers in order to more effectively ensure driver and passenger safety in light of recent incidents involving Ford and General Motors.

In “Effectively Assessing Risk in New Product Development: A Tool for Engineers and Management,” Philip Anderson and Cherie Sherman discuss methods to manage risk in new product development by avoiding overconfidence in the development team or firm.

Mohammed Masum Billah contends in “Employee Job Satisfaction and Organizational Capacity Analysis: A Study on Integrated Development Foundations (IDF) Bangladesh” that firms choosing to invest more in specific contributors to employee job satisfaction may be able to develop superior organizational capabilities.

Christina Chung and Youngmin Choi discuss the relationship between attitude toward the ad and purchase intention in the context of mobile ads, an increasingly important area of inquiry for consumer marketers, in “Is There a Relationship Between Brand Value and Corporate Transparency?”

In “Is There a Relationship Between Brand Value and Corporate Transparency?” Laurence DeGaetano finds a relationship between the Bloomberg Environmental, Social and Governance (ESG) scores of the top 100 US brands and their brand values, further suggesting that transparent disclosure of both “good” and “bad” information may enhance brand value.

Coming interest rate liberalization will allow rising interest rates, promote greater inter-bank competition, reduce margin spreads, and reward the introduction of new financial products, requiring Chinese banks to position themselves to take advantage. So argues Di Wang in “The Impact of Interest Rate Liberalization on Commercial Banks.”
Olusola Samuel Faboyede, Oluhu Dick Mukoro, Francis Iyoha, and Aiwanose Hannah Odafen discuss the benefits of adoption of Extensible Business Reporting Language (XBRL) in helping integrate Nigeria’s banking system into global commerce in “The Impact of Extensible Business Reporting Language Education and Adoption of Stock Exchange Development: A Focus on Nigeria.”

Urmig Ghosh-Dastidar, Eugene Fiorini, and Steven Miguel Lora report on population pressures on various species in the Hudson River ecosystem and the attendant potential consequences in “Connectance, Robustness, and the Hudson River Food Web.”

In “McNeely and King Rulings: A Court in Disarray over the Admissibility of Scientific Evidence,” Arleen C. Gonzalez discusses discrepant court rulings that rest on inconsistent interpretation of the Fourth Amendment to the U.S. Constitution, a discrepancy that may ultimately be left to a higher court to resolve.


Moving to issues of importance within the university setting, Joseph Lema and Donna Albano discuss academic advising as a source of competitive advantage in a world where traditional brick-and-mortar colleges and universities face competition from online institutions, massively open online courses (MOOCs), and other sources in “Facilitating the Advising Process.”

In “The Moderating Role of Traditional Health Beliefs in the Relationship Between Social Capital and Self-Reported Health Status Among Disadvantaged Households in India,” Yam Limbu and C. Jayachandran look at economically disadvantaged households in India, an underinvestigated segment of society. Their study focuses on the types of social capital available in disadvantaged neighborhoods to determine whether available social capital is related to health status in the population of interest.

Ashford Maharaj investigates capital-market development in the Caribbean in “Frontier Capital Markets: Issues and Challenges for Caribbean Stock Exchanges,” noting that “frontier markets” such as those in the Caribbean can benefit by greater integration into systems of global finance and global commerce.

In “The Yelp Effect: A Look at the Impact of Yelp, Online Reviews and Reputation in the Digital Era,” Mary Kate Naatus discusses the role of online review sites such as Yelp on firm and brand reputation, including consideration of the credibility of the sites themselves.

M.J. Park provides a case study of a consultant and her efforts to help a firm implement organizational change in “Consulting for Organizational Change,” noting that consultant expertise and credibility as well as the strength of the consultant/firm partnership contribute to the success of the engagement.
In “Students’ Reactions to Revolution Analytics (R): Text Mining of Twitter Data with R Packages TwitterR and Wordcloud,” Loreen Powell, Hayden Wimmer, and Ken Hall report on an experiential learning project in an undergraduate course in which students developed “tag clouds” using data collected from Twitter feeds using packages (programs) written for the open-source development and analytical environment R.

Michel Sauvignon continues his stream of research into vehicle-operator hypovigilance, distraction, and fatigue in “Hypovigilance and Motor Behaviour: Impact on Driving Ability,” furthering the attempt to derive a reliable indication of when hypovigilance occurs in order to design effective interventions.

In the 2014 BAASANA Student Panel, Madhav P. Sharma leads a culturally and ethnically diverse panel of students from the Bloomsburg University of Pennsylvania in discussion of cultural diversity and internationalizations, multiple perspectives of U.S. academic issues, and comparative analyses of several countries including the U.S. and Saudi Arabia.

Sun Hui and Guo Li Xuan describe the ways in which distortion of accounting information owing to sources such as inexperience, inadequate training and status of accountants, and perverse incentives to fraud and deception hold back economic development in China in “Research on the Causes of Distortion of Accounting Information from an Accounting Entity.”

In “Mass-Bestosis: Examining the American Asbestos Litigation Phenomenon,” Glenn Vallach and Cherie Ann Sherman comprehensively review the factors driving the widespread and extremely lucrative asbestos litigation arising in the late 20th and early 21st centuries in the United States.

The growth of unstructured text as a data source (driven in part by declining response to traditional surveys and the rise of bulletin boards and social media discussions) has fueled interest in tools and techniques to mine useful insights from these sources, the topic of “Using Natural Language Processing and Content Analysis to Enhance Virtual Discussion Groups” by Hayden Wimmer, Ken Hall, and Loreen Powell.

Yang Litian introduces his “5Ps” model of firm-level and economy-level development in “Influence of International Trade and Globalized Economy on the Development of Foreign Trade and Economy of China.”

Last but far from least, Zhang Yang discusses the biomolecular mechanisms of the Chinese Jing Luo medical tradition in “The Essence and Mechanisms of Main and Collateral Channels (Jing Luo),” in hopes of promoting a deeper understanding of the uses and benefits of traditional Chinese medicine.

I hope you find this diverse collection of studies and presentations interesting and informative; I am confident you will find they demonstrate the quality of scholarship in the ranks of BAASANA. Thank you for your attention and consideration.

Kenneth D. Hall, DBA
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Proceedings Editor
CAN ENTREPRENEURS SAVE NIGERIA?
A LONGITUDINAL STUDY

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ABSTRACT
This paper seeks to stimulate a sustainable dialogue on the role and position of entrepreneurs in Nigeria’s National development. This study argues that in order for Nigeria to be a viable member of the emerging market and retain such membership, the Nigerian entrepreneurs must continuously embrace the challenges of learning, education, innovation and address other burning issues. These are essentials to the successful practice of entrepreneurship. It is noted here that the conceptual approach is adopted in this paper.

CONTEXTUAL FRAMEWORK AND METHODOLOGICAL NOTE
The theory and practice of entrepreneurship is inseparable, just like the head and tail of a coin which can be viewed separately but cannot be separated if it must maintain its value. In other words, the practice and practical aspect of entrepreneurship must be based on sound theoretical framework.

The methods of data collection include focus group study/brainstorming among colleagues, including Nigerians in the diaspora and students in universities both in Nigeria and in the United States. A literature review of relevant books, journal articles and mass media materials constitute a major part of the methodology. The study spans over three decades.

Research Implications
The data collected so far are huge. In fact, only highlights of the findings are presented due to space and time constraints. Twelve key concepts are presented as developed by this author based on research methodology. This underscores the originality of the work.

Entrepreneur: Definitions and Alternative Perspectives
The global household word “entrepreneur” is defined and redefined and analyzed over a period of fifty years. Our contribution here provides for alternative perspectives for the concept of entrepreneur. Their definitions and characteristics are succinctly discussed (see figures 1 and 2 below).

Idea Generators
Idea generators are persons or a group with the capacity to create meaning and share ideas for the purpose of providing solutions to human problems. Idea generators as entrepreneurs provide a platform for meeting the human needs and wants.

Philosophers consider ideas to be part of the fundamental ontological category of being human. In fact, idea generators arise from a reflexive, spontaneous manner at times without thinking or serious reflex flow. In general, idea generation is a mental representation image. In sum, ideas are fundamental to the concept of entrepreneurship. Critical thinkers are often labeled as idea generators. There are legions of instances of ideas that have created / have led to the creation of new
products or provide services that have continuously and considerably improved the standard of living and quality of life. In a nutshell, in the world of entrepreneurs, **the idea is business, period.**

**Knowledge Builders**
Knowledge builders build and develop people, institutions, organizations and societies. In the main, knowledge builders are entrepreneurs. They are workers who are professionals rather than ordinary employees. The knowledge workers are made up of society of seniors and juniors and not bosses and subordinates. In the world of knowledge builders, knowledge is all. It is borderless; it travels faster than money (Drucker 2008). In other words, it is universally accessible; Knowledge is not hierarchical or scalar but is functional. The term knowledge industries, knowledge economy are about fifty years old coined in 1960. The knowledge workers collectively are new capitalists. The application of knowledge has facilitated the development of key material resources of the 21st century. Knowledge workers collectively own a huge means of production. They have majority shareholders and owners of many large businesses (Fortune 500 Companies) e.g. Apple, Microsoft, Samsung, Toshiba, Google (See Table 1 following).

Knowledge workers are key members of the human society where mobility is potentially unlimited. Today knowledge products are not only mobile but portable. To a large extent, knowledge as a means of production is quite different from other means of production because it cannot be transferred, it can only be acquired through learning. In the knowledge industry, such as higher educational institutions or other appropriate knowledge organizations, anyone can attempt to acquire the means of production (Knowledge required for a job) but not everyone can win. There lies the challenge of continuous learning and continuing education through innovation and creativity by the knowledge workers. In sum, **knowledge is all**- in the world of entrepreneurship and entrepreneurs.

**Table 1: Mega-Entrepreneurs who started in their 20s**

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<th>ENTREPRENEURIAL FIRMS</th>
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<td>Microsoft</td>
<td>Bill Gates and Paul Allen</td>
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<td>Netscape</td>
<td>Marc Andreessen</td>
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<td>Dell Computers</td>
<td>Michael Dell</td>
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<td>Gateway 2000</td>
<td>Ted Waitt</td>
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<td>Macaw Cellular</td>
<td>Craig Macaw</td>
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<tr>
<td>Apple Computers</td>
<td>Steve Jobs and Steve Wozniak</td>
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<td>Digital Equipment</td>
<td>Ken and Stand Olsen</td>
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<tr>
<td>Federal Express</td>
<td>Fred Smith</td>
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<tr>
<td>Genentech</td>
<td>Robert Swanson</td>
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<tr>
<td>Polaroid</td>
<td>Edward Land</td>
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<tr>
<td>Lotus Dev. Group</td>
<td>Mitch Kapor</td>
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<tr>
<td>Loix.com</td>
<td>Kevin McCurdy</td>
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(Ade-Turton, 2005)

**Strategists**
The strategies are individuals who are shaping the future and continuously attempt and use available means for desired outcome. Strategists are long range planners armed with comprehensive action plan. They always provide scenarios in their entrepreneurial journey. In other words strategists are noted for alternative plan of actions, a scholar asserted when discussing the concept of Blue Ocean Strategies.
Everyone knows that the dream business strategy is to create a new product that everyone wants and no one else is offering. But that is easier said than done, how do you do it?

“They proffer an answer; a framework to help companies swim free of the threshing bloody red ocean of competition into calm and uninfected waters: the blue ocean.”

**Innovators**
Innovators are smart entrepreneurs who introduce something new out of existing discoveries or works. They add value to existing products or services. Innovators are often labeled as record breakers in their attempt to solving problems or improve the condition of living and life styles. Innovators in their capacity as entrepreneurs are prevalent than inventors - The latter are smaller in number. In the same vein, innovators as record breakers who create competition for other innovators in their field. To be sure, entrepreneurs as innovators are not only within the organization’s internal environment but outside it. There lies in many respects, the competitive nature of innovators and innovation in today’s dynamic environment. In sum, the hall mark of today’s organization is unrelenting innovation.

**Inventors**
Inventors are authors of new process for creating an object or a result. They are unique because they are record makers rather than record-breakers usually associated with innovations. Their works are novel and not obvious to other skilled people in the same field. Their products always have legal protection; they have intellectual property rights.

It is noted here that inventors are creative and imaginative often external beyond the boundaries of human knowledge, experience and abilities. As great entrepreneurs, they wear the “huge cap” of being the first in their breakthrough works in meeting the human needs and wants. In the world of entrepreneurship, inventors are record makers.

**Visioneers**
Visioneers are entrepreneurs who are always balancing the current realities with future conditions. They create future in a coherent matter. They view organization’s mission and goals beyond the present. In an ever changing environment, the visioneers employ the organization mission statements to meeting the state of the desired future. In a nutshell, the vision, the mission and the goals of their organizations are interrelated and futuristic.

**Risk Takers**
Risk – takers believe in the world of uncertainty. The risk – takers prepare for the unexpected in an uncertain world. However they are action – planners who intentionally interact with uncertainty. The risk takers are located in the political, economic and social sectors of the society. As political risk takers they are political leaders who severely risk their resources in a democratic dispensation as change makers, they; are always labeled as servant leaders. Risk takers make tough choices in order to solve problems beneficial to mankind. As economic risk takers, in their capacity as economic entrepreneurs, they invest in business organizations or business ventures. They view business investment as having four interrelated purposes which are survival, growth, profit-making and social responsibility. Risk takers as social entrepreneurs actively participate in education, health, religion and environment activities and issues. They are the courageous founders, owners and operators of
non-profit organizations and social organizations. They view their organizations as social goods rather than economic goods.

**Intellectuals**
Intellectuals are producers of the so-called “Life of the Mind.” They have the entrepreneurial mind set “guru.” The intellectuals are often labeled as practitioners in the world of ideas. However, they possess distinctive quality of the intellectual person that of mental skills which they demonstrate that are not limited to intelligence. However, they often focus on thinking about abstract, theoretical assumptions which have provided invaluable solutions to human desires and needs. Regularly, they continue to make a difference in people’s life. To be sure, intellectuals are often labeled as scholars and academicians. They include philosophers in epistemology and in other professional and academic endeavors such as the arts, sciences and humanities.

**Architects**
Architects as entrepreneurs are designers and planners. Critical thinking is the “Alpha and Omega” of Architects. They are noted architects who cherish beauty and beautification. Drawings, figures and the Art works are central to their profession. Imagination and the environment are the hallmark of architects in their entrepreneurial journey. To be sure, Architects are at their best when they innovate and document works, inventions or new ideas.

**Effective Communicators**
Effective communicators are encoders, and the originators of a communication process. They are individuals or a group who inform, educate and share ideas with recipients or decoders for the purpose of meeting the demand of human needs and wants (see Figure 1 below).

The typology of communicators can be classified as: intra-communicators who are critical thinkers, inter-personal communicators, mass communicators and technology communicators (including technology infusion communicators). The latter (Technology communicators) do produce symbols, signs, virtual images, and technical languages. Also, they are the most effective communicators as entrepreneurs in the twenty-first century. Life changing materials through the “miracle they have performed in the areas of telecommunication products and services are their noted achievements: electronics goods and services. Through their innovative ideas, distance has been considerably reduced Communication gadgets are made portable and highly mobile. In effect, the world is now flat.
1. **VALUE CREATORS**

Value creators are individuals, people or a group of people who cherish and influence human attitudes and values. They always pursue and concern themselves with relevant course of actions and outcomes that are desirable. Value creators are life changers, life transformers, and solution providers. They pride themselves as “first mover advantage individuals” who make a difference in people’s life by creating and meeting unlimited human wants and needs while employing available and limited resources.

Entrepreneurs as value creators are noted designers/producers of global value materials (table 1) such as manufactured vehicles, electronics goods, appliances, television, and a variety of clothes/dresses including sport-wears/shoes worn by both genders including hair attachments. Put in another way, value creators as entrepreneurs have globalized life-styles in the form of value materials developed and produced by these unique individuals.

2. **CHANGE MAKERS**

Change makers are actors who effect a change in people’s life. They put their skills and competencies into use by adding value through improved quality of life and standard of living of fellow individuals, the community and the society. As entrepreneurs, they are motivators, mentors and problem solvers. They are not managers but leaders of people. They are always armed with the basic functions of management: planning, listening, organizing, leading and controlling. In addressing issues, change makers are proactive and interactive planners rather than inactive and reactive entrepreneurs.

In many respects, change makers are revolutionaries as they transform groups, communities and societies. As economics change makers or entrepreneurs, they are investment inducers, prime creators of job and drivers of economic activities and wealth creators. As political change agents, they are enablers, facilitators and regulators of the society. In their capacity as social entrepreneurs, they are social change makers and the conscience of the societal ethics and they provide leadership in the areas of education, health and environment issues.

In sum, change-makers are the purveyors in the entrepreneurial journey who consider challenges faced by individuals, organizations and the society as solvable. In the same vein, they view their challenges and solutions as not limited to the internal system but environmental.
Interrelated Entrepreneurship (PES) Model
The political, Economic and Social (PES) theoretical model (below) provides an understanding of the inter-relatedness of Political, Social and Economic entrepreneurship. For the purposes of the study, the trio is interrelated in order for the model to function effectively (figure 1).

Political Entrepreneurship
The government is the trustee of the society. The body or institution called the government is a leading stakeholder in the affairs of a nation. It is pertinent here to ask, what is political entrepreneurship? In other words, who is a political entrepreneur? The political entrepreneurs are those individuals who perform the same or similar functions in the political premise as entrepreneurs perform in the free market. What is crucial in this regard is that the theory of political entrepreneurship as in the theory economic entrepreneurship is both economic and political. Political and economic functions are the focus rather than political and economic personality. In her capacity as the trustees of the society or nation, the government coordinates the affairs of the society and is in charge and in control of the resources employed in processing, production and providing the essential infrastructures.

Economic Entrepreneurship
The free market economy is central to economic entrepreneurship. Furthermore it has the following characteristics: direction and redirection of scarce resources through production for the future satisfaction of consumer needs and wants. Other characteristics are privatization (State owned sale to private inventors). Individualism: an emphasis in this regard is on the importance of guaranteeing individual freedom and self expression; a second law of individualism is the people economic self interest as opposed to collectivism. The clear massage of individualism in the tenet of economic entrepreneurship is that individual economic and political freedoms are the basic rules on which citizens of a society should have and enjoy.

Social Entrepreneurship
Social entrepreneurship is the process by which individuals or a group build, develop and transform institutions or organizations to advancing solutions to social problems. Social entrepreneurs are the idea champions and advocate of change within and between and even beyond established organizations. The qualities of social entrepreneur include a long term commitment to a course. Social entrepreneurs are also noted for certain qualities that encompass ability to conquer apathy, incomprehension and social vices. They are also mobilizers of resources for the purpose rapid individual development, urban renewal and rural development, wealth creation or distribution. In a nutshell, social entrepreneurship is the intersections of the world’s web of problems and the exploratory methods and strategies to addressing them. Thus, the inter-connectedness of political, economic and social entrepreneurship and entrepreneurs cannot be overemphasized.
CONCLUDING REMARKS
The political system (the system of government in a nation) that Nigeria operates for most part of its life as an independent state is antithesis to the basic tenets of a free market economy. The six decades of Nigeria as an independent nation have witnessed a system of government that can be classified as totalitarian or military dictatorship, and to a lesser degree quasi democracy – military guided democracy. In fact the leadership of the nation is populated by “military personnel in civilian dress” The present constitution was drawn by the military, who handed over reluctantly to “elected” civilians. It is widely believed that Nigeria operates a civil rule and not democratic system of government.

The explicit burning issues arising from the above analysis and discussion include:
1. Political instability
2. Insecurity
3. Recurring Social and Political leadership crisis including religious, ethnic and class conflict
4. Lack of/poor availability of infrastructure
5. Nigerians in diaspora: many of these promising citizens who are unwilling or hesitant to settle in Nigeria. This shortcoming is a major contributing factor to the lack of viable investment and sustainable national development.

6. Mono-economy (oil): lack of diversification of the economy

7. Corruption and unethical behaviour

8. Absence of government institutions or existence of weak institutions for generating revenue and management of same. (Local, State and Federal).

The role and position of Nigerians who possess entrepreneurial mindsets and resources and who are most willing and courageous to addressing these burning issues *inter alia* cannot be overemphasized in saving Nigeria, the giant of Africa. In sum, in order for Nigeria to become a viable member of the emerging market and retain such membership, Nigerian entrepreneurs must continuously embrace the challenges of learning, education, innovation, creativity, and transformative leadership. These are the noted attributes of entrepreneurship and entrepreneurs. Put in another way, the entrepreneurial journey to becoming a producing nation rather than a consuming society requires the aforementioned characteristics (among others). Furthermore, lessons drawn from both developed and emerging markets of G20 are quite relevant here (see Table 2) following.
Table 2: G20 Major Economies of the World, Emerging Markets and Developed Countries

<table>
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<td>Oceania</td>
<td>Australia</td>
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(Ade-Turton: 2013)

Understanding G20: Membership and Functions
Collectively, the G-20 economies account for around 85% of the gross world product (GWP), 80% of world trade (or if excluding EU intra-trade: 75%), and two-thirds of the world population. The G-20 heads of government or heads of state have also periodically conferred at summits since their initial meeting in 2008. The G-20 was proposed by former Canadian Prime Minister Paul Martin as a forum for cooperation and consultation on matters pertaining to the international financial system. The group was formally inaugurated in September 1999, and held its first meeting in December 1999. It studies, reviews, and promotes high-level discussion of policy issues pertaining to the promotion of international financial stability, and seeks to address issues that go beyond the responsibilities of any one organization. With the G-20 growing in stature after the 2008 Washington summit, its leaders announced on 25 September 2009, that the group would replace the G8 as the main economic council of wealthy nations.

REFERENCES

16


LESSONS NOT LEARNED: FORD, GM, AND THE NHTSA...WHY?

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ABSTRACT

It is alleged that the automotive industry and the National Highway Traffic Safety Administration (NHTSA) have compromised consumer safety and peace of mind since 1960. We seek to determine why some executives violate basic ethical and social responsibility principles. Some companies admit corporate negligence and recall faulty products to limit corporate liability and salvage company image. Other companies choose to neglect or delay informing customers about defective products, thereby gambling their reputations and customer safety.

This research concentrates on two similar cases of automotive recalls, Ford Motor Company’s Pinto and General Motors (GM). We draw analogies between the two companies and how they handled the recalls by examining internal forces such as corporate culture, cost per recall, number of cars recalled, delay in issuing the recall, strategies to handle the recall, image costs, and company performance. We also examine external forces such as global business, deaths due to faulty cars, customers’ and media reactions to the news, and federal government regulations. We attempt to answer questions like: Why has the automotive industry failed to learn valuable lessons from the Ford Pinto crashes and to respond effectively to increased government regulations, pressure from consumer advocacy groups, and the media? We relate this research to the importance of product quality and customer safety and satisfaction in modern management literature.

An estimated 500 to 900 deaths occurred from 1971 to 1977 as a result of the Ford Pinto’s faulty gas tanks and transmissions. Sources estimate that the problems GM is experiencing caused 31 frontal crashes and at least 13 deaths over several years due to a faulty ignition switch. The recall, which affects about 1.6 million vehicles worldwide, covers vehicles in which the ignition turns off while the car is running, disabling the power steering and air bags. According to the New York Times, as of March 2013, 303 deaths were reported in GM cars with failed air bags. Despite several years of evidence, GM did not recall the cars. According to Ryan Brinkman, JP Morgan automotive specialist, the price of the replacement parts is between $2 and $5 per vehicle. GM said it expects the ignition recall will cost the company a total of $300 million, or less than $100 per vehicle if all of the recalled vehicles are brought in for repairs. These data are evidence of a striking need for examination of automotive industry accountability.

BACKGROUND

General Motors has a history of ignoring safety conventions in the pursuit of profit. This disregard for consumer safety began in the 1960s when GM brought to market the Chevrolet Corvair, a death trap, and continued with the sale of the Chevrolet Cobalt and Saturn Ion, beginning in 2001.
U.S. Auto Industry Overview

Viewing recent congressional hearings through the prism of history, one has the impression that the U.S. auto industry in general, and General Motors in particular, has not progressed a millimeter on safety since Ralph Nader exposed the instability of GM’s Chevrolet Corvair in his book *Unsafe at Any Speed*, published in 1965 (Automotive News 2014). The Big Three auto manufacturers, GM, Ford, and Chrysler, have long dominated the U.S. auto industry. In the last four decades of the 20th century, the auto industry faced numerous problems, including challenges to market share/dominance, the world economy, foreign competition, and environmental and safety concerns. The world economy was reeling from the subprime mortgage crisis. Unemployment rates were high, credit markets were tight, and the financial services industry was in trouble.

In the 1970s, the auto industry was plagued by the Clean Air Act and foreign competition, namely, more fuel-efficient imports and the Japanese style of “lean production.” U.S. auto manufacturers introduced methods such as increased quality control, automated production techniques, and just-in-time (JIT) ordering into the manufacturing process. Chrysler, the smallest of the Big Three, was the first to experience serious financial trouble. Facing bankruptcy, Chrysler turned to the U.S. federal government for a $1.5 billion bailout loan. With the help of this loan, new leader Lee Iacocca, and the introduction of a new design, the now-ubiquitous minivan, Chrysler was on its way to profitability.

The 1980s and 1990s brought more challenges: increased competition from German and Japanese automakers, as well as joint ventures, investments in overseas companies, and buyouts. In 1998, Chrysler and Daimler-Benz merged. In 1999, Ford bought Volvo and GM had arrangements with manufacturers in Japan and Fiat in Italy (Hardman 2010). In 1991, GM recorded the highest loss of any corporation at the time – $4.5 billion (Glass 2013). In the mid-1990s, however, the introduction of the sport utility vehicle (SUV) caused sales and profits to rebound.

In 2000, environmental concerns became the industry’s most pressing issue. William Clay Ford, president of Ford Motor Company, publicly announced that Ford’s SUVs were inefficient and a threat to the environment. In 2008, the industry’s woes came on the heels of high oil prices and a declining U.S. economy due to the subprime mortgage crisis. All three U.S. auto manufacturers saw sales drop as much as 40 percent from the previous year. The Big Three reacted by closing plants, cutting production, instituting layoffs, and asking the U.S. Congress for financial support. Congress rejected the request, but President George W. Bush exercised executive privilege and allowed the Big Three to receive a share of funds allotted to the Troubled Asset Relief Program (TARP). Ultimately, GM and Chrysler filed for bankruptcy.

General Motors Stimulus Package 2009

The subprime mortgage crisis affected the entire U.S. economy, including the auto industry. During a recession, credit is tight. Without access to new credit, GM and Chrysler increased the number of employee layoffs, burned through their reserves, and began to sell assets. Like the housing bubble, an automobile bubble occurred in 2006. New vehicles were eligible for 100 percent financing. The economic crisis prompted the U.S. government to roll out a stimulus package of $825 billion. GM received $52 billion in U.S. government aid, and the federal government now owned 61 percent of GM. In March 2009, President Obama gave Chrysler 30 days and GM 60 days to restructure or face bankruptcy. The GM restructuring meant the loss of chief executive Rick Wagoner, and concessions were made to bondholders and United Automobile Workers (UAW). By
August 2010, GM had gained momentum and was planning to repay the loan early. GM would still owe the government $45.3 billion, which it planned to repay through the sale of stock.

INTRODUCTION
U.S. Autos with Safety Problems

a. Ford Pinto

Ford Motor Company has done its fair share of designing and selling unsafe vehicles, most notably the Ford Pinto, also known as “the death trap.” In late 1960, Vice President Lee Iacocca rushed the Pinto into production to compete in the profitable small-car market against Volkswagen (Dowie, 1977). The Pinto was described as a 2,000/2,000 car. The goal was to design a car that weighed less than 2,000 pounds to be sold for less than $2,000. To achieve this goal, Ford compromised key safety standards. The Pinto’s fuel tank was positioned behind the rear axle, causing numerous causalities due to rear-end-collisions even at low speeds (Turley, 2014). For seven years, Ford and its engineers knew that the Pinto was not safe; Pinto crashes caused as many as 900 deaths and burn victims were estimated to be in the tens of thousands (Dowie, 1977).

Despite these statistics, Ford used cost-benefit analysis to justify its decision not to recall the Pinto, valuing corporate profit more than human lives. Ford estimated the repair cost per vehicle to be $11, or a total of $137 million to repair 11 million cars and 1.5 million trucks in the event of a recall (Turley, 2014). Research shows that Ford pressured NHTSA to place a dollar value on a human life. In 1972, NHTSA determined that a human life is worth $200,725. Valuing burned individuals at $67,000 each and the dead at $200,725, it was cheaper for Ford to settle in court and continue to sell the Pinto without making the necessary repair (Turley, 2014).

b. Bridgestone/Firestone Tires

Ford was a major partner in a far-reaching safety crisis that affected many lives in the U.S. and international car market. Defective Firestone tires on the Ford Explorer and other Ford light trucks caused rollovers resulting in 700 injuries and 271 deaths in the United States alone (Schubert, 2011). Research shows that Ford used Firestone tires since 1906.

Despite the 1998 Firestone recall, Ford executives indicated that the Firestone brand would continue to be standard equipment on the Explorer (Simison, Lundegaard, Shirouzu, and Heller, 2000), even though Firestone and Ford were secretly recalling tires in the overseas market since 1990 (Corona and Komendanchik, 2008). NHTSA did not become involved until 1998 when one of the State Farm Insurance research analysts contacted the agency about an increased number of accidents resulting from Firestone tires (Schubert, 2011). After determining that Bridgestone/Firestone tires may have caused more than 80 deaths in the U.S. and 40 in Venezuela, a formal investigation was initiated by NHTSA in May 2000 (Corona and Komendanchik, 2008). To rectify the problem, Firestone and Ford issued a recall of 6.5 million tires on August 9, 2000 (Schubert, 2011). The crisis affected consumer confidence and Ford's as well as Firestone's profitability. Ford spent more than $3 billion replacing tires that Firestone did not include in its recall (Schubert, 2011).

c) Chevrolet Corvair

The Corvair, “GM’s Deadliest Sin,” was designed with the engine in the rear instead of the front. To accommodate six passengers versus four passengers in this compact car, several compromises were made. The prevailing objective, however, was cost control. Accidents, some fatal, began shortly after the Corvair’s introduction in 1960. Differential tire pressure caused the rear
tire to pop off its rim leaving gouges in the pavement. Ernie Kovacs, a popular entertainer at the
time, died while driving his 1961 Corvair Lakewood station wagon. Chevrolet chose not to educate
dealers or customers. Ralph Nader’s *Unsafe at Any Speed* is commonly blamed for the Corvair’s
demise, but the car was doomed years before the book’s publication in 1965 (Neidermeyer 2012).
The Corvair was the product of GM’s tendency to give engineers the latitude to pursue innovations,
but these models were either flawed from inception or compromised by the bean counters. In the
case of the Corvair, it was both (Neidermeyer 2012).

**b) Ignition Switch**

According to GM’s own report, a faulty ignition switch was first detected on re-production testing of
the Saturn Ion in 2001. Evidence of the defective switch surfaced again in 2004 when the Chevrolet
Cobalt, a new, fuel-efficient model, was introduced (Levin, Doron, and Fortune 2014). The problem
was a shorter, cheaper spring. The faulty switch could have been replaced for approximately $2
each; GM decided not to replace the switch, however. Two analysts estimated the total cost of
repairs at less than $100 million, but that expense could be overshadowed by an inevitable flood of
lawsuits and any damage to GM’s reputation inflicted by the recall (Bunkley 2014). The connection
between the ignition switch and air bags being deployed in a crash relates to the electrical power
provided by the engine. Without engine power the electronic system cannot function and airbags
will not deploy. By the end of 2013, the automaker had concluded that the faulty ignition could be
linked to 31 crashes and 13 deaths (Levin, Doron, and Fortune 2014). Beginning in March 2014,
GM began recalling more than 1.6 million cars, and to date, the recall continues. GM changed the
ignition switch some time in 2006. In the meantime, however, 95,000 defective switches were sold
to dealers and wholesalers. Realizing approximately 5,000 were used in newer car repairs, GM had
no choice but to issue a recall. CEO Mary Barra stated, “We are taking no chances with safety. We
are going to provide our customers with the peace of mind they deserve and expect by getting new
switches into all vehicles” (Vlasic and Wald 2014).

### 3. Safety Problems and NHTSA

Did the National Highway Traffic Safety Administration (NHTSA) do everything it could to
guarantee consumer safety? The mandate of NHTSA is to monitor potential threats, collect data to
identify trends about outlier vehicles, and take action to guarantee consumer safety (Nelson 2014).
More than 400 consumer complaints are filed at NHTSA every year, and 929 recalls affecting 55
million cars have been issued as a result of NHTSA investigations over the past seven years (Nelson,
2014).

Wayne State University as a chairman emeritus of consumer advocacy group Public Citizen about
the current state of NHTSA. In her opinion, the agency is under-staffed and under-funded, with a
hard-to-navigate website that makes it difficult to file complaints. To be effective, NHTSA needs
more funding, more staff, a user-friendly website, and transparent decision-making. Claybrook noted
that in 2007 and 2010, NHTSA and Department of Transportation engineers recommended recall
investigations, and the NHTSA review panel overruled both times for lack of information required
to establish a trend (Priddle 2014). In 2005, NHTSA failed to follow through on its investigation of
the airbag and ignition connection, especially in a Maryland crash where the airbag of a 2005 Cobalt
did not deploy (Colias and Nelson 2014). NHTSA officials were criticized by the public for being
silent and not acting quickly to save lives despite warning signs as early as 2004 (Nelson, 2014). In
2013, NHTSA criticized GM for using service bulletins, regional recalls, and warranty extensions to handle major safety issues and deemed it improper (Bunkley 2014).

IMPLICATIONS OF SAFETY PROBLEMS

General Motors

Vehicle recalls can be a serious issue for the auto manufacturer. It is not only the direct repair costs and quality-related expenses, “but also the legal liabilities and potential damages, image issues which carry a hefty price tag. The less tangible expense is brand damage. Brand damage equates to a serious opportunity cost and lost sales” (Elmerraji 2010).

Mary Barra became CEO on January 15, 2014 and learned of the ignition switch issue on January 31, 2014. She took numerous steps to resolve the issue: 1. NHTSA was notified and a recall of 2.6 million vehicles issued; 2. Barra met with family members of those involved in the crashes and announced that Ken Feinberg was hired to “explore and evaluate” compensation options; and 3. She hired two law firms to find out exactly what happened.

When Barra appeared before Congress in April to answer questions about the faulty ignition switch recall, she also presented a public relations strategy. Barra carefully explained that whatever went wrong had happened at the bad old GM – a dysfunctional place that had vanished with the company’s 2009 bankruptcy. Barra portrayed herself as the leader of a new customer-focused GM that would never endanger the lives of drivers over a $2 part (Levin, Doron, and Fortune, 2014).

The ignition switch recall has forced GM to re-examine its safety efforts and recall procedures and to pay closer attention to quality issues in current models (Vlasic and Wald 2014). They will stop selling the dealer delivered 2013 and 2014 Chevrolet Cruze and will recall the 172,000 already sold. GM is also recalling other current models: the 2014 Silverado and GMC Sierra pickups, and the 2015 Suburbans, Tahoes, GMC Yukons and Yukon XLs equipped with six-speed transmissions.

During the restructuring, the U.S. Auto Task Force recognized GM’s management as the main problem. The government attempted to change the culture by removing CEO Rick Wagoner, whose lack of foresight, inability to move the company forward, failure to take the difficult steps necessary, and repeated denial about GM’s dire situation compounded its communication problems (Glass 2013). GM has a multi-tiered organizational structure. There are approximately 18 tiers of bureaucracy between the CEO and the shop floor. This structure allows employees to avoid responsibility at all levels – up, down, and sideways. In addition, employees were incentivized to control costs using measures ranging from saving a few cents to cutting corners on design. Bonuses and praise were given to reinforce cost-cutting behavior. To reverse this trend and create a customer-centric corporate culture, Ms. Barra instituted a program recognizing employees “when they see something that could affect customer safety.” Her next step to eliminating the multi-tiered bureaucracy is to appoint a regulator (Automotive News 2014).

Transparency is a cultural issue that must be linked to accountability for companies to succeed. “Managers must protect those who report problems, or self-protection trumps organizational health” (Baldoni 2014). At first, GM chose to hide its safety problems, but now has taken steps to correct them. Ms. Barra has assumed responsibility and is taking action to remedy not only the safety issues, but also the lack of communication within GM that caused them. She regards it as an opportunity to accelerate cultural change. The executive team is being reorganized, new appointments are being considered, and Ms. Barra may go outside GM to fill corporate strategy, human resources, and legal posts (Bennett 2014). She will push middle management and old timers
to think and act differently, shedding GM’s hidebound culture and putting the customer first (Giglio 2014).

Soaring fuel prices became the Achilles’ heel of the American automaker (Glass 2013). When gas prices began to rise, consumers reacted by buying smaller, fuel efficient vehicles. GM’s lack of foresight and dependence on SUVs and trucks put the Japanese auto manufacturers on top. Just months into her new job, Ms. Barra was left answering for a flawed GM “process” that somehow was allowed to flourish a decade and four chief executives ago (Automotive News 2014). GM is facing a critical time: Top senior leaders are new to their positions, global restructuring is underway, and they plan to launch new vehicles. The recall will mostly likely divert senior management attention. Politically and nationally, GM will take a hit.

2. Suppliers

The U.S. automobile industry consists of three distinct but highly interconnected segments: 1. The Big Three; 2. non-U.S. companies that manufacture cars in the U.S.; and 3. parts suppliers, contract engineers and similar businesses which supply and service segments of the Big Three, non-U.S. companies, and one another (“parts suppliers”). There are also several non-U.S. companies which manufacture cars in the U.S. and thousands of parts suppliers, dealerships, and other direct service providers of the auto industry in the U.S. (Pearl, 2008).

a. Ford's Suppliers

Firestone, a major Ford supplier, recalled more than 10 million 500-series tires with defective treads in 1978. This tire recall was the largest in U.S. history. Firestone issued the recall after the defective tires caused 119 to 150 deaths. The tread defect on Firestone tires affected Ford's Explorer, Bronco, Ranger, and F-150 SUVs and trucks (Schubert, 2011). At first, Firestone was reluctant to admit the tires were faulty; instead they blamed drivers for under-inflating the tires on the Ford Explorer (Corona and Komendanchik, 2008).

The second Firestone and Ford crisis occurred in 2000 when Ford issued a recall of 6.5 million cars due to a tread separation problem. Evidence shows that the problem first surfaced in 1994 (Schubert, 2011). From 1994 to 1996, Bridgestone/Firestone hired inexperienced workers to replace steelworkers during a Steelworkers Union strike. The new workers were forced to meet production deadlines, and as a result, the quality of the tires was compromised and unsafe tires were sold to Ford (Corona and Komendanchik, 2008).

Industry observers suggested that Ford knew about the safety compromises that Firestone practiced in manufacturing the 500-series tires. Nonetheless, Ford continued to take the risk of using Firestone tires. In 2001, Ford ended its business relationship with Firestone. NHTSA concluded that Firestone, not Ford, was culpable for the tire failures. To settle the dispute between the two companies, Firestone paid Ford $240 million in 2005 (Schubert, 2011).

b. GM's Suppliers

It has been reported that GM used to pressure their suppliers, especially part makers, to cut costs, which led to manufactured parts lacking the original design specifications (Plungis and Green 2014). Delphi Automotive PLC is the company that manufactured the two ignition switches that have been used in GM designs. In a talk with a Wall Street analyst, Delphi Automotive PLC explained that the cost of replacing a switch with a safer one will cost from $2 to $5, which could be installed by a mechanic in a matter of minutes (Bennett 2014). Now that GM has decided to make the recall to fix ignition switches, cylinder locks, and keys, they need a new ordering system that
involves coordination between GM dealers and GM parts' suppliers. Parts' suppliers play a crucial role in making the 2.6 million-vehicle ignition-system recall a success. GM revealed to its dealers that the wait for parts that need to be replaced at GM dealerships will be long (LaReau and Colias 2014).

LITERATURE REVIEW
Corporate Social Responsibility

The irresponsible actions of Ford and GM inflicted harm on hundreds of consumers and their families, which leads to an important question: Do companies have any responsibility to their customers? There is considerable research devoted to Corporate Social Responsibility (CSR) and its importance to companies and their stakeholders.

In 1979, Thomas J. Zenisek proposed a definition of CSR as "The degree of fit between society's expectation of the business community and the ethics of the business." In addition, Zenisek defined Ethics as "a system of standards of conduct and moral judgment." There are two aspects to Business Ethics – social ideology, and business and operational ideology. The operational aspect of ethics is influenced by the business community. Business leaders make decisions based on the company's welfare; they determine what ideas to accept or what ideas to reject. The social ideological aspect of ethics is concerned with viewing and organizing the world into a logical system. Business communities will be considered ethical and responsible as long as they meet the society's demands and expectations (Zenisek et al., 1979).

In 1984, Peter Drucker defined CSR as "... the proper social responsibility of a business is to tame the dragon, that is, to turn a social problem into economic opportunity and economic benefit, into productive capacity, into human competence, into well-paid jobs, into wealth" (Kraus et al 2012).

In 2007, Hopkins said, "CSR is concerned with treating the stakeholders of the firm ethically or in a responsible manner. ‘Ethically’ or ‘responsible’ means treating stakeholders in a manner deemed acceptable in civilized societies. Social includes economic and environmental responsibility. Stakeholders exist both within and outside a firm. The wider aim of social responsibility is to create higher standards of living, while preserving the profitability of the corporation, for people both within and outside the corporation" (Kraus et al 2012).

Being socially responsible affects a company's goodwill value. In 1924, Commons explained that the "Goodwill" of any business is the most important capital asset of a company, which is generated from customer loyalty. Research shows that maintaining and increasing goodwill value depends on engaging in continued ethical behaviors. Companies that knowingly produce and/or sell unsafe products increase their chances of losing goodwill value. When companies admit wrongdoing and inform the public of their mistakes, however, they reduce the chance of losing the goodwill value (Black et al., 1994). "Goodwill is not created instantly but it can be destroyed rapidly with a single widely published mistake" (Black et al. 1994). Ford knew from its engineers that the Pinto gas tank position and design were flawed. At that time Ford decided to ignore the safety problem and not inform its customers hoping this decision would maintain and protect its goodwill (Black et al., 1994). In 2010, Crane and Mattern note, “It is by now fairly widely accepted that businesses do indeed have responsibilities beyond simply making a profit.”
B. Business Ethics

Business ethics is the art and discipline of applying ethical principles to examine and solve complex moral dilemmas. Business ethics addresses the two questions, "What is right and wrong? good and bad?" (Weiss et al 1998). In 1990, Laura Nash defined Business Ethics as "the study of how personal moral norms apply to the activities and goals of commercial enterprise. It is not a separate moral standard, but the study of how the business context poses its own unique problems for the moral person who acts as an agent of the system" (Weiss et al 1998).

Even ancient Egyptian writers contemplated the importance of doing business ethically. "The Precepts of Ptah-hotep," one of the oldest surviving books, was written between 2450-2300 BCE. Its author, Ptah-hotep, was a popular Egyptian sage and vizier. In the book, he warns about the dangers of bribery and secret deals, wealth and power, and placing oneself above others after accumulating wealth. He notes that after people become wealthy, they place themselves above others and forget their past (Ciulla, 2011). In 1993, Archie Carroll stressed the importance of ethical reasoning to grasp the complexity of moral problems. He added that, "an intuitive or learned understanding and concern for fairness, justice, due process to people, groups and communities" is necessary for ethical reasoning. As a result, ethics informs and illuminates morally complex decisions in business (Weiss et al 1998).

Another note on the importance of business ethics or the lack of them, is what Henry Taylor, former British statesman, observed, “falsehood ceases to be falsehood when it is understood on all sides that the truth is not expected to be spoken” (Carr 1968). One wonders after researching the many problems Ford, GM, and NHTSA inflicted on customers and families, if business ethics was a game with a different set of rules. Albert Z. Carr once said, "The ethics of business are game ethics, different from the ethics of religion" (Carr 1968). In 1970, the economist Milton Friedman openly defended corporations from any ethical responsibility to anyone other than shareholders. Friedman insisted that the only social responsibility of a business is using company resources legally in the free market to increase the profits for stockholders and owners (Weiss et al 1998).

C. Corporate Governance

Some things can be measured and some cannot. Corporate governance cannot. Jean Tirole defined corporate governance as “the design of institutions that induce or force management to internalize the welfare of stakeholders” (Tirole 2001). In the 1990s, Business Week published articles comparing the corporate governance principles of Ford and GM. GM was credited with creating the Magna Carta of Corporate Governance (DeAngelo et al 2014). Despite this charter, the board of directors failed to act, and GM appealed to the government for a massive bailout.

Ford, on the other hand, had a different set of principles. A family member who was CEO fired himself and searched outside the company for his successor. This decision worked to Ford’s advantage. New management blood, and the perspective it provided, meant Ford was the only auto manufacturer that did not need a bailout during the crisis. “It’s a hugely important general principle: Judgment Trumps Structure” (DeAngelo et al 2013).

“If there has been one pattern to these crises over the decades, it’s that somewhere along the line – from design to engineering to assembly to purchasing to sales and marketing – there has been an opportunity for someone to say, ‘Stop. Let’s rethink this.’ May the GM ignition-switch tragedy serve as an enduring lesson for everyone in the industry. May it give every underling the courage to speak up and every boss the ears to listen” (Automotive News 2014).
ISSUES WITH BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY

A. Greed

A practice in every industry, a necessary evil, is the cost-benefit analysis in which health and safety are weighed against profit. If the automobile industry spared no expense to ensure safety, vehicles would cost much more, making them out of reach for consumers in the lower income bracket. So we accept a certain amount of danger behind the wheel. That’s life (Nelson 2008).

The Ford Pinto is a classic example of corporate greed. Lee Iacocca, vice president of Ford Motor Company, wanted to produce a low-cost car that brought in huge profits. As a result, the Pinto went into production with even the most basic safety features missing.

It is still shocking to read the memo *Mother Jones* magazine wrote in an incendiary 1977 article "… in effect says it is acceptable to kill 180 people and burn another 180 every year, even though we have the technology that could save their lives for $11 a car" (Nelson et al 2014). In 1980, GM had a safety problem with the "side-saddle" fuel tank on its pickup trucks. In a memo that was kept secret for many years, GM engineer Edward Ivey told regulators that GM needed to spend only $2.20 per vehicle to put a stop to burn fatalities. He added that any extra cost to the $2.20 per vehicle will be considered a loss according to GM's cost-benefit calculations (Nelson et al 2014). GM identified the problem early in 2001, but did not begin the recall. Why? For the same reason, the cost of the fix. Some estimates for the fix were about 57 cents for parts plus labor.

B. Too Big to Fail

The failure of the U.S. auto industry would have an effect not only on the U.S. economy, but also on the global economy. According to the Center for Automotive Research (CAR), an independent nonprofit analyst of the automotive industry, auto manufacturers and parts suppliers directly employ over 1,200,000 workers of whom about 240,000 are employed by the Big Three and about 115,000 by non-U.S. manufacturers. CAR has calculated that the total loss of jobs due to the multiplier effect of the failure of the U.S. auto industry would be about 3 million unemployed (Pearl 2008). The industry’s failure would drive the unemployment rate to levels not experienced since the Great Depression.

Another issue involves U.S. imports and exports. As of September 2008, there were imports of $185 billion in value of automobiles, parts, and engines and $94.6 billion in value of vehicles, or 7% of our total exports. The U.S. was running a trade deficit due to a combination of lost exports and increased imports; this deficit would have a serious adverse effect on our balance of trade (Pearl 2008).

C. Customer Forgiveness

After 250 deaths and thousands of incidents caused by faulty Firestone tires, Firestone is still operating globally and successfully. Who can forget the Pinto, Ford’s Death Trap? Five decades after the Pinto, Ford is known as one of the world’s most successful companies.

When remembering the Titanic, the catastrophe that killed more than 1500 persons, one must wonder: How did White Star survive the disaster? It was reported that White Star was asked by other ships and the Titanic design engineers to install 64 lifeboats. Nevertheless, White Star installed only 16 boats, which led to hundreds of deaths. White Star’s business flourished when merged with Cunard, and after the process of rebranding in 2005, White Star and Cunard became known as Carnival.

There are many examples of companies that inflicted major disasters on customers, but are still doing business and are bigger and more successful than ever (Continuity in Business 2011).
Car buyers don't seem to care. The good news for GM is that car buyers have shown little concern about the recalls. New car sales have been strong in the three months since the ignition recall was announced, and the automaker is still No. 1 in U.S. market share. Even the prices of used GM autos have stayed firm throughout the crisis. (CNNMoney 2014).

The nation’s largest auto maker has been stressing the difference between its new cars and trucks and the mostly discarded brands and models that have been linked to at least 13 deaths (Bennett 2014). Kelly Blue Book analyst Eric Ibara said, “GM’s strong sales in April suggests that consumers are looking past old GM’s errant ways and has [sic] more faith in new GM’s products” (Bennett 2014).

D. Consumer Behavior

Consumer behavior is "The study of how consumers select, purchase, use, and dispose of goods and services to satisfy personal needs and wants" (Hanna, Hanna, and Wozniak 2013). In her book "No Logo," Naomi Klein explains how big corporations significantly depend on marketing products rather than manufacturing products in an effort to build their brand image. In their branding efforts, companies target Generation X most frequently, because if they manage to attract one Gen X consumer to buy their brand, the rest will follow. In the 1990s, companies realized that their stock value is tied to their advertising expenditures, which leads to the achievement of their ultimate goal: branding (Segerstrom 2010). Product information that is available to the present generation has risen exponentially. Customers are bombarded with all kinds of product information through various media and networks, such as websites, social networks, cable networks, radio stations, newspapers, magazines, telemarketers, faxes, e-mails, and direct mail. This kind of information exposure should not be underestimated (Hanna, Hanna, and Wozniak 2013). As a discipline designed to understand the basic ideology of human behavior, psychology serves marketers well by identifying ways to influence people to buy their products or services. Individuals are often not conscious of or not able to express motives for buying a certain product. Marketers are aware of this situation, which is the reason companies invest big money in advertising. Through advertising, marketers want to communicate their products’ added value and benefits to give individuals a reason to get up and go buy that product (Haugtvedt 2001).

In his book "The Hidden Persuaders," Vance Packard explains that advertisers are changing our cultures and habits. Even smart and rational individuals sometimes decide to submit knowingly to the pressure, which they seem to enjoy. Companies influence what we eat, drink, drive, do, watch, and also what we put on (Haugtvedt 2001).

E. Ignorance/Lack of Communication

On many occasions, Barra insisted that the solution to the ignition switch problem reside with drivers; they only need to keep one key on the keychain and remove everything else (Valsic and Wald 2014). New York Times has reported that, since 2009, GM handled major safety issues by using letters to dealers called "technical service bulletins" which can be an inexpensive alternative to a recall. It is estimated that GM had known the problem of the defective ignition in the Saturn Ion, Cobalt, and other small cars as far back as 2001. In 2005, GM handled that issue by sending dealers a service bulletin, suggesting they inform drivers that they need to remove extra keys and other items from the ignition keychain (Jenson 2014). During Senate hearings, Ms. Barra stressed safety as a core value. However, service bulletins were issued instead of a recall. The communication gap ranged anywhere from 6 months to 9 years.
In 1966, Lyndon Johnson signed the Motor Vehicle Safety Law. That made Henry Ford II unhappy. Ford sent its best brains to try to instill the idea in Washington that auto accidents are the fault of drivers themselves and highway conditions, not the fault of the car itself (Dowie 1977).

GM’s Problem Resolution Tracking System (PRTS) was set up to track problems that could delay the vehicle from going into production. The system serves as a depository for issues and assigns a priority level to the problem. In 2001, when the ignition switch problem was discovered, it should have been “priority 1.” This would have sent up a red flag to the engineer responsible for the part, the supervisor, possibly the engineer in charge of electrical components and ultimately the vehicle’s chief. That never happened, however. There were at least three reports filed on the PRTS over the years. Each time either nothing was done or remedial action was taken (Colias and Nelson 2014).

It was later discovered that a change was made to the switch in April 2006. It was first approved by Ray DeGiorgio, engineer, who subsequently a month later, agreed to the change. Normally to make tracking the part easier in the event of a problem, redesigned parts are issued a new part identification number. Not so in the case of the ignition switch. The team assigned to investigate the switch problem, led by Jim Federico, chief engineer for small cars and electric vehicles, could not figure out why the 2007 Cobalt and other compact vehicles were not experiencing the same problem. The only answer GM could provide was “that the supplier proposed the change, and the engineer responsible for the part signed off on it (Colias and Nelson 2014).

GM’s board of directors was unaware of the issue before the February recalls began. The board has taken a number of steps to make sure this does not happen again. In April, they hired the law firm of Wachtell, Lipton, Rosen and Katz to conduct a review on how safety issues flowed to its members. Out of the review they want to ensure any future safety issues flow more rapidly through the management levels. They are also meeting with Ms. Barra at least weekly to oversee how she is handling the overhaul of the company’s operations (Lublin and Bennett 2014).

According to Beverly Behan, a corporate-governance consultant and author, “Some corporate-governance experts say GM’s board hasn’t been as visible as it should be in providing investors with information on how it is overseeing the recall response. Directors need to explain the board’s investigative process and steps planned to improve its oversight of risks so that a similar problem does not recur” (Lublin and Bennett, 2014).

CONCLUSION/RECOMMENDATIONS

After researching vehicle safety problems, the many issues that threaten consumer safety will persist if the board of directors does not fulfill its role of governing. As a result, these are recommendations that NHTSA and the automobile industry must implement: 1. Create a task force that includes engineers, suppliers, customers, consumer advocacy groups, government, board, and media; and 2. Hold the board of directors solely and legally responsible and accountable for customer safety.

REFERENCES


EMPLOYEE JOB SATISFACTION AND ORGANIZATIONAL CAPACITY ANALYSIS: A STUDY ON INTEGRATED DEVELOPMENT FOUNDATIONS (IDF) BANGLADESH

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ABSTRACT
This paper is the outcome of a research project conducted on Integrated Development Foundation (IDF) Bangladesh. The research focused on IDF’s human resource management capacity, financial management capacity, degree of employees’ job satisfaction and overall management and its impact on beneficiary mainly customers. Group interview method, observation method and interviewing employees with structured questionnaire method were conducted to collect the data. In this research annual report of IDF was one of the main sources of secondary data. To find out the employees’ job satisfaction level eleven independent variables were included in the questionnaire and it was found that reward system, training and development and job information were significantly correlated with employees’ job satisfaction at five percent level of significance. Six independent variables were considered to know the organizational capacity of IDF out of which human resource development, financial management and external relations were significantly correlated with organizational capacity at five percent level of significance. At present this organization is doing very well with dynamic leadership but it needs to improve in different areas such as human resource management and new product development.

KEYWORDS
Job satisfaction, Human resource management, organizational capacity etc.

INTRODUCTION
The Integrated Development Foundation (IDF) is a non-profit, non-political and a non-government organization (NGO) established in December 1992 with a broad goal to transforming Bangladesh into a poverty-free country. IDF follows the Grameen Bank microfinance model, which was developed by Nobel Laureate Professor Muhammad Yunus in the 1970s. IDF started its operations in the relatively inaccessible hilly regions of Chittagong Hill Districts and other un-served areas of Bangladesh to combat poverty. The main objective of IDF is to assist the poor, the landless, the destitute women and children, small farmers and disabled persons in order to enable them to gain access to resources and to undertake various income-generating activities. In addition to micro-finance, IDF undertakes interventions in other related sectors e.g., nutrition and health, sanitation and safe water, education and skills, housing and environment, renewable energy (solar home system), human rights and governance. Though, the micro-finance is the mainstay of its agenda/operation, IDF takes a holistic approach to poverty-alleviation as far as possible.

Basically, IDF’s interventions involve three socio-economically disadvantaged categories of households i.e., beggars, ultra-poor and the poorest. At the moment (by the year 2011), IDF has grown into one of the large NGOs in the country (and the largest NGO in the Chittagong Hill Districts) there are about 90,000 members (households) benefitting from its operations and 35 branches in the country. It disbursed about Tk. 6415.05 million (=Tk.641.50 crore) up to 2011 with
IDF’s operational districts cover Bandarban, Khagrachari, Cox’s Bazar, Chittagong, Rajshahi and Dhaka.

IDF programs have attracted attention of national and international agencies. IDF has received financial support from Grameen Trust, SIDA, PKSF, HKI, ILO, AUSAID, CARE Bangladesh, UNCDF, UNICEF, USAID, IDCOL, Government of Bangladesh, Basic Bank, Grameen Foundation USA, Deutsche Bank and Cow Bank Australia to carry out its activities. In Bangladesh, a good number of NGO’s helps the poor and ultra poor people by providing services like IDF. The researcher had the opportunity to do research in the field level and office level of IDF as it was asked by the IDF. A lot of researches were conducted about the impact of NGO’s on countries economy and individual life style but a few researches were conducted on employee’s job satisfaction and organizational capacity in particular.

PURPOSE AND SCOPE
The purpose of the study is to provide an independent and comprehensive review and analysis of IDF’s activities and assess the effectiveness of its various programs. Previously, a similar evaluation was undertaken in 2004. It was funded by SIDA. The assessment shall also provide key lessons learnt and identify strengths and weaknesses of the organization in the implementation of the project and provide conclusions and recommendations.

OBJECTIVES
Organization Analysis
In terms of organizational analysis it includes the following:
(i) Job satisfaction analysis of IDF employees.
(ii) Financial analysis of IDF.
(iii) Organizational capacity analysis.
(iv) To find out the strengths, weaknesses, opportunities, and threats of IDF

METHODOLOGY
To conduct organizational analysis, the research team collected data from primary as well as secondary sources. Secondary data are mostly collected from annual reports of the company but some are collected from the office orders and office records. The researchers go through annual report 2002 to annual report 2012. For primary data the researcher prepared two sets of questionnaire, one for employee’s job satisfaction and other set questionnaire for organizational capacity analysis. These questionnaires were based on literature review, previous research, expert opinions and experience. The judgmental sampling procedure was used to select the sample units from different work groups of different branches of IDF who were willing to respond to the questionnaire. Total numbers of respondents were 174 selected from three different divisions such as Dhaka, Chittagong and Rajshahi. The draft questionnaires were tested with 7 employees of IDF to find out whether the questionnaire was understandable to them and necessary changes and amendments were made. The first questionnaire on employee’s job satisfaction which consists of 68 questions and the second questionnaire on organizational capacity have 44 questions. Questions are designed in a five point Likert scale to find out the causes of labor unrest with the help of workers’ right according to Bangladesh labor law act 2006. Five point Likert type scale has been used in the questionnaire to measure workers’ opinion about the implementation of worker rights by the company. 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree have been given in order to analyze data. (Luthans, 2002; Anon., 2003). To test the conditions of job
information, six questions were asked in the questionnaire. Four questions were asked to test job
analysis, three questions to test work family balance, seven questions to test career advancement, six
questions to test reward system, eleven questions to test compensation package, three questions to
test working conditions, six questions to supervisory support, four questions to test recruitment and
selection, four questions to test training and development of employee’s and nine questions to test
job satisfaction. Organizational capacity analysis questionnaire has nine questions related to
governance, six questions related to operations and management, ten questions related to human
resource development, eight questions related to financial management, five questions related to
service delivery, and six questions related to external relations. To test the hypothesis, Pearson’s
product moment correlation analysis and multivariate analysis were used. SPSS version 16.5 was
utilized to analyze the data.

**Table 1: Type of Respondents**

<table>
<thead>
<tr>
<th>Type of Respondent</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainee field organizers (TFO)</td>
<td>43</td>
</tr>
<tr>
<td>Field organizers (FO)</td>
<td>45</td>
</tr>
<tr>
<td>Senior field organizers (SFO)</td>
<td>26</td>
</tr>
<tr>
<td>Trainee program organizers (TPO)</td>
<td>4</td>
</tr>
<tr>
<td>Program organizers (PO)</td>
<td>11</td>
</tr>
<tr>
<td>Assistant program organizers (APO)</td>
<td>9</td>
</tr>
<tr>
<td>Senior program organizers (SPO)</td>
<td>4</td>
</tr>
<tr>
<td>Deputy program organizers (DPO)</td>
<td>3</td>
</tr>
<tr>
<td>Computer operators (CO)</td>
<td>6</td>
</tr>
<tr>
<td>Asst. area managers</td>
<td>3</td>
</tr>
<tr>
<td>Area managers</td>
<td>16</td>
</tr>
<tr>
<td>Asst. coordinators</td>
<td>2</td>
</tr>
<tr>
<td>Sr. Asst. coordinators</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>174</td>
</tr>
</tbody>
</table>

**Focus Group Interviews**

*Group 1*
Focus group interview 5 April 2014
Subject: Overall organization of IDF
Zahirul Alam - Executive Director of IDF
Mahfuzur Rahman – Treasurer of IDF
Niranjan Chandra Debnath - Senior Program Organizer of IDF
Md. Johurul Islam - Senior Accounts Officer of IDF

*Group 2*
Focus group interview 2 April 2014
Subject: Solar project of IDF
Area Manager: Chandpur (11 branches)
Branch Manager: Sharasti
Branch Manager: Kochua  
Branch Manager: Hajigonj  
Technician: Sharasti  
Technician: Kochua  

**Individual Interview**  
Individual interview 1 April 2014  
Subject: Agricultural and livestock project of IDF  
Respondent: Md. Wali Ahad Setu, Assistant professor, Sher-e-Bangla Agricultural University (He visited hilly area of Chittagong region of IDF)

**Observation Method**  
The writers himself visited Dhaka, Chittagong and Chandpur region of IDF and observed the IDF employees and their working procedures and the customers of IDF as a visitor.

**ANALYSIS AND FINDINGS**  
**Primary Data Analysis**  
In this research, primary data collected through questionnaire methods. Two sets of questionnaire prepared one for employee’s job satisfaction and other for organizational capacity analysis. Data is collected from different parts of the Bangladesh such as Dhaka, Chittagong and Rajshahi area. The research team collected data from 174 employees of IDF out of which 43 trainee field organizers, 45 field organizers, 26 senior field organizers, 4 trainee program organizers, 11 program organizers, 9 assistant program organizers, 4 senior program organizers, 3 deputy program organizers, 6 computer operators, 3 asst. area managers, 16 area managers, 2 asst. coordinators, and 2 sr. asst. coordinators. All respondents are educated, 63 passed H.S.C, 10 passed diploma, 70 did bachelor, and 31 did masters. 15 female employees and 159 male employees gave their opinions on two sets of questionnaires.

**Employee Job Satisfaction Analysis**  
Most respondents agreed with this statement: “All of the information received at job interview about the job before being employed was relevant,” with 77 strongly agreeing, 66 agreeing, 18 neutrals and 13 disagreeing.

**Figure 1: Response to Relevant Job Information Item**

![Graph showing response to relevant job information item](image)

**Source:** Field Survey August-October, 2013
Regression Analysis

Table 2: Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.746(a)</td>
<td>.556</td>
<td>.526</td>
<td>.50308</td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

From the above calculation it shows that there was a significant correlation between dependent variable and independent variables. And at 5% level of significance the correlation is 74.60%. Here, adjusted $R^2$ is 0.526 which means that about 52.60 percent variation of dependent variable is explained by independent variables included in this model. And the independent variables of this model are training and development, compensation package, job information, recruitment and selection, work family balance, job design, job analysis, career advancement, working conditions, supervisor supports, and reward system.

Table 3: ANOVA Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>51.412</td>
<td>11</td>
<td>4.674</td>
<td>18.467</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>41.001</td>
<td>162</td>
<td>.253</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>92.413</td>
<td>173</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

ANOVA test results show that the table significance value 0.05 is greater than the calculated significance value 0.000, meaning that the null hypothesis is rejected. There is a significant relationship between dependent variable and independent variables. Therefore, employee job satisfaction depends on training and development, compensation package, job information, recruitment and selection, work family balance, job design, job analysis, career advancement, working conditions, supervisor supports, and reward system. However, these results do not necessarily mean that all elements of independent variables have significant impact on job satisfaction. For this, the author went for coefficient analysis for further study.
Table 4: Results of Multivariate (OLS) Analysis: Relationship between Organizational Practices and Employee Job Satisfaction

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Estimated t-value</th>
<th>Significance level.</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) job information</td>
<td>.193</td>
<td>.086</td>
<td>.155</td>
<td>2.241</td>
</tr>
<tr>
<td>ii) job analysis</td>
<td>.012</td>
<td>.091</td>
<td>.010</td>
<td>.129</td>
</tr>
<tr>
<td>iii) work family balance</td>
<td>.002</td>
<td>.060</td>
<td>.002</td>
<td>.032</td>
</tr>
<tr>
<td>iv) career advancement</td>
<td>-.060</td>
<td>.087</td>
<td>-.056</td>
<td>-.686</td>
</tr>
<tr>
<td>v) reward system</td>
<td>.287</td>
<td>.080</td>
<td>.293</td>
<td>3.602</td>
</tr>
<tr>
<td>vi) compensation package</td>
<td>-.061</td>
<td>.066</td>
<td>-.071</td>
<td>-.922</td>
</tr>
<tr>
<td>vii) working conditions</td>
<td>.100</td>
<td>.093</td>
<td>.092</td>
<td>1.076</td>
</tr>
<tr>
<td>viii) supervisor supports</td>
<td>-.063</td>
<td>.081</td>
<td>-.069</td>
<td>-.773</td>
</tr>
<tr>
<td>ix) job design</td>
<td>.047</td>
<td>.069</td>
<td>.056</td>
<td>.680</td>
</tr>
<tr>
<td>x) recruitment and selection</td>
<td>.088</td>
<td>.070</td>
<td>.095</td>
<td>1.270</td>
</tr>
<tr>
<td>xi) training and development</td>
<td>.475</td>
<td>.062</td>
<td>.465</td>
<td>7.655</td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

Coefficient analysis shows the relationship between dependent variable and each independent variable. According to Significance value employee’s job information, reward system and training and development have significant influence on employee’s job satisfaction. Here, table significance value is 0.05, which is greater than calculated significance value 0.026, 0.000, and 0.000 respectively. Career advancement, compensation package and supervisor support have negative t values, confirming the Pearson correlation results that career advancement, compensation package and supervisor support have no positive relationship with the dependent variable. But the calculated significance values of job analysis, work family balance, working conditions, job design and recruitment and selection are greater than the table significance value.

**SUMMARY OF FINDINGS**

At last, the final model includes three independent variables employee’s job information, reward system and training and development which have significant impact on employee’s job satisfaction.
Table 5: Dependency of job satisfaction on organizational practices

<table>
<thead>
<tr>
<th>Elements</th>
<th>Value of $[\beta]$</th>
<th>Rank order on the basis of standard coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and development</td>
<td>0.465</td>
<td>1</td>
</tr>
<tr>
<td>Reward system</td>
<td>0.293</td>
<td>2</td>
</tr>
<tr>
<td>Job information</td>
<td>0.155</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>0.913</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

Financial analysis of IDF

Any MFI (especially one not dependent on grants from donors, foreign or national) will have to manage its finances prudently. Without a sustained and robust financial situation, an MFI cannot develop and expand. It seems this cardinal rule is kept in mind by the IDF policy-makers and the management. IDF’s total volume of microfinance-related business has grown over the last years (2007-2011). See Table 2.1 IDF’s number of group-members has grown from 68,193 (in 2007) to 86,952 (in 2011) and 96,312 (in 2012); in 2013 the number has crossed the milestone of 100,000. This is a reflection of IDF’s grassroots level strength.

Table 6: IDF Loans and Savings, 2007-2011

<table>
<thead>
<tr>
<th>Years (1)</th>
<th>Cumulative Members (2)</th>
<th>Cumulative Savings (million Taka) (3)</th>
<th>Cumulative Borrowers (4)</th>
<th>Cumulative Loan disbursed (million Taka) (5)</th>
<th>Loan outstanding (million Taka) (6)</th>
<th>Yearly Income (million Taka) (7)</th>
<th>Yearly Income over expenditure (million Taka) (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>68,193</td>
<td>192</td>
<td>63,176 (93%)</td>
<td>2,966</td>
<td>413</td>
<td>93</td>
<td>27.78</td>
</tr>
<tr>
<td>2008</td>
<td>72,901</td>
<td>213</td>
<td>65,603 (90%)</td>
<td>3,722</td>
<td>415</td>
<td>99</td>
<td>13.34</td>
</tr>
<tr>
<td>2009</td>
<td>78,690</td>
<td>230</td>
<td>69,130 (87%)</td>
<td>4,575</td>
<td>453</td>
<td>100</td>
<td>0.75</td>
</tr>
<tr>
<td>2010</td>
<td>82,132</td>
<td>263</td>
<td>68,297 (83%)</td>
<td>5,526</td>
<td>558</td>
<td>155</td>
<td>14.0</td>
</tr>
<tr>
<td>2011</td>
<td>86,952</td>
<td>305</td>
<td>72,170 (83%)</td>
<td>6,805</td>
<td>659</td>
<td>200</td>
<td>15.3</td>
</tr>
</tbody>
</table>

Source: IDF, Annual Reports, 2007 to 2012, Dhaka

In tandem, other related indicators of micro-credit (MC) sectors e.g. groups, centers, branches, unions (under coverage), upazilas (sub-district under coverage) and districts (under coverage) have grown. It is observed that in 2012 IDF covers 10 districts (about 6.4 percent of the total), 85 upazilas (about 23 percent of the total) and 325 unions. The last-mentioned set of statistics shows the expense of IDF’s micro-credit operations and its related challenges, prospects.

The physical expansion (i.e. coverage of new areas and members) has led to simultaneous growth of borrowers, loan-disbursement, loan outstanding, organizational income and savings. See columns (3) to (8). Loan-disbursed (cumulative) from Tk. 296.6 crore or Tk. 29666 million (in 2007), to Tk. 680.5 crore (in 2011) Tk. 8281.19 crore or Tk. 8281.5 million (in 2012). Alternatively speaking, the yearly loan-disbursement has risen from Tk. 75.55 crore or Tk. 755.5 million (in 2008) to Tk. 127.94 crore or Tk. 1279.4 million (in 2011) and to Tk. 147.7 crore or Tk. 1477.0 million (in 2012). IDF’s loan overdue-rate (in percent) seemed high (about 83 percent) in 2008, but it has been tamed and brought down in the range of 35 to 50 in 2009-2012. The estimates of portfolio-at-risk (PAR) >30 is not that high; it is in the range of 3.00 to 4.00.
Three indicators of IDF’s yearly income, income over expenditure and savings show that the organization keeps in making positive gains, see columns (7) and (8) of Table 2.1; note that income over expenditure is recorded highest in 2007 (i.e. Tk. 2.78 crore or Tk. 27.78 million) and is the lowest in 2009 (i.e. Tk. 756 lakh or Tk. 0.75 million). In real terms (i.e. correcting for annual inflation rate of 8 to 9 percent), the estimates of income over expenditure (or simply income) should look much smaller and modest. Graph 2.3 present growths of IDF’s cumulative savings and cumulative loan-disbursement. Yearly savings (on account of the four products) has risen from Tk. 2.06 crore or Tk. 20.6 million (in 2008) to Tk. 8.75 crore or Tk. 87.35 million (in 2012). The bulk of savings comes from member savings (which is almost mandatory), then follows special savings.

Income and Income over Expenditure, 2007-2012
The organization posts yearly income from micro-finance sector of Tk. 9.47 crore or Tk. 94.68 million in 2008 and it more than doubles to Tk. 20.75 crore or Tk. 207.51 million in 2012. The overwhelming share (about 95 percent) of this income is generated by service charges paid by the clients (i.e. the group-members). IDF does not earn hefty income from MF-operation and it is also not expected from the organization (the mission of which, after all, is poverty reduction). Its net income (after deducting administrative expenses, overheads, rental costs, cost of fund, depreciation etc.) is estimated around Tk. 30 lakh or Tk. 3.0 million in 2008 and Tk. 1.92 crore, or Tk. 19.26 million in 2012.

Loan-portfolio, 2008-2012
Earlier estimates (see table-) show that yearly loan-disbursement grow from Tk. 77.56 crore (in 2008) to Tk. 147.69 crore (in 2012). Table 2.2 presents percent-share of loan-disbursement (i.e. loan-portfolios) by major purpose in the period under consideration.
Table 7: IDF Distribution (as percent of total loans) of Loans by Purpose, 2008-2012

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Purpose</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Small Business</td>
<td>27.67</td>
<td>16.12</td>
<td>1.53</td>
<td>1.51</td>
<td>3.4</td>
</tr>
<tr>
<td>02</td>
<td>Farming</td>
<td>12.75</td>
<td>25.66</td>
<td>21.12</td>
<td>22.13</td>
<td>23.40</td>
</tr>
<tr>
<td>03</td>
<td>Cow rearing</td>
<td>9.56</td>
<td>5.42</td>
<td>8.50</td>
<td>10.2</td>
<td>12.2</td>
</tr>
<tr>
<td>04</td>
<td>Goat rearing</td>
<td>2.12</td>
<td>3.32</td>
<td>5.71</td>
<td>5.81</td>
<td>7.75</td>
</tr>
<tr>
<td>05</td>
<td>Poultry</td>
<td>3.98</td>
<td>4.36</td>
<td>20.02</td>
<td>12.60</td>
<td>11.70</td>
</tr>
<tr>
<td>06</td>
<td>Local transportation</td>
<td>9.79</td>
<td>7.36</td>
<td>2.44</td>
<td>2.1</td>
<td>2.5</td>
</tr>
<tr>
<td>07</td>
<td>Fruit gardening</td>
<td>1.38</td>
<td>1.60</td>
<td>16.40</td>
<td>16.10</td>
<td>8.6</td>
</tr>
<tr>
<td>08</td>
<td>Others**</td>
<td>32.75</td>
<td>36.16</td>
<td>24.28</td>
<td>29.55</td>
<td>30.45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>755.55</td>
<td>853.13</td>
<td>950.8</td>
<td>1279.45</td>
<td>1474.9</td>
</tr>
</tbody>
</table>

Source: IDF, Annual Reports, 2007 to 2012, Dhaka

Table 7 reveals a number of aspects worth noting:
(i) The major portfolio in the terminal year is farming (23.4 percent-share), poultry (12.2 percent-share), goat-rearing (11.7 percent-share) and fruit-gardening (8.6 percent-share). There is a dramatic drop in the share of small business (i.e. petty trading) from the earlier years of 2008-2009 in the closing years of 2011-2012; a fall from around 28 percent-share to 2-3 percent-share.
(ii) Local transportation (e.g. rickshaw, van etc.) as a loan-portfolio also loses importance from around 10 percent-share in 2008 to about 2.5 percent in 2012.
(iii) The above-mentioned change in the mix of loan-portfolio reflects a welcome change in the total loan-disbursement scenario. IDF’s financial resources are going to fund real sectoral activities such as farming (e.g. vegetables, crops), cow and goat rearing, poultry (i.e. livestock) and horticultural farm. This is a great quantitative change in the investment portfolios of the borrower members.

Current Assets, Current Liabilities, Current Ratio and Acid Test Ratio, 2002-2012

Let us look at the estimates of current assets (value in Million Taka) and current liabilities (value in Million Taka) of the organization for the period 2002 to 2012. The value of current asset rose from Tk. 106 million in 2002 to Tk. 841 million in 2012. In the period some spectacular positive changes have taken place both in current assets and current liabilities. In the same period, the value of current liabilities rises from Tk. 1.5 million in 2002 to Tk. 371 million in 2012. The study finds current ratios (value of current assets/ value of current liabilities) for the period (2002-2012) quite satisfactory; the standard number being 2. Naturally, one would not like to see a ratio (or number) much higher than the norm or much lower than it. For the terminal year of 2012, the ratio is 2.27; for the sub-period 2007-2012 the ratio ranges between 2.00 to 2.35. It is excellent. See Table 8 below.
Table 8: IDF: Current Assets (Million Tk.), Current Liabilities (Million Tk.), Quick Assets (Million Tk.), Current Ratio, Acid Test Ratio, 2002-2012

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Year</th>
<th>Current assets (Million taka)</th>
<th>Current liabilities (Million Taka)</th>
<th>Current ratio</th>
<th>Quick assets (Million taka)</th>
<th>Acid test ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2002</td>
<td>106</td>
<td>1.5</td>
<td>70.66</td>
<td>106</td>
<td>71</td>
</tr>
<tr>
<td>2</td>
<td>2003</td>
<td>141</td>
<td>3</td>
<td>47</td>
<td>141</td>
<td>47</td>
</tr>
<tr>
<td>3</td>
<td>2004</td>
<td>181</td>
<td>4</td>
<td>45.25</td>
<td>181</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>2007</td>
<td>393</td>
<td>196</td>
<td>2</td>
<td>392</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>2008</td>
<td>448</td>
<td>225</td>
<td>1.99</td>
<td>447</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>2009</td>
<td>490</td>
<td>243</td>
<td>1.98</td>
<td>490</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>2010</td>
<td>634</td>
<td>269</td>
<td>2.35</td>
<td>633</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>2011</td>
<td>742</td>
<td>316</td>
<td>2.35</td>
<td>741</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>2012</td>
<td>841</td>
<td>371</td>
<td>2.27</td>
<td>841</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: IDF, Annual Reports 2007 to 2012, Dhaka

Return on Total Assets Ownership’s Equity, Total Debt and Assets

Total asset-value of IDF has grown from Tk. 11.06 crore or Tk. 110.64 million in 2002 to Tk. 89.67 crore or Tk. 896.67 million in 2012; it has grown at an annual (average) rate of growth of 89 percent. See Table 9 following. Similarly, net income (value) grew from a modest Tk. 0.96 crore or Tk. 9.6 million in 2002 to Tk. 3.88 crore or Tk. 38.77 million in 2012; it grew at a rate of annual (average) 38 percent.

Table 9: IDF: Return on Assets Ratio, Net Income (Million Tk.), Average Total Assets (Million Tk.), 2002-2012

<table>
<thead>
<tr>
<th>SL. NO.</th>
<th>Years (1)</th>
<th>Average Capital Fund (Million taka)* (2)</th>
<th>Net Income (Million taka) (3)</th>
<th>Average total assets (Million taka) (4)</th>
<th>Return on Assets Ratio** (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2002</td>
<td>32.54</td>
<td>9.6</td>
<td>110.64</td>
<td>0.086</td>
</tr>
<tr>
<td>2</td>
<td>2003</td>
<td>35.13</td>
<td>5.03</td>
<td>128.3</td>
<td>0.039</td>
</tr>
<tr>
<td>3</td>
<td>2004</td>
<td>42.9</td>
<td>12.29</td>
<td>166.72</td>
<td>0.073</td>
</tr>
<tr>
<td>4</td>
<td>2007</td>
<td>114</td>
<td>27.77</td>
<td>418.03</td>
<td>0.066</td>
</tr>
<tr>
<td>5</td>
<td>2008</td>
<td>121</td>
<td>13.34</td>
<td>453.64</td>
<td>0.029</td>
</tr>
<tr>
<td>6</td>
<td>2009</td>
<td>129</td>
<td>0.73</td>
<td>517.09</td>
<td>0.001</td>
</tr>
<tr>
<td>7</td>
<td>2010</td>
<td>139.5</td>
<td>14.95</td>
<td>622.35</td>
<td>0.024</td>
</tr>
<tr>
<td>8</td>
<td>2011</td>
<td>156</td>
<td>15.28</td>
<td>769.47</td>
<td>0.019</td>
</tr>
<tr>
<td>9</td>
<td>2012</td>
<td>183</td>
<td>38.77</td>
<td>896.67</td>
<td>0.043</td>
</tr>
</tbody>
</table>

Source: IDF, Annual reports 2007 to 2012, Dhaka

*Total assets = Current assets + fixed assets
Note: Capital fund = Owner funds and donor funds
**Asset ratio = Net income (value)/ Average total assets (value)

Return on total asset has fallen from 0.086 in 2002 to 0.043 in 2012. Time-series estimates of return (ratio) on total asset show that over the period 2002-2012, the overall trend has been on of decline. Some improvement in the period 2004-2007, there is a steep fall in the years 2008-09 (the period of undemocratic government). From 2010 onward, the ratio is rising, but it seems to be modest one.

The year 2009 was the worst year for IDF, when asset ratios hit rock bottom. Table 8 above presents owners’ (the founding members) equity over the period 2002 to 2012; it grew from a modest Tk. 3.25 crore or Tk. 32.54 million in 2002 to a reasonable amount of Tk. 12.23 crore (or Tk.
122.28 million) in 2012; the annual (average) rate of growth of owners’ equity is estimated at 34.5 percent. It is quite encouraging. See column (2) of the table.

**Table-10: IDF Loans and Loans Outstanding (Million Tk.) 2008-2012**

<table>
<thead>
<tr>
<th>Components</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan disbursed (by year)</td>
<td>755.55</td>
<td>853.13</td>
<td>950.80</td>
<td>1279.45</td>
<td>1476.90</td>
</tr>
<tr>
<td>Loan disbursed (cum.)</td>
<td>3721.67</td>
<td>4574.80</td>
<td>5525.60</td>
<td>6805.05</td>
<td>8281.95</td>
</tr>
<tr>
<td>Outstanding increase (by yr.)</td>
<td>1.77</td>
<td>38.06</td>
<td>104.94</td>
<td>101.78</td>
<td>139.86</td>
</tr>
<tr>
<td>Loan outstanding (cum.)</td>
<td>414.67</td>
<td>452.73</td>
<td>557.68</td>
<td>659.45</td>
<td>799.31</td>
</tr>
<tr>
<td>Rate of repayment</td>
<td>99.00%</td>
<td>99.67%</td>
<td>99.01%</td>
<td>99.29%</td>
<td>99.54%</td>
</tr>
</tbody>
</table>

*Source: IDF, Annual reports 2008 to 2012, Dhaka*

The above table showed that loan disbursement trend was upward and the increasing rate was very good. It indicates that the number of borrowers was increasing. Now the question loan disbursement increasing was good for IDF or not. To answer this question we have to know two things. Firstly was it increase the outstanding and secondly was it increase the rate of repayment. If both the answer positive then it can conclude that IDF did the right things because the outcome of these activities was profit increased. Here the rate of repayment was very good, all most it was above 99% and trend of outstanding increase was also good.

**Organizational Capacity Analysis**

Sample question and answered by the respondent: Standard operating procedures and policies are functioning. 66 respondents cited excellent achievement, 61 said no need for immediate improvement, 31 said only little improvement required, 10 said need improvement, 5 said neutral about this statement and 1 said nonexistent (see Figure 3 below):

**Figure 3: Standard Operating Procedures and Policy Functions**

*Source: Field Survey August-October, 2013*
Table 11: Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.700(a)</td>
<td>.490</td>
<td>.471</td>
<td>.32780</td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

From the above calculation it shows that there was a significant correlation between dependent variable and independent variables. And at 5% level of significance the correlation is 70.00%. Here, adjusted $R^2$ is 0.471 which means that about 47.10 percent of the variance in the dependent variable is explained by independent variables included in this model (governance, operations and management, human resource development, financial management, business service delivery and external relations).

Table 12: ANOVA Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>17.210</td>
<td>6</td>
<td>2.868</td>
<td>26.695</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>17.944</td>
<td>167</td>
<td>.107</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>35.154</td>
<td>173</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

From ANOVA test it shows that the table significance value 0.05 is greater than the calculated significance value 0.000. leading to the rejection of the null hypothesis. Therefore, there is a significant relation between dependent variable and independent variables. Therefore, organizational capacity depends on the independent variables of this model are governance, operations and management, human resource development, financial management, business service delivery and external relations. But it does not mean that all elements of independent variables have significant impact on organizational capacity. For this, the author went for coefficient analysis for further study, as shown in Table 13 following.
Table 13: Results of Multivariate (OLS) Analysis

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Estimated t-value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>i) governance</td>
<td>.089</td>
<td>.065</td>
<td>.127</td>
<td>1.366</td>
</tr>
<tr>
<td>ii) operations and management</td>
<td>.077</td>
<td>.062</td>
<td>.121</td>
<td>1.247</td>
</tr>
<tr>
<td>iii) human resource development</td>
<td>.123</td>
<td>.056</td>
<td>.211</td>
<td>2.181</td>
</tr>
<tr>
<td>iv) financial management</td>
<td>.149</td>
<td>.068</td>
<td>.215</td>
<td>2.173</td>
</tr>
<tr>
<td>v) business service delivery</td>
<td>.017</td>
<td>.060</td>
<td>.027</td>
<td>.285</td>
</tr>
<tr>
<td>vi) external relations</td>
<td>.075</td>
<td>.029</td>
<td>.162</td>
<td>2.607</td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

Coefficient analysis shows the relationship between dependent variable and each independent variable. The results listed in the table above indicate that human resource development, financial management and external relations have significant influence on organizational capacity. However, governance, operations and management, and business service do not appear to be significantly related to organizational capacity.

Summary of findings
At last, the final model includes three independent variables: human resource development, financial management and external relations, all of which have significant impact on organizational capacity.

Table 14: Dependency of organizational capacity

<table>
<thead>
<tr>
<th>Elements</th>
<th>Value of $\beta$</th>
<th>Rank order on the basis of standard coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial management</td>
<td>0.215</td>
<td>1</td>
</tr>
<tr>
<td>Human resource development</td>
<td>0.211</td>
<td>2</td>
</tr>
<tr>
<td>External relations</td>
<td>0.162</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>0.588</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey August-October, 2013

Strengths, Weaknesses, Opportunities, and Threats of IDF

**Strengths**
- In 2012 it has 72,806 borrowers and 96,312 members.
- Up to 2012 IDF distributed loans totaling 8282 million taka.
• It has approximately 931 dedicated and trained employees out of which 839 are male employees and 92 female.

• It has 17 products (purposes of loan).

• Its working capital management is very good.

• It has the credibility to collect fund from different sources such as PKSF, Bank ASIA Ltd., BASIC Bank Ltd., Krishi Bank, BRAC Bank Ltd., Prime Bank Ltd., One Bank Ltd., Eastern Bank Ltd., and so on.

• IDF organized pre-service training and in-service training for its staff members.

• IDF launch renewable energy (solar home system) which has good prospects.

• Its monitoring system is quite satisfactory.

• This organization gives competitive salary to its employees.

• Income over expenditure is increasing due to increase the loan outstanding.

• Its liquidity ratio shows that its liquidity well managed in the past few years.

• Its net income and total assets both are increasing consequently.

• IDF employees have given clear job description and realistic target by the authority.

• The working environment of IDF is comfortable.

• Supervisor help subordinates whenever they needed.

• Most of the employees are satisfied with the present HRM practices of the organization.

• It has standard operating procedures.

• Facilities and equipment are in good management control.

• Decision making process is transparent.

• Staff motivation is good especially in solar home system.

• Every member has clear work plan to meet the strategy.

• Internal and external audit and financial review undertaken regularly.

• Demonstrated capacity to sustain market driven business strategy.
Formal working relationship with government agencies in place.

Weaknesses
- Compared to loan disbursement, members’ savings is not satisfactory.
- IDF’s microfinance is in maturity level.
- IDF’s product breadth is not that much wider.
- IDF’s monitoring system is known by the field level employees; therefore it has some positive and negative impacts on proper monitoring.
- Its employee motivation system is good, but the timing of motivation is not good.
- IDF automation system is work station based but it needs to establish a server based automation system.
- IDF collects fund from high cost sources, if it cannot minimize its operating expenditure then this will be a weakness for IDF.
- Cash flow management is good but more liquidity is not good for the organization.
- IDF present organization structure is good but costly and it will be more costly if IDF introduce more new product which they must do.
- At present it has no leadership training, refreshment training, and confidence build up training.
- IDF has no written Human Resources Management policy and guideline.
- IDF has not yet applied any remarkable marketing strategies.

Opportunities
- At present IDF serves only in 12 districts, therefore it has the opportunity to capture the other districts of Bangladesh.
- IDF has the opportunity to introduce new product because it has an established network.
- IDF has the opportunity to introduce new business because the executive director and the governing body have the capability and experience to run a new business.
- IDF can monitor its borrowers better than a commercial bank so it can introduce profit sharing or sharia based micro finance instead of interest.
- IDF has the opportunity to establish a private university in the long run.

Threats
- IDF has a good number of competitors.
- Some NGO’s doing illegal or bad practices which creates image problem.
- At present a good number of banks provide microcredit facilities to its customer.
- Government rules and regulations are not stable and sometimes unfriendly to run NGO.
- Unstable political situation is always a threat for the organization.
- The number of donors and the amount of donation is changing time to time.
RECOMMENDATIONS

- IDF’s Management and its employees have to more concerned about members savings. Everyday every employee must motivate his or her members and borrowers to increase the savings.
- Microfinance is in maturity level. So try to find out the problematic branch and resolve the problem by transferring employees, give more loans or take help local leader or administration to collect fund, or give motivational packages for borrowers to repay the loan.
- IDF has 17 products, it can introduce new product by considering the productivity, economic development, and social development of users and mostly user purchasing power of the product.
- IDF monitoring system is good but it has some lacking. Employees just do what they need to do to escape from monitoring. So the authority of different level must visit time to time without announcement and directly talk with the customer.
- IDF sometimes collects loan from high cost sources. It is only good when you already cover the fixed cost and fixed variable cost. Therefore, IDF should collect funds from low and high cost sources in such a way so that overall cost will be lower than the rate of loan disbursement.
- IDF current ratio and acid test ratio showed that IDF liquidity condition is good for long period of time in that case some fixed current assets can be used for long term investment so that its profit will increase at the same time it does not face any liquidity crisis.
- IDF present organization structure is better than the previous functional structure but it is costly and it will be more costly if this organization launches more new products. So, it is best for the organization to make its structure as product team based organization structure.
- IDF arrange two kinds of training programs. It is good but the research team found that employees more training such as leadership training, refreshment training etc. Sometimes it can be possible to arrange on the job training suppose a manager send to another branch for one week at the same time another manager from another branch will work on his branch. On that time the respective area manager will help to develop their leadership skill. At the same time both manager are requested to submit a report about what he observes and what he learns from the new branch.
- IDF has no written human resource development policy and guidelines making it essential to prepare a written HRM policy for this organization.
- Today’s market is always competitive. To survive and capture new markets you must apply marketing strategies. The main strategy is to find out why people purchase your product, what are the benefits you offer to your customers that competitors have not, is it add value to your customers. If the answer is positive then let your customer to know about the benefits of the product with the help of your employees, existing customers and advertisement.
- IDF must maintain formal relationship with the government and private agencies in place. It is basically a social movement. If everybody creates pressure on a person to repay the loan then he has no chance to escape it. So try to develop social network as much as possible.
• IDF can expand its business in the other districts of Bangladesh.
• IDF has a number of competitors, so the organization should try to capture market share by providing good services and sustainable development.
• IDF employees are satisfied, and will be more satisfied if training and development, reward system and job information are properly taken care of.
• IDF’s organizational capacity is satisfactory and will improve further if proper financial management, human resource development and external relations are taken care of.

REFERENCES


EFFECTIVELY ASSESSING RISK IN NEW PRODUCT DEVELOPMENT: A TOOL FOR ENGINEERS AND MANAGEMENT

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ABSTRACT
Overconfidence is the most prominent and important bias among evaluators of innovations such as entrepreneurs, inventors and business decision-makers (Ludtke & Luthje, 2012). Most new products fail (Burkitt & Bruno, 2010) which is a reflection of this mind-set. Engineers and scientists engaged in new product development (NPD) are typically too optimistic in assessing their ability to solve a problem in the forecast time period. Nevertheless, products that entail a significant learning curve for a company are often included in revenue forecasts. Failure to meet deadlines, such as a product release date, can diminish confidence in a company and therefore, affect its stock price.

There are numerous methods such as decision trees and gate processes for monitoring and managing new product development. These methods can be complex and difficult to understand. In addition, all too often, they stifle creativity and leave management frustrated in trying to interpret the risks associated with a particular research and development (R&D) project.

To help minimize overconfidence and to communicate predictable risk, the authors develop a model which firstly, enables technical employees to better understand the risks of developing a particular new product. The model addresses technical as opposed to marketing concerns and highlights those elements in the development process that are not well understood. Secondly, the goal of the model is to bridge the gap between engineers and researchers and the Board members, for example, who are generally non-technical.

A simple and graphic interface enables the technical staff to communicate the areas of technology which may prove troublesome.

Specifically, the authors assert that experience with the product type under development determines the risk. The method stratifies risk into four categories (HOP-SKIP-JUMP-LEAP) based upon the development team’s familiarity and experience with the technology being developed. The breadth of the experience available, at several levels -- the team, company or industry -- reflects the level of risk. To begin the risk classification process, the development team places each task in the product development process into a risk category, each category being associated with a probability of success range from zero to one hundred percent. On a task-by-task basis, the development team further customizes the risk by narrowing the range to a specific percent. Both serial and parallel development paths can be accommodated by the method. Generally, incremental product improvements are populated with HOPS and SKIPS, while revolutionary or radical products will have multiple JUMPS and possibly a few LEAPS.

The authors present the theoretical underpinnings and research, which support the model’s validity. Much of this research emphasizes the importance of the company’s intellectual capacity i.e.
knowledge and skills, in ensuring new product success (deSousa Mendes & de Toledo, 2012). The authors also discuss how the model predicts the success and failure of products from a technical perspective. Both hypothetical and real-world examples are explored.

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ATTITUDES TOWARD MOBILE ADS AND INTENTION TO USE MOBILE ADS

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ABSTRACT
The high penetration of mobile phones has created a good opportunity for marketers to send consumers advertising messages. According to eMarketer (2014), nearly half of all digital ad spending in North America will be on the mobile Internet by 2017. Since mobile is personal, marketers can reach mass consumers with customized mass messages via mobile channels. However, there is a lack of studies that help us to understand how consumers formulate their attitudes toward mobile ads and their effectiveness. This study examines consumer attitudes toward mobile ads and their intention to utilize or take action on mobile ads they may see. Ease of use, entertainment and credibility constructs are examined in the relationships between attitudes and intention to use mobile ads.

THEORETICAL BACKGROUND
The theory of reasoned action (TRA) is used for the study (Ajzen, 1991). TRA was introduced under the assumption that humans’ behaviors are rational, beliefs lead attitudes, and a behavior is the immediate determinant of an action and predicts behavioral intention and actual behavior. Attitude toward behavior refers to “an individual’s positive or negative feelings about performing the target behavior” (Fishbein & Ajzen, 1975, p. 216) and the attitude is affected by behavioral beliefs. Applied to mobile consumer behavior, individual feelings are related to transaction activities. Thus, favorable attitude promotes intention to use.

HYPOTHESES
Using the theory and previous research findings, a conceptual model is created (Figure 1). Using two independent constructs, including ease of use and entertainment, attitude toward mobile ad, credibility, and intention to use a mobile ad are examined. The following hypotheses are developed.

H1: Mobile ad ease of use is positively related to mobile ad entertainment.
H2a: Mobile ad ease of use is positively related to attitude toward mobile ad.
H2b: Mobile ad entertainment is positively related to attitude toward mobile ad.
H3a: Attitude toward mobile ad is positively related to intention to use a mobile ad.
H3b: Attitude toward mobile ad is positively related to mobile ad credibility.
H4: Mobile ad credibility is positively related to intention to use a mobile ad.
RESEARCH METHOD
This study administered a survey to measure attitude toward mobile ad and intention to use. Using convenience sampling, data were collected from a Northeastern university in the U.S. using web-based survey. The sample frame is appropriate since college students are heavy users of mobile units as their primary communication channel. The Sample consisted of 72 college students, consisting of 44% females and 56% males. All respondents were between 19 and 25 years old. The scale used for measuring attitudes is based upon the ones developed by Ducoffe (1996) and Tsang et al. (2004). Entertainment, credibility, ease of use and intention to use scales were modified from Tsang’s study (2004). All items were measured on a 7-point Likert scale.

Data Analysis
The measurement model was tested using confirmatory factor analysis (CFA). The CFA results indicated an acceptable fit ($\chi^2 = 250.91$, df = 160, p-value = .000, CFI = .94, RMSEA = .089, and TLI = .93). Further, construct validity was evaluated based on the indices suggested by Hair, et al., (2006). Factor loadings ranged from .79 to .95 ($p < .001$) and the variance extracted estimates (VEs) are .71, .80, .77, .75, and .80 for ease of use, entertainment, attitude, credibility and intention to use, respectively. In addition, the construct reliability estimates were all adequate, ranging from .90 to .95. Discriminant validity is measured by using the method suggested by Fornell and Lacker (1981); the results indicated that the discriminant validity of the model is supported and good reliability is also established (Table 1). Structural equation modeling (SEM) was run to examine the theoretical model and test hypotheses. The results indicated a satisfactory fit of data ($\chi^2 = 258.77$, df = 164, p-value = .000, CFI = .94, RMSEA = .09, and TLI = .93). Regarding the hypotheses tests, the path model results revealed that all hypotheses except H4 are significant (Table 2).

FINDINGS AND IMPLICATIONS
Ease of use on mobile ad affects mobile ad entertainment and attitude toward mobile ad. Mobile ad entertainment affects attitude toward mobile ad. Attitude toward mobile ad affects intention to use mobile ad and mobile ad credibility. However, mobile ad creditably is not related to intention to use mobile ad. The findings imply ease of use and entertainment-lead positive attitude toward mobile ad. Positive attitude toward mobile ad increases mobile ad effectiveness. As managerial suggestions, marketers should consider mobile ad ease of use and entertainment in order to increase the effectiveness of mobile ad.

LIMITATION AND FUTURE STUDY
Based on CFA and SEM, the measurement and theoretical model measurement index except RMSEA indicate appropriate fit. It should be .08 or less. Considering the small sample size, more data will be collected in order to investigate the reason. As an experimental study, a parsimonious model was examined. For future study, more constructs that affect attitude toward mobile ad will be examined.
Figure 1: Research Model and Hypotheses

Table 1 Results of CFA

<table>
<thead>
<tr>
<th></th>
<th>EASE</th>
<th>ENTER</th>
<th>ATT</th>
<th>CRED</th>
<th>INU</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASE1</td>
<td>.843</td>
<td></td>
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<td>EASE2</td>
<td>.836</td>
<td></td>
<td></td>
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<tr>
<td>EASE3</td>
<td>.803</td>
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<td></td>
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<tr>
<td>EASE4</td>
<td>.880</td>
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<tr>
<td>ENTER1</td>
<td></td>
<td>.923</td>
<td></td>
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<td>ENTER2</td>
<td></td>
<td>.881</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTER3</td>
<td></td>
<td>.909</td>
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<tr>
<td>ENTER4</td>
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<td>.866</td>
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<tr>
<td>ENTER5</td>
<td></td>
<td>.926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATT1</td>
<td></td>
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<td>.909</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATT2</td>
<td></td>
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<td>.948</td>
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<tr>
<td>ATT3</td>
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<td>ATT4</td>
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<td>ATT5</td>
<td></td>
<td></td>
<td>.870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRED1</td>
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<td></td>
<td></td>
<td>.818</td>
<td></td>
</tr>
<tr>
<td>CRED2</td>
<td></td>
<td></td>
<td></td>
<td>.927</td>
<td></td>
</tr>
<tr>
<td>CRED3</td>
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<td></td>
<td></td>
<td>.844</td>
<td></td>
</tr>
<tr>
<td>INU1</td>
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<td></td>
<td></td>
<td></td>
<td>.918</td>
</tr>
<tr>
<td>INU2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.964</td>
</tr>
<tr>
<td>INU3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.794</td>
</tr>
</tbody>
</table>

| Variance Extracted | 70.75% | 80.8% | 77.4% | 74.66% | 79.67% |
| Construct Reliability | .91 | .95 | .94 | .90 | .92 |

EASE: ease of use; ENTER: entertainment; ATT: attitude; CRED: credibility; INU: intention to use
Table 2 Tests of the hypotheses

<table>
<thead>
<tr>
<th>Path</th>
<th>Path coefficients</th>
<th>p level</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1  Mobile ad ease of use → mobile ad entertainment</td>
<td>.71</td>
<td>0.001</td>
</tr>
<tr>
<td>H2a Mobile ad ease of use → attitude toward mobile ad.</td>
<td>.45</td>
<td>0.001</td>
</tr>
<tr>
<td>H2b Mobile ad entertainment → attitude toward mobile ad.</td>
<td>.54</td>
<td>0.001</td>
</tr>
<tr>
<td>H3a Attitude toward mobile ad → intention to use a mobile ad</td>
<td>.79</td>
<td>0.001</td>
</tr>
<tr>
<td>H3b Attitude toward mobile ad → mobile ad credibility</td>
<td>.75</td>
<td>0.001</td>
</tr>
<tr>
<td>H4  Mobile ad credibility → intention to use a mobile ad</td>
<td>.12</td>
<td>ns</td>
</tr>
</tbody>
</table>
IS THERE A RELATIONSHIP BETWEEN BRAND VALUE AND CORPORATE TRANSPARENCY?

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ABSTRACT
Is there a relationship between a company’s own voluntary environmental, social, and governance disclosure and the value of the brand? Branding has long been a tool for an organization to increase its sales and company value. Many would agree that authenticity and transparency in branding is essential for creating and maintaining consumer loyalty leading to long-term company value. Therefore, do companies that have strong, highly valued brands extend authenticity and transparency in their own Corporate Social Responsibility (CSR) reporting?

KEYWORDS
Brand Value, Corporate brand, Corporate Social Responsibility, CSR, Environmental, ESG, Ethical, Governance, Sustainability, Transparency

INTRODUCTION/BACKGROUND:
Corporate Social Responsibility (CSR) and accompanying transparency have been in the public eye for a number of years. The connection between CSR actions, brand value and company value have been study and debated. Companies have been ranked and rated using measure such as greenhouse gas emissions. Companies falsely presenting themselves as “green” have spawned a new word: “greenwashing.” After several decades of receiving attention from: governments consumers, academics, and the business community; a company’s added-value by posturing itself as socially responsible may still be difficult to prove. However, the added-value is generally perceived to exist.

Building on previous work attempting to link CSR to brand or company value, this review attempts to link a company’s own CSR disclosure practices to brand value. In other words, is there a relationship between the disclosure of the company’s CSR practices and its brand value? Null Hypothesis: There is no difference in the level of environmental, social, and governance (ESG) transparency between “Top Valued Brand Name” companies and “Lesser Valued Brand Name” Companies.

LITERATURE REVIEW
Several studies have been conducted to determine if there is a connection between corporate social responsibility and brand value. Although First and Khetriwal (2010) suggested that firms with good environmental performance did not gain a reputational advantage, several other reviews have advanced alternative suppositions. Minor and Morgan (2011) studied the connection between CSR and reputation. Their study included a review of the British Petroleum spill and the Toyota faulty accelerator incident. They concluded that a firm’s CSR actions can partially mitigate the risk of reputational damage. Similarly, Melo and Galan (2011) concluded that CSR positively impacted brand value, while Lii and Lee (2012) showed a positive connection between customer attitudes and CSR initiatives. Finally, Gregory (2013) asserts that CSR “contributes measurably to brand equity
value.” From a different perspective, Torelli, Monga, & Kaikati (2012) indicate that CSR activities can sometimes have a negative result when examining the impact on luxury brands.

The contribution of this work is to review the connection, if any, between the reporting quality of a firm’s CSR report and its brand value.

**METHODOLOGY**

The 100 Most Valuable US Brands 2012 list published by MPP Consulting (2012) was sourced as a starting point. The list was vetted and reduced by two effects. First, non-public company brands were eliminated. Second, product branding was consolidated. That is, a company that had several product brands was rolled into one and analyzed as one company; Procter & Gamble being a notable example, holding several high value brands such as Gillette and Pampers. Then for each company the 2012, or latest available, Bloomberg ESG Disclosure Score was obtained. This process further reduced the study list resulting in a working file to 50 US companies with top valued brand(s). The Bloomberg score is described by Bloomberg (2014) as follows:

“ESG Disclosure Score: Proprietary Bloomberg score based on the extent of a company's Environmental, Social, and Governance (ESG) disclosure. Companies that are not covered by ESG group will have no score and will show N/A. Companies that do not disclose anything will also show N/A. The score ranges from 0.1 for companies that disclose a minimum amount of ESG data to 100 for those that disclose every data point collected by Bloomberg. Each data point is weighted in terms of importance, with data such as Greenhouse Gas Emissions carrying greater weight than other disclosures. The score is also tailored to different industry sectors. In this way, each company is only evaluated in terms of the data that is relevant to its industry sector.”

Next the 2012 or latest available Bloomberg ESG rating was obtained for the S&P 500. Companies that had no ESG rating were excluded from the analysis.

**RESULTS**

A review of the top brand companies was done. General distribution by sector follows:

<table>
<thead>
<tr>
<th>Sector</th>
<th># of Companies</th>
<th>Avg ESG Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>2</td>
<td>53</td>
</tr>
<tr>
<td>Industrial</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>Technology</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>Financial</td>
<td>7</td>
<td>38</td>
</tr>
<tr>
<td>Consumer, Non-cyclical</td>
<td>9</td>
<td>35</td>
</tr>
<tr>
<td>Consumer, Cyclical</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Communications</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

Of interest to note, are the high average scores of energy and industrial companies. Certainly the sample is small and therefore could not be used as a valid indicator. As already mentioned, the score is a measure of transparency, not an evaluation of the actual ESG actions. In addition, the score does not measure the extended impact a company’s actions could have on the environment or society.
For the two groups “Companies with high brand value” and “Non-high value brand S&P 500 companies”, basic metrics of the ESG score were calculated.

<table>
<thead>
<tr>
<th></th>
<th>HIGH BRAND VALUE</th>
<th>NON-HIGH BRAND VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Companies in sample</td>
<td>50</td>
<td>436</td>
</tr>
<tr>
<td>Avg ESG Score</td>
<td>37</td>
<td>27</td>
</tr>
<tr>
<td>Std Dev of ESG Score</td>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

The t-test resulted in the rejection of the null hypothesis: There is no difference in the level of environmental, social and governance (ESG) transparency between top valued brand name companies and lesser valued brand name companies.

CONCLUSION
The Bloomberg Environmental, Social and Governance (ESG) score evaluates the company’s transparency which could be used as a measure of the firms’ CSR report quality. It does not make a judgment about the firm’s actions or activities. Results of the review show that firms with valuable brands also have higher than average disclosure scores. So it appears that US companies with high valued brands do engage in more robust disclosure practices than other companies. From this it could be suggested that a companies with valuable brands practice transparency communicating both the ‘good’ as well as the ‘bad’.

REFERENCES


THE IMPACT OF INTEREST RATE LIBERALIZATION ON COMMERCIAL BANKS

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ABSTRACT
The impacts of interest rate liberalization on commercial banks are: interest rate liberalization will generally lead to the rise of interest rates of commercial banks. Interest margins will be narrow, net interest margin and net interest spreads will decrease; commercial banks will therefore face more complicated risks, rising costs, increasing difficulty of matching assets and liabilities, intensifying competition, product and business innovations in the industry, and more rapid adjustments of income structure. Therefore, as part of the process of interest rate liberalization, there are some things for China's commercial banks to do: first, increase personnel training for interest rate risk management, integrate resources, and enhance the firm’s ability to resist the interest rate risk; second, to change business growth mode, to reconstruct commercial banks’ comprehensive risk management mode, concept, systems, and technology, and third, to establish a performance evaluation system for commercial banks, the core of which is based on RAROC (risk-adjusted return on capital) and EVA (economic value added).

KEYWORDS
Commercial banks; Interest rate liberalization; Interest margins; Financial innovation

INTRODUCTION
If the People’s Bank of China (the central bank) gradually reduces and removes controls on interest rates, it will be the market itself that determines interest rates. We name that action Interest Rate Liberalization. The currency institute will implement the currency policy and adjust the macro-economy through indirect impact on interest rates with public transactions, instead of any direct intervention.

The current study shows that financial institutes will enjoy long-term benefits from interest rate liberalization although temporary difficulty is inevitable. In the 1990s, the progress of interest rate liberalization in developed countries caused bank crises in America and other countries in Latin America. Some small and medium-size banks, which lack of capability to resist risks, had been bankrupted (Diaz-Alejandro, 1985; Vihrialta, 1994; Vihrialta, 1996). In addition, the bank crisis quickly spread to emerging countries. However, the studies in recent years show that interest rate liberalization has created more efficient use of financial resources. Financial institutions have stronger capabilities to resist risks and gain long-term margin (Jayaratne & Strahan, 1998; Tirtiroglu et al., 2005; Allen & Gale, 2003; Ranciere et al., 2003 Ang and McKibbin 2007) [1]. Meanwhile, financial governance agencies are facing new challenges on administrative regulations, bank structure development, and risk management arising from interest rate liberalization.

Interest rate liberalization began June 1, 1996. Based on experience from other countries’ successes and specific local conditions, China gradually prompted interest rate liberalization in accordance with the rule “foreign currency first, then local currency; loans first, then savings; large amounts first, then small amounts.” Although now the lower limit for loans and upper limit for savings have not opened up completely, the loan interest rate will be totally liberalized with the
removal of the lower limit in coming years. Interest rate liberalization for savings will be carried out first to small banks and move forward then. Certain relevant measures, such as a competent benchmark interest rate system, insurance policies for depositors and qualified financial governance, are under consideration. The complete opening-up for interest rate of loans and savings, along with a truly efficient layout for interest rate liberalization, will depend on adequate financial products, institutional variety and transaction freedom, dimensions of financial markets and currency institutes liberalization policy.

1. THE IMPACT OF INTEREST RATE LIBERALIZATION ON INTEREST RATE LEVELS, INTEREST SPREADS, NET INTEREST MARGIN AND NET INTEREST SPREADS

The interest rate liberalization innovation leads to the significant change to interest rate level in banks, having impact on the interest spreads and interest margin, which is the main profit source for banks.

a. Interest Rate Liberalization Will Lead to Higher Interest Rates

For most countries, the nominal and actual interest rate for saving has increased from negative or low rate to positive and high rate, which also prompting the increase of loan interest rate. According to a study by Sache (1996), among countries with complete nominal interest rate profile, 15 of them experienced interest rate growth, five experienced interest rate decreases, while among the 18 countries with complete actual interest rate profile, 17 experienced interest rate growth of various levels.\(^2\)

For developed countries, the average interest spreads decreased after interest rate liberalization; this tendency is reversed in developing countries. The research shows that the average interest spreads in developed countries has reduced 54 basis points in America, 82 basis points in Japan and 21 basis points in China Taiwan (Province). Overall, the reduction is about 0.5\%~1\%\(^3\). Meanwhile, the interest spreads in developing countries kept increasing at the rate higher than the average level in developed countries.

In general, if countries have stable macro-economies, advanced financial markets and regulations and have taken step-by-step procedures, interest spreads will narrow after interest rate liberalization; for those countries with unstable macro-economies and radical measures, on the other hand, the financial fluctuations resulted from interest rate liberalization and interest spread widened as a result.

The current interest spreads in Chinese commercial banks are at the highest level in the last 20 years, and are among the largest in the world. Neither business transformation nor risk management can benefit from such conditions. We suggest to steadily prompt interest rate liberalization and reduce interest spreads as appropriate action\(^4\). In the context of larger credit fund gaps between demand and supply in future, banks will still play a leading role in pricing. Extending the downward float interval, or even removing the lower limit for loans, will not have much impact on nominal interest rates. Some traditional banks with public business, especially the large state-owned banks, will experience actual impact on interest rate levels. According to a prediction from McKinsey, the average interest spreads in banks in China will reduce by 11\%~27\% in coming 3-5 years.\(^5\)
b. Interest Rate Liberalization Will Decrease Both Net Interest Spreads and Net Interest Margin

The net interest spread represents the ratio of net interest yield (interest yield minus interest cost) to the total assets of the banking entity. It is an important indicator for commercial bank efficiency, reflecting the transaction cost in resource configuration for financial institutes. A high interest spread always represents efficiency loss. The net interest margin represents the return rate of net interest yield, i.e. the ratio of net interest yield to average interest earning assets. It mainly depends on the net interest spread and will be affected by the size of interest earning asset and borrowed funds.

To respond to the interest rate risks from liberalization, banks need to adjust business structure to reduce net interest spreads. Angbazo (1997) uses the dealer model frame to analyze the impact on net interest spread from interest rate liberalization and credit risk. The results show that banks tend to pursue more net interest spread to compensate for the risks associated with high default rates and interest rate fluctuation[6]. Similarly, Wong (1997) also demonstrates a positive relationship between net interest spread and interest rate fluctuation[7]. Drakos (2003) applied global least squares (GLS) methods to evaluate the efficiency of 83 banks in transformation in central and eastern Europe and the former USSR. The findings indicate that interest rate liberalization lead to lower net interest spreads and higher efficiency[8]. Schwaiger and Liebeg (2007) considered the lower operating fees, higher efficiency and development of non-traditional business as the main contributors to net interest spread reduction[9]. Through research on interest rate liberalization in Tunisia, Bennaceur & Goaied (2008) had found a dual effect: partial liberalization will reduce the interest spread, while complete liberalization can increase the profit rate for banks[10]. Overall, the net interest spread will be downward along with benefits for financial and economic development.

The local banks estimate that interest rate liberalization will cause the net interest spread to reduce. In the context of interest spread protection, cross-cycle net interest margin in China Bank industry is around 2.6%. If the interest regulation is loosening, the effect is about 20BP. A complete interest rate liberalization can result in effect of 15BP. In the event the banks maintain the current customer size, there will be the need to narrow long-term interest spread by 80BP. The net profit rate in China Commercial Banks will reduce by 35% with assumption of net interest margin reduction by 1.2%; if net interest margin reduction by 0.7%, the net profit will be reduced by 50%(Duting, 2012). It seems to be inevitable for net interest margin to reduce after liberalization. It can be helpful to increase the profit level and efficiency by developing intermediary business.

2. IMPACT OF INTEREST RATE LIBERALIZATION ON RISK MANAGEMENT IN COMMERCIAL BANKS

a. The Interest Rate Liberalization Brings More Complex Risks to Commercial Banks

The innovation of interest rate liberalization created high risks and more complex period structure. The interest risk control became a tough task. Banks need to find ways to compensate effectively for interest risk due to savings interest rate growth. Credit risks increase sharply as a result of higher reverse option and moral hazard and from unqualified borrowers or the lack of a credit system. When two banks were presented a good project and a bad project, the “negative” bank had to increase the savings interest rate when re-funding for “bad” projects. This in turn increased the risk of bankruptcy.[11]. Through research on interest rate liberalization in South Korea, Aggarwal et al. (2006) found that return on equity is positively correlated with unexpected changes to short-term interest rates, and has no correlation with long-term and expected short-term interest rate[12].

The interest rate liberalization brings more competition on funding and financial resource distribution among the banks and between banks and other financial institutes. Banks are facing high
operating risks (Zhanghong, 2008). With further opening-up of interest rate liberalization, more
competitions came up to American commercial and saving banks, savings and loans associations,
deposit and loan mutual aid associations, money market funds, etc. (Mukherjee et al., 2001). In the
1990s, mergers and acquisition were popular in banks and those financial institutes without survival
and management capability had been eliminated\textsuperscript{[13]}. By analyzing the data for 76 banks in China
during 1997-2006, Xiaoqing Fu (2009) found that the progress of interest rate liberalization in China
drives not only the competition on core business in banks, but also competition between banks and
other financial institutions\textsuperscript{[14]}. In particular, banks will compete with other financial institutes on
funding capacity, and compete with currency market on fund collection and professional resource.

Due to common weaknesses in small and mid-sizes commercial banks such as lack of
capital, single-business patterns, low risk management levels and a high percentage of non-
performing loans, the negative impact is obvious (Zhoumaoqing, 2012). The high interest spread
cannot last long, and small/mid-sized banks are facing dual burdens from debt and assets. The
savings interest rate is increasing sharply while the loan interest rate is permitted only limited
growth (in other words, the interest margin is narrowing). The term structure of liabilities and assets
did not match each other. Other issues include averse selection risk, etc. (Duting 2012). There are
many more risks for losses and closures. Many small savings institutions also closed in America and
Japan at the primary stage of financial system liberalization. For example, in each year during 1987-
1991, about 200 banks in America closed. The peak figure reached 250 banks a year: nearly one
closure per day. Meanwhile, a total of 985 banks failed from 1985 to 1990 in Japan (Fu, 2012;
Zongliang, 2011).

b. Interest Rate Liberalization Increases Costs for Commercial Banks and Makes It More
Difficult to Match Liabilities to Assets
At the primary stage, liberalization can help to increase interest rates of savings so as to stabilize
deposits and drive loan business. However, it also pushes the portfolio to higher cost and can
significantly change the liability structure and term structure of savings. As a result, banks prefer to
seek loan projects with higher interest rates to earn higher profits and manage risks\textsuperscript{[17]}. Through
research on interest rate liberalization of commercial banks in Thailand from 1992 to 1996, Olaf
Hübler (2008) found that banks prefer to have more risky assets and reduce mortgage lending to
balance the default losses\textsuperscript{[18]}. DuTing (2012) opines that there will be an impact of 5-6 basis points
on overall savings costs if long-term interest rates are liberalized. In this case, the liability structure
in banks has to face greater uncertainty\textsuperscript{[19]}. By creating a mathematical model for lending, Porter
(2009) found that both capital costs and savings returns will increase due to interest rate
liberalization. Small banks can get additional savings and extend business by opening the channels
of competition. Large banks will reduce savings size to control funding costs\textsuperscript{[20]}. These will lead to
changes to the structure of liabilities and assets and make it more challenge to manage risky assets.

3. THE IMPACT OF INTEREST RATE LIBERALIZATION ON NEW PRODUCTS, NEW
BUSINESS AND MARGIN STRUCTURE IN COMMERCIAL BANKS
There are four main factors for financial innovations: to pursue high profit (Gurley and Shaw, 1955);
fluctuation in financial markets (Friedman, 1982); to avoid unfavorable financial governance
regimes (Kane, 1988), and wide application of information technology and global communication
networks (Hannon and McDowell, 1984; Merton, 1995). All four factors are included in interest rate
liberalization to drive financial innovation in commercial banks.
a. Interest Rate Liberalization Speeds Competition among Commercial Banks and Helps Develop New Products
Interest rate liberalization presents great challenges to commercial banks. They must seek more flexibility on independent pricing, implement differential pricing policies and increase the return on loans. On the other side, they will try to add value to customer assets, reducing losses from interest rate fluctuation. Enterprises can obtain more capital at lower cost through financial innovation. Tufano (1989) indicates that 18% of public offering shares in American capital markets in 1987 came up in the middle and late period of interest rate liberalization[21]. Interest-related derivatives can hedge interest risks and significantly increase the return on loan portfolios for commercial bank. Comparing to large state-owned banks, small and mid-sized banks can take quick action to enter into relevant markets and extend business scope with new products and services.

In general, commercial banks will play the role of accounting and agent centers on higher levels. Their product innovation, which transfers from capital-intensive to knowledge-intensive represented by derivatives (Liyuji, Zhaoyang, 2005), will maintain stable and healthy development of banks and resist tough competition and interest risks. As estimated by the Bank for International Settlements, the value of interest exchange and other derivatives reached $600 trillion, increasing by seven times compared to 10 years ago, and nearly 11 times annual global GDP. Interest rate option values increased from $8 trillion to $57 trillion during 1998-2007[22]. At present, interest rate liberalization provides a good chance to banks in China to create new products and services.

b. Interest Rate Liberalization Speeds Business Innovation and Margin Structure Adjustment
Currently, about 80% of profit in commercial banks in China comes from traditional savings and lending business. They lack the capability to earn profits and must change operational concepts in the context of interest rate liberalization. Business innovation should focus on developing intermediary businesses and compensate for the decrease in interest spread with non-interest spread income (Zhuhong, 2006). Wealth management could and should be a main margin source for modern commercial banks. For example, profit from wealth management accounting for 50% in total margin in Hang Seng Bank, and net profit from personal banking business has held at 35% in the last 10 years in United Bank of Switzerland[23] Xiao Xinrong and Wu Yonggang (2011) investigated interest rate liberalization innovation in United States in 1980s. They found that interest rate liberalization played a positive role in inducing banks to turn to intermediary businesses. After liberalization, non-interest income in the American banking industry increased from 20% to 43%[24].
In recent years, banks in China kept publishing new intermediary products, such as bank cards and Personal Wealth Management Service etc. These new made more and more contribution to bank’s income. In the first half year of 2009, the transaction fee and net commission in BOC, ICBC, CCB and BANK OF COMMUNICATION accounted for 21.28%, 18.70%, 17.90%, and 14.88% in their respective total business income. For other banks, the percentage is around 6%-11%, higher than that in last year (Puya, 2010)[25].

Additionally, there are a large number of small and mid-sized businesses with funding issues in China. They have urgent demand on financial services and provide great profit potential to commercial banks if they can leverage the liberalization to set pricing be themselves. The commercial banks need to study the funding demand from small and middle size businesses and provide new products and service to them. With interest rate liberalization and globalization for Renminbi, more and more Chinese enterprises will extend their business overseas. It is a requirement and trend for commercial banks to develop cross-border financial services. In addition, new IT and mobile communication technologies make online banking and mobile banking the main
profit source for the banking industry, creating more space for business innovation (Duting, Wangsheng, 2012).

4. CONCLUSION AND RECOMMENDATION

In summary, interest rate liberalization will have following impact on commercial banks:
higher interest rates, narrower interest margins, lower net interest margins and net interest spread. In
the initial liberalization stage, interest rate risks will increase due to lack of effective tools. Banks
have to seek highly risky compensation and be tolerant to the mismatch between liabilities and
assets. Credit risks increase sharply as a result of higher reverse option and moral hazard;
management is much more difficult. Interest rate liberalization prompts commercial banks to
develop new products and services to deal with risks from inflation and interest rate oscillation.
Commercial banks can hedge interest rate risk and increase return on portfolio through intermediary
product expansion, qualified service and interest-related derivatives.

What we can learn from the study are: 1) Pay more attention to interest risks and enhance
personnel training for interest rate risk management to resist the interest rate risk; meanwhile,
develop new derivatives to reduce interest rate risks; 2) adapt to new condition and speed up the
strategic transformation for commercial banks’ business mode: from extensive growth to intensive
growth; reconstruct commercial bank comprehensive risk management mode in the concept of risk
management, risk management system and risk management technology; establish the performance
evaluation system of commercial banks, the core of which is based on RAROC (risk adjusted return
on capital) and EVA (economic value added). 3) The small and middle size banks should utilize their
regional and geopolitical advantages to develop new products/services and create new development
mode.

We can gain good experience from interest rate liberalization in other countries to better
understand its impact on banks in China. As China enters into the final stage of local currency
reform, the country needs to find the right development method for its banking industry, based on
successful experience on strategic transformation from foreign countries.

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THE IMPACT OF EXTENSIBLE BUSINESS REPORTING LANGUAGE EDUCATION AND ADOPTION OF STOCK EXCHANGE DEVELOPMENT: A FOCUS ON NIGERIA

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ABSTRACT
The growing need for widely available and easily accessible financial information in the financial markets has prompted the necessity for the knowledge and adoption of Extensible Business Reporting Language (XBRL) as the standard format for presenting financial reports across the globe. The impact of an efficient information distribution system like the Extensible Business Reporting Language (XBRL) could help protect creditors, make cross border relations more secure and support the competitiveness of financial markets. This study aims at investigating the impact of the possible learning and adoption of Extensible Business Reporting Language (XBRL) in the Nigerian Stock Exchange. The data used for this study were gathered through the instruments of a questionnaire and secondary sources. One hundred and fifty (150) copies of a questionnaire were administered, out of which 131 were collated for analysis. To achieve the objectives of this study, five hypotheses were formulated from the structure of research questions. Kruskal-Wallis and descriptive statistical tools were used in testing these hypotheses. Findings show that environmental factors and problems in the Nigerian Stock exchange will affect the learning and implementation of XBRL in the Stock Exchange as well as the fact that certain infrastructure must be put in place before the implementation of XBRL. Based on these findings, the study recommends that the Federal government should announce and compel the educational awareness and adoption of XBRL as a format for regulatory filing and financial reporting in the Nigerian Stock Exchange.

KEYWORDS  
XBRL, Nigerian Stock Exchange, Education, Information, Development

INTRODUCTION
In recent times, the need for updated, accurate and easily understandable financial information in the financial markets has grown. This is facilitated by the upsurge in international trade and unification
of markets and increase in the number and users of accounting information. According to Chandran (2010), cited in Faboyede, Mukoro, and Olowe (2011), investors today are very demanding, and emphasize greatly on authenticity, accuracy, and reliability of financial data as financial reporting reveals the true financial and overall health of an organization. However, the differences in presentation, terminologies, interpretation, and accounting standards in financial reports have frustrated users of accounting reports all around the world.

The answer to this problem, it seems, came in the form of the Extensible Business Reporting Language (XBRL) when Charles Hoffman, a Certified Public Accountant (CPA) from the State of Washington, began experimenting with XML in April 1998 which eventually led to the development of XBRL. The Extensible Business Reporting Language (XBRL) is defined as —a standard-based method with which users can prepare, publish (in a variety of formats), exchange and analyze financial statements and the information they contain (Malhotra and Garriit, 2004). It is to address business reporting information on the internet and bases on XML, which is a standard for electronic data exchange on the internet. It is a markup language, rather than a programming one. It enables business data and information to be shared and communicated by companies, banks, stock exchanges, accounting institutions, governments and other relating organizations (Faboyede, Mukoro, Olowe, 2011). It is open-standard, free of charge, and developed by an international non-profit consortium known as the XBRL International (Li, 2007). It should be noted that Extensible Business Reporting Language (XBRL) is a significant part of the Accounting Information System process.

China, in 2004, and the United States of America (USA), in April 2009, set the pace for the world when their respective Securities and Exchange Commissions mandated that regulatory filing by companies be done in the XBRL format. Incidentally, financial markets the world over are mandating that companies listed on the stock exchange report their financial data for the period in Extensible Business Reporting Language (XBRL) including Japan, Brazil, South Africa and many others, with positive results.

In the Nigerian system, little or no strides have been made in the area of XBRL. So far, only the Association of National Accountants of Nigeria (ANAN), has taken steps by joining the XBRL International as a direct member and incorporating XBRL into the ANAN training curriculum for over 10,000 students. The Nigerian Stock Exchange (NSE) has made no move towards the adoption of the Extensible Business Reporting Language (XBRL) in its regulatory filing system which would have made positive impact on users of financial reports. This is a major reason for undertaking this study.

Thus, the main objective of this study is to examine the usefulness and need for the implementation of the Extensible Business Reporting Language (XBRL) based on the review of its implementation in selected international stock exchanges which include the American Stock Exchange, Japanese Stock Exchange, Chinese Stock Exchange, South African Stock Exchange and the Indian Stock Exchange, and the implications of its adoption for financial report users in those countries and Nigeria.

Other specific objectives include: examining the environmental factors that will affect the implementation of the Extensible Business Reporting Language (XBRL) in the Nigerian Stock Exchange; identifying the infrastructure necessary to ensure the implementation of Extensible Business Reporting Language (XBRL) in the Nigerian Stock Exchange; and analyzing the attitude of participants in the Nigerian Stock Exchange and users of financial reports to the possible implementation of the Extensible Business Reporting Language (XBRL) in the Nigerian Stock Exchange.
Exchange. The remaining part of this paper discusses the literature review, methodology, findings, implications, and recommendations.

LITERATURE REVIEW

Extensible Business Reporting Language (XBRL) is a framework based on XML (Extensible Markup Language) that is freely licensed and facilitates the automatic exchange and reliable extraction of financial information among various software applications anywhere in the world. This new business reporting language enables companies and individuals to use financial information in a much swifter and more flexible way (Malhotra and Garriit, 2004). In today's financial markets, financial information should be widely available and easily accessible (Wymeersch, 2008). It should also be in the format that encourages easy and accurate business decision making. Financial reporting in recent times has been unsatisfactory due to discrepancies in terminology, presentation, analysis and standardization of financial reports. Financial fraternities have been trying to find a solution to this problem with special attention to that of dissemination and standardization especially the financial markets.

Extensible Business Reporting Language (XBRL) is the most reliable and all-encompassing solution to modern day financial reporting issues. As Malhotra and Garriit (2004) put it, Extensible Business Reporting Language is the missing link; the specification that allows financial and business reporting concepts to be expressed quickly, less expensively, and more efficiently. The widespread use of XML will streamline reporting and transaction tracking in every area of business, from regulatory and tax compliance to internal and performance measurements and international harmonization. Reports that took hours to assemble using any analytical application can now be prepared, distributed and consumed in merely seconds using XBRL tags. Joined in a quiet revolution, many companies around the world are beginning to speak a new but common language known as XBRL (Willis, 2003).

Naseem (2011) explains that XBRL allows companies and individuals to —tag data inside financial reports to facilitate data extraction and manipulation. Its specifications satisfy the major users of the application which include i) business information preparers, ii) intermediaries in the preparation and distribution process, iii) users of this information and iv) the vendors who supply software and services to one or more of these three types of user. UBMatrix (2006) defines XBRL in 3 categories as follows: (a) XBRL is a global standard method for the electronic exchange of business information (replacing 100s of proprietary methods). (b) XBRL represents a global agreement of the semantics of financial reporting concepts and business rules. (c) XBRL is also an organization, comprised of over 400 members from around the world. The organization stands behind and maintains XBRL.

Summarizing the definitions of XBRL is Eckhausen (2004) who states that: XBRL is a freely available electronic language for financial reporting, based on the XML standards in order to: i) Prepare financial data ii) Extract reliable financial data iii) Exchange financial data on a system to system basis, and iv) Publish company financial data.

Business organizations are required by regulatory bodies to produce reports periodically for the users of financial statements in different formats as some users require more information than others. With XBRL, all these needs can be met.
THE XBRL PROCESS

Business organizations are required by regulatory bodies to produce reports periodically for the users of financial statements in different formats, since some users require more information than others, but with XBRL, all these needs can be met simultaneously. The diagram below indicates some examples of the need for multiple reports based on the same data. A goal of XBRL is to reduce the manual rework that is usually required to meet the needs/requirements of each of the users. According to Richards and Smith (2004), if all the needs can be met by simply transforming the same data into different formats using XML/XBRL technologies, then many of the repetitive reporting processes can be eliminated. Shown below is the diagram that shows the different stages which may be involved in a typical XBRL process:

Figure 1. The XBRL Process

![Diagram of the XBRL Process](image)


BENEFITS OF XBRL FOR EXTERNAL REPORTING

EDGAR (2007) attests to the benefits of using XBRL for financial external reporting to companies. Such benefits include: quick communication of more accurate data; unprecedented level of transparency for external reporting; reduced costs of automated data gathering and aggregation;
efficient data validation; errors are identified/corrected prior to disclosure filings; narrative explanations of valid data discrepancies embedded; faster speed to publishing; expedited reviews from the Securities and Exchange Commission for XBRL filings; leadership and reputation for transparency; improved communications: Companies can ensure that individuals are reviewing their numbers as they were depicted.

4.1 Benefits of XBRL for Internal Accounting
Although the primary push is for using XBRL in interactive data to prepare financial statements, XBRL also works for internal company information, controls, compliance, and reporting processes. The larger the company, the more benefits there are to using XBRL enterprise-wide to automate business processes (EDGAR, 2011). Other benefits include: (a) Analysis of competitors and benchmark against industry peers (b) Improved audits and analysis of Mergers and Acquisition targets (c) Faster integration of new acquisitions (d) Communication between autonomous business units using different accounting and ERP systems (e) Automation of aggregation of data from various software applications and databases.

4.2 Requirements of XBRL
The requirements of XBRL as stated by UBMatrix (2006) include: (i) Automated, efficient and reliable extraction of information from an XBRL document; (ii) Automated comparison of information expressed in XBRL documents such as financial and other business information. These include accounting policies, notes to the financial statements between companies and the supply chain information; (iii) Drill down from information to more detailed information such as, authoritative literature, and audit working papers; (iv) Support for multiple languages; (v) Extensibility in terms of adding concepts and modifying relationships which is the highest priority. XBRL must be flexible to meet its users’ needs; (vi) Semantic and syntactic validation of information within XBRL instances, particularly numeric information, and textual-type information; (vii) presentation, such as the use of bold, italics, and other stylistic techniques are not a requirement; (viii) The data in XBRL documents is commonly numeric and has relationships to other numbers. These relationships need to be accurate.

4.3 Role of XBRL in the Stock Exchange Development
Stock Exchanges that collect standard electronic financials and that have automated the analysis and mining of this data have a fundamental advantage over other Exchanges. They are much more attractive to investors. With XBRL-compliant data, Stock markets can offer increased value and provide competitive advantages to institutions and private investors. Financial data verified in real-time, converted to XBRL and posted directly to an issuer’s website improves worldwide exposure and provides rapid analysis capabilities to the investment and analyst community (Selim, 2012). There has been a positive increase in XBRL implementation around the world. According to XBRL and the International Accounting Standards Committee Foundation, XBRL in the stock exchange will ensure: (a) Seamless flow of data; (b) Filtered data; (c) Validation; (d) Creation of enhanced/new revenue opportunities, and (e) Saving of time and resources. Also, Selim (2012) noted that the implementation of XBRL in the stock exchange will help market regulators in the following ways: (i) **Quicker Analysis of listed companies’ filings:** In the past, market regulators had to build company data into analysis database and send to investment houses for use. This process usually took months to carry out thus providing these houses with outdated information. XBRL offers investors and market regulators instant access to company financials;
(ii) **Facilitated Data Collection Solutions: XBRL Forms**: Products like XBRL forms remove the financial and technological burden from the filers and provide an easy-to-use, web-based front end for users to verify financial information prior to submission. With the taxonomy identified, the XBRL Forms application dynamically renders a set of taxonomy-driven returns for high quality financial data capture;

(iii) **Profit Centre Opportunities**: By adopting an integrated platform to collect, verify, analyze and report XBRL data in near real-time, market regulators can collect higher-quality data and realize drastically improved time to market. This opens the door for new viable profit centre opportunities:

a) How much more valuable is same-day data versus data received in 30 days, 90 days or annually? Would a Portfolio Manager pay a premium for near real time analytics and/or data mining capabilities against the most current reported investment data? With an integrated end-to-end XBRL data collection and analytics platform in place, market regulators could explore premium data services as a viable profit centre;

b) A premium to the standardized Exchange listing fees could be charged to the Issuers for facilitating XBRL filings. Financial data verified in real-time, converted to XBRL and posted directly to an Issuer’s website would improve transparency and worldwide exposure, and provide rapid analysis to the investment and analyst community.

c) Once a market regulator has implemented an analytics platform that integrates validated, near real-time XBRL data, they may wish to offer some or all of this data to the community in order to drive new revenue growth for the Exchange. Investors, analysts and journalists would find this data ideal for intra and cross-sectored analysis and data mining, such as predictive and regression analysis, neural networks, benchmarking, identifying outliers, or peer rankings within an industry category or across market sectors.

d) Chargeable models for investors, analysts and journalists against near real-time Investment data can drive new revenue growth for an Exchange;

(iv) **Real-Time Validation**: Since XBRL forms dynamically renders web submission forms from a market regulator’s taxonomy, it can also validate each filing in real time before certifying the return and generating the required XBRL instance document;

(v) **Risk Mitigation**: For market regulators, better risk mitigation involves validating financial return data against the taxonomy prior to submission, dramatically reducing round tripping and errors related to re-keying data into back-end systems. An integrated XBRL-based data collection system enables this type of workflow and introduces cost, labour and time efficiencies for the regulator as well as the filer;

(vi) **Data Re-usability**: Fundamentally, structured data like XBRL has meaning and context attached to data, so that it can be exchanged effectively between trading partners, between entities and regulators, as well as exchanged internally. Properly structured data is inherently easier to reuse between automated applications; whereas unstructured data is difficult to share without manual intervention;

(vii) **High-Efficiency Risk Management: XBRL Designer**: One example of these powerful Taxonomy design tools is XBRL Designer: a metadata-driven GUI design tool that streamlines taxonomy design (including data definitions, formula creation and returns definitions) to give business users complete control over the entire data collection process. With XBRL Designer, Market Regulators can quickly react to changing legislation, standards and policies without IT or 3rd party intervention, effectively insulating the business from the inherent complexities of XBRL;

(viii) **Keeping Your Taxonomy Up to Date**: Taxonomy design has traditionally required skilled XML programmers and/or XBRL specialists to prepare taxonomies by specifying detailed concepts,
groups, dimensions, calculations, and validation rules. Manually editing these Taxonomy files can be very complex and time consuming, and in the past has required significant relaying of the data collection/validation requirements to highly paid XBRL experts for ongoing management of the Taxonomy. Over the past few years however, powerful and business user-friendly Taxonomy design tools have emerged and now policy changes can be implemented faster and more efficiently directly by business users.

4.4 FACTORS AFFECTING XBRL ADOPTION
There are various factors that might affect the implementation of XBRL in the stock exchange. According to Cordery, Fowler and Mustafa (2009), factors that affect XBRL adoption in an organization can be classified into:

i) **Environmental context factors:** Environmental context factors include industry characteristics, support infrastructure and Government. Industry characteristics involve consideration of the level of competition, influence or pressure from an organization’s trading partner, and/or regulator and government agenda.

ii) **Organization context factors:** According to Janvrin, Bierstaker and Lowe (2008, as cited by Cordery et al 2009), these factors relate to the organization’s structure, processes and resources which constitute the organization’s readiness to adopt technology. These factors include organization size and resources, top management support and organization champion.

iii) **Technology context factors:** These factors include relative advantage, compatibility, complexity, trialability and observability of an information system technology like XBRL play a significant role in the decision to adopt it.

5.0 RESEARCH HYPOTHESES
The hypotheses of this study include:

**Hypotheses 1:**

**H0** – There is no significant difference in the opinion that environmental factors will affect XBRL implementation across the 3 groups of respondents.

**Hypotheses 2:**

**H0** – There is no significant difference in the opinion that certain infrastructures are necessary to ensure the implementation of XBRL in the Nigerian Stock Exchange across the 3 groups of respondents.

**Hypotheses 3:**

**H0** – The attitude of users of financial reports will not be positive to the possible implementation of the Extensible Business Reporting Language (XBRL).

**METHODS OF DATA ANALYSIS**
A well-structured five point Likert scale questionnaire was administered to stakeholders in financial reporting in Nigeria, notably, investors, Tax practitioners, auditors, preparers of financial statement and capital market operators. A total number of 150 questionnaires were distributed and 131 of these questionnaires were returned, showing an average return rate of 87.3%. We employed the Kruskal-Wallis Test (sometimes referred to as the Kruskal-Wallis H Test), which is a non-parametric alternative to a one-way between-groups analysis of variance, in testing the hypotheses.
5.2 Hypothesis Testing

**Hypothesis 1**

H₀₁ – There is no significant difference in the opinion that environmental factors will affect XBRL implementation across the 3 groups of respondents.

<table>
<thead>
<tr>
<th>Respondent Group</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent industry factors effect on XBRL implementation</td>
<td>46</td>
<td>65.21</td>
</tr>
<tr>
<td>Investor Tax Practitioner Auditor</td>
<td>36 39</td>
<td>64.25 53.04</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

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<tr>
<th>Respondent Industry factors effect on XBRL Implementation</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.416</td>
<td>2</td>
<td>.181</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable.

**Respondent Group**

**Interpretation**

The Asymptotic Significance of 0.181, which is greater than 0.05, shows that there is no significant difference in the perception of the groups. The three groups agree to equal degree that a major environmental factor (industry factors) will affect the implementation of XBRL. The Investors have a mean rank of 65.21 followed by the Tax Practitioners with 64.25 and the Auditors with 53.04.

**Decision**

Level of significance; α = 0.05. Since p value = 0.181 ≥ 0.05 = α, accept the null hypothesis which states that there is no significant difference in the opinion that environmental factors will affect XBRL implementation across the 3 groups of respondents and reject the alternative hypothesis.

**Hypothesis 2:**

H₀₂ – There is no significant difference in opinion that certain infrastructures are necessary to ensure the implementation of XBRL in the Nigerian Stock Exchange across the 3 groups of respondents.
Ranks

<table>
<thead>
<tr>
<th>Respondent Group</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent Company formal policies on electronic matters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investor</td>
<td>47</td>
<td>73.56</td>
</tr>
<tr>
<td>Tax Practitioner</td>
<td>36</td>
<td>57.25</td>
</tr>
<tr>
<td>Auditor</td>
<td>39</td>
<td>50.99</td>
</tr>
<tr>
<td>Total</td>
<td>122</td>
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</tbody>
</table>

Test Statistics \(^{a,b}\)

<table>
<thead>
<tr>
<th>Respondent Company formal policies on electronic matters</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.633</td>
<td>2</td>
<td>.005</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable.

Respondent Group

Decision
Level of significance; \(\alpha=0.05\). Since p value = 0.005 \(\leq 0.05=\alpha\), reject the null hypothesis and accept the alternative hypothesis which states that there is a significant difference in opinion that certain infrastructures are necessary to ensure the implementation of XBRL in the Nigerian Stock Exchange across the 3 groups of respondents.

Hypotheses 3:

\(H_03\) – The attitude of users of financial reports will not be positive to the possible implementation of the Extensible Business Reporting Language (XBRL).

Ranks

<table>
<thead>
<tr>
<th>Respondent Group</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent XBRL contribution to speeding up reporting and filing cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investor</td>
<td>46</td>
<td>63.70</td>
</tr>
<tr>
<td>Tax Practitioner</td>
<td>36</td>
<td>67.04</td>
</tr>
<tr>
<td>Auditor</td>
<td>38</td>
<td>50.43</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>
Test Statistics $^{a,b}$

<table>
<thead>
<tr>
<th></th>
<th>Respondent XBRL contribution to speeding up reporting and filing cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square df Asymp. Sig</td>
<td>6.52 2 .038</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test  
b. Grouping Variable.

Respondent Group

Decision
Level of significance; $\alpha = 0.05$. Since $p$ value $= 0.038 \leq 0.05 = \alpha$, reject the null hypothesis and accept the alternative hypothesis which states that the attitude of users of financial reports will be positive to the possible implementation of the Extensible Business Reporting Language (XBRL).

Sequel to the closed ended questionnaire administered, we found out that Extensible Business Reporting Language has a very important role to play in the Nigerian Stock Exchange and has positive implications for users of financial reports at large. Other findings include:

1. The study found out that environmental factors are capable of affecting the implementation of Extensible Business Reporting Language in the Nigerian Stock Exchange
2. The research also found out that certain infrastructure such as Company formal policies on electronic matters must be put in place before the implementation of Extensible Business Reporting Language
3. Challenges such as operational, organizational and Nigerian Stock Exchange problems will affect the implementation of XBRL in the Nigerian Stock Exchange.
4. The major stakeholders/users of financial reports (investors, tax practitioners and auditors) have a positive attitude towards the possible implementation of XBRL in the Nigerian Stock Exchange.
5. Based on the opinion of the experts, Extensible Business Reporting Language will improve Accounting Information System and the decision making process.

OTHER FINDINGS
After a critical analysis of the questionnaires recovered from respondents, the following observations were made: The Nigerian capital market has a low awareness of Extensible Business Reporting Language. Industry factors will affect the implementation of Extensible Business Reporting Language in the Nigerian Stock Exchange. The presence of support infrastructures will affect the implementation of Extensible Business Reporting Language in the Nigerian Stock Exchange.

The Nigerian economic environment is suitable for XBRL implementation. Stakeholders believe that XBRL can contribute to speeding up the reporting and filing cycle, fosters data comparability, reduce processing errors and be a reliable resource for the preparation of tax returns. Stakeholders believe that XBRL will improve the transparency, comparability, relevance and reliability of financial statements.
CONCLUSIONS
The global adoption of the programming language Extensible Business Reporting Language (XBRL), will improve business data and information sharing among companies, banks, stock exchanges, accounting institutions, governments and other related concern. Transparency, comparability and reliability of financial statements promise to also improve. Thus, Extensible Business Reporting Language (XBRL) is needed and should be adopted by the Nigerian Stock Exchange as the standard for financial reporting and regulatory filing. Only then can it gain back investors’ confidence and make strides towards the global stock exchange it aspires to be.

RECOMMENDATIONS
Awareness campaigns of the existence of Extensible Business Reporting Language (XBRL) must be carried out to encourage smooth and easy transition to XBRL-based financial reporting. Analysts, fund managers and other institutional investors should be made aware of XBRL through their professional bodies.

The Institute of Chartered Accountants of Nigeria (ICAN) should join XBRL International, become an active member and include XBRL in its curriculum in order to increase the awareness of XBRL and enable aspiring accountants to fit into an XBRL-based financial reporting system. Voluntary filing should first be encouraged to give companies time to prepare, train employees, establish appropriate infrastructure and policies within the system and develop an XBRL-based financial reporting.

The Nigerian Stock Exchange should join and become an active member of XBRL International to have access to information, network and establishments that will make transition to XBRL-based reporting possible. Finally, XBRL training for all preparers of financial report should be undertaken to ensure a smooth transition to XBRL-based financial reporting.

REFERENCES


Eckhausen, F. (2004), “XBRL - extensible business reporting language, the new language of financial reporting” presented at SUGI 29, May 9-12, 2004, Montreal, Canada


CONNECTANCE, ROBUSTNESS, AND THE HUDSON RIVER FOOD WEB

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ABSTRACT
The Hudson River is home to diverse populations of fish, birds, and mammals that cohabit and compete among themselves for resources. The Hudson River flows from the Lake Tear of the Clouds and journeys 315 miles dropping 4,322 feet in elevation before emptying itself into New York Harbor. This work addresses four different Hudson River food webs: Marsh, Brackish, Fresh water Channel and Fresh Water Shallows. A graph theoretic approach is used to analyze the Hudson River habitats and their intricacies. Trophic status of the food webs are studied and the robustness of the food webs are analyzed using a measure of connectance. Highly and poorly connected species are identified using this measure of connectance. It is observed that removing the most important species from the food web results in negative changes in the normalized connectance whereas loss of insignificant species results in positive changes. Our findings also suggest that highly connected species are not always the intermediate species. Some basal species which are traditionally known as weak species are also identified as significant species as well as some intermediate and top species.

INTRODUCTION
The American shad, Atlantic sturgeon, river herring (blue back herring and alewife), American eel, and largemouth bass are in decline (Department of Environmental Conservation p. 80). Intense economic harvesting pressure and overexploitation have caused coastal and marine species to drop. Harvesting and fishing should be managed properly and carefully to avoid further decline of the current population. Food web (Cozzens 2011; Junker and Schreiber 2008) analysis can assist in this, providing an understanding of predator-prey relationships along with the stability and robustness (Dunne, Williams, and Martinez Ecology 2002; Dunne, Williams, and Martinez 2004) of the ecosystem and the nature of competition among species.

Food webs can be represented by directed graphs (digraphs) (Cozzens 2011; Junker and Schreiber 2008; West 2000) through direct or indirect connections – a directed arc points from the preys to predators to signify energy transfers or the flow of nutrients from one organism (food source) to another (consumer). Such food webs can play a crucial role in developing understanding of our ecosystem. For simplicity, we assume that the given food web has no 2-cycle feeding relationship. A particular case is that there are no two species that directly feed on each other.
In a given food web, top species are species with no predators and basal species have no prey. All other species (neither top nor basal) are called intermediate species (Cohen and Briand 1984). A dominant species in a given food web however, can be described in many ways. Here we assume species A is dominant if its removal from the food web causes species B to grow unboundedly (Cozzens module) i.e. there will not be any predators left for the species B. The following figure (figure 1) shows a partial food web for the Hudson River Shallow Water region (Cary Institute) with the respective species’ names and categories listed in Table 1. We observed algae, detritus, phytoplankton, bacteria, water celery, and eel larvae as basal species and mute swan, American eel, canvasback duck, great egret, bald eagle, and people as top species. The rest of the species are intermediate species. Moreover, carp American eel, and people are found to be dominant species.

**Figure1. Partial food web of the Shallow Water Hudson River food web**
Table 1

<table>
<thead>
<tr>
<th>Species</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Algae</td>
<td>basal</td>
</tr>
<tr>
<td>2 Detritus</td>
<td>basal</td>
</tr>
<tr>
<td>3 Phytoplankton</td>
<td>basal</td>
</tr>
<tr>
<td>4 Bacteria</td>
<td>basal</td>
</tr>
<tr>
<td>5 Water Celery</td>
<td>basal</td>
</tr>
<tr>
<td>6 Amphipods</td>
<td>Intermediate</td>
</tr>
<tr>
<td>7 Cladocerans</td>
<td>Intermediate</td>
</tr>
<tr>
<td>8 Midge</td>
<td>Intermediate</td>
</tr>
<tr>
<td>9 Damselfly</td>
<td>Intermediate</td>
</tr>
<tr>
<td>10 Snails</td>
<td>Intermediate</td>
</tr>
<tr>
<td>11 Eel Larvae</td>
<td>basal</td>
</tr>
<tr>
<td>12 Carp</td>
<td>Dominant, Intermediate</td>
</tr>
<tr>
<td>13 Spottail Shiner</td>
<td>Intermediate</td>
</tr>
<tr>
<td>14 Redbreast Sunfish</td>
<td>Intermediate</td>
</tr>
<tr>
<td>15 Tessellated Darter</td>
<td>Intermediate</td>
</tr>
<tr>
<td>16 American Eel</td>
<td>Dominant, Top</td>
</tr>
<tr>
<td>17 Largemouth Bass</td>
<td>Intermediate</td>
</tr>
<tr>
<td>18 Mute Swan</td>
<td>Top</td>
</tr>
<tr>
<td>19 Canvasback Duck</td>
<td>Top</td>
</tr>
<tr>
<td>20 Great Egret</td>
<td>Top</td>
</tr>
<tr>
<td>21 Bald Eagle</td>
<td>Top</td>
</tr>
<tr>
<td>22 People</td>
<td>Dominant, Top</td>
</tr>
</tbody>
</table>

Studying robustness of a food web is vital in the context of rapidly increasing habitat modification, particularly for analysis of species extinction or rapid change. There are several ways to measure the robustness of a system when that system is subjected to species loss. One measure of the robustness of a food web used by ecologists when studying food webs subjected to species loss is connectance (Dunne, Williams, and Martinez Proceedings: 2002; Dunne, Williams, and Martinez Ecology: 2002; Dunne, Williams, and Martinez 2004; Gilbert 2008). Connectance, or directed connectance in this case, indicates the proportion of all possible interactions within a binary food web that can be realized. It is calculated by:

\[
\frac{L}{S^2}
\]

where S is the number of species (nodes) in the food web and L is the number of links or connections between species (nodes). That is, it is the ratio of the number of observed links to the number of all possible links. Note that the term \( S^2 \) is the maximum number of possible interactions or links, if each species could potentially interact with every other species including itself.

When cannibalism is excluded (an arc from a species to itself), connectance is represented as:
Furthermore, when cannibalism and 2-cyclic feeding relationships are excluded, connectance is defined as (Junker and Schreiber, 2008, p. 290):

\[
C_S = \frac{2L}{S(S-1)}, \quad S > 1 \quad (1)
\]

Note that the minimum value of links \( L \) to link all species in a single food web is:

\[
L = S - 1.
\]

Therefore, the minimum value of \( C_S \) is:

\[
C_{\text{min}(S)} = \frac{2}{S}.
\]

Similarly, when all components are connected to each other and no self-linking or 2-cyclic feeding relations exist, the maximum number of links that can be observed is:

\[
L \leq \left( \frac{S}{2} \right) = \frac{S(S-1)}{2} \quad \text{for all } S > 1.
\]

Therefore, the maximum connectance value is:

\[
C_S = 1.
\]

Connectance specifies the degree to which the species within a food web are connected to each other. It has an important role when studying a given food web since it provides a measure of the interactions and energy transfer between species in that food web. Martinez showed that connectance, particularly directed connectance, was one of the most robust measures for studying various food web resolutions (Martinez 1991). Studies have also shown there is a high correlation between robustness and connectance and robustness increases with connectance (Dunne, Williams, and Martinez, 2002). However Gilbert (2008) noticed that although loss of poorly connected species increases connectance, it also causes a decrease in robustness and large negative changes in connectance due to species loss adversely affect the robustness. Thus, irrespective of how well connected a food web is, loss of any species from a food web decreases its robustness. Here, we study connectance of various Hudson River food webs and provide a relative analysis of robustness of these food webs.

**MODELING AND ANALYSIS OF THE HUDSON RIVER FOOD WEB**

Flowing from the Lake Tear of the Clouds, the Hudson River journeys 315 miles and drops 4,322 feet in elevation before emptying into New York Harbor. The Hudson River is home to diverse populations of fish, birds, and mammals that cohabit and compete among themselves for resources. The Hudson River provides habitats, each with its own intricate food web. In this paper, we focus mainly on four significant regions of the Hudson River food web: namely, Brackish Channel, Marsh,
Fresh Water Shallows, and Freshwater Channel. Data are collected from Cary Institute of Ecosystem Studies (Cary Institute).

We use normalized connectance (Gilbert 2008) for comparison of various food webs and modify the expression to incorporate food webs that exclude cannibalism and 2-cycle feeding:

\[
C_{\text{norm}(S)} = \frac{C_S - C_{\text{min}(S)}}{C_{\text{max}(S)} - C_{\text{min}(S)}} = \frac{C_S - C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} = \frac{2L}{S(S-1)} - \frac{2}{S}
\] (2)

where \(C_{\text{norm}(S)}\) is normalized (directed) connectance for \(S\) species. Here we assume greater robustness to species loss implies smaller changes in connectance and larger negative changes in connectance due to species loss indicates less robustness. However we assume irrespective of how well connected a food web is, loss of any species from a food web decreases its robustness.

**Table 2** lists the total number of links in the original data set and the original measure of connectance before any species loss occurs. Based on this measure of normalized connectance we observe that Brackish is the most connected food web, whereas Fresh Water Channel is the least connected.

<table>
<thead>
<tr>
<th></th>
<th>Marsh</th>
<th>Brackish</th>
<th>Fresh Water Channel</th>
<th>Fresh Water Shallows</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Species</td>
<td>18</td>
<td>23</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td># of links</td>
<td>60</td>
<td>99</td>
<td>51</td>
<td>87</td>
</tr>
<tr>
<td>Connectance, (C_S)</td>
<td>0.3922</td>
<td>0.3913</td>
<td>0.2208</td>
<td>0.3766</td>
</tr>
<tr>
<td>(C_{\text{min}(S)})</td>
<td>0.1111</td>
<td>0.0867</td>
<td>0.091</td>
<td>0.091</td>
</tr>
<tr>
<td>(C_{\text{norm}(S)})</td>
<td>0.3162</td>
<td>0.3333</td>
<td>0.1429</td>
<td>0.3143</td>
</tr>
</tbody>
</table>

Note that the loss of species decreases both \(S\) and \(L\) and consequently changes connectance. **Tables 3, 4, 5, and 6** show the removal of one species and the number of links lost due to this species’ removal for all four food webs. The columns from left to right show respectively, the species index, names of the removed species, number of links left after the species removal, change in links, value of connectance, percentage change in connectance due to the species removal, minimum connectance value due to one species removal, normalized connectance, and change in normalized connectance.
Table 3
Marsh

<table>
<thead>
<tr>
<th>Removal of 1 Species</th>
<th>Links after Removal</th>
<th>Change in Links</th>
<th>Connectance $C_S = \frac{2L}{S(S-1)}$</th>
<th>% Change in Connectance</th>
<th>Cmin</th>
<th>Cnorm $\frac{C_{\text{min}}}{1-C_{\text{max}}}$</th>
<th>Change in Cnorm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Algae</td>
<td>56</td>
<td>4</td>
<td>0.4118</td>
<td>5</td>
<td>0.1176</td>
<td>0.3333</td>
<td>0.0172</td>
</tr>
<tr>
<td>2 Spartina Alterniflora</td>
<td>50</td>
<td>10</td>
<td>0.3676</td>
<td>-6.25</td>
<td>0.1176</td>
<td>0.2833</td>
<td>-0.0328</td>
</tr>
<tr>
<td>3 Typha(Cottail)</td>
<td>50</td>
<td>10</td>
<td>0.3676</td>
<td>-6.25</td>
<td>0.1176</td>
<td>0.2833</td>
<td>-0.0328</td>
</tr>
<tr>
<td>4 Phragmites</td>
<td>50</td>
<td>10</td>
<td>0.3676</td>
<td>-6.25</td>
<td>0.1176</td>
<td>0.2833</td>
<td>-0.0328</td>
</tr>
<tr>
<td>5 Deltritus</td>
<td>51</td>
<td>9</td>
<td>0.375</td>
<td>-4.375</td>
<td>0.1176</td>
<td>0.2916</td>
<td>-0.0245</td>
</tr>
<tr>
<td>6 Microbes</td>
<td>55</td>
<td>5</td>
<td>0.4044</td>
<td>3.125</td>
<td>0.1176</td>
<td>0.325</td>
<td>0.0088</td>
</tr>
<tr>
<td>7 Fungi</td>
<td>55</td>
<td>5</td>
<td>0.4044</td>
<td>3.125</td>
<td>0.1176</td>
<td>0.325</td>
<td>0.0088</td>
</tr>
<tr>
<td>8 Midges</td>
<td>51</td>
<td>9</td>
<td>0.375</td>
<td>-4.375</td>
<td>0.1176</td>
<td>0.2917</td>
<td>-0.0245</td>
</tr>
<tr>
<td>9 Mud worms</td>
<td>51</td>
<td>9</td>
<td>0.375</td>
<td>-4.375</td>
<td>0.1176</td>
<td>0.2917</td>
<td>-0.0245</td>
</tr>
<tr>
<td>10 Amphipods</td>
<td>51</td>
<td>9</td>
<td>0.375</td>
<td>-4.375</td>
<td>0.1176</td>
<td>0.2917</td>
<td>-0.0245</td>
</tr>
<tr>
<td>11 Snails</td>
<td>51</td>
<td>9</td>
<td>0.375</td>
<td>-4.375</td>
<td>0.1176</td>
<td>0.2917</td>
<td>-0.0245</td>
</tr>
<tr>
<td>12 Killifish</td>
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<td>5</td>
<td>0.4044</td>
<td>3.125</td>
<td>0.1176</td>
<td>0.325</td>
<td>0.0088</td>
</tr>
<tr>
<td>13 Mouse</td>
<td>55</td>
<td>5</td>
<td>0.4044</td>
<td>3.125</td>
<td>0.1176</td>
<td>0.325</td>
<td>0.0088</td>
</tr>
<tr>
<td>14 Marsh Wren</td>
<td>53</td>
<td>7</td>
<td>0.3897</td>
<td>-0.625</td>
<td>0.1176</td>
<td>0.3083</td>
<td>-0.0078</td>
</tr>
<tr>
<td>15 Red-wing Blackbird</td>
<td>53</td>
<td>7</td>
<td>0.3897</td>
<td>-0.625</td>
<td>0.1176</td>
<td>0.3083</td>
<td>-0.0078</td>
</tr>
<tr>
<td>16 Great Blue Heron</td>
<td>58</td>
<td>2</td>
<td>0.4265</td>
<td>8.75</td>
<td>0.1176</td>
<td>0.35</td>
<td>0.0338</td>
</tr>
<tr>
<td>17 Muskrat</td>
<td>57</td>
<td>3</td>
<td>0.4191</td>
<td>6.875</td>
<td>0.1176</td>
<td>0.3417</td>
<td>0.0255</td>
</tr>
<tr>
<td>18 Snapping Turtle</td>
<td>58</td>
<td>2</td>
<td>0.4265</td>
<td>8.75</td>
<td>0.1176</td>
<td>0.35</td>
<td>0.0338</td>
</tr>
</tbody>
</table>
### Table 4

**Brackish**

<table>
<thead>
<tr>
<th>Removal of 1 Species</th>
<th>links after removal</th>
<th>change in links</th>
<th>Connectance $C_s = \frac{2L}{S(S-1)}$</th>
<th>% Change in Connectance</th>
<th>Cmin</th>
<th>Cnorm $(\frac{C_{max}}{C_1+\frac{C_{min}}{C_{max}}})$</th>
<th>Change in Cnorm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Bacteria</td>
<td>92  7</td>
<td></td>
<td>0.3983</td>
<td>1.779702</td>
<td>0.0909</td>
<td>0.3381</td>
<td>0.0048</td>
</tr>
<tr>
<td>2  Phytoplankton</td>
<td>92  7</td>
<td></td>
<td>0.3983</td>
<td>1.779702</td>
<td>0.0909</td>
<td>0.3381</td>
<td>0.0048</td>
</tr>
<tr>
<td>3  Detritus</td>
<td>92  7</td>
<td></td>
<td>0.3983</td>
<td>1.779702</td>
<td>0.0909</td>
<td>0.3381</td>
<td>0.0048</td>
</tr>
<tr>
<td>4  Mud Worms</td>
<td>90  9</td>
<td></td>
<td>0.3896</td>
<td>-0.4329</td>
<td>0.0909</td>
<td>0.3286</td>
<td>-0.0048</td>
</tr>
<tr>
<td>5  Midges</td>
<td>90  9</td>
<td></td>
<td>0.3896</td>
<td>-0.4329</td>
<td>0.0909</td>
<td>0.3286</td>
<td>-0.0048</td>
</tr>
<tr>
<td>6  Amphipods</td>
<td>90  9</td>
<td></td>
<td>0.3896</td>
<td>-0.4329</td>
<td>0.0909</td>
<td>0.3286</td>
<td>-0.0048</td>
</tr>
<tr>
<td>7  Polychaetes</td>
<td>90  9</td>
<td></td>
<td>0.3896</td>
<td>-0.4329</td>
<td>0.0909</td>
<td>0.3286</td>
<td>-0.0048</td>
</tr>
<tr>
<td>8  Copepods</td>
<td>88  11</td>
<td></td>
<td>0.381</td>
<td>-2.6455</td>
<td>0.0909</td>
<td>0.3190</td>
<td>-0.0143</td>
</tr>
<tr>
<td>9  Crab larvae</td>
<td>88  11</td>
<td></td>
<td>0.381</td>
<td>-2.6455</td>
<td>0.0909</td>
<td>0.3190</td>
<td>-0.0143</td>
</tr>
<tr>
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<tr>
<td>11 Rangia Clam</td>
<td>94  5</td>
<td>0.4069</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12 Opossum Shrimp</td>
<td>87  12</td>
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<td>-3.7518</td>
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<td>0.3143</td>
<td>-0.0190</td>
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<tr>
<td>13 Blue Crab</td>
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<td>0.4069</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Blueback Herring</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>15 Bay Anchovy</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>16 Bluefish</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>17 Shad</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>18 White Perch</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>19 Atlantic Tomcod</td>
<td>89  10</td>
<td></td>
<td>0.3853</td>
<td>-1.5392</td>
<td>0.0909</td>
<td>0.3238</td>
<td>-0.0095</td>
</tr>
<tr>
<td>20 Striped Bass</td>
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<td>0.0909</td>
<td>0.3048</td>
<td>-0.0286</td>
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<tr>
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<td>3.9923</td>
<td>0.0909</td>
<td>0.3476</td>
<td>0.0143</td>
</tr>
<tr>
<td>22 Cormorant</td>
<td>98  1</td>
<td>0.4242</td>
<td></td>
<td>8.4175</td>
<td>0.0909</td>
<td>0.3667</td>
<td>0.0333</td>
</tr>
<tr>
<td>23 People</td>
<td>93  6</td>
<td>0.4026</td>
<td></td>
<td>2.8860</td>
<td>0.0909</td>
<td>0.3429</td>
<td>0.0095</td>
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</table>
### Table 5
Fresh Water Channels

<table>
<thead>
<tr>
<th>Species</th>
<th>Links after removal</th>
<th>Change in links</th>
<th>Connectance ( C_j = \frac{2L_j}{S(S-1)} )</th>
<th>% Change in Connectance</th>
<th>Cmin</th>
<th>Cnorm</th>
<th>Change in Cnorm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>45</td>
<td>6</td>
<td>0.2143</td>
<td>-2.9412</td>
<td>0.0952</td>
<td>0.1316</td>
<td>-0.0113</td>
</tr>
<tr>
<td>Phytoplankton</td>
<td>45</td>
<td>6</td>
<td>0.2143</td>
<td>-2.9412</td>
<td>0.0952</td>
<td>0.1316</td>
<td>-0.0113</td>
</tr>
<tr>
<td>Detritus</td>
<td>42</td>
<td>9</td>
<td>0.2</td>
<td>-9.4118</td>
<td>0.0952</td>
<td>0.1158</td>
<td>-0.02707</td>
</tr>
<tr>
<td>Mud Worms</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
<tr>
<td>Midge</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
<tr>
<td>Amphipods</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
<tr>
<td>Copepods</td>
<td>45</td>
<td>6</td>
<td>0.2143</td>
<td>-2.9412</td>
<td>0.0952</td>
<td>0.1316</td>
<td>-0.0113</td>
</tr>
<tr>
<td>Cladocerans</td>
<td>45</td>
<td>6</td>
<td>0.2143</td>
<td>-2.9412</td>
<td>0.0952</td>
<td>0.1316</td>
<td>-0.0113</td>
</tr>
<tr>
<td>Rotifers</td>
<td>45</td>
<td>6</td>
<td>0.2143</td>
<td>-2.9412</td>
<td>0.0952</td>
<td>0.1316</td>
<td>-0.0113</td>
</tr>
<tr>
<td>Zebra Mussels</td>
<td>43</td>
<td>8</td>
<td>0.2048</td>
<td>-7.2549</td>
<td>0.0952</td>
<td>0.1211</td>
<td>-0.0218</td>
</tr>
<tr>
<td>Blue Crab</td>
<td>49</td>
<td>2</td>
<td>0.2333</td>
<td>5.6863</td>
<td>0.0952</td>
<td>0.1526</td>
<td>0.0098</td>
</tr>
<tr>
<td>BlueBack Herring</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
<tr>
<td>Striped Bass Larvae</td>
<td>48</td>
<td>3</td>
<td>0.2286</td>
<td>3.529412</td>
<td>0.0952</td>
<td>0.1474</td>
<td>0.0045</td>
</tr>
<tr>
<td>Striped Bass Juvenile</td>
<td>47</td>
<td>4</td>
<td>0.2238</td>
<td>1.372549</td>
<td>0.0952</td>
<td>0.1421</td>
<td>-0.0008</td>
</tr>
<tr>
<td>Striped Bass</td>
<td>48</td>
<td>3</td>
<td>0.2286</td>
<td>3.529412</td>
<td>0.0952</td>
<td>0.1474</td>
<td>0.0045</td>
</tr>
<tr>
<td>Shad</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
<tr>
<td>White Perch</td>
<td>50</td>
<td>1</td>
<td>0.2381</td>
<td>7.843137</td>
<td>0.0952</td>
<td>0.1579</td>
<td>0.0150</td>
</tr>
<tr>
<td>Catfish</td>
<td>48</td>
<td>3</td>
<td>0.2286</td>
<td>3.529412</td>
<td>0.0952</td>
<td>0.1474</td>
<td>0.0045</td>
</tr>
<tr>
<td>Largemouth Bass</td>
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<td>2</td>
<td>0.2333</td>
<td>5.686274</td>
<td>0.0952</td>
<td>0.1526</td>
<td>0.0098</td>
</tr>
<tr>
<td>Sturgeon</td>
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<td>4</td>
<td>0.2238</td>
<td>1.372549</td>
<td>0.0952</td>
<td>0.1421</td>
<td>-0.0008</td>
</tr>
<tr>
<td>Cormorant</td>
<td>48</td>
<td>3</td>
<td>0.2286</td>
<td>3.529412</td>
<td>0.0952</td>
<td>0.1474</td>
<td>0.0045</td>
</tr>
<tr>
<td>People</td>
<td>46</td>
<td>5</td>
<td>0.2190</td>
<td>-0.7843</td>
<td>0.0952</td>
<td>0.1368</td>
<td>-0.0060</td>
</tr>
</tbody>
</table>
We define the most significant species as those whose removal from the food web lowers the value of the connectance dramatically, and the weakest are those whose removal from the food web improves i.e. increases this value. Based on this analysis, we list the top two most significant species and the two least connected species from all four regions in Table 7.

<table>
<thead>
<tr>
<th>Removal of 1 Species</th>
<th>links after removal</th>
<th>change in links</th>
<th>Connectance $C_s = \frac{2L}{S(S-1)}$</th>
<th>% Change in Connectance</th>
<th>Cmin</th>
<th>Cnorm $c_{\text{norm}} = \frac{c_{\text{min}} - c_{\text{max}}}{c_{\text{max}}}$</th>
<th>Change in Cnorm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Algae</td>
<td>78</td>
<td>9</td>
<td>0.3714</td>
<td>-1.3793</td>
<td>0.0952</td>
<td>0.3053</td>
<td>-0.0090</td>
</tr>
<tr>
<td>2 Detritus</td>
<td>76</td>
<td>11</td>
<td>0.3619</td>
<td>-3.9081</td>
<td>0.0952</td>
<td>0.2947</td>
<td>-0.0195</td>
</tr>
<tr>
<td>3 Phytoplankton</td>
<td>76</td>
<td>11</td>
<td>0.3619</td>
<td>-3.9081</td>
<td>0.0952</td>
<td>0.2947</td>
<td>-0.0195</td>
</tr>
<tr>
<td>4 Bacteria</td>
<td>76</td>
<td>11</td>
<td>0.3619</td>
<td>-3.9081</td>
<td>0.0952</td>
<td>0.2947</td>
<td>-0.0195</td>
</tr>
<tr>
<td>5 Water Celery</td>
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<td>0.4</td>
<td>6.2069</td>
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<td><strong>0.3368</strong></td>
<td><strong>0.0226</strong></td>
</tr>
<tr>
<td>6 Amphipods</td>
<td>78</td>
<td>9</td>
<td>0.3714</td>
<td>-1.3793</td>
<td>0.0952</td>
<td>0.3053</td>
<td>-0.0090</td>
</tr>
<tr>
<td>7 Cladocerans</td>
<td>78</td>
<td>9</td>
<td>0.3714</td>
<td>-1.3793</td>
<td>0.0952</td>
<td>0.3053</td>
<td>-0.0090</td>
</tr>
<tr>
<td>8 Midges</td>
<td>78</td>
<td>9</td>
<td>0.3714</td>
<td>-1.3793</td>
<td>0.0952</td>
<td>0.3053</td>
<td>-0.0090</td>
</tr>
<tr>
<td>9 Damsel fly</td>
<td>80</td>
<td>7</td>
<td>0.381</td>
<td>1.1494</td>
<td>0.0952</td>
<td>0.3158</td>
<td>0.0015</td>
</tr>
<tr>
<td>10 Snails</td>
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<td>2.4138</td>
<td>0.0952</td>
<td>0.3211</td>
<td>0.0068</td>
</tr>
<tr>
<td>11 Eel Larvae</td>
<td>83</td>
<td>4</td>
<td>0.3952</td>
<td>4.9425</td>
<td>0.0952</td>
<td><strong>0.3316</strong></td>
<td><strong>0.0173</strong></td>
</tr>
<tr>
<td>12 Carp</td>
<td>73</td>
<td>14</td>
<td>0.3476</td>
<td>-7.7012</td>
<td>0.0952</td>
<td><strong>0.2789</strong></td>
<td><strong>-0.0353</strong></td>
</tr>
<tr>
<td>13 Specktail Shiner</td>
<td>73</td>
<td>14</td>
<td>0.3476</td>
<td>-7.7012</td>
<td>0.0952</td>
<td><strong>0.2789</strong></td>
<td><strong>-0.0353</strong></td>
</tr>
<tr>
<td>14 Redbreast Sunfish</td>
<td>73</td>
<td>14</td>
<td>0.3476</td>
<td>-7.7012</td>
<td>0.0952</td>
<td><strong>0.2789</strong></td>
<td><strong>-0.0353</strong></td>
</tr>
<tr>
<td>15 Tessellated Darter</td>
<td>73</td>
<td>14</td>
<td>0.3476</td>
<td>-7.7012</td>
<td>0.0952</td>
<td><strong>0.2789</strong></td>
<td><strong>-0.0353</strong></td>
</tr>
<tr>
<td>16 American Eel</td>
<td>78</td>
<td>9</td>
<td>0.3714</td>
<td>-1.3793</td>
<td>0.0952</td>
<td>0.3053</td>
<td>-0.0090</td>
</tr>
<tr>
<td>17 Largemouth Bass</td>
<td>82</td>
<td>5</td>
<td>0.3905</td>
<td>3.6781</td>
<td>0.0952</td>
<td>0.3263</td>
<td>0.0120</td>
</tr>
<tr>
<td>18 Mute Swan</td>
<td>86</td>
<td>1</td>
<td>0.4095</td>
<td>8.7356</td>
<td>0.0952</td>
<td><strong>0.3474</strong></td>
<td><strong>0.0330</strong></td>
</tr>
<tr>
<td>19 Canvasback Duck</td>
<td>86</td>
<td>1</td>
<td>0.4095</td>
<td>8.7356</td>
<td>0.0952</td>
<td><strong>0.3474</strong></td>
<td><strong>0.0330</strong></td>
</tr>
<tr>
<td>20 Great Egret</td>
<td>83</td>
<td>4</td>
<td>0.3952</td>
<td>4.9425</td>
<td>0.0952</td>
<td>0.3316</td>
<td>0.0173</td>
</tr>
<tr>
<td>21 Bald Eagle</td>
<td>83</td>
<td>4</td>
<td>0.3952</td>
<td>4.9425</td>
<td>0.0952</td>
<td>0.3316</td>
<td>0.0173</td>
</tr>
<tr>
<td>22 People</td>
<td>82</td>
<td>5</td>
<td>0.3905</td>
<td>3.6782</td>
<td>0.0952</td>
<td>0.3263</td>
<td>0.0120</td>
</tr>
</tbody>
</table>
Table 7

<table>
<thead>
<tr>
<th>Significant Species</th>
<th>Marsh (Links Lost)</th>
<th>Brackish (Links Lost)</th>
<th>Fresh Water Channel (Links Lost)</th>
<th>Fresh Water Shallows (Links Lost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spartina Alterniflora (10), Typha (10), Phragmites (10), Deltrius (9), Midge (9), Mud worms (9), Amphipods (9), Snails (9)</td>
<td>Striped Bass (14), Copepods (11), Crab Larvae(11), Rotifers (11)</td>
<td>Detritus (9), Zebra Mussels (8)</td>
<td>Carp (14), Spottail Shiner (14), Redbreast Sunfish (14), Tessellated Darter (14), Detritus (11), Phytoplankton (11), Bacteria (11)</td>
<td></td>
</tr>
<tr>
<td>Weak Species</td>
<td>Great Blue Heron (2), Snapping Turtle (2), Muskrat (3)</td>
<td>Cormorant (1), Sturgeon (5), Blue Crab (5)</td>
<td>White Perch (1), Largemouth Bass (2), Blue Crab (2)</td>
<td>Mute Swan (1), Canvasback Duck (1), Water Celery (3)</td>
</tr>
</tbody>
</table>

For example, losing Typha from the Marsh food web (see Table 3) results in approximately 6% negative changes of the connectance whereas, losing snapping turtle from the same food web results in about 9% increase in connectance. Similarly, loss of striped Bass from the Brackish region (see Table 4) lowers the connectance value by approximately 6% whereas losing Cormorant from the same region increases the connectance value by approximately by 8%. Similar patterns are also observed for all other species (see Tables 3, 4, 5, 6). Thus, loss of poorly connected species i.e. species that have relatively fewer links to the other species in the food web results in positive change connectance, whereas the loss of highly connected species i.e. the significant species results in a negative change. Notice that using this definition of connectance the highly connected species are not always necessarily the intermediate species. Carp (links 14), Spottail Shiner (links 14), Redbreast Sunfish (links 14), Tessellated Darter (links 14), Detritus (links 11), Phytoplankton (links 11), Bacteria (links11) are found to be highly connected species in the Fresh Water Shallows food web. The species Detritus, Phytoplankton, and Bacteria, are considered as basal species (traditionally called weak species) when the others are considered as intermediate species in this food web.

Although “people” is considered as a top species in this foodweb, it is not considered as one of the top significant species based on this measure of connectance. Many other intermediate species in this food web are also not considered as important species, since these species do not share relatively larger number of feeding links with others. Similarly, in the same food web Mute Swan (links 1), Canvasback Duck (links 1), Water Celery (links3) are found to be the most poorly connected species. Water celery is a basal species when canvasback duck and mute swan are considered as top species in this food web. Therefore using this measure of connectance, we identify the highly connected species (significant species) and the poorly connected species (non-significant species) based on the number of feeding links lost due to the species removal and not necessarily based on the species status (i.e. basal, intermediate, and top). The value of the normalized connectance also provides a relative measure of species importance within their own food web. Within these four food webs, the highest negative changes in the normalized connectance (-0.0353) occurs in the Fresh Water Shallows due to the loss of spottail shiner, redbreast sunfish, tessellated darter, or carp. Therefore, these four species play the most significant roles in this food web than that of the other species within their respective food web. Similarly, loss of great blue heron or the snapping turtle from the Marsh food web results in the highest increase of the
normalized connectance value. Therefore, these two species are relatively least connected in Marsh food web than all other species from all four food webs.

As was observed by Gilbert (2008) we also notice the loss of highly connected species results in a negative change in the normalized connectance whereas, the loss of weakly connected species leads to positive change in the normalized connectance. Equation 3 shows the relationship between the loss of links

\[ L_O - L_{\text{lost}} \]

and the change of normalized connectance:

\[ \Delta C_{\text{norm}(S)} = C_{\text{norm}(S)} - C_{\text{norm}(O)} \]

where \( L_O \), \( L_{\text{lost}} \), and \( C_{\text{norm}(O)} \) are respectively, the number of the links of the original food web, the number of links lost due to a species loss, and the normalized connectance of the original food web. The figures 2, 3, 4, and 5 show the relationships between the normalized connectance to the removal of 1, 2, and 3 species for all four food webs. The x-intercept shows where the normalized connectance value changes from positive to negative. For loss of one species, x-intercept occurs approximately at 6, 8, and 7 respectively, for Marsh, Brackish, and Fresh Water Shallows whereas it lies between 4 and 5 for Fresh Water Channel. Similarly for loss of two species, this intercept lies approximately at 12 and 18 for the Marsh and Fresh Water Shallows respectively whereas, it occurs between 15 and 16 for Brackish and 7 and 8 for Fresh Water Channel. Similar behavior is observed with loss of three species. Furthermore the value of the normalized connectance of Fresh Water Channel (~0.14) is much lower than that of the other three food webs (see Table 1) and also the change of the normalized connectance from positive to negative occurs for fewer links lost (see figure 4) due to species loss than the other three food webs we consider this food web is more sensitive to species loss and thus less robust than the other three food webs. Similarly, Brackish is the most robust food web among these four since it has the highest value of the normalized connectance (~0.33) and the normalized connectance changes from positive to negative for larger numbers of links lost (see figure 2) due to species loss than that of the other three food webs.
\[ C_S = \frac{2L}{S(S-1)} \text{ and } C_{\text{norm}(S)} = \frac{C_S - C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} \]

Therefore, \( \Delta C_{\text{norm}(S)} = C_{\text{norm}(S)} - C_{\text{norm}(O)} \),

where \( C_{\text{norm}(O)} = \text{Normalized connectance of the original foodweb} \)

\[ \Delta C_{\text{norm}(S)} = \frac{C_S - C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} - \frac{C_O - C_{\text{min}(O)}}{1 - C_{\text{min}(O)}} \]

where \( C_O = \text{Connectance of the original food web} \),

\[ C_{\text{min}(O)} = \text{minimum connectance of the original foodweb} = \frac{2}{\text{number of species (original)}} \]

\[ C_{\text{min}(S)} = \text{minimum connectance after the species loss} = \frac{2}{\text{number of species (current)}} = \frac{2}{S} \]

Note number of links (after species loss) = Original number of links – links lost

\[ L_S = \text{Number of links (after species loss)} = L_O - L_{\text{lost}}, \quad L_O = \text{original number of links} \]

\[ \Delta C_{\text{norm}(S)} = \frac{2(L_O - L_{\text{lost}})}{S(S-1)} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} - \frac{C_O - C_{\text{min}(O)}}{1 - C_{\text{min}(O)}} \]

\[ \Delta C_{\text{norm}(S)} = \frac{2L_O}{S(S-1)(1 - C_{\text{min}(S)})} - \frac{2L_{\text{lost}}}{S(S-1)(1 - C_{\text{min}(S)})} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} + \frac{C_O - C_{\text{min}(O)}}{1 - C_{\text{min}(O)}} \]

\[ \Delta C_{\text{norm}(S)} = \left[ \frac{2}{S(S-1)(1 - C_{\text{min}(S)})} \right] L_{\text{lost}} + \left[ \frac{2L_O}{S(S-1)(1 - C_{\text{min}(S)})} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} + \frac{C_O - C_{\text{min}(O)}}{1 - C_{\text{min}(O)}} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} \right] \]

Take \( m = \frac{2}{S(S-1)(1 - C_{\text{min}(S)})} \) and \( b = \frac{2L_O}{S(S-1)(1 - C_{\text{min}(S)})} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} + \frac{C_O - C_{\text{min}(O)}}{1 - C_{\text{min}(O)}} - \frac{C_{\text{min}(S)}}{1 - C_{\text{min}(S)}} \)

Then \( \Delta C_{\text{norm}(S)} = mL_{\text{lost}} + b \)
The original network is made of 18 species and 60 links with a measure of initial connectance of approximately 0.39 (see Eq. 1) and with an initial normalized connectance value of ≈ .32 (see Eq. 3).

The original network is made of 23 species and 99 links with a measure of initial connectance of approximately 0.39 (see Eq. 1) and with an initial normalized connectance value of ≈ .33 (see Eq. 3).
The original network is made of 22 species and 51 links with a measure of initial connectance of approximately 0.22 (see Eq. 1) and with an initial normalized connectance value of $\approx 0.14$ (see Eq. 3).

Figure 4

Change in Normalized Connectance with Removal of 1, 2 and 3 Species - Fresh Water Channel

The original network is made of 22 species and 87 links with a measure of initial connectance of approximately 0.38 (see Eq. 1) and with an initial normalized connectance value of $\approx 0.31$ (see Eq. 3).

Figure 5

Change in Normalized Connectance with Removal of 1, 2, & 3 Species - Fresh Water Shallows
CONCLUSIONS
We use a measure of connectance to study the robustness of each food web and identify the most connected species and least connected species of four different Hudson River food webs. Here, we assumed that a robust food web should show small changes in their connectance to the loss of fewer species whereas, a non-robust food web should show more sensitivity to its connectance with species loss. We associate large positive and large negative changes of connectance, respectively with the least important and the most significant species of the food webs. Based on this measure of connectance, we found that basal species, which are traditionally known as weak species, along with some intermediate species and top species, may play crucial roles in a given food web and thus may be the most significant species of that given food web. Similarly, some intermediate species along with some basal and top species may be the least important species in a given food web. Furthermore, comparing the values of connectance of the original food web and analyzing the relationships between the links lost and the normalized connectance, we concluded Fresh Water Channel is the most sensitive food web to the species loss and thus least robust and Brackish is least sensitive to the species loss and thus most robust food web among the four. We were unable to make such a comparison between Marsh and Fresh Water Shallows. We believe further studies need to be done to establish significance of species in a given food web and to perform relative analysis of robustness of various food webs.

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REFERENCES


McNEELY AND KING RULINGS: A COURT IN DISARRAY OVER THE ADMISSION OF SCIENTIFIC EVIDENCE

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ABSTRACT
The United States Supreme Court has recently made important yet contradictory decisions regarding the admissibility of scientific evidence in criminal prosecutions. In Maryland v King (2013), the Court in a sharply disputed opinion, held in favor of the government when it ruled that it is permissible for officers at a police station to obtain and analyze a DNA sample via cheek swab on detainees who based on probable cause had been charged with a serious offense. In McNeely v Missouri (2013), however, also in a divided opinion last term, the Court ruled against the government on the question of the admissibility of an involuntary blood draw subsequent to a DUI arrest. In both instances the Court discussed the balance that must be struck between privacy and a compelling government interest. In King, the Court held that learning if a detainee was being sought for other crimes was a sufficiently compelling government interest to justify the intrusion. In McNeely, on the other hand, the Court found that the possibility of destruction of the evidence by dissipation of BAC was not a sufficiently compelling government interest that would justify the blood draw. Although in both instances the Court agreed that there was a diminished expectation of privacy while in custody, the King court found that obtaining a DNA sample was less intrusive than a blood draw, and therefore lawful. This paper will critically explore the contradictions in these cases and contribute to the understanding of legal thought in the area of admissibility of scientific evidence in a criminal prosecution.

INTRODUCTION
The United States Supreme Court recently rendered two decisions regarding admissibility of scientific evidence in criminal trials. Both cases have led to confusion over the correct interpretation of the reasonableness requirement dictated by the Fourth Amendment to the U.S. Constitution for a lawful search. The Fourth Amendment to the US Constitution provides that:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized. 1

This paper examines the different theories used by the Court in McNeely v Missouri2 and Maryland v King3 to resolve the question of admissibility of scientific evidence. Their decisions led to conflicting results. Generally, Fourth Amendment jurisprudence relating to searches centers around answering the following three questions: 1. Was there a search? 2. Was the search reasonable? 3. Was a warrant

1U.S. Const. amend. IV.
2 569 U. S. ____ (2013)
3 569 U. S. ____ (2013)
needed? If there is not a search then the Fourth Amendment is not implicated at all. Determining whether a search is reasonable usually looks to balancing law enforcement/governmental needs against the interest in personal freedom.\(^4\) If the needs of law enforcement are determined to outweigh the need for individual privacy, then the search is deemed reasonable and can pass constitutional muster provided all the other requirements of the Fourth Amendment are met. Finally, the courts must determine if a warrant based on probable cause and issued by a neutral and detached magistrate should have been obtained prior to the search.\(^5\)

I. Basic Parameters of Fourth Amendment Analysis

A. Was there a search?

Every encounter between law enforcement and the people does not necessarily trigger Fourth Amendment protections. The threshold question is has there been a search by government personnel acting under color of law. Fourth amendment protections are not limited to interactions with law enforcement personnel only; they also apply in settings involving other government agencies. We have significant case law involving public school personnel\(^6\), and public transportation, among others. The first requirement therefore is that the encounter must be between a public entity and a private individual.\(^7\) Once the prerequisite of government activity is met, the next level of inquiry focuses on determining whether a search occurred at all. At this point, the analysis becomes more complicated. The seminal case in this area is Katz v U.S.\(^8\) Katz involved the placement of an eavesdropping device by the police on the outside of a telephone booth. Katz was convicted of transmitting wagering information over telephone lines and appealed his conviction arguing that there had been a search that violated the Fourth Amendment. The government argued that because the device had been placed on the outside of the booth there was no physical intrusion, and hence no search had occurred. The Court disagreed holding that the Fourth Amendment was not limited to the protection from physical intrusions, but rather it protected the privacy interests we had in the conversations themselves. Katz was the birth of the expectation of privacy test for determining if a search had occurred.

Justice Harlan’s concurrence explained the expectation test to mean that a search has occurred under the Fourth Amendment when 1.) An individual has a subjective expectation of privacy and 2.) the expectation is considered objectively reasonable. Using this analysis the Court found that Katz had an expectation of privacy in his conversation and that the expectation was reasonable. In reaching this conclusion, the Court overruled Olmstead v U.S.\(^9\), a wiretapping case that had found that a search could not occur if there was not a concurrent physical intrusion.

B. Was the search reasonable?

Once the decision has been made that a search has indeed occurred using the Katz expectation of privacy test, the inquiry moves to the question of whether the search was reasonable. Reasonableness is analyzed by looking at both the probable cause requirement and the warrant preference. The warrant preference will be addressed below. Interestingly, although probable cause is a ubiquitous term in Fourth Amendment law, it has not been readily and clearly defined. Our

\(^4\) Camara v. Municipal Court 387 U.S. 526 (1967)  
\(^5\) Coolidge v. New Hampshire 403 U.S. 443 (1971)  
\(^6\) New Jersey v. T. L. O., 469 U.S. 325 (1985)  
\(^8\) 389 U.S. 347 (1967)  
\(^9\) 277 U.S. 438 (1928)
understanding of its meaning comes from a patchwork of cases that mostly focus on what it is not. One of the earliest definitions of probable cause came in *Locke v U.S.*\(^{10}\) and said: “Probable cause’ means less than evidence which would justify condemnation. It imports a seizure made under circumstances which warrant suspicion.”\(^{11}\) *Brinegar v U.S.*\(^{12}\) stated that probable cause exists where "the facts and circumstances within their [the officers'] knowledge and of which they had reasonably trustworthy information [are] sufficient in themselves to warrant a man of reasonable caution in the belief that an offense has been or is being committed."\(^{13}\) (Quoting Carroll v. United States, 267 U. S. 132, 267 U. S. 162 (1925)) (Bracketed material in the original.)\(^{14}\) Probable cause for a search requires that law enforcement officials have a substantial belief that would lead a reasonable person to believe that evidence of a crime is located in a particular place or on a particular person. It is a quantum of evidence that requires more than a hunch and more than mere suspicion, but less than the standard for conviction.\(^{15}\)

The Court has gone through a long and often confusing history of cases trying to guide both law enforcement officials and laypersons on how to understand if the probable cause standards have been satisfied. The most confusing of the cases were the ones describing the two prong test proposed in *Aguilar v Texas*\(^{16}\) and *Spinelli v U.S.*\(^{17}\) The *Aguilar/Spinelli* test involved assessing an informant’s tip in order to determine if it satisfied probable cause. Strict requirements involving evidence of the informant’s reliability and credibility had to be met. Evidence regarding how the informant acquired its information also had to be provided. When the *Aguilar/Spinelli* cases and their progeny proved to be too cumbersome to implement the Court abandoned the two prong test in favor of the “totality of circumstances” test.\(^{18}\)

The Court did away with the rigid two-prong test saying “In its place we reaffirm the totality-of-circumstances analysis that traditionally informed the probable-cause determinations."\(^{19}\) The Court understanding the realities of how and where the law is implemented said: “We also have recognized that affidavits “…are normally drafted by nonlawyers in the midst and haste of a criminal investigation. Technical requirements of elaborate specificity once enacted under common law pleadings have no proper place in this area.”\(^{20}\) Finally, the Court looked to *Jones v United States*\(^{21}\) and established a “substantial basis for…concluding]” that a search would uncover evidence of wrongdoing, the Fourth Amendment requires no more.”\(^{22}\)

C. Was a warrant needed?

Law enforcement activities often happen hastily, under dangerous circumstances, and do not always give law enforcement officials the time and opportunity to secure a warrant. Hence, the command of

\(^{10}\) 11 U.S. 7 Cranch 339 (1813)
\(^{11}\) 11 U.S. 7 Cranch 339 339 (1813)
\(^{12}\) 338 U.S. 160 (1949)
\(^{13}\) 338 U.S. 160, 175-76 (1949)
\(^{15}\) Terry v. Ohio, 392 U.S. 1 (1968)
\(^{16}\) Aguilar v. Texas, 378 U.S. 108 (1964)
\(^{17}\) Spinelli v. United States, 393 U.S. 410 (1969)
\(^{20}\) United States v. Ventresca, 380 U.S. 102, 108 (1965)
\(^{21}\) Jones v United States 362 U.S. 257, 271 (1960)
\(^{22}\) Jones v. United States, 362 U.S. 257, 271 (1960)
the Fourth Amendment “that no warrant shall issue but upon probable cause”\(^{23}\) has meant that although warrants are preferred in all instances, a warrant requirement is made only in specific circumstances. *US v Ventresca* \(^{24}\) explained the Court’s position as follows:

> “An evaluation of the constitutionality of a search warrant should begin with the rule that ‘the informed and deliberate determinations of magistrates empowered to issue warrants…are to be preferred [380 U.S. 102, 106] over the hurried action of officers…who may happen to make arrests.’ United States v. Lefkowitz, 285 U.S. 452, 464. The reasons for this rule go to the foundations of the Fourth Amendment.” 378 U.S., at 110, 111. In *Jones v. United States*, 362 U.S. 257, 270, this Court, strongly supporting the preference to be accorded searches under a warrant, indicated that in a doubtful or marginal case a search under a warrant may be sustainable where without one it would fall. In *Johnson v. United States*, 333 U.S. 10, and *Chapman v. United States*, 365 U.S. 610, the Court, in condemning searches by officers who invaded premises without a warrant, plainly intimated that had the proper course of obtaining a warrant from a magistrate been followed and had the magistrate on the same evidence available to the police made a finding of probable cause, the search under the warrant would have been sustained. Mr. Justice Jackson stated for the Court in *Johnson*: "The point of the Fourth Amendment, which often is not grasped by zealous officers, is not that it denies law enforcement the support of the usual inferences which reasonable men draw from evidence. Its protection consists in requiring that those inferences be drawn by a neutral and detached magistrate instead of being judged by the officer engaged in the often competitive enterprise of ferreting out crime. Any assumption that evidence sufficient to support a magistrate's disinterested determination to issue a search warrant will justify the officers in making a search without a warrant would reduce the Amendment to a nullity and leave the people's homes secure only in the discretion of police officers." *Johnson v. United States*, supra, at 13-14.\(^{25}\)

There are, however, specific, well defined exceptions to the preference for warrants. The rationale for these exceptions varies and involves the balancing of law enforcement needs against the interest in individual privacy. Law enforcement needs may include *inter alia* avoiding destruction of evidence, officer safety, border/national security, public safety, and emergencies. The individual privacy side of the balance can often involve ideas such as the intrusion is *de minimus*, or there is a reduced expectation of privacy. The most commonly alluded to exceptions are: search incident to an arrest, consensual search, plain view search, automobile exception search, administrative/inventory search, border security search and searches relating to some form of exigency.

*Chimel v California* \(^{26}\) allowed for a search of a person and the area within that person’s immediate control incident to a lawful arrest for the purpose of ensuring office safety.

\(^{23}\) U.S. Const. amend. IV.
\(^{24}\) United States v. Ventresca 380 U.S. 102 (1965)
\(^{25}\) United States v. Ventresca  380 U.S. 102, 106 (1965)
\(^{26}\) Chimel v. California 395 U.S. 752 (1969)
The automobile exception to the warrant requirement was first announced in *Carroll v U.S*\(^{27}\). In justifying this exception the Court focused first on the mobility of an automobile and the loss of destruction of evidence that could follow. In subsequent cases, the Court added that using the *Katz* expectation of privacy analysis, we could conclude that there was a reduced expectation of privacy in automobiles. It would be unreasonable for persons to believe that there was an expectation of privacy in automobiles since they are visible to the public.\(^{28}\)

The plain view exception to the warrant requirement, in this instance a seizure, relies on the reduced expectation of privacy argument that harkens back to *Katz*. The plain view exception demands probable cause and requires that the officer be lawfully in the location where the evidence/contraband is readily visible.\(^{29}\) The plain view exception has been extended to include plain smell and plain touch.\(^{30}\)

“Open fields” searches although often included in discussions about exceptions to the warrant preference, is not actually an exception, but rather has been deemed not to be a search at all. Searches of open fields are considered not to implicate Fourth Amendment protections because there is simply no reasonable expectation of privacy in those areas.\(^{31}\)

The right of nations to secure their borders outweighs interests in personal privacy, border searches are generally conducted without a warrant, but distinctions in outcomes are drawn based on whether there is a fixed checkpoint as opposed to a roving patrol.\(^{32}\) The expectation of privacy is diminished at the borders when the expectation is balanced against the need to keep the borders secure.

Voluntary consent, allows law enforcement officers to proceed without a warrant. The voluntariness of the consent as well as the authority to give consent can always become issues in subsequent litigation.\(^{33}\)

The all-encompassing exigent circumstances exception to the warrant preference is at issue in *Missouri v. McNeely*. Exigency means that an emergency exists that prevents law enforcement from obtaining a warrant, even though they have probable cause. If probable cause does not exist, then the search is unconstitutional warrant or not. Unlike some of the other exceptions to the warrant that are determined categorically, (e.g. search incident to an arrest, plain view) the determination about whether a warrant should have been procured is generally based on the application of the totality of circumstances test. The Court examines the facts and circumstances of the case and determines in each separate instance whether the facts justify not having obtained a warrant. Some scenarios have already been addressed by the Court as having met the standard of exigency obviating the need for a warrant. In *Brigham City*\(^{34}\) exigency was found where the police were rendering emergency aid. Likewise, in *Tyler v. Michigan*\(^{35}\), the Court found exigency when law enforcement was responding to a fire in a building.

Finally, the administrative/inventoriness exception occurs when the government during routine booking, or engaging in impounding type procedures must inventory contents not only for officer

\(^{27}\) 267 U.S.132 (1925)
\(^{29}\) Arizona v. Hicks, 480 U.S. 321 (1987)
\(^{31}\) Hester v. U.S., 265 U.S. 57 (1924)
\(^{32}\) Almeida-Sanchez v. United States, 413 US 266 ( 1973)
\(^{33}\) Schneckloth v. Bustamonte 412 U.S. 218 (1973)
\(^{34}\) Brigham City v. Stuart 547 U.S. 398 (2006)
\(^{35}\) Tyler v. Michigan 436 U.S. 499 (1978)
safety, but also for identification purposes, and to safeguard against accusations that items have been stolen or damaged.

Finally, inspection of an arrestee's personal property may assist the police in ascertaining or verifying his identity. See 2 W. LaFave, Search and Seizure 5.3, pp. 306-307 (1978). The question here is whether, consistent with the Fourth Amendment, it is reasonable for police to search the personal effects of a person under lawful arrest as part of the routine administrative procedure at a police station house incident to booking and jailing the suspect. The justification for such searches does not rest on probable cause, and hence the absence of a warrant is immaterial to the reasonableness of the search. Indeed, we have previously established that the inventory search constitutes a well-defined exception to the warrant requirement. See South Dakota v. Opperman, supra.36

The administrative/inventory exception was at issue in Maryland v. King.

I. Missouri v McNeely

37 Missouri v McNeely No. 11-425 (2013)

On certiorari to the Missouri Supreme Court Missouri v McNeely 37 involved the nonconsensual and warrantless blood draw of an individual detained on suspicion of driving while intoxicated. McNeely, the respondent was detained by police for speeding and crossing the centerline. McNeely refused to take a breath test that would have measured his blood alcohol concentration (BAC). Drivers in all states give implied consent to this test as a condition of exercising their driving privileges.38 The police officer arrested McNeely, transported him to a local hospital and over McNeely’s objection, ordered that a lab technician to draw a blood sample from McNeely. The blood sample read over the legal limit, and McNeely was charged with driving while intoxicated (DWI). McNeely sought to exclude the evidence alleging that the warrantless nonconsensual blood draw was a violation of his Fourth Amendment rights. Both the trial court and the Missouri Supreme Court agreed that indeed the evidence needed to be excluded. Missouri argued that a per se rule ought to apply in DWI cases. Arguing that the dissipation of alcohol in the bloodstream could result in destruction of evidence, creating an exigent circumstance that should permit warrantless blood draws. The Court disagreed, rejecting the per se rule, and affirming that a totality of circumstances test to be applied on a case by case basis. The Missouri Supreme Court judgment was affirmed.

A. Exigent Circumstances

As described above the exigency “…exception applies when there is a compelling need to prevent imminent destruction of evidence, and there is no time to obtain a warrant.”39 The Court did not dispute the fact that alcohol does indeed dissipate from the bloodstream, but did not agree that in every instance that dissipation rose to the level of an exigent circumstance. The majority explained that in some instances a DWI stop could indeed become an exigent circumstance, but that not all DWI stops would necessarily take that route. The Court further addressed the question of delays on obtaining warrants as a further reason to treat DWI arrests as exigent. The Court was clear that again there may be some situations where a delay in obtaining a warrant may occur, but that it did

37 Missouri v McNeely No. 11-425 (2013)
38 Missouri Revised Statutes Chapter 577.020
39 McNeely, supra (ROBERTS. J., dissenting in part. concurring in part)
not necessarily happen in all or most instances. The Court went on to discuss the technological advances that have sped up the warrant application process thereby significantly reducing any delays.

The Court did agree that exigency existed in *Skinner v Railway*\(^{40}\) based on a “special needs” finding. In *Skinner* warrantless blood samples were taken from railroad employees for the purpose of reducing fatal train accidents. The Court spoke of “special needs” as needs that go beyond the normal law enforcement duties.\(^{41}\) In *New Jersey v. T.L.O.* the Court found “special needs” to exist in school settings. (Subsequent cases also found special needs in prisons.) Finding that the blood draw in *McNeely* was not intended for anything other than routine law enforcement duties, the Court rejected a “special needs” argument in this case.

**B. Destruction of Evidence**

*Cupp v. Murphy*\(^{42}\) involved a nonconsensual warrantless removal of fingernail scrapings. In *Murphy*, respondent’s former wife was killed by strangulation and respondent voluntarily came to the station house for questioning. During the questioning, police officers noticed a red spot on Mr. Murphy’s finger, and thought it might be evidence of the crime since the victim had suffered lacerations and abrasions about the neck. Without an arrest or a warrant, police scraped respondent’s fingernails and obtained incriminating evidence. Respondent sought federal habeas corpus relief. Unlike *McNeely*, the Court in *Murphy* found that unquestionably there was an immediate danger that the evidence under the respondent’s fingernails would disappear. A simple hand washing could have resulted in the evidence being forever lost. While recognizing, the “natural metabolization of alcohol in the bloodstream” in *McNeely* an argument that there was no time to obtain a warrant could not be sustained.

**C. Bodily Intrusions**

*Schmerber v California*\(^{43}\) remains the seminal case in addressing the constitutionality of warrantless bodily intrusions. The petitioner in *Schmerber* had been arrested for DWI following an automobile accident where he sustained injuries. Subsequent to investigating the accident, petitioner was taken to a hospital for treatment of his injuries. The police officer directed that hospital personnel take a nonconsensual, warrantless blood sample from petitioner. Petitioner was arrested and convicted. Evidence of his BAC was admitted at trial. On appeal, petitioner argued that the nonconsensual, warrantless blood draw was a violation of the Fourth Amendment. In a very specific, narrow ruling, the Court affirmed the conviction explaining first that there was probable cause and that in this particular case there were exigent circumstances that did not permit the police to obtain a warrant prior to directing the blood draw.

That we today hold that the Constitution does not forbid the State minor intrusions into an individual’s body under stringently limited conditions in no way indicates that it permits more substantial intrusions, or intrusions under other conditions.\(^{44}\)

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\(^{41}\) *New Jersey v. T.L.O.* 469 U.S. 325 (1985)

\(^{42}\) *Cupp v Murphy* 412 U.S. 291 (1973)

\(^{43}\) *Schmerber v. California* 384 U.S. 757 (1966)

\(^{44}\) *Schmerber v. California* 384 U.S. 757,772 (1966)
II. Maryland v. King No. 12-207 (2013)

Maryland v. King 45 deals with a matter where the respondent was arrested on counts of first and second degree assault involving a shotgun. As part of Maryland’s routine booking procedure, a buccal swab containing DNA was taken that could subsequently be matched to the CODIS database. The Maryland DNA Collection Act46 allows for the collection of DNA samples of individuals arrested for serious crimes. The respondent’s sample matched an unidentified sample in the database collected from a prior unresolved rape case. Respondent was charged and convicted on the prior rape charge based on the CODIS DNA match. On appeal to the Court of Appeals of Maryland, the conviction was set aside on a finding that the buccal swab was an unreasonable search in violation of the Fourth Amendment. In a 5-4 decision, the Supreme Court reversed the Court of Appeals of Maryland. The Court found that in the context of a routine booking, a buccal swab for DNA used for the purpose of identification was not a violation of the Fourth Amendment.

A. Administrative/ Inventory Exception

In Illinois v Lafayette 47 the Court addressed the Fourth Amendment requirements as they related to the booking process. In this case, the Court held that searching an arrestee at the station house without a warrant is a reasonable search. A search that was conducted as part of the routine booking process falls under the inventory exception to the warrant preference. “Applying these principles, we hold that it is not "unreasonable" for police, as part of the routine procedure incident to incarcerating an arrested person, to search any container or article in his possession, in accordance with established inventory procedures.” 48 Likewise, routine fingerprinting for identification purposes has long been held to not implicate Fourth Amendment searches. People v. Jennings 96 N.E. 1077 (1911).

B. Expectation of Privacy

The King Court utilizing a balancing test concluded that there was a “substantial government interest in identification of arrestees” that outweighed the minimal intrusion of a cheek swab, thus resulting in a diminished expectation of privacy. The Court analogized this type of search to the taking of fingerprints or photographs that are used routinely for identification of arrestees. “Detention for fingerprinting may constitute a much less serious intrusion upon personal security than other types of police searches and detentions. Fingerprinting involves none of the probing into an individual’s private life and thoughts that marks an interrogation or search”.49 Thus, information obtained that is used for purposes of identification like fingerprints, voice exemplars, handwriting samples or photographs are minimal intrusions. “Handwriting, like speech, is repeatedly shown to the public, and there is no more expectation of privacy in the physical characteristics of a person's script than there is in the tone of his voice.” 50

In U.S. v Dionisio, the court stated as follows:

45 Maryland v. King 569 U.S. ___(2013)
46 Maryland Code PUBLIC SAFETY
   TITLE 2 . DEPARTMENT OF STATE POLICE
   Subtitle 5 - Statewide DNA Data Base System
   Section 2-504 - Collection of DNA samples
49 Davis v. Mississippi 394 U.S. 721 (1969)
50 U.S. v. Mara 410US 19 (1973)
In Katz v. United States, supra, we said that the Fourth Amendment provides no protection for what "a person knowingly exposes to the public, even in his own home or office . . . ." 389 U.S., at 351. The physical characteristics of a person's voice, its tone and manner, as opposed to the content of a specific conversation, are constantly exposed to the public. Like a man's facial characteristics, or handwriting, his voice is repeatedly produced for others to hear. No person can have a reasonable expectation that others will not know the sound of his voice, any more than he can reasonably expect that his face will be a mystery to the world. 51

C. Bodily Intrusions

It is difficult to reconcile the King with the plethora of cases addressing the warrantless intrusion of the body that find it must be done so rarely. The Court seems to want to focus only the how “gentle” the cheek swab is to justify its position that it is a minor physical intrusion and as such carries a diminished expectation of privacy. It is true that in Schmerber the Court did consider that a blood draw is commonplace and does not usually result in injury or trauma. What the Court fails to consider, however, is that the intrusion is not just a reference to the physical aspect. The intrusion is not simply about the needle prick or the cheek swab, but rather about the intrusion on privacy when the secretions are subsequently analyzed. Both the blood draw and the DNA are subjected to chemical analysis revealing information that the arrestee has not “knowingly exposed to the public." 52 In Skinner, the Court found that “The ensuing chemical analysis of the sample to obtain physiological data is a further invasion of the tested employee's privacy interests." 53

The Court attempts to establish that the DNA obtained in King, is almost useless except for use in identification. The Court buttresses its argument by referring to this DNA as “junk” because the sample is drawn from non-coding DNA material. DNA testing involves the analysis of chromosomes in the nucleus of all human cells. DNA contains coding material that carries the information necessary for making proteins; it also carries noncoding material whose function is not entirely clear. DNA identification is made using only noncoding DNA. Therefore, the Court concludes that since the sample cannot be used for anything other than identification there is no privacy concern. While it is true that noncoding DNA does not serve to make protein, it is also true that science is just now beginning to learn what noncoding DNA does do. Recent research suggests that RNA found in noncoding DNA has regulatory functions that may affect DNA replication. 54 Links between the endoplasmic reticulum and diabetes are also being explored. 55 In other words, we don’t know what we don’t know. The noncoding DNA may contain a wealth of information that we have yet to uncover and in which we should have a right to privacy until we know. As warned in Skinner when we permit analysis of our bodily secretions that “It is not disputed, however, that chemical analysis of urine, like that of blood, can reveal a host of private medical facts about an employee, including whether he or she is epileptic, pregnant, or diabetic.” 56

It is the bodily integrity and human dignity that is at issue here, protected in McNeely, but left exposed in King. The interests in [384 U.S. 757, 770] human dignity and privacy which the Fourth

51 410 U.S. 1 (1973)
52 Dionisio supra.
53 Skinner supra.
54 RNA Functions By: Suzanne Clancy, Ph.D. © 2008 Nature Education
55 Endoplasmic Reticulum Stress: Another Link Between Obesity and Insulin Resistance/Inflammation? Guenther Boden 10.2337/db08-1746 Diabetes March 2009 vol. 58 no. 3 518-519
56 Skinner, supra.
Amendment protects forbid any such intrusions on the mere chance that desired evidence might be obtained. In the absence of a clear indication that in fact such evidence will be found, these fundamental human interests require law officers to suffer the risk that such evidence may disappear unless there is an immediate search (Schmerber v. California 384 U.S. 757 (1966)).

(Editor’s note: Because this paper comes from a legal studies perspective, it was decided to adhere to the citation and footnoting practices of that discipline rather than the social and natural science disciplines from which the other papers in these proceedings are drawn.)

57 Dionisio, supra
ADOPTION OF SOCIAL ANALYTICS IN B2B FIRMS:
EXPLORATION AND INITIAL PROPOSITIONS

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ABSTRACT
Although research into the adoption of social analytics tools and practices by B2B firms is beginning to increase, scholars differ regarding the degree to which B2B firms have embraced these tools and practices. Järvinen, Tollinen, Karjaluoto, and Jayawardhena (2012) find that adoption and use of social media measuring tools is more prevalent among large businesses (more than 250 employees and/or annual sales of more than €100 million, as defined by the authors). One study (Gottheil 2010) finds that some 80% of B2B marketers set objectives and measure results, though the tools used vary widely. However, a 2013 study finds that 69% of firms use “reporting and analytics” (Pease 2013).

Degree of penetration of social analytics in the B2B space aside, firms are not taking full advantage of the opportunities presented by the technology. According to a Gallup study of global B2B services firms, only about one firm in seven considers itself fully engaged with customers; furthermore, low customer engagement scores are associated with future revenue declines (Liyakasa 2012). Extending previous research as described above, we intend to investigate use of social analytics by horizontal vs. vertical B2B firms and to investigate the influence of the firm’s perceived “customer/prospect” universe on adoption of social analytics. For this initial study, two cases are anticipated, from which initial propositions will be advanced.

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FACILITATING THE ADVISING PROCESS

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ABSTRACT
The value of academic advising has never been more important with the impact of emerging technologies, increasing competition among institutions of higher education, justification for costs of a university degree, varied methods of course delivery, assessment, accreditation standards, growth of massive open online courses (MOOC), along with increased domestic and international partnerships and cooperative agreements among institutions. The role of academic advising has also increasingly emerged as institutions of higher education face unprecedented challenges ranging from operating efficiencies, consumer value, and positive outcomes and the need for transparency to name a few. With increasing complexity of the higher education environment, students also have increased expectations of service levels in addition to the integration of popular “outside the classroom” learning such as co-op’s, internships, exchanges, study abroad, service learning, and other experiential learning activities.

Approaches to academic advising vary widely between institutions and while a large number of institutions follow a traditional prescriptive approach often reflecting an extension of a k-12 or pre-adult teacher centered, subject based approach, other institutions focus on a learner-centered approach that is more characteristic in aligning with characteristics of adult learning. While the purpose of this study is not to argue the philosophy of adult education in itself, but to draw upon adult learning theory as it relates to academic advising in higher education and to critically evaluate how a learner centered approach to academic advising is continuing to reflect the nature of learning and development in society today. Similarly as advocated by Lowenstein (2005) on the learning-centered paradigm of advising as teaching concept this study will examine advising as a development process. Understanding the myths and misconceptions of self-directed learning and academic advising will also be presented to highlight the paradoxes that often exist in higher education and evident from a variety of perspectives.

Although there are a number of differing perspectives among the research when defining self-directed learning, there are also a number of commonalities that attempt to provide a conceptual framework (Oddi, 1987). Considering life experiences and knowledge that contributes to the learning environment, responsibility, control, ownership, and self-planning are a number of the common characteristics associated with self-directed learning (Knowles, 1980). Knowles (1998) argues that self-directed learning is a process that involves an individual to initiate ownership of learning and development on a self-directed basis. Similarly, Tough (1979) further explains that self-directed learning involves the ability to guide and plan the learning process that is driven by the desire to learn from life experiences with higher levels of personal autonomy and self-worth.
Providing learners the opportunity to plan and direct their own learning supports greater levels of self-directedness that is readily found throughout adult learning literature (Brockett & Hiemstra, 1991; Brookfield, 1984; Guglielmino, 1977; Houle, 1961; Knowles, 1973; Long, 1991; Mezirow, 1985; Oddi, 1987; Tough, 1979).

The convenience sample of 215 students consisted of undergraduate students who study business management. Data collection occurred from April to May, 2013 with a facilitator who administered the survey to the students that volunteered for the study with a completion time 20 minutes to complete the questionnaire. Participants were granted privacy in a secluded area while completing the questionnaire to ensure accurate and honest responses to survey questions with minimal risk to participants associated with the study. Data was collected from students through the administration of the SDRLS, which consists of 58 Likert-scaled (five-point scale) items in addition to demographic questions. Students completed the questionnaire on an electronic tablet for efficiency in data collection and input, novelty, and flexibility along with the option of a manual pen and paper alternate or web link version. The SDLRS scores were listed by an identification number.

The results of this study helped to highlight the difference in levels of self-directed learning readiness among students in a higher education environment. Aligning academic advising with adult learning characteristics such as self-directed learning may help support a more refined approach to academic advising that leads to a process of transformation among student learning in higher education.
THE MODERATING ROLE OF TRADITIONAL HEALTH BELIEFS IN THE RELATIONSHIP BETWEEN SOCIAL CAPITAL AND SELF-REPORTED HEALTH STATUS AMONG DISADVANTAGED HOUSEHOLDS IN INDIA

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ABSTRACT
Empirical evidence on the association between social capital and self-reported health status of disadvantaged households is rare. This study examines whether traditional health beliefs influence the impact of social capital on self-reported health of disadvantaged households in rural India. Results reveal that structural social capital (i.e., group membership, group support, bonding, bridging, linking) is strongly associated with self-reported health. Conversely, cognitive social capital has a weak influence on health status. The impact of social capital on self-reported health is significantly higher among the disadvantaged households with lower level of traditional health beliefs than those with higher level of traditional health beliefs.

KEYWORDS
Self-reported health status, social capital, traditional health beliefs, disadvantaged households

INTRODUCTION
Health research has primarily focused on urban and middle class population and the health of the disadvantaged households in developing countries has received relatively little attention (Burke et al. 2009). Moreover, the emphasis of these studies has been the individual, whereas the synergistic role of a cohort of husband and wife in a family context received scant attention. Since family is increasingly recognized as an important and appropriate unit of analysis in health research, the current study centers on the self-reported health status of disadvantaged families in India.

The evidence supporting the role of social capital on health has remained ambiguous (Ziersch 2005). While some researchers have argued that social capital has either no or a negligible impact on health (e.g., Muntaner et al. 2000; Lynch 2001), the others found just the opposite (e.g., Kawachi et al. 1999; Yip et al. 2007). While social capital is conceptualized as a multidimensional construct consisting of structural and cognitive components (Harpham 2008), most studies have relied on a few, but varied dimensions of social capital. The current study attempts to fill this gap by using a broader measure of structural social capital (i.e., group membership, support from groups, support from individuals) and cognitive social capital (i.e., trust in neighborhood, social harmony, sense of belonging, sense of fairness, trust in healthcare providers, and trust in community workers). Because rural and disadvantaged families in high context cultures in Asia embrace strong beliefs in
traditional norms and values, this study also examines the moderating role of traditional health beliefs in examining the association between social capital and self-reported health status.

THEORIES AND HYPOTHESES
Social cognitive theory holds that learning can take place through social interactions by observing and interacting with others (Bandura 1986). Social capital theory also suggests that social networks, or the relationships between individuals within and outside family circles and group membership, can promote the exchange of information and experiences. The individuals who are part of such networks facilitate coordination and cooperation as well as the acquisition and sharing of information for mutual benefit (Coleman 1988). Individuals living in certain neighborhoods and/or associated with formal and non-formal groups can provide support to others, reciprocate resources, and gain access to resources of other individuals (Coleman 1988; Putnam 1995), thereby influencing others’ behavior. For example, studies have highlighted that disadvantaged households’ ability to learn about health is largely influenced by their neighbors (Leonard et al. 2009). Social capital can promote better access to healthcare and motivation to engage in health maintenance activities ((Kawachi et al. 1999; Krishna 2002). Disadvantaged households based in Indian rural communities generally believe in traditional health practices that are embedded in cultures. The traditional beliefs may act as constraints to access health care and the need to engage in preventive health behavior; thus resulting in poor health status. Thus, we hypothesize:

Hypothesis 1: Social capital is positively related to self-reported health status.

Hypothesis 2: Traditional health beliefs moderate the relationship between social capital and self-reported health status such that social capital will have a stronger positive relationship with self-reported health status among disadvantaged households who possess lower levels of traditional health beliefs as compared to those who possess higher levels of traditional health beliefs.

DATA COLLECTION, SAMPLE, AND MEASUREMENT
The participants for this study include rural families in Tamil Nadu who are classified as those living below poverty level (BPL) who are in possession of Antyodaya Anna Yojana (AAY) ration cards to make them eligible for subsidized food and other services delivered through the public distribution system. Using the AAY membership list, 400 families were randomly selected to participate in the study. The data for this study was collected using several professionally trained field workers of a reputed research firm. The questionnaire was pre-tested and was translated into Tamil before conducting the in-home interviews. The total number of respondents included 652 husbands/wives/single parents from 340 families. The average age of husbands is 44 years, and 37 years for spouses.

Social capital was measured with the SASCAT scale developed by De Silva et al. (2006) and this scale was specially designed to measure cognitive and structural social capital in low-income countries. Self-reported health status measure (Jayanti and Burns 1998) was adapted as appropriate to the context of low-income rural families in India. Traditional health beliefs measure was developed based on Jenkins et al.’s (1996) health beliefs scale.

RESULTS
A series of two-way analyses of variance (ANOVA) were performed to analyze the data. Basic assumptions of ANOVA were assessed before testing the hypotheses. Consistent with hypothesis 1,
results show that five dimensions of structural social capital: group membership ($F_{(2, 646)}=5.826$, $p<.01$); support from groups ($F_{(2, 646)}=5.913$, $p<.01$); bonding ($F_{(1, 648)}=6.034$, $p<.05$); bridging ($F_{(1, 648)}=10.442$, $p<.01$); and linking ($F_{(1, 648)}=4.827$, $p<.05$) were positively related to health status. Only two elements of cognitive social capital (social harmony ($F_{(2, 646)}=3.913$, $p<.05$) and trust in community workers ($F_{(2, 644)}=4.727$, $p<.01$)) were significantly associated with health status. As predicted in hypothesis 2, traditional health beliefs (THB) moderate the relationship between social capital and health status. Results reveal bridging ($F_{(1, 648)}=4.062$, $p<.05$), linking ($F_{(1, 648)}=4.188$, $p<.05$), and trust in community workers ($F_{(2, 646)}=3.984$, $p<.05$) were positively related to self-reported health status when traditional health beliefs were low than high.

**DISCUSSION AND IMPLICATIONS**

Given the limited research and inconclusive finding regarding the association between social capital and health status, results provide strong evidence in support of the role of structural social capital on health status. Five aspects of structural social capital (i.e., group membership, group support, bonding, bridging, and linking) and two dimensions of cognitive social capital (i.e., social harmony and trust in community workers) are positively associated with health status. The results indicate that engaging in group activities (e.g., micro-financing and micro enterprises) that are supported by self-help groups and non-governmental organizations seems to influence health status of disadvantaged households. Public health campaigns can deliver need-based programs by nurturing group affiliation and community support, cultivating citizenship activities, and facilitating rural residents to interact and learn through networking with community leaders. Health intervention programs can nurture and promote trust and social harmony among the disadvantaged households. The role of community-based health workers as a channel for disseminating health intervention programs and messages cannot be ignored. Results show that higher levels of social capital are favorably associated with a more favorable health status only when traditional health beliefs remain low. Thus, traditional health beliefs of targeted population should be taken into account when developing health programs to improve health status in rural India.

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FRONTIER CAPITAL MARKETS: ISSUES AND CHALLENGES FOR CARIBBEAN STOCK EXCHANGES

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ABSTRACT
This study investigates the capital markets development in frontier and developing markets with a more particular focus on the fundamentals of Caribbean capital markets that would include the internal functioning and relations in a financialization impetus within the global context. The study assumes that capital markets go through phases or stages in the Rostowian’s structural pattern of economic development and by moving through tightly structured events, the status of developed capital markets would be the culmination point for the efficient allocation of scarce capital resources. The new theory of development envisages that there needs to be the existence of open and transparent, but yet regulated financial markets where price discovery is freely and fairly determined in markets that are open to domestic and foreign traders. Frontier markets, by joining the supposedly flat world, are empowered to internally mobilize domestic and foreign capital whereby capital formation would occur in sufficient quantities such that, a path toward sustainable growth and development in the globalized 21st Century is forged. The geographical reality suggests that the Caribbean is locked between a strongly emerging Brazilian and the well-developed United States economies implying that proximity breeds contagion and the comparative analysis and findings of this study reveal that there are implicit and explicit arrangements by frontier markets to move toward more efficient and transparent capital markets.

KEYWORDS

INTRODUCTION
Countries around the world are obsessed with the question of the growth of the nation-state, or to paraphrase Adam Smith, the wealth of a nation. From a financial viewpoint the wealth of nation factors in tangible and intangible assets less the liabilities that would include elements such as physical, human, and natural capital less all net liabilities of the country. The prevailing theory is that the presence of financial markets facilitates the mobilization of financial assets for short and long term investing and financial intermediation. Efficiently functioning financial markets promote financial integration by positioning the country to confront the competitive nature of the environment relevant for global capital accumulation. Accessing global capital through localized financial markets implies less reliance on foreign aid and external financing as capital is transferred from the surplus savers to deficit savers thereby enabling scarce financial resources to gravitate toward the greatest return possible.

The intellectual and analytical reasoning about economic growth and development of a country in the modern era have evolved over the past half century or so, partly in response to a myriad of perceptions of the poverty and the widening gap between the developed and the developing countries. Theorizing about the causes of that differential and inferring policy prescriptions have occupied much space in the literature on growth and development of a country as
During the past two decades and especially, within the last ten years, much of the emphasis has been placed on the interconnectedness between growth and development of the so-called real economy and the role of the financial sector. Therefore, an understanding of the role of the financial sector has increased markedly and research about the importance and crucial role performed by the financial sector in growth and development has expanded tremendously as the learning curve is ridden with the passage of one experience after another in successive waves of financial crises.

A growing body of recent research literature supports the premise that, in addition to many other myriad of factors, the performance and long-term economic growth and welfare of a country are inextricably linked to its own degree of financial development (Levine, 2005; Rioja, & Valev, (2003); Levine & Zevros, 1996). According to the World Economic Forum financial development is measured by factors such as the prevalence of financial services firms, depth of financial penetration, access to financial capital, and the efficiency and stability of a financial system as a whole which includes its financial markets, intermediaries, asset classes, institutions, all within a regulatory framework (World Economic Forum, 2012). The literature tends to suggest that the higher the degree of financial development, the greater would be the availability of financial services and financial intermediaries thereby positioning the given developing country for risk diversification as the economy continues to develop. In this paper the real economy is meant primarily to be that part of the economy that relates to the direct production and consumption of tangible goods and services as opposed to an intangible paper economy.

The link between growth, welfare, and prosperity could be traced back to the works of Joseph Schumpeter (Minsky, 1986; Robinson, 1952), and more recently the works of McKinnon (1973) and Dermirguc-Kunt and Levine (1999). During much of the nineteen sixties and seventies there were chronic foreign exchange shortages that resulted in gross inefficiencies in a variety of ways, and certainly these were disincentives for the development of any new export activities. During much of the 1980s, the focus was on the reduction of trade barriers and the vagaries of an open and vulnerable economy, which formed the backdrop against the prescription for rapid economic growth, alongside education and other investments in humans and impetus high savings rates. The Asian crisis of the 1990s was greeted with a relentless depletion of their foreign exchange holdings as their financial sectors waxed and waned. Even though the financial sector has long been recognized as a crucial sector in supporting an efficient allocation of resources, the link between the financial sector and the rest of the economy was not fully understood nor appreciated. During much of this same period the Caribbean were experimenting with their self-identified developmental gigs, because rising out of a colonial tradition the English Speaking Caribbean territories experimented with successive models of development. The proposition that an industrialization trust would absorb the surplus agricultural labor, which after failing as a developmental model, was followed by a model that sought to disrupt the dependency chain as a required condition to enter into a more developed stage. The emphasis was that the financial system must be sound and that the banking system would also be part of the solution by taking managed and measured risk within a competitive financial services environment. The CLICO debacle in Trinidad & Tobago, as many researchers are aware, is a case in point here. The CLICO meltdown is a good example that less developed countries conglomerates have exposures in developed economies as well. And like many developed and emerging market countries, commercial and investment banks are principal players in financial markets. For example, the government of Singapore identified financial services firms as a key sources of economic growth as that nation focused on the development of investment portfolio management, securities trading, and other related capital market activities (IMF, 2012). But as the economy grows so too is the need for sourcing of all types of credit and financial derivatives.
This study investigates the capital markets development in frontier and developing markets with a more particular focus on the fundamentals of Caribbean capital markets including the internal functioning and relations in a financialization impetus within the global context. An alternative to relying on a languid process of purely domestic capital formation is the advent of relatively well-functioning capital markets that would attract foreign and domestic capital in which spot prices are discovered and where savings are efficiently allocated to their most productive uses. We therefore assume in this study, that capital markets go through phases or stages in the Rostowian’s structural pattern of economic development and since financial markets develop in stages they move through tightly structured events such that the model common to today’s developed capital markets is the culminating graduation point for developing countries. Similarly and in a sequentially progressive way, there are stages through which the developing countries matriculate in compartmental stages toward capital markets development such as pre-frontier, frontiers, emerging and developed markets and perhaps a post-developed stage where financialization transcends the tangible economy into intangible financial instruments. According to this schema countries would seek to develop their financial markets along this structured path in order to reach the developed stage, which is characterized by mispricing of financial assets to the point where the full-fledged capital market trading in financial claims as particular commodities are traded independent of “real” productive economy.

This paper delves into the scenario that financial markets are necessary conditions for sustainability in growth and development in a nation state and seek to compare and contrast a nucleus of countries to see what conclusion can fundamentally be drawn. Trading on financial markets is about obtaining prices. Bekaert et al. (2005) found that the formation and promotion of equity markets has produced economic growth greater than would have occurred otherwise. Following Bekaert et al, this study would also confirm like that economic growth is closely associated with the growth and development in financial markets as we compare financial markets in frontier, emerging and developed countries with emphasis on the English speaking Caribbean countries.

The fundamental reality is that, while the entrepreneurial model of the free enterprise system still characterizes a portion of the capitalism-led economies of the world such an archetype has been subordinated to a new economic order where the financial markets exist primarily to serve the market driven economy. In this new post-modernity capital is raised for the purpose of creating, selling, and trading securities and derivatives of securities not to finance industry in the capitalist tradition, but to trade within and between financial markets in a self-serving circular flow. The result being that market players indulge in speculative activities, aloof of the non-financial sectors in collateralized debt obligations and assets and mortgage-backed securities. This development has culminated in the fracturing of the long-established link between monetized velocity of circulation and turnover ratios of goods and services in the so-called real economy. Particularly for the USA, finance has outdone the real economy (Greenwood & Scharfstein, 2013) to the point where the number of financial transactions has far exceeded the volume appropriate for the goods and services markets, which is evident by the fact that the aggregate dollar value in the world’s financial markets have far outpaced the comparable volume in the world’s gross domestic product. The next section looks the financial market theory of development followed by a stages approach to financial development. This would be followed by a literature review, data and analysis and we would conclude with an inventory of what was revealed through this study and panoply of areas for future research.
MODELS OF DEVELOPMENT
Frontier English-speaking Caribbean countries are ideally placed between financial superpower houses the USA and Brazil, the former being the trail blazer among developed markets while the latter is symptomatic of emerging markets. Interestingly, the English speaking Caribbean developing countries have also emerged out of the British colonial experience where the traces of a formal of capital market were already ingrained albeit a mostly functioning auction market for government debts including other central banking products. Strategically also, is the geographical juxtaposition of the Caribbean so close to the United States and Canada suggests that to mimic these very developed countries in terms of financial markets development implies that proximity breeds the appropriate contagion effect (Weber and Davis Lounsbury, 2009). One also needs to be aware that knowledge contagion and mimicry can be experienced from both the successful and unsuccessful experiments and by other participants.

Against such a geopolitical reality is the story of Caribbean economic development which spanned an era of trial and errors given that they were caught between two competing ideologies of the East and the West. The first experiment was shrouded in a modernization impetus followed by a challenge to metropolitan thinking and the rise of the Plantation economy explanation resulting is systematic dependency. As long as the East-West ideological cold warfare remained intact these struggles were fodder for the challenges over colonialism and imperialism. Therefore, unable to find a new theory neo-liberalism was foisted on these countries. The fourth and final development impetus was globalism grounded in the structural power of international capital flows.

Modernism
A major model of economic development in the Caribbean focused on the constraints imposed by limited capital accumulation and the inefficient allocation of resources such that less-developed countries are dependent on foreign transfers of capital to propel industrialization (Lewis, 2003). The basis of Lewis’s model is that the Caribbean lacked the capital, the competence, and the innovating capabilities to develop their own nations and therefore, foreign capital is required to move from an agricultural-based economy into one that is manufacturing based. Understandably this model was met with success in Puerto Rico so the thinking was that such a successful experiment could be replicated in the other island-nations as well. The end result therefore, is that foreign investments would flow in sufficient quantities resulting in sufficient expatriated profits and local savings as the skills of the expatriates are transferred to the indigenous population. The point in the end was that the objective of economic transformation did not occur as the projects and the modernism impetus were deemed a failure (Demas, 1965).

Plantation Dependency Theory
The seeds of this theory rest on the inability of the dependent and small economy to acquire the managerial lever necessary to propel the internal dynamics in order to attain sustainable growth of the economy (Beckford, 1972). Taking this position the Caribbean countries were to be seen as subsidiaries of joint-stock trading companies symptomatic of the earlier West India Company’s era. What was clear in the new theory was that it laid out a credible intellectual argument against the modernism theory described above. The new theory however, may have destroyed the prevailing modernism theory, but did not offer a workable alternative. In the heyday of postulating this theory came the 1974 petroleum crisis, when only Trinidad & Tobago enjoyed a windfall in cash inflows. Closely aligned to the dependency theory was the center –periphery construction, the center being the developed economies who retained the savings derived from the exports and imports trading
(Dosman, 2008). At the other end is the periphery or less developed economies, who had to export more and more to maintain a constant living standard because of deteriorating terms of trade favoring the center (developed countries). The 1973-74 oil crisis essentially destroyed the dependency theory construct as large surpluses for oil-exporters like Trinidad & Tobago and Nigeria were generated in the face of developing countries requiring massive foreign borrowings to finance their oil imports.

**Neo-Liberalism**

During much of the 1980s ‘carrot and the stick’ diplomacy was the prevailing response to the dependency protagonists. In the midst of collapsing raw material prices in world commodities markets and the double-digit inflation of the 1980s meant that supply–side economics and trickle down would cure the looming hardships that we to follow. The dependency proponents would receive high praise for their effort at exposing the weaknesses of the modernism thrust, but they could not articulate a workable replacement to transcend the socio-economic underpinnings (Payne & Sutton, 2001) and so the vacant apolitical economic development model was lacking in specifics and the theory was neutralized with the implementation of the imperialist’s carrot and stick treatment supported by the 1973/4 petroleum crisis. The carrot being a package of economic goodies such as preferential treatment for Caribbean Exports to the United States and Western Europe supported by economic aid and the stick being, structural adjustments prescriptions dictated by multilateral agencies such as the World Bank and the International Monetary Fund (IMF).

The world recession of the early 1980s facilitated the carrot and stick with the intent of bringing the deviant countries such as Jamaica, Guyana, Grenada and the likes into line with the Western capitalist system (one Cuba was already too many). Even hydro-carbon rich Trinidad & Tobago fell in line with the carrot and stick politics as they too got into financial difficulties through much of the 1980s. The multilateral lending agencies were bent on doing the imperialist bidding as they cooked the date in order to present a bleaker financial picture a t of Trinidad & Tobago (Wesley, 1989). During the 1990s and responding to the ‘carrot and stick’ construct the Caribbean countries announced a major shift in development strategy, towards greater reliance on private sector-led growth and correspondingly, a reform of their public sectors. The public sector reform involved reducing the public enterprises’ role and reforming governments to provide both a better enabling environment for private sector growth and improved traditional public services. The shift in strategy was in many cases expressed in public declarations, For example, the World Bank reported that the economies of Latin America and the Caribbean abandoned centralized planning in favor of market driven privatization (World Bank, 2005).

**Globalism**

The end of the cold war meant that the leftist ideology that was giving legs and legitimacy to most of the challenges to mainstream thinking lacked the oxygen to take the ideology further. The belief is that capitalism has won, which suggested a deeper embrace of neo-liberalism which was already in motion, but this time virtual elimination of trade barriers and global capital would be front and center to the development thrust. The new impetus meant that international financial capital knows no borders and the global village is a wonderfully inclusive environment enhanced by the new age of technology. Singapore has state-run programs aimed at attracting global technological companies into its heartland, while most major multinational manufacturing companies had subsidiaries in Nigeria with a mostly seamless switching in spite of geographical differentiation.

Globalization was seen as a layered and uneven process, changing in its form, rather than able to be defined as a specific condition. It is a matrix of ongoing practices and associated ideas and
sensibilities that may become more totalizing but can never be complete (James, 2006). Globalism therefore, is a work-in-progress and, as would be shown later in this paper, fits right in with the new theory of development. In essence, the globalism thrust suggests that the needs of the world must be foremost rather the localized individual needs of a given nation state.

**A New Theory of Development**

By the turn of the current century the intellectual climate had shifted to the point where confidence in government planning as a solution waxed and waned and the so-called flat world began to take shape as the historical hegemony of Western capitalism was challenged by rising economic power such as China, India, and Brazil. Lurking not far behind were the emerging country, Singapore, an Asian tiger, and the frontier country Nigeria, a financial powerhouse in Africa. In the midst of the globalism thrust a foundation was laid such that raw material and relative cheap labor would work to the advantage of those countries outside the mainstream capitalist system. And since the theories of development almost always emphasized scarcity of foreign capital, then foreign investors having access to transparent and reliable financial markets could provide needed path to economic development. Thus, the role of government is not to get into the business of crowding out local and foreign investors, but to subtly lay the ground work for a free and fair marketplace for capital to be allocated efficiently. Herein lay the new theory of development, which was articulate by the World Bank (World Bank Development Report, 1999).

The new theory of development envisages that there needs to be the existence of open, transparent, and regulated financial markets that are free, fair and open to domestic and foreign traders thereby allowing for effective price discovery. By joining the supposedly flat world frontier market countries are empowered to internally mobilize domestic and foreign capital whereby capital formation would occur in sufficient quantities as a path towards sustainable growth and development in the globalized 21st Century is forged.

The financial market theory of development implies that stock markets will enhance economic growth to the extent that these are embedded in an institutional matrix thereby ensuring that underlying market signals guide decision-makers toward the availability of growth opportunities. Moreover, stock markets generate a wealth of intelligence through the operation of the price system, which helps guide decisions of both managers and investors. The benefits to investors are rooted in prospective growth rates unattainable in advanced economies and high returns matching the risks with the returns. But countries vary substantially in the extent to which they provide the enabling climates for financial markets to take hold and expand. Thus, the critical question for understanding the uneven spread and performance of stock exchanges is that there is parallel reality when countries favoring stockholders’ value maximization such as those deriving their economic system out of the British colonial experience are better poised to adopt the working of market-based financial architecture.

**FINANCIAL MARKETS DEVELOP IN STAGES**

The literature on financial markets tends to suggest markets develop in stages in that the currently developed financial markets were at one time or another pre-frontiers markets and progressed from pre-frontier to frontier to emerging and then developed levels. With such developmental stages as a backdrop this study seeks to make comparisons of the frontier markets as defined by Morgan Stanley Capital International (MSCI) with one emerging and one developed country namely Singapore and the United States respectively. A third country, Nigeria was included in this study for two reasons: first Nigeria is an African country and the Caribbean does have a special affinity with
Africa and Commonwealth African Countries in particular and second, that country is a petroleum producer and like Trinidad & Tobago and therefore, its economic fortunes are closely associated with the vagaries of petro-carbon prices in international commodities markets. Singapore is particularly unique in terms of the way it chart its course to break out of the typical center-periphery bind that was common to many third world countries with similar historical origins. Therefore, like the Anglo-Caribbean countries Singapore was a British colony and despite local dialect of indigenous languages did adopt English as it official business language.

**Pre-Frontier Markets**

Frontier capital markets are those exchanges that are excluded for the other categories and are in the early stage of frontier formation. This category is what this paper is referring to as pre-frontier and would include those countries excluded from the S&P Frontier BMI or the MSCI Frontier Market Index. Pre-frontier markets include the poorest of the world’s nations. These markets have few opportunities for investors now, but they could become really interesting in the years to come as investment opportunities are exhausted in frontier and emerging markets. Table 1 gives those countries that are classified as such together with the region of the world where these are geographically located:

**Table 1: Pre-Frontier Capital Markets**

<table>
<thead>
<tr>
<th>Europe</th>
<th>Latin America</th>
<th>Sub-Saharan Africa</th>
<th>Middle East/ North Africa</th>
<th>Asia</th>
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<tbody>
<tr>
<td>Armenia</td>
<td>Bahamas</td>
<td>Cameroon</td>
<td>Algeria</td>
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<td>Belarus</td>
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<td>Georgia</td>
<td>Cayman Islands</td>
<td>Niger</td>
<td>Palestine</td>
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<td>Syria</td>
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Table 1 (continued)

<table>
<thead>
<tr>
<th>Europe</th>
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<th>Asia</th>
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<tr>
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<td>Uruguay</td>
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</tr>
<tr>
<td>Venezuela</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>


Frontier Markets

The term “frontier markets” was first used in 1992 by the Farida Khambata of International Finance Corporation (IFC), a subsidiary of the Internal Bank for Reconstruction and Development (IBRD), to reflect a subset of emerging market economies. The intent was to define frontier markets as those markets that are investable, but are less well-developed in terms of size, liquidity, and accessibility transparency vis-à-vis those traditional emerging markets. Perhaps the frontier markets of today were the pre-frontier ones of the 1980s. What is also anticipatory is that frontier markets are largely uncorrelated with the other more advanced capital markets and as such is consequential as such for managing risk in one’s portfolio or investment possibility frontier. These markets have few opportunities for investors now, but they could become really interesting in the years to come as investment opportunities are exhausted in frontier and emerging markets. The frontier markets include very small nations at an early stage of economic development with relatively small stock markets as listed in Table 2.
Table 2: Frontier markets

<table>
<thead>
<tr>
<th>Europe</th>
<th>Latin America</th>
<th>Sub-Saharan Africa</th>
<th>Middle East/ North Africa</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
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<td>Columbia</td>
<td>Cote d’Ivoire</td>
<td>Jordan</td>
<td>Kazakhstan</td>
</tr>
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<td>Ecuador</td>
<td>Ghana</td>
<td>Kuwait</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Latvia</td>
<td>Jamaica</td>
<td>Kenya</td>
<td>Lebanon</td>
<td>Sri Lanka</td>
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<td>Lithuania</td>
<td>Panama</td>
<td>Mauritius</td>
<td>Oman</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>Trinidad –Tobago</td>
<td>Namibia</td>
<td>Qatar</td>
<td></td>
</tr>
<tr>
<td>Serbia/Montenegro</td>
<td>Nigeria</td>
<td>United Arab Em.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slovak republic</td>
<td></td>
<td></td>
<td>Tunisia</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukraine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Emerging Markets

The term *emerging market* was reportedly first used by the World Bank’s economist Antoine W. van Agtmael in 1981 when made reference to a group of nations undergoing rapid economic growth and industrialization World Bank’s International Finance Corporation (IFC), which works to develop the private sector in poor countries (Van Agtmael, 1981). In a loose sense frontier markets are taken to mean a subset of all emerging markets and are thus, less structured, less liquid and not relatively efficient as their emerging market counterparts, of whom is assessed to be on the verge of attaining developed status The emphasis here is quite obvious, which is, the attaining of fully developed financial markets would occur in stages just as the Rostowian prescription of the so-called stages of economic development (Rostow, 1960). Emerging markets are countries with the capacity to grow rapidly and improve their industrialization economic infrastructure and social and economic activities. During the 1970s there countries were referred to as less developed countries as their financial economic and social structures were disjointed and underdeveloped. “Glasnost” and “perestroika” were the terms used in the 1980s to refer to economic openness and economic and political restructuring respectively as envisage by the last leader what was then the Soviet Union, Mikhail Gorbachev (Brown, 2009).
Table 3: Emerging Markets

<table>
<thead>
<tr>
<th>Europe</th>
<th>Latin America</th>
<th>Sub-Saharan Africa</th>
<th>Middle East</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Repub.</td>
<td>Brazil</td>
<td>South Africa</td>
<td>Egypt</td>
<td>Czech Republic</td>
</tr>
<tr>
<td>Hungary</td>
<td>Chile</td>
<td>Morocco</td>
<td>India</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Poland</td>
<td>Columbia</td>
<td>Turkey</td>
<td>Indonesia</td>
<td>Thailand</td>
</tr>
<tr>
<td>Russia</td>
<td>Mexico</td>
<td></td>
<td>Malaysia</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td></td>
<td></td>
<td>Singapore</td>
<td></td>
</tr>
</tbody>
</table>

Source: Standard & Poor's, (2012). Global Stock Markets Factbook
http://data.worldbank.org/indicator/CM.MKT.LCAP.CD

**Developed Financial Markets**

The developed financial market countries as categorized by the Financial Times Stock Exchange (FTSE) described developed markets as those countries having effective monitoring authorities over well-developed equity and derivative markets, with efficient and effective clearing and settlement facilities. The financial markets are usually liquid, efficient and transparent and the trading mechanisms facilitate liquidity in equities and debt of the listed entities. Table list the countries of the world that are categorized as “developed” by FTSE:
TABLE 4: Developed Financial Markets

<table>
<thead>
<tr>
<th>Europe</th>
<th>America</th>
<th>Middle East</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Luxemburg</td>
<td>Canada</td>
<td>Israel</td>
</tr>
<tr>
<td>Belgium</td>
<td>Netherlands</td>
<td>United States</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Denmark</td>
<td>Norway</td>
<td>United States</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Finland</td>
<td>Portugal</td>
<td>Japan</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>Spain</td>
<td></td>
<td>Singapore</td>
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<tr>
<td>Germany</td>
<td>Sweden</td>
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<td>South Korea</td>
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<td>Iceland</td>
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<td>Italy</td>
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</tr>
</tbody>
</table>


REVIEW OF THE LITERATURE

In a major study to test global growth opportunities in capital markets Bekaert, Harvey, Lundbl and Siegel (2007) found a positive correlation between in international financial structure and the PE ratios from its sales to foreign customers. There were also favorably higher PE ratios in countries that have liberalized their capital account, equity markets, and banking system according to these authors. Demirguc-Kunt and Levine (1999) articulate the view that market capitalization as a percentage of the Gross Domestic Product indicates the relative importance of the given stock exchanges in relation to the domestic economy. In essence, if a securities exchange accounts for all of the domestic production, then the market capitalization as a percentage of GDP would theoretically be equal to 100 percent. Capital market liberalization, the international free flow of money, and investments were the most debated policy issue of the 1990s and became an important feature of contemporary globalization (Stiglitz, 2007). A crucial aspect of the industrialization process is the development of an autonomous financial system and a loosening of past institutional constraints related to mainly bank finance was pointed out by (Jackson, 2009), while Bekaert and Harvey (1997) argued that capital markets are the better allocator of financial claims provided that these markets truly reflect the prevailing conditions. To this end George Stiglitz (1989) in his 1989 work took the opposite view and saw the stock markets in emerging and frontier markets as contributing very little to economic development.

In a study about bank financing Vitols found that bank finance is not so important for purposes of the Rostowian stages of economic growth (Vitols 2001). The author also claimed that such an assertion overstated the significance of bank-based finance in the industrialization of Germany and Japan during the last Century. Broadening the use of the term emerging markets suggests that a positive response to the following related questions as dictated by the theorist W.W. Rostow, which asked whether or not the particular country experienced the take off stage. Eyal Kaplan, a partner in Walden Israel Venture Capital and essentially echoing the Rostow’s growth stages in the real economy, professes that all nations aspire to the same developmental trajectory,
and they should be able to attract increased foreign investment capital as they progress (India Knowledge@Wharton, 2007).

Emerging markets, and in particular frontier markets, are attractive to investors because these countries are more lucrative in that they offer rates of return that are relatively higher than the more mature advanced markets and hence, do present further opportunities for investors to diversify risks. In a recent IMF working paper Arcand, Berkes, and Panizza (2012) examined whether there is a threshold above which financial development no longer has a positive effect on economic growth. Using different empirical approaches they showed that pouring financial assets into the system would have a negative effect when credit to the private sector reaches 100% of GDP which they termed this phenomenon as the “vanishing effect of financial development.” This finding was confirmed by Rousseau and Wachtel (2011), who also found a vanishing effect of financial depth and showed that credit to the private sector has no statistically significant impact on GDP growth over the 1965-2004 period. They showed that there is little evidence that the growth of equity markets in recent years has substituted for debt financing which led to a reduced role of financial deepening on growth. The recent crisis in Europe may also have increased concerns that some countries may have had financial systems which were too large compared to the size of their domestic economy. Rioja and Valev (2003), with panel data from 74 countries and using the generalize method of moments (GMM) for deriving estimators, tested the hypothesis that financial development has a strong positive influence on productivity growth primarily in the more developed economies. In the less developed countries, however, the authors found that the effect of finance on output growth occurs mainly through the means of capital accumulation.

A well-functioning financial market is associated with economic growth given that Levine and Zevros (1996) found that developed capital markets are correlated with improved economic performance, and there is a link between the size and liquidity of stock markets and easy access to information, rigorous accounting standards, and strong investor protections. A Price Waterhouse study the market liquidity importance revealed that a good majority (62%) of CEOs and CFO cited market liquidity as the major factor that would entice them into choosing a market to float their IPOs. A distance second (38%) cited by these top leaders was the legal framework for market regulations for the smooth functioning of these markets (PriceWaterhouse Cooper, 2011). It is well established therefore, that domestic and international investment in developing economies is vital for economic development. Rodrik and Subramanian (2009) also suggested that researchers may have overemphasized the role of finance in economic development and argued that developing economies are as, or more likely to be savings-constrained and that the effect of foreign finance appreciated the real exchange rate and reduced profitability and investment opportunities. However, Chakraborty and Tridip (2003) found that it was not possible to say unequivocally whether bank-based or market based financing is better for growth because the growth rate depends on the efficiency of financial and legal institutions. They found, however, that a bank-based system outperforms the market-based one along other dimensions and that bank-based systems are more conducive for broad-based industrialization. More recently and dealing with development in developed capital markets Rajan (2005) put it bluntly by naming his paper, “Has financial development made the world riskier?” The author answered in the affirmative arguing that massive development in the financial sector meant that risk had to be on the upswing in unprecedented ways.

The dominant policy paradigm on financial development, which is based on the market-based financial development is increasingly insufficient to address the issues that are particularly relevant for financial systems in Latin America (de la Torre, Gozzi, & Schmukler, 2006). The authors conclude that the dominant policy paradigm is ill-suited for providing significant guidance
vis-à-vis the emerging nation issues. Many of the traditional emerging markets that have historically been attractive to investors due to their low correlation with developed markets have moved increasingly more in line with developed markets and thereby increasing the correlation and reducing the benefits that accompany diversification. Frontier markets, however, retained low correlations with developed markets and present strong diversification possibilities (Speidell, 2011). But as finance theories inform us, an invest with generally favorable risk-adjusted accounting fundamentals is the central reason for optimism for the prospects of investment opportunities in frontier capital markets, which are buttressed by a young labor force, low wages, and increasingly productive surplus labor force (Speidell, 2011).

The current situation is that the most lucrative returns in emerging markets have not come from the BRICS according to Fowler (2010), but rather from frontier markets. For example, China’s Shanghai index is down more than 20% during year 2010, Brazil is down more than 1.5%, Russia has returned only a modest 1.5% while South Africa was up only 4.6%. A new type of emerging market investment is producing much more impressive returns than any of the BRICS members. Liquid markets have many buyers and sellers, relatively small spreads between buying and selling prices, and robust trading volumes. Sometimes investors do not trust the operations of a stock market and so they shy away from investing (Luigi, Sapienza, and Zingales, 2008) and some banks transfer their liquidity shocks not only to domestic banks, but foreign ones as well (Schnabl, 2012). The “financial market theory of development” has found support in several academic studies for example the World Development Report, 1999-2000 gave a good explanation of the financial market theory of development.

A greater volume in terms of paper money and paper derivatives have proliferated across borders with only about 10% of these flows derived from tangible assets (Steil & Litan, 2006). A historical time series performed by Rosseau (2003) demonstrated that financial development in a given country historically played a leading role in economic development. The author found that to be the case for the Dutch Republic (1600-1794), England (1700-1850), the United States (1790-1850), and Japan (1880-1913). In Evans (2013) there was an attempt to link finance-led growth with the tangible economy in the case of one of the frontier market in this study, Nigeria.

**DATA COLLECTION**

The Financial development Report 2012 published by World Economic Forum USA Inc. identified several factors that are necessary conditions to propel economic growth and development among developing countries. The report gives a scorecard from comparative data, which a set of benchmarking by employing several underlying broadly defined financial variables such financial stability, size and efficiency of banking services including financial access and financial markets as systemic banking crises. Prior to examining a series of comparative financial the baseline data of the real economy would give a perspective on production and wealth of a nation measured by baseline macro-economic data. This study used the variables highlighted in that report. Following the benchmarking by the World Economic Forum financial development indicators this study compiled and analyzed relevant data.

**Baseline Macro-Economic Data**

The historical underpinnings of Caribbean economies suggest that the public-led sector has to succumb to the pressures for efficiency generated by market discipline and in so doing they have followed through with the policies aimed at reducing the proliferation of public enterprises, pursued
market liberalization strategies, and sought to facilitate a fledging competitive commercial environment.

Table 5 (below) also reveals a crucial fact that fact that Singapore does have a huge debt on its balance sheet as compared to the others. The Singapore government has little or no external debt and the domestic debt securities are issued for reasons unrelated to the government’s fiscal needs but to develop the local debt market where the supply of funds come from pension funds and the borrowing are used to financing housing for a real estate investing population.

Table 5: Baseline Macro-Economic data for period 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Top Marginal Tax Rate %</th>
<th>Top Corp. Tax Rate</th>
<th>Tax Burden as % GDP</th>
<th>Government Exp. as % GDP</th>
<th>Financial Freedom</th>
<th>Government Debt % GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRB</td>
<td>35</td>
<td>25</td>
<td>27</td>
<td>39</td>
<td>60</td>
<td>83</td>
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<tr>
<td>GUY</td>
<td>33</td>
<td>40</td>
<td>22</td>
<td>36</td>
<td>30</td>
<td>66</td>
</tr>
<tr>
<td>JAM</td>
<td>25</td>
<td>33</td>
<td>23</td>
<td>33</td>
<td>60</td>
<td>127</td>
</tr>
<tr>
<td>TTO</td>
<td>25</td>
<td>25</td>
<td>16</td>
<td>36</td>
<td>60</td>
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<tr>
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<tr>
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<td>14</td>
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<td>80</td>
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<td>35</td>
<td>25</td>
<td>42</td>
<td>70</td>
<td>74</td>
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</table>


Government expenditures as a % of GDP for the countries selected were as much as 42% for a high in the United States to a low of 17% for Singapore as seen in Table 5. Public debt to GDP ratio reveals the cumulative total of all government borrowings less repayments on debts that are denominated in a country’s home currency. Government debt as a percentage of GDP shows that governments are very much in control of debt as it does not seem to be an issue endemic to frontier markets specifically although Jamaica seems quite relatively at a high polar position. Notice how the debt is relatively low for Nigeria and Trinidad & Tobago no doubt these oil-rich economies are sitting on huge piles of cash much to the envy of other economies in this study.

Government spending as a percentage of GDP consumption expenditure annually would include all government current expenditures for the purchase of goods and services and includes compensation to government employees. It also includes most expenditure for national security and current defense expenditure. Therefore, expenditures for capital formation are excluded and as would be expected, the USA would show a high percentage of capital formation in this area when compared to the other countries included in this study. Government spending for the acquisition of goods and services for current use to directly satisfy individual or collective needs of the country is more directly known as government final consumption expenditure. Figure 1 below shows the current consumption expenses by the central governments. In an economically free country, there would be no constraints on the flow of investment capital as individuals and businesses would be allowed to move their resources into and out of specific activities both internally and across the country’s borders with little or no restrictions.
Financial freedom is a measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector. State ownership of banks and other financial institutions such as insurers and capital markets reduces competition and generally lowers the level of available services. In an ideal banking and financing environment where a minimum level of government interference exists, independent central bank supervision and regulation of financial institutions are limited to enforcing contractual obligations and preventing fraud. Credit is allocated on market terms, and the government does not own financial institutions. Financial institutions provide various types of financial services to individuals and companies. Banks are free to extend credit, accept deposits, and conduct operations in foreign. In an ideal banking and financing environment where a minimum level of government interference exists, independent central bank supervision and regulation of financial institutions are limited to enforcing contractual obligations and preventing fraud. Credit is allocated on market terms, and the government does not own financial institutions. Financial institutions provide various types of financial services to individuals and companies.

Prudent macroeconomic policy within a stable political and legal environment has been the key to Singapore’s continuing success in maintaining one of the world’s highest levels of economic freedom. Well-secured property rights promote entrepreneurship and productivity growth. A strong tradition of minimum tolerance for corruption is institutionalized in an efficient judicial framework, strongly sustaining the rule of law. Singapore’s openness to global trade and investment has facilitated the emergence of a more competitive financial sector and continues to provide real stimulus and ensure economic dynamism. Competitive tax rates as indicated in Table I and a transparent regulatory environment encourage vibrant commercial activity as the private sector continues to exhibit economic resilience within a competitive environment. However, state ownership and involvement in key sectors remain substantial as the government administers public housing, health care, and various other programs, and public indebtedness through a statutory entity known as the Central Provident Fund (Singapore Government, 2012). The trade regime is very open and competitive and all foreign and domestic businesses are given an open and equally legal facilitating framework. Trinidad and Tobago is one of the largest supplier of liquefied natural gas (LNG) is one of the most industrialized economies in the Caribbean. The size of the economy measured by GDP doubled within the first decade of the 21st Century as that country continues to heavily dependent on the hydrocarbons sector which has persistently accounted for more than 40 percent of GDP and some 75% percent of export earnings. Despite record relatively low interest rates (see Table 3) investors’ confidence are weak, and domestic businesses have adopted a cautious approach to investing the domestic market to foreign banks.

Parameter of Financial Market Development
The market price of annual gross domestic product based on the given country’s local currency. We aggregate the gross value added by all resident producers in the given economy net of taxes and subsidies (see Figure 1 below).
Figure 1: Gross Domestic Product GDP 1981–2011


Table 6: Parameters of the GDP Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Volatility</th>
<th>Average</th>
<th>Covariance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRB</td>
<td>3.87</td>
<td>1.17</td>
<td>3.32</td>
</tr>
<tr>
<td>GUY</td>
<td>5.04</td>
<td>1.51</td>
<td>3.34</td>
</tr>
<tr>
<td>JAM</td>
<td>2.85</td>
<td>2.03</td>
<td>1.40</td>
</tr>
<tr>
<td>TTO</td>
<td>5.44</td>
<td>2.06</td>
<td>2.63</td>
</tr>
<tr>
<td>NGA</td>
<td>5.08</td>
<td>3.65</td>
<td>1.39</td>
</tr>
<tr>
<td>SGP</td>
<td>4.22</td>
<td>6.85</td>
<td>0.61</td>
</tr>
<tr>
<td>USA</td>
<td>2.09</td>
<td>2.72</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Figure 2: Capital Formation 1981-2011

Source: Data extracted from World Bank Data Set, http://data.worldbank.org/indicator
Figure 3: Bank Credit as % of GDP

Source: Data extracted from World Bank Data Set at http://data.worldbank.org/indicator

Domestic credit provided by the banking sector includes all credit to various sectors on a gross basis excluding credit given credit to the central government. As can be seen the U.S. banking sector provide most financing followed by Guyana and Barbados in that order.
Guyana’s efforts to improve the management of public finances have had little impact on its lethargic financial markets as its inefficient public sector continues to be a drag on its private sector development. Other long-standing constraints on Guyana’s economic freedom include widespread government corruption and fragile protection of property rights under the weak rule of law. However, the situation with Barbados is somewhat different as the Bajan’s economy has exhibited a strong foundation for economic freedom supplemented by relatively lower levels of corruption and country’s national policies have attracted foreigners both as tourists and investors.

Similar to the Singaporean debt to GDP ratio, the Jamaican economy exhibited an expanded government debt to a level that now exceeds the island’s annual gross domestic product. Unlike the Singaporeans however which also exceeded its GDP, the Jamaican authorities engaged in expansionary stimulus spending which did not impacted its double digit unemployment rate but put pressure on inflation, and a bloated civil service bureaucracy were all drags on the Jamaican’s ability to lay the groundwork toward the realization capital market efficiency.

Nigeria, with its strong surge in oil production, similar to Trinidad & Tobago, and the frequent spikes in oil prices in the commodities market meant that the economy has expanded quickly thereby achieving average annual growth rate of approximately seven percent over the past 10 years or so. Like Trinidad & Tobago, oil sector continues to dominate the Nigerian economy and social unrest is almost always one step away. The U.S. economy, the world’s largest, has not recovered fully from the 2008 financial crisis and ensuing Great Recession. The financial weapons of mass destruction worsened the financial crisis and climaxed into what we know today as the Great Recession. And now the U.S. economy has begun to recover being led by the New York Stock Exchange and a renewed impetus in manufacturing, but spending at the national level rose to over 42 percent of GDP in 2011 (see Table 1) and gross public debt surpassed 74 percent of GDP in 2012.
Stock Market Liquidity

Turnover ratio is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the end-of-period values for the current period and the previous period. Following Hui and Heubel (1984) I used a volume-based measure for market liquidity as follows:

\[
\left\{ \frac{\sum_{T=1}^{T} Pit \times Vit}{\sum_{T=1}^{T} |PCit|} \right\}
\]

Where Pit is the price of asset i on day t, Vit denotes the volume traded, and |PCit| is the absolute percentage price change over a fixed time interval, given by PCit = Pit − Pit–1. The liquidity ratio is usually computed for a number of assets and is aggregated over a pool with similar characteristics. The time interval (T, t) adopted to compute the index is typically chosen arbitrarily, where the numerator denotes the total volume of traded assets over a one-year period.

Figure 6: Stock Market Liquidity

The liquidity ratio scaled recalculated to a log normal distribution demonstrates the fact that frontier and pre-frontier markets are way off from attaining stock market liquidity. Liquidity is often pointed
liquid as a key concept in financial markets and often denotes a desirable function that should reflect well-organized and transparent financial markets. A market is liquid to the extent that the prevailing structure of transactions provides a prompt and secure link between the demand and supply of assets, thus delivering low transaction costs. The above figure is quite telling and it really demonstrated some semblance of frontier emerging and developed status. The USA is the most liquid of all followed by the emerging Singapore frontier Nigeria with the pre-emerging such as Guyana Barbados and Caribbean small states. The above data tells a whole picture that there are co-movements in liquidity among less-developing countries and a least liquid when compared to emerging and developed economies.

**Gross National Savings**

Gross national savings of a country is gross national income less total consumption, plus net transfers according to the World Bank (World Bank 2013). It is the non-consumption of current resources that refers to the percentage of the gross domestic product (GDP) in the form of savings gross by individuals and businesses in a country over a given period of time. In a sense this measure gives an indication of the financial position as it is poised for growth because savings remain the main source of funding public and private activities in the given country.

**Figure 7: Gross National Savings as % GDP 1993-2010**

From Figure 7 above one can see that Singapore has a consistent high rate of savings followed by Trinidad & Tobago. However, Trinidad & Tobago is quite erratic and like Nigeria, correlates with the fortunes of the hydrocarbon sector.

**Contagion Effects**

Is there any contagion among the selected countries for this study? Using Standard & Poor’s Global Equity Indices denominated U.S. dollar price change in the stock markets covered by the Standard & Poor’s and International Financial Corporation Index and the Standard & Poor’s Frontier Broader Market Indices.

\[
Y_t = \beta x_t + \gamma z_t + \epsilon_t
\]

\[
X_t = Z_t + \eta_t
\]
where, $X_t$ and $Y_t$ are two different stock market indices. Example: comparing these two types of liquidity shocks clarifies the major difference between these crisis- and non-crisis contingent relationship such that $\eta_t$ are idiosyncratic and independent shocks. This model assumes that shocks are transmitted from country $x_t$ to country $y_t$ through the variable $\beta$, and that the liquidity shock has different effects on the two countries. Also, assume that $z_t$ is independent of $\epsilon_t$ and $\eta_t$. Is there any contagion among the selected countries for this study? Using Standard & Poor’s Global Equity Indices denominated U.S. dollar price change in the stock markets covered by the Standard & Poor’s and International Financial Corporation Index and the Standard & Poor’s Frontier Broader Market Indices.

**Figure 8: Stock Market Indices 1997-2011**

![Stock Market Indices 1997-2011](image)

Source: Standard & Poor’s Data (2012),

**Table 7: Correlation matrix (Guyana Excluded)**

<table>
<thead>
<tr>
<th></th>
<th>JAM</th>
<th>TTO</th>
<th>NGA</th>
<th>SGP</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAM</td>
<td>1.00</td>
<td>0.30</td>
<td>0.09</td>
<td>-0.07</td>
<td>-0.05</td>
</tr>
<tr>
<td>TTO</td>
<td>1.00</td>
<td>-0.06</td>
<td>-0.41</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>NGA</td>
<td>1.00</td>
<td>0.17</td>
<td>-0.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGP</td>
<td>1.00</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above matrix the Trinidad & Tobago Index negatively correlates with Singapore (-41%), while the same Singapore Index positively correlates (56%) with the United States Index.

**Capital Market Liberalization**

The World Bank report in 2005 made the observation that privatization in small developing countries has been particularly challenging and suggested that these countries learn from past mistakes and experiences and continue the liberalizing process. Mention was already made about IMF cooking the data to make Trinidad & Tobago books look worst than it really was, appoint re-
affirmed in (Maharaj, 2011) occurrence that led to devaluation of the TT dollar and other belt-
tightening measures such as furlough of government employees, roll-back of the COLA escalator
and so on. A transparent and reliable bond market suggests the existence of a money market which
links the capital markets to the banks and helps carve out the interest rate yield curve, as essential
gauge for the pricing of long term debt instruments. The absence of capital markets could very well
leave many worthwhile projects unpursued. The idea behind liberalization and the flat world
integration was that capital should be invested and re-invested wherever and whenever it would
attract the highest risk-adjusted rate of return.

Financial Intermediation
Financial intermediation is the avenue through which financial assets are channeled from those who
have excess funds to those who have a deficit at some given point in time. There are two avenues
through which this process is accomplished. One is the more traditional bank-based intermediary
process involving lending institutions such as commercial banks, credit unions, and insurance
companies. The other one is called the market-based financing where funds are allocated between
surplus and deficit savers through a market oriented interactions. Financial intermediation in the
Trinidad & Tobago as well as the wider Caribbean is grounded in historical antecedents of
production and exchange (ECLAC, 2005). Bank-based lending was the imposed route for generating
and mobilizing financial capital.

Figure 9: Domestic Credit Provided to Private Sector by Banks 1981-2011


Stock Market Performance in Trinidad & Tobago 1991 – 2011
The concept of holding period return (HPR) is often used to calculate changes in the market index of
stock markets with high level showing greater returns and lower numbers including negatives
showing lower returns. For the country’s market index therefore, we have:

\[ HPR_t = \frac{\text{Index}_t}{\text{Index}_{t-1}} - 1 \times 100, \text{ where} \]
\[ t = \text{current period} \]
\[ t-1 = \text{previous period} \]

The log normal distribution is the mere pertinent parameter to measure changes in prices over time
as it considers the compounding and discounting effects on the returns and which
Figure 10: Log Normal Distribution of the Composite Stock Market Index for Trinidad & Tobago, 1991-2011

The above figure (Figure 10) tracks the Composite Index of the Trinidad & Tobago stock exchange for the period 1991 to 2011. Table 8 below gives the expected return and volatility. Notice how the fitted Log normal fitted distribution line is slightly downward sloping meaning that the T&T stock market at best remained flat.

Parameters of the Data

<table>
<thead>
<tr>
<th>Parameters of the Data</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Return</td>
<td>1.06%</td>
</tr>
<tr>
<td>Normal Distribution Volatility</td>
<td>4.02%</td>
</tr>
<tr>
<td>Log normal Expected Return</td>
<td>0.0098</td>
</tr>
<tr>
<td>Number of Observations (N)</td>
<td>254</td>
</tr>
</tbody>
</table>

Note: See the Appendix for the data and more explanation analysis.
Table 8: Total Number of Firms Listed in Stock Exchanges 1998-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>Singapore</th>
<th>Trinidad and Tobago</th>
<th>Jamaica</th>
<th>Barbados</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>3114</td>
<td>321</td>
<td>26</td>
<td>48</td>
<td>20</td>
</tr>
<tr>
<td>1999</td>
<td>3025</td>
<td>355</td>
<td>28</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>2000</td>
<td>2862</td>
<td>418</td>
<td>28</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>2001</td>
<td>2798</td>
<td>388</td>
<td>30</td>
<td>43</td>
<td>25</td>
</tr>
<tr>
<td>2002</td>
<td>5685</td>
<td>434</td>
<td>31</td>
<td>42</td>
<td>19</td>
</tr>
<tr>
<td>2003</td>
<td>5,295</td>
<td>561</td>
<td>35</td>
<td>39</td>
<td>19</td>
</tr>
<tr>
<td>2004</td>
<td>5,231</td>
<td>625</td>
<td>37</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>2005</td>
<td>5,143</td>
<td>685</td>
<td>37</td>
<td>42</td>
<td>19</td>
</tr>
<tr>
<td>2006</td>
<td>5,233</td>
<td>461</td>
<td>37</td>
<td>41</td>
<td>21</td>
</tr>
<tr>
<td>2007</td>
<td>5,130</td>
<td>472</td>
<td>37</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>2008</td>
<td>5,603</td>
<td>458</td>
<td>37</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>2009</td>
<td>4,401</td>
<td>459</td>
<td>37</td>
<td>39</td>
<td>20</td>
</tr>
<tr>
<td>2010</td>
<td>4,279</td>
<td>461</td>
<td>37</td>
<td>38</td>
<td>22</td>
</tr>
<tr>
<td>2011</td>
<td>4,171</td>
<td>462</td>
<td>37</td>
<td>37</td>
<td>22</td>
</tr>
<tr>
<td>Average</td>
<td>5,434</td>
<td>573</td>
<td>36.01</td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td>Average Dev.</td>
<td>1169.21</td>
<td>101.11</td>
<td>3.90</td>
<td>2.41</td>
<td>2.05</td>
</tr>
<tr>
<td>Average Dev as % of Average</td>
<td>21.52</td>
<td>17.64</td>
<td>10.83</td>
<td>5.33</td>
<td>8.72</td>
</tr>
</tbody>
</table>

Source: Data extracted from World Bank Data Set at http://data.worldbank.org/indicator/FR.INR.RISK

The average deviation as a % would give a good indication of the developed state of the stock market or lack thereof, because one would expect over time that new companies would go public while some of them would de-list. For example we see that in Trinidad & Tobago the average deviation % was only 5.5 where the very developed NYSE had an average deviation percent of 21.52 suggesting the lethargic nature of an underdeveloped Trinidad’s capital market.

A market capitalization calculation is a critical part of any stock market evaluation and represents the total market value of all stocks traded in the given stock exchange over the given period in relation to the applicable gross domestic product GDP). The market capitalization/GDP
ratio draws attention to the efficiency, integration and diffusion of the stock market, where its significance is very much akin to an accounting relationship known as price to sales ratio. The entangling of market capitalization to GDP with GDP helps to assess the valuation of the market in relation to the economy as a whole. Thus, one could argue that an increasing market cap to GDP ratio is very much a sturdy indicator of sustainability of domestic and international flow of funds in an economy. Market capitalization is essentially the share price times the number of shares outstanding of companies listed domestic companies are the domestically incorporated companies listed on the country’s stock exchanges at the end of the year. Listed companies do not include investment firms, mutual funds, or other collective investment vehicles.

Figure 11: Market Capitalization as % GDP

In Trinidad and Tobago’s case however, this was partly due to declining market capitalization and the market adjustment caused by pension funds adjusting their portfolios that lead to a decline in share prices. It could also suggest that companies listed on these exchanges may not be fully representative of contributors to gross domestic product in the economy. For example, in T&T oil and gas, the primary contributor to GDP is not directly reflected on the T&T Stock Exchange. Therefore, this ratio is a good indicator when a company is seeking to attain a level of acceptability to investors the efficiency of its capital markets. According to Demirguc-Kunt and Levine (1999) stock exchange with a market cap/GDP ratio greater than 100% means that value is added form non domestic sources. And values below this benchmark indicate that there is some domestic production is not accounted for on the exchange and that such production may have been transferred extraterritorially. On average, it seems that the TTSE, as well as the Jamaican and Barbados Stock Exchanges have values less than 100 at various times during the observation period.

Another good indicator for comparison would be stock market turnover ratio, which is a ratio that indicated the volume of shares traded over a given period as a percentage of the total listed c shares of companies. Turnover ratio is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the end-of-period values for the current period and the previous period. Similar to the turnover ratio in accounting such as the inventory turnover ratio which indicates the firm’s accomplishment of converting inventory into cash so too is the stock turnover ratio Stock turnover which actually measures the ability of the firm to convert inventory of stocks into revenue. The low
rate of the stock turnover indicates that stock is taking a longer time to turnover and as a result funds are tied up for longer periods of time. Stock turnover ratios then show the reoccurrence of the average stock recycling itself over the given period of time, usually over a given twelve-month measurement period. The market-oriented NYSE is the largest stock market in the world as so is the relative frequency of the turnover ratios.

**Figure 12: Stock Markets Turnover Ratios**

![Graph showing turnover ratios for different countries over time.](source)


Figure 12 above shows that the turnover ratios of the Caribbean stock markets are very low compared to the very developed and mostly market-oriented USA’s New York Stock Exchange.

**DISCUSSION AND CONCLUDING COMMENTS**

The use of market capitalization as a percentage of the Gross Domestic Product (GDP) is a measure which indicates the relative significance of the respective securities exchanges in their domestic economies. The average market capitalization to GDP ratio for the UK exchange for the period under review was 147%, while the respective ratios for the US and Canada’s securities exchanges were 109% and 126% respectively. Moreover, in developed exchanges the ratios were consistently over 100% for the entire review period. On the other hand, similar ratios for the selected Caribbean stock exchanges on average were less than 50% suggesting that their stock markets have stagnated.

Emerging market Singapore was forced by the need to arrest the escalating unemployment rate as they selected instead self-imposed globalization through free market forces rather than having some international lending agencies prescribe austerity programs to deal with their faltering economic fortunes. Perhaps copying from the Israelis, who did not rely on their neighbors to purchase their products, but instead leaped over to the Europeans and North Americans, so too did the Singaporeans. Singapore sought markets for its goods and services beyond its neighboring countries to further away countries such as mainland China, India, Europe, and North America. By taking this step Singapore defied the effects of the dependency theory that became a popular explanation for the third world’s underdevelopment dilemma during the 1970s.

There is little doubt that investors in countries such as Trinidad & Tobago, Barbados and so on are cold toward the stock markets because the specter of “mistrust” is quite present and that contagion among foreign and domestic banks is no different as those found in other emerging capital markets. Anecdotal evidence suggests that developed and well-functioning financial markets can prolong economic expansions (Rosseau, 2003). This paper takes the view that the development of
financial markets go through stages or phases through historical antecedents and using the FTSE and S&P listings markets can be classified in developmental stages such as pre-frontier, frontier, emerging, and developed. From the data presented and the analyst that followed in this study the results suggest that important strides are made by frontier markets toward emerging status, but they are not there yet and progress is essentially stymied. Markets are too illiquid and price discovery is still in the embryonic stage and has been for decades. The frontier markets are flat suggesting a secular trend locked into low turnover ratios. Government direct involvement in business, a bloated civil service, lack of transparency, and the absence of the major multinational equity not trading in frontier markets are all inherent impediments toward the promotion capital market efficiency.

**Internal Liquidity**

Liquidity is often pointed at as a key concept in financial markets and often denotes a desirable function that should reflect well-organized and transparent financial markets. A market is liquid to the extent that the prevailing structure of transactions provides a prompt and secure link between the demand and supply of assets, thus delivering low transaction costs. The internal liquidity of a securities exchange is a measure of the extent to which an exchange can facilitate the buying and selling transactions. The higher the percentage of market capitalization that is traded, the more liquid the market is deemed to be. The statistics derived during this study reflect the fact that the financial markets are indeed fairly illiquid. Similarly, all regional pre-emerging exchanges shared this phenomenon. This study explored the impact of the regulator on the securities market, both in terms of effectiveness and transparency. While the impact of the regulator may have some implications for the development of the securities market it is important to assess the investor’s perception as regards to other major impediments to the development of the market. The findings of this study reveal factors that may have contributed to a faltering market performance and pattern for new equities in the frontier capital markets are:

1. The relative cost of raising capital by debt, rather than by equities. For example, the Government of Jamaica is encouraging firms to raise capital in the equities market given that interest rates on company’s debt are close to double digit interest rate.

2. The concentration of corporate ownership among small groups of families and acquaintances in what is called interlocks dilutes effective control and misallocate resources.

3. Lacking of transparency and the possible manipulation of the market inhibit wider participation by both potential issuers and potential shareholders in the market.

4. The lack of familiarity with the requirements of the stock market and an appreciation for the raising capital through the stock exchange.

5. The credit and debt derivatives sector of the market has shown signs of growth. It is necessary that the regulatory framework be upgraded to promote effective monitoring and disclosure transparency.

**Further Research on Development of the Securities Market**

There are four necessary concluding theoretical points on the above:

1. **Reduction of corporate-specific risk**: there is little doubt that the capital is allocated more so through bank-based financial system and does appear to have an advantage in terms of providing a long-term stable financial framework for companies. But market-based systems,
in contrast, tend to be more volatile but are better able to efficiently channel funds to new companies in growth industries.

2. **Moral hazard**: this problem arose because managers gain from their shrewd managerial decisions as incentives are tied to firm’s value creation. Therefore, managers would take action to maximize his compensation and he seeks to align his interest with that of the other shareholders. In so doing the moral hazard problem could be reduced.

3. **Separation of management and ownership**: Trinidad & Tobago firms needs to engage in activities that would grow their businesses and so the separation of management and ownership would make room for more efficiency and widespread growth.

4. **The energy sector**: Especially in the cases of Nigeria and Trinidad & Tobago, an effort must be made to bring the energy sector into the securities market. It is well known around frontier market circles that the hydrocarbon related industries produce well over one-third of these countries’ GDPs.

Further empirical research should focus not only on why some countries are so vulnerable during periods of crisis – the contagion effect, but why some countries are always vulnerable to movements in other countries irrespective of geographical proximity. Could it be that trade with third markets has an effect or could fundamentals such as sources of capital from a single source has a direct contagion effect? Perhaps the overdependence are being brought about because the so called flat world which enticed Forbes and Rigobon (1999) referring to the existence of strong transmission mechanisms all across continents may perhaps be excess interdependence and not contagion as such.

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THE YELP EFFECT: A LOOK AT THE IMPACT OF YELP, ONLINE REVIEWS AND REPUTATION IN THE DIGITAL ERA

Mary Kate Naatus
Saint Peter’s University

ABSTRACT
In today’s mobile and digital world, where consumers have access to a wealth of information, in addition to entertainment, retail options, and many other novelties right in the palm of their hands, businesses cannot ignore the importance of reaching consumers through these digital media. In particular, the influence of Yelp, the online review site founded a decade ago, has been found to have statistically significant impact on business revenue in several economic analyses. This article reviews the literature on Yelp’s impact on small businesses and contains preliminary findings from the beginning of an exploratory survey study of small business owners and entrepreneurs in the urban communities of Jersey City and Hoboken, a growing, urban area right outside New York City. In the small sample surveyed thus far, many owners are heavily emphasizing their businesses’ online presence and promotion, keeping a close watch on online reviews of their businesses particularly Yelp, and using social media like Facebook, Twitter and Instagram to engage customers. A small group of owners in the sample report they place little importance on online reviews and broader digital media. Variables such as neighborhood, owner’s age and personality, socio-economics and longevity of the business, seem to be correlated with varying levels of online usage by owners.

Keywords: Digital media, online reviews, urban entrepreneurship, social media, small business

DIGITAL MEDIA AND THE RISE OF ONLINE REVIEW SITES
Entrepreneurs and small business owners today face myriad challenges from scarce capital to high rents and taxes to competition from big box corporations with cheaper products. Picture a local mom and pop hardware store competing with Lowe’s, Home Depot and Walmart, all within a 2-mile radius. A local pizza shop may have thirty or more direct competitors within the same radius, including corporate giants like Domino’s, Pizza Hut and Papa John’s, who are vying for customer orders. In order to survive and thrive, these small businesses need to take advantage of whatever small geographic advantage they have in terms of proximity to neighborhoods, customers and public transportation routes. They should also do everything possible to build customer loyalty and word of mouth recommendations, to retain customers and bring in new ones. More and more small businesses are looking to the digital arena for ways to promote their businesses and brands and reach and engage with consumers. From maintaining a robust webpage, to interacting with customers on social media like Facebook and Twitter to creating content for blogs and YouTube, to being constantly aware of one’s online reputation, managing these digital spaces can be very challenging, especially for very small businesses. One phenomenon that is growing in influence and proliferating as a result of the growth of digital and mobile consumption is online reviews, such as Yelp. One need only look up the name of a restaurant or bar on any search engine, and right away that business’s rating on Yelp may show up at the top of the Google or Yahoo search, affecting perceptions of all potential customers who seek information online or on their smartphones and
The purpose of this paper is to review the limited research on the influence of online reviews, particularly Yelp, on small businesses in different sectors, and to analyze preliminary findings from a survey of local businesses in the Jersey City and Hoboken urban area. The survey examines owner perceptions of the internet and online and mobile strategies in general, and more specifically perceptions of the effectiveness of social media marketing and the importance of Yelp and online ratings to their customers and their business.

In terms of the impact of Yelp on businesses, several notable studies have been conducted recently that affirm and quantify the impact Yelp has in driving customers to make purchases and reservations at restaurants in the Seattle and San Francisco urban areas (Magruder, 2012; Luca, 2011). The study described in this paper includes very small businesses across industries on the east coast in the cities of Jersey City and Hoboken, which reside across the Hudson River from New York City. The researcher plans to explore previous findings and extend the geographic areas already examined and also incorporate related variables and owners’ perceptions of Yelp and online reviews, to assess the current situation in a growing urban area that is rapidly being recognized as a “foodie” destination (Pace, 2013) and that hopes to be one of the top mid-sized cities in America (Kusisto, 2014).

The Rise of Yelp and the Move to Digital Word of Mouth

Word of mouth marketing and referrals are nothing new, and there are many studies on the nature of consumer decision-making and the influence of word of mouth (Ellison & Fudenberg, 1995; Dellarocas, 2003). However, adding both the internet and the power of mobile apps like Yelp, in the hands of millions of smartphone users in addition to GPS targeting, allows for higher efficiency and immediate relevancy of the ratings to users. For example if a user clicks on the Yelp app in a certain neighborhood and searches for Chinese food, within seconds, Yelp will display the closest restaurants that have been “vetted” by Yelp users, which can have a direct influence on choice of restaurant. Many business owners display Yelp-branded stickers on their storefronts, indicating their popularity on the site and also in a sense validating the legitimacy of Yelp ratings to an extent.

Yelp was born in 2004 out of a business incubator with the original idea of friends being able to get recommendations from others on businesses via email, but later evolved to be a social-sharing site with the growth in popularity of social media (Hendricks, 2013). Yelp quickly dominated and overtook other players that were already competing in this market like Citysearch and Yahoo Local, which some researchers attribute to Yelp’s ability to attract reviewers by creating a community and rewarding top Yelpers with “elite” status (Wang, 2010). In less than a decade, the site has grown to a multinational company, expanding into Latin America, Europe and Asia, with an average monthly usage of 132 million unique visitors in Q1 2014 (Google Analytics) and over 57 million local reviews, making Yelp the leading local guide for real word-of-mouth on everything from boutiques and mechanics to restaurants and dentists. Approximately 61 million unique visitors visited Yelp via their mobile device on a monthly average basis during Q1 2014 (Yelp Press Page, 2014).

One driver of Yelp’s growth was a group of super users it created called The Yelp Elite, which is small group of frequent users who have their reviews designated as elite, conveying reliability, and also benefit exclusive party and event invites (Wang, 2010). For businesses who do not yet have a presence on Yelp, they can set up a profile and add photos and menus, and also provide directions to interested customers, which can attract new customers and reviewers (Hendricks, 2013).

Not everyone, however, is elated at Yelp’s rapid growth and influence, and there are many lawsuits, complaints and broad discontent with the company, the filtering system for user reviews.
and accusations of fraudulent posts. There are nearly 1,500 formal complaints against Yelp that have been closed with the Better Business Bureau (www.bbb.org) and over 2000 complaints pending with the Federal Trade Commission (Loten, 2014). This researcher has anecdotal evidence that some local business owners believe their competitors have posted fraudulent negative reviews against them. Others believe many legitimate good reviews are hidden in Yelp’s filtering system, and not calculated into overall Yelp ratings nor readily visible to users. This paper seeks to collect primary data from local business owners in an urban area to analyze owners’ perceptions of Yelp and later use empirical data to assess the impact of Yelp reviews on customer decision-making.

LITERATURE REVIEW

In this broad body of literature, a principal research question that is often addressed is whether online reviews like Yelp reviews or Amazon.com reviews, are replacing other variables or decision drivers or if they are complementing other information searches in the consumer purchase process. Other studies look at the accuracy of reviews and the mathematical formulas calculating the reported review scores on Yelp, TripAdvisor and other sites (Dai et al., 2012).

In a 2006 study, (Chevalier & Mayzlin) researchers examined the relationship between a book’s customer reviews and its sales rank on Amazon and Barnes & Noble online sites and determined that an improvement in a book’s reviews leads to an increase in relative sales at that site, that for most samples in the study, the impact of one-star reviews or negative reviews is greater than the impact of five-star reviews, and that the content within the reviews tend to have more of an influence on customer purchase decision than simply the numerical score of the rating.

A study focusing on the movie industry and professional reviewers like Siskel and Ebert (Reinstein & Snyder, 2005), found that consumer purchase of experience goods, meaning goods for which the quality is uncertain prior to consumption, are influenced by expert reviews. They controlled for collinearity between high demand and positive reviews, and found that for certain categories of movies, positive expert reviews had a more statistically significant impact.

Specifically looking at Yelp, there have been two significant recent studies from Harvard and UC Berkeley that have found that Yelp ratings have a statistically significant impact on reservations and sales on restaurants in the Seattle and San Francisco, where the studies were done. The Harvard Business Review study (Luca, 2011) found that a restaurant’s average rating on Yelp has a large impact on revenue - a one-star increase correlates to a 5-9 percent increase in revenue for independent restaurants in Seattle. The Berkeley study that looks at data from San Francisco, CA (Anderson and Magruder, 2012) found that an extra half-star rating on Yelp causes restaurants to sell out 19 percentage points (49%) more frequently, with more significant impacts when alternate sources of information are less available. Interestingly both studies were able to establish causality by comparing similar businesses with very close Yelp scores in terms of exact number, but due to Yelp’s estimating rules, a restaurant with 4.49 vs 4.51 stars would be displayed as having a half star difference, thus influencing perceptions of quality or desirability. These two cities in the studies, San Francisco and Seattle, have some commonalities in terms of young, urban population, high technology usage, much higher than average median income and high average education level, which may impact results, skewing towards higher than average usage of mobile apps and Yelp.

Another study (Byers et. al. 2012) looked specifically at the interaction between Yelp ratings and Groupon deals used by a business. Groupon deals and other online deals like Amazon Deals, Living Social and Yipit are becoming more commonly used by different types of product and service-oriented businesses, from restaurants to orthodontists. They found that businesses may suffer a decrease in their online reputation on Yelp after doing a Groupon deal due to the fact that Groupon
users are statistically more likely to rate a business lower than a non-Groupon user, and that often the extra flood of customers taking advantages of a given deal can cause the product or service quality to go down, also influencing negative Yelp reviews.

For this article, the focus will be on Yelp ratings, and how local business owners in Jersey City and Hoboken areas perceive Yelp reviews and ratings to affect their businesses. The survey results will also reveal if owners are aware of their own Yelp ratings and those of competitors’ and strategies they may have to actively manage online reputation. This will add a new geographic urban area to either confirm or diverge from the Seattle and San Francisco studies and some insight into small business owner perceptions of these digital word of mouth ratings. Jersey City provides an interesting case study, as it is officially the second largest city in New Jersey with 240,000 population and growing rapidly in terms of development, population and brand perception. Hoboken is also unique. It is the city known as the “Mile Square,” rumored to have the most bars per capita in the United States, and in 2013 named as “the most exciting small city in America, in a survey conducted by the Movoto blog (Zeitlinger, 2013).

RESEARCH DESIGN & METHODOLOGY
Based on existing studies and observations of people heavily using Yelp when trying new restaurants, salons and other types of businesses, the broad hypothesis of this study is that online review sites and particularly Yelp, do have an impact on small businesses in a variety of categories, such as restaurants, bars and hair salons, but that these effects may be mitigated depending on the product/service category and the socio-economic status and age of target customers and the neighborhood. It is also possible that in gentrifying urban neighborhoods, the lack of presence on digital media and poor ratings on review sites, may more adversely affect existing businesses than in more traditional areas with more well-established clientele. In order to flesh out the relationships and correlations, regression models will build in publicly available secondary data, such as average and median income, ethnic breakdown and education level in neighborhoods, as well as available data on online reputation, ratings, and social network presence. While this phase of the study will not ask for revenue and sales data from owners or incorporate publicly available financial data, future papers will look at this variable as well.

The primary survey has 31 questions, and is being distributed via email, Facebook and Twitter as a Survey Monkey link, and administered in person or over the phone to business owners and managers. Chain stores and franchises will be excluded from this study, since previous studies (Luca, 2011) have found that the relationship between Yelp scores and consumer behavior is less significant, and since many of these chains, such as McDonalds, Domino’s and Dunkin Donuts spend so much on advertising and branding, it would be very difficult to isolate the impact of Yelp ratings to establish causality or even a correlation.

Another unique contribution of this research project is that a team of student researchers will be involved in the survey process and that small businesses will be asked if they would like to work with business students from the University to help them develop, improve or maintain digital media strategies, so it could be classified under community action research. Student researchers are funded by a Title V grant for the summer to learn the research process and contribute to the study.
PRELIMINARY FINDINGS & ANALYSIS
To date, the team of researchers has collected 20 surveys from a variety of businesses, including restaurants and pizzerias, a shoe repair store, florists, a dance studio, coffee shops, hair and nail salons and clothing and toy stores. The majority of businesses indicated they place at least some importance on Yelp reviews and that they believe they may have some effect on bringing in new customers. However, the majority of these same businesses report they do not try to influence satisfied or loyal customers to post their opinions on Yelp or other sites. Yelp strongly encourages businesses not to try to solicit Yelp reviews, stating that it might damage the credibility of the reviews and hurt its business. While several businesses say they pay some attention to their competitors’ ratings on Yelp, a few businesses said they do not bother to look at their competitors’ ratings, even though they believe Yelp influences consumer buying. This is likely due to time constraints, since managing social media and online reviews can be very time-consuming and many small business owners are already very busy running the daily operations of their businesses.

Some anecdotal observations that will be further explored in this ongoing project include that in more affluent neighborhoods, more businesses have “People love us on Yelp” stickers in their windows, while these types of advertisements are less visible in more working-class neighborhoods. While not included in this paper, many businesses, regardless of neighborhood are increasing the use of online delivery services like Delivery.com, Seamless and GrubHub, allowing them to reach new customers and drive revenues through delivery orders. In one case, a business that has closed down since the time of our initial contact was heavily dependent on these delivery companies for the majority of its revenues. The restaurant was selling higher-end, healthy, higher priced food in a working class, immigrant neighborhood. While the walk-in business did not meet expectations, ultimately forcing the business to close, they were able to stay open for over a year through revenues driven by delivery services.

A few businesses in this study’s sample only became aware of the existence of Yelp after being contacted by Yelp to congratulate them on their good ratings on the site and asking the owners to put up the “People love us on Yelp” sticker in their windows, accompanied by the claim that this would be good for business. The author was surprised to see how some very humble, more traditional restaurants/luncheonettes have such a large and positive following on Yelp, while admittedly saying they do not spend any time on digital media at all. In the case of one luncheonette, the author attributes that to the owner’s simplicity and focus on its long-held competitive advantage, offering high quality, low-cost food with no frills.

Though there has not been enough data collected to make any generalizations, it seems that there is a difference in level of digital media usage and importance attributed to Yelp reviews between service providers, like hair and nail salons, and product-oriented businesses, particularly restaurants, with the latter paying the most attention to online reviews and reporting they believe Yelp ratings impact customer decision-making. There are major differences depending on how long the business has been opened, with newer businesses responding far more positively and in agreement that they value the web, social networks and review sites, verses older businesses generally being more neutral or less involved.

CONCLUSION & RECOMMENDATIONS
Whether or not businesses are actively using digital media or engaging with customers online, most owners interviewed to date acknowledge that it does influence the environment and that consumers are looking at sites such as Yelp before making decisions. A small group of owners, usually whose businesses have been around for a long period of time, have reported that they do not like the
movement towards digital media and prefer to do business in a more traditional manner, relying on face to face word of mouth and building loyalty over time. Newer business owners tended to be more open to digital media and embracing novel and inexpensive ways of building brand awareness and recognition in the hopes of bringing in new customers and establishing a positive reputation.

This continuing project will include interviewing more businesses and performing some quantitative analysis of a larger sample of survey results in addition to some secondary data gathered from Yelp and other ratings websites and social media sites. The author will compare Yelp ratings to Google ratings, and reviews on Delivery sites like Seamless and Delivery.com as well. Future research should add a measure of financial success, such as revenues, sales, or reservations in the case of a restaurant or another way to quantify impacts and possibly even establish causality, in the way the Magruder and Anderson (2012) and Luca (2011) studies did. In addition, once the larger sample of businesses is established, they will be coded according to industry, such as restaurant, retail store, hardware, salon, etc., so that researchers can examine any major differences in attitude or impacts across industries.

REFERENCES


CONSULTING FOR ORGANIZATIONAL CHANGE

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ABSTRACT
For an organization development (OD) change effort to be successful, the consultant and the client must create a partnership. The philosophy of the consultant and the culture of the client organization impact the consultant’s approach to the intervention and the evolution of the process. Through a personal interview the researcher found that this consultant believes in a partnership approach and has developed a lasting trust relationship with the members of this organization. As a result of this relationship, the organization’s readiness for change is enhanced as the consultant has the credibility and expertise to influence the organization’s members to trust in the process and be open to the change effort. This influence is critical, as the success of this intervention directly impacts the survivability of the organization as it grooms the next generation of leaders. To date, this intervention has been targeted, interactive, and well-received. It also continues to evolve to develop a sustainable program to benefit all members of the organization rather than a select few. Recommendations are made, in a broad sense, as to how this intervention might be more OD-based; however, the intervention met the client where they were and has been successful to date. Finally, this case study demonstrates that not only did this client’s culture impact the development of the intervention, but over time the intervention is impacting the organization’s culture. Historically, leaders adopted the culture’s top-down management style; however, more recently, the organization’s leadership is more open and transparent, recognizing that talent lives throughout the organization and is just waiting to be tapped.

INTRODUCTION
A change effort in an organization is a strategic response to environmental factors. These factors may be internal or external, but they create the impetus for organization development and the need to determine how it will move toward a desired state. The organization must also assess if the development process requires an immediate response or a long-term change effort.

In addition, the leadership must consider the level of expertise that is essential to effectively manage this planned change effort. The organization may have personnel that have the prerequisite knowledge, skills, and abilities. On the other hand, the organization may need to consider engaging an external consultant. The consultant choice is impacted by several factors including the organization’s culture and the consultant’s philosophy on managing change.

This case study discusses an established, privately held organization in Pennsylvania for whom a long-term, planned change effort was required due to internal factors and for which the decision was made to work with an external consultant. The organization and the consultant will remain anonymous due to the proprietary nature of this ongoing change effort. This study seeks to understand the relationship between the consultant, the organization, and its long-term change effort including: (a) the influence of the consultant’s philosophy on the methodological approach to the organization and its evolving change effort; and (b) the importance of relationships and trust as the basis of effective consultation and as an influence on the organization’s readiness for change.
LITERATURE REVIEW
As a foundation for the interview discussion and case analysis, it is necessary to review applicable literature. Material pertinent to this study address the following questions: what is organization development; how is the term consultant defined; what is the role of the consultant; what approaches might a consultant use; what intervention models are appropriate; and what factors impact the client-consultant relationship?

Organization Development
When implemented effectively, the organization development (OD) process creates lasting change with an organization. It is “an effort (1) planned, (2) organization-wide, and (3) managed from the top, to (4) increase organization effectiveness and health through (5) planned interventions in the organization’s ‘processes’, using behavioral-science knowledge” (Beckhard, 1969, p. 9). Rothwell, Stavros, and Sullivan (2010b) state that “OD provides adaptable and real-time discipline for living systems that require information sharing to govern next moves and adjustments. It is interactive, relational, participative, and engaging” (p. 15).

As a strategic response to environmental factors, an OD intervention is the development process the organization moves through in order to reach its desired state. “An intervention is a change effort or a change process. It implies an intentional entry into an ongoing system” (Rothwell, Stavros, & Sullivan, 2010b, p. 26). Argyris (1970) defines an intervention as “any action on the part of the change agent [and]…carries the implication that the action is planned, deliberate, and presumably functional” (Rothwell et al., 2010b, p. 26).

Consultant Defined
According to Block (2011) “A consultant is a person in a position to have some influence over an individual, a group, or an organization but has no direct power to make changes or implement programs” (p. 2). Weiss (2009) states that “A consultant is someone who provides value though specialized expertise, content, behavior, skill, or other resources to assist a client in improving the status quo….A consultant improves the client’s condition” (p. 4).

Rothwell et al. (2010b) state that a change agent is “a person who attempts to change some aspect of an organization or an environment” (p. 24). However, differing perspectives of a consultant’s position as a change agent influence how the term consultant is defined. Appelbaum and Steed (2005) cite the definition of management consulting, by Greiner and Metzger (1983), which leans towards the consultant as the expert: “specially trained and qualified persons who assist, in an objective and independent manner, the client organization to identify management problems, analyze such problems, and help, when requested in the implementation of solutions” (p. 69).

The management consulting methodology is aligned with the idea of change management (CM). “Change management is a process of helping a person, group, or organization change, [however] the word ‘management’ implies an effort to plan the change and exert influence over other people in the process” (Rothwell et al., 2010b, p. 16). The expert definition of a consultant suggests, therefore, that the consultant will be the one with the power to fix the organization’s problem.

In opposition to the CM consultant, an OD consultant is considered a facilitator of a client’s change effort. Rothwell, Stavros, and Sullivan (2010a) describe an OD consultant as one that assists with the process of change by helping clients identify and plan how to handle changes within organizations. In OD, the power remains in the hands of the organization’s members to find the
The Role of the Consultant
The role of a consultant varies based on their personal philosophy about their practice. And, a consultant can alter their role for a change effort as appropriate to meet the organization where it is in order to satisfy its strategic needs. However, it is best that this role choice be made at the entry phase of the client-consultant interaction and be adhered to throughout the change intervention. Weiss (2009) provides his perception of the consultant’s role when he states “Consulting is not synonymous with implementing, delivering, instructing, or executing, although consulting may include any of these activities….The consultant must deliver value-added to the client” (p. 5). Specifically, Weiss defines six value added categories. Of the six, three value added categories are applicable to this study’s consultant: (a) expertise – that transcends industries and…applicable to a wide variety of environments; (b) knowledge – the broader experiential understanding of process versus content about a particular field; and (c) behavior – interpersonal competencies that enable them to facilitate groups to achieve (Weiss, 2009, pp. 6-7).

For this case study, it is important to expand on the topic of the value adding role of consultants. Appelbaum and Steed (2005) state that “The partner…establishes mutual accountability and ownership of…objectives, process and outcomes….The capability-builder focuses on enhancing the client’s capacity to solve similar problems with its own resources…. The truth teller…builds active and accurate feedback systems with the client” (p. 74). Finally, the role of the value added consultant impacts an organization’s readiness for change. Theodore (2013) states “The ultimate goal of organization development is to make the organization more open and more adaptive through increases in capability and potential in order for it to continue making such planned change efforts on an action orientation basis” (p. 65).

Approaches to Consulting
The consultant’s perspective of their role as change agent impacts their approach to the organization and reflects their CM or OD philosophy. Appelbaum and Steed (2005) cite Schein (1990) in describing basic approaches to consultation. These approaches are the (a) purchase of expertise model – the consultant provides an independent perspective on a problem; (b) doctor-patient model – the consultant uses their expertise to diagnose and identify a problem; or (c) process consultation – the consultant facilitates the organization in using their own expertise to define their problem and develop possible solutions (Appelbaum & Steed, 2005, pp. 70-71).

Intervention Models
When choosing an intervention model, the consultant must consider the type of change effort required in an organization. This case study specifically evaluates the consultant’s role in a large-system intervention – a long-term change effort which greatly depends upon a positive, trust-based, consultant-client relationship. Interventions on this scale are generally a response to three kinds of disturbances; however, the most applicable disturbance to this case is a change to the leadership in an organization.

According to Cummings and Feyerherm (2010), large system interventions “are triggered by environmental jolts and internal disruptions; provoke…transformational change; incorporate new organizing paradigms; are driven and led by senior executives; require an organizational learning system; and involve multiple organization levels and large numbers of members” (p. 349). Further, these interventions require an investment of time, effort, and commitment from all members toward
organizational and personal learning. Therefore, Cummings and Feyerherm state “organizations need to create processes, procedures, and norms that support a learning orientation for the whole organization” (p. 350).

Several OD models address large system interventions; however, only the two most applicable models are discussed. One of the more popular models is the Action Research Model (ARM). The ARM is a “clearly identifiable sequence of activities…directed toward continuous improvement by means of a cycle in which information about problems is collected, fed back to people affected, used to stimulate action, and evaluated” (Rothwell & Sredl, 2000, p. 309).

According to Rothwell and Sredl (2000) the phases of the ARM model include entry, contracting, diagnosis, feedback, planning, action/intervention, and evaluation (p. 310). The authors state that this model is particularly effective when the target group of the intervention is the total organization as is the case of succession planning (p. 315). These phases are discussed in more detail in the interview and analysis sections.

For this case study, the organization’s intervention experience is best viewed through the Whole System Change (WSC) Model as there is an evolving environment in which the client and the consultant lead a discontinuous change effort. Axelrod, Cady, and Holman (2010) describe WSC in the following way:

A new approach in which the people of a system – across functions and hierarchy – participated in both making the decisions and implementing the changes. Such an approach creates a sense of wholeness that accelerates change because people act from their collective image of their desired future as they begin to experience themselves as a whole system. (p. 364)

WSC incorporates six capacities to leading a change effort. Due to their applicability to the organization’s leadership and the external consultant in this case study, these capacities are critical to highlight. Axelrod et al. (2010) state the following about the six capacities of WSC:

- First, leaders must walk their talk or they will not be trusted. Second, change is messy and difficult. Leaders must be able to use the messiness of the change creatively. They must be role models for others whose eyes will be focused on them.
- Third, leaders must be able to convene others to confront issues in the achievement of their goals. Convene the right stakeholders [and]...support them.
- Fourth, leaders must be willing to listen and learn. It requires a degree of humility.
- Fifth, leaders must support people with time, resources, guidance, and actions.
- Finally...letting go of control and being willing to be changed by what occurs. (pp. 368-370)

WSC “requires a willingness to face the unknown...and to be curious, receptive, and humble. It is the work of asking questions that focus...attention toward deeply felt, collective aspirations” (Axelrod, Cady, & Holman, 2010, p. 367). Perhaps the most significant aspect of WSC to this case is the statement by these authors that describes the management of discontinuous change: “by following the energy that emerges, sensing the patterns taking shape, and calling those patterns into collective awareness, novel and often unpredictable solutions appear” (Axelrod et al., 2010, p. 368). This process reflects an organization’s evolution in ways that may not be anticipated or planned but that can best be managed through an OD approach.

There is a final point to be made on WSC – Axelrod et al. (2010) state that “When leadership is recognized as a broadly held capacity that can emerge from anywhere, organizations begin to operate in a more fluid and life-affirming way” (p. 370). How aspects of this case study fit the WSC model are discussed in more detail throughout the analysis section.
Factors that Impact the Client-Consultant Relationship
Consultants are continually managing lateral relationships; therefore, the balance of power between the consultant and client is always open to ambiguity and negotiation (Block, 2011, p. 9). According to Appelbaum and Steed (2005) “It is generally accepted that how the consultant puts together the consulting process will affect the relationship with the client and consequently the success of the project” (p. 77).

The authors state that the “following success factors will lead to more favorable project outcomes”: (a) competent consultants, (b) emphasis on client results vs. consultant deliverables; (c) clear and well communicated expectations and outcomes; (d) visible executive support; (e) adaptation to client readiness; (f) investment up front in learning the client’s environment; (g) defined in terms of incremental successes; (h) real partnership with consultants; and (i) inclusion of the consultants through the implementation phase (Appelbaum & Steed, 2005, p. 77).

Another factor impacting the client-consultant relationship is the organization’s culture. Schein (1990) states that the culture is like an organization’s personality and character, similar to that of an individual who learns how to behave, has certain beliefs and values, and allows one to adapt to one’s environment (p. 111). Schein defines an organization’s culture as follows: (a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems. (p. 111)

Schein (2010) asserts that “the initial belief and values of the group’s founders and leaders gradually become shared” (p. 301). Also, the “content of a given culture is generally the result of the occupational culture…[which is] the shared beliefs, values, and norms of an occupational community, based on their formal training and practical experience…leading to shared tacit assumptions” (Schein, 2010, pp. 302-303).

Finally, the strength of the organization’s culture is an important aspect that a consultant must respect when creating the relationship with the client and choosing the consulting approach. Schein (2010) writes that cultural strength depends on several factors including “The strength of the convictions of the original founders and subsequent leaders; the degree of stability of the membership and leadership over a period of time; and the number and intensity of learning crises that the group has survived” (p. 302). For this case study, the impact of the organization’s culture is illustrated using the various phases of the intervention.

INTERVIEW WITH THE CONSULTANT
The data collected for this case study was obtained through the interview process. The Action Research Model (ARM) was used as a general framework for leading the interview; however this is not meant to indicate that it is the methodology used by the consultant. Due to the proprietary nature of the change intervention, the names of the organization and individuals have been changed to protect their anonymity. The client is identified as XCo and the consultant is identified as “R”.

Consultant’s Background
The consultant has had her own practice for several years. Her experience is that “one does not go to school to become a consultant.” R describes her background through “three legs of a stool”. In her undergraduate work, she majored in psychology and “has always been attracted to the human element in problems and opportunities.” After graduating, R became interested in the teaching aspect of business through her participation in an intensive training program. She moved into
training and then into managing operations. R states that her style of managing is one of consensus building and empowerment in order to create high performing work teams. This is the “first leg of her stool.”

The second leg of R’s stool is her graduate work. She completed her MBA at a prestigious university where she was able to learn theory and advanced practices. And while this education is valuable, she believes her experience in industry is what taught her what she “knows.” Later, R joined a consulting practice to remain involved in the human and organizational design aspects of business and, subsequently, opened her own practice to continue her work on her own terms. This she considers the third leg of her stool.

Consulting Philosophy
R believes she is a “reluctant consultant” which means “being resistant to the notion that she is smarter than the client and...there to fix their problems because they can’t.” Inherently, she developed a collaborative way of working with clients. R realized that “what she does have...is time because organizations are so busy getting the job done” – the client needs a thought partner. R does not believe that a consultant benefits the organization by going to into it with a strong idea of what “should” happen. Consulting is relationship-based, yet, she says the consultant has to “meet the organization where they are.” She often tells her clients “my job is to work myself out of a job...if I do my work well then I don’t have a job here anymore and I want to leave something behind that is sustainable...something that is yours that I helped you create. I ask good questions and I help you when you derail to get back on track.” This philosophy aligns with the OD consulting approach – to assist clients with the process of change by helping them identify and plan how to handle changes within their organization (Rothwell et al., 2010a).

Organizational Culture and the Change Effort
Before reviewing the specifics of the consultant’s entry into XCo, it is valuable to get a sense of the client and its culture. XCo is an “entrepreneurial, hard charging” organization; the people are fast working and bright. This entrepreneurial spirit has members essentially running their own businesses, yet they recognize the need to work together for the common good. Also, the members, in general, are “very straightforward, black and white thinkers.” The existence of these characteristics is valuable for the client’s business and an essential part of the occupational culture.

The organization is, historically, a family business with a stable leadership team; therefore, it has a strong culture consistent with the key factors described by Schein (2010) including the strength of the convictions of the original founders and subsequent leaders and the degree of stability of the membership and leadership over a period of time (p. 302). This culture values quantifiable performance results and requires extensive time and commitment from all its members – another example of the occupational culture impacting the organization’s culture. Using the ARM framework, the following sections examine how the strength of the organization’s culture framed the consultant’s approach to the various phases of the intervention and to the relationships within the organization in order to make the intervention successful.

Entry Phase
The consultant’s relationship with the client existed for several years before this long-term change effort was discussed. Through networking, a relationship was established with members of the organization and over time several successful consulting opportunities built the client-consultant relationship.
Without the consultant, XCo recognized the need to address succession planning for their leadership. This need became the impetus for a long-term intervention to achieve organizational perpetuation through proper succession planning. Working with the consultant, the client’s core leadership team determined that the purpose of the intervention was to create a leadership development system and identify the next generation of leaders for the organization. The client and the consultant began talking about how to address succession planning. In these discussions, questions arose and R found that within the leadership there were differing points of view.

The question of who is the target audience of the intervention is still an evolving one and philosophically based. From the consultant’s perspective it appeared that there were those in the core team who thought that XCo needed to “target the most promising, the high potentials” within the organization. They believed they knew “who the real talent was.” The other school of thought was “a base needs to be built so the talent can rise to the top because at this point there isn’t a way to measure it.” The resulting ideas for the leadership development program was a compromise but leaned toward the latter view.

A formal needs assessment was not conducted, but R stated that she “knew the people, the dynamics, and the culture.” However, an assessment important to the communication and cultural aspects of the organization was completed. The results of this assessment impacted those who were chosen to participate in the leadership development program. It is also important to note how the culture impacted the contracting phase.

**Contracting Phase**

Realizing the pressing need for the development of a leadership change effort, the core team was “sure they had the answer and were ready.” They had a sense of urgency to successfully perpetuate the business and were concerned that the high performing members of the organization might leave because they did not see a career path. The consultant contracted to (a) create a pilot leadership program, (b) develop a formal leadership development program, and (c) assist with training the top performers selected by leadership so the organization could be sustainable beyond the current decade.

**Planning Phase**

The planning phase included a review of the strengths of the organization and a discussion of what success would look like for the leadership program. This assessment led to questions such as: how is the organization currently training individuals to become leaders; what is the XCo’s way of leading; how will trainees practice what is learned; who will mentor them?

The organization’s culture impacted the planning phase of the intervention. Due to their hard-driving nature, R had to slow down the process, “ask the right questions, identify the needs, determine what was really going on, and figure out how we know we are successful.” The results were used to develop the pilot program and the lessons learned would be used to create the formal program for candidates chosen by the core leadership team.

**Pilot Program: Implementation and Evaluation**

The pilot program sessions were facilitated by R and covered topics such as leadership, problem solving, communication, managing people and process, and executive presence. During the evaluation of the pilot program several key findings were made by the consultant and used to adjust and improve the formal program. For example, due to the flat structure of the organization, training was adjusted toward the concepts of informal leadership and influence versus hierarchal and
directive leadership. Further, training sessions were increased to provide adequate time for discussion. Finally, it was recognized that the content of the program would benefit other members of the organization through a series of Lunch ’n Learn sessions. In this process, the WSC model of discontinuous change emerges. R stated that they “didn’t design and implement” the program, they “just leaned into it and let the design come to them.” One of the things learned by the client in developing new leaders was that they “don’t just tap them or provide training in the classroom, they had to shift the culture.”

**Implementation of the Long-Term Change Effort**
The intervention is a multi-year program that seeks to develop new leadership by the end of the decade. R facilitates all trainings, exercises, discussions, and assignments; however, a core team member visits each session to demonstrate their support of the program and to give input as to how the topic “linked to leadership.” As the training sessions meet monthly, the consultant touches base with the core team to provide updates on the energy of the participants and share class takeaways. Included in these takeaways are the participants’ insights into best practices and key learning from that session. This data provides an opportunity for ongoing assessment and adaptation by the consultant.

**Evaluation of the Change Effort**
At the end of each nine month formal program, participant feedback forms are completed and shared with the core team. The consultant collects all of the data and insights throughout the year and creates an improved program for following year. This demonstrates the level of trust and respect she receives from the organization. It is also important to note that this feedback process instills a sense of ownership in the participants who help to create the program.

**Whole System Change and the Change Effort**
The evolution of the planning for this leadership development program and the leaders’ recognition of what was previously unforeseen, but more broadly needed within the organization, aligns with the WSC concept of managing discontinuous change. According to R, perhaps the greatest lesson the client learned in the first year of the intervention was that this program would be valuable to all the organization’s members.

As a result, the core team decided to open the program to other members of the organization, not just a chosen few. This decision aligns with the Whole System Change model of intervention. Axelrod et al. (2010) state “When leadership is recognized as a broadly held capacity that can emerge from anywhere, organizations begin to operate in a more fluid and life-affirming way” (p. 370). The client’s success is in their own hands.

**ANALYSIS**
This study seeks to understand the relationship between the consultant, the organization, and its long-term change effort. It is important to note that this intervention did not share all the characteristics of OD, but the consultant made an excellent case that one must meet the client where they are, listen to them, ask the right questions, and the learning will come. And as this case demonstrates, the evolving intervention more closely aligns with an OD approach.

Using the ARM, the following is a brief analysis of how this intervention differs from a traditional OD approach in the needs assessment and planning phases. Analysis is also provided regarding the growth of the organization’s culture and the role of this consultant.
Needs Assessment
Unlike an OD approach, for this case, the initial assessment of the client’s problem included only top leadership. However, it was clear that a system to develop the future leaders of the organization did not exist thereby creating a significant gap affecting the survivability of the organization. Therefore, to align with OD, recommendations for a formal needs assessment include (a) interviewing top leaders to discover what a future leader needs to be and what they expect from a leadership development program; (b) reviewing personnel records to learn about employee capabilities and competencies; and (c) interviewing employees to assess leadership potential and to learn their perspective on what they consider leadership in the organization.

Planning
In the planning phase, it appears that two activities are not aligned with the traditional OD model: the development of the pilot program and the selection of the program participants. To develop the pilot program and its contents in an OD approach, participants in the planning phase should include a broader group of organization members such as cross-functional teams. Also, a company-wide group meeting would allow groups to brainstorm topics for inclusion in the program. These inclusive processes gain feedback on the leadership skills members think are beneficial to the organization and create a level of commitment for the change effort. In this way, the members of the organization become change agents.

The second area of distinction from traditional OD is the method of employee selection for participation in the program. In the planning stage of the intervention, the participants were selected by top management as there were no objective criteria to determine who was “in” and who was “out” of the program. The lack of objective criteria for selection leads to questions such as: (a) were those selected found to be the best to lead in the future, and (b) what was the reaction of those who were not chosen? In this organization, questions of fairness did arise.

The impact of the selection decisions on employees may negatively affect their attitude, engagement, and productivity; therefore, it is recommended that the consultant and leadership involve the organization’s members in determining the objective criteria. This OD approach would provide employees with the opportunity for collaboration, ownership, and commitment.

Cultural Growth
During the intervention process there have been valuable, culture-related successes. According to the consultant, there are frequent and rich conversations happening in the organization that did not occur previously. Due to discussion and interaction, the participants report acquiring knowledge about each other and using it to benefit the business. And there is an expectation among the participants that they will communicate and resolve problems. This improved communication across the organization provides a vision of the organization’s sustainability and is a valuable illustration of cultural growth.

Another positive cultural evolution is the increase in transparency within the organization. Traditionally, leadership styles have been top-down and directive, viewing even high-potential employees as the “up-and-coming,” but the core team is learning to recognize the untapped talent in the organization and is asking them to provide ideas and direction. This change in culture aligns with the characteristics of Whole System Change.
The Role of the Consultant
The success of the intervention to date demonstrates that the client has a well-placed trust in the consultant and values her service. This trust also creates a level of influence for the consultant on the organization’s members. The parties understand that together they are building a leadership development program that ensures the perpetuation of the organization. When asked for her final thoughts on the key to a positive client-consultant relationship, the consultant said “Patience and the willingness to let the process evolve even when faced with the need of the client to know or have the answer. Seek the ‘yes, and’ versus the ‘either/or’.”

CONCLUSION
The researcher set out to evaluate the impact of the client-consultant relationship during a long-term intervention at a privately-held organization. Using the OD approach, the ARM, and the WSC Model as a framework for evaluation provided new insights into this organization and its experience in this change effort for the researcher and the consultant. This consultant’s philosophy on her role as a partner to the client and as a facilitator in an intervention is a major influence on her approach. Another key factor is the strong culture of the organization including the attitude of the core leadership team and the impact of occupational culture.

The relationships built and the trust gained throughout the organization has been the basis for cultural growth and the evolving success of the change effort to date. The widely held, internal recognition that the survivability of the organization is dependent on the success of this program creates a sense of urgency, ensures commitment from those involved, and supports a more open and collaborative culture.

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STUDENTS’ REACTIONS TO REVOLUTION ANALYTICS (R): TEXT MINING OF TWITTER DATA WITH R PACKAGES TWITTER AND WORDCLOUD

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ABSTRACT
Technology provides the vehicle to gather data and analyze the data into information. Currently, Revolution Analytics (R) is used worldwide as a dynamic statistical software which allows seamless integration many social media data sets including, but not limited to Google, Facebook, LinkedIn, and Twitter.

Twitter and word clouds were chosen for this presentation because access to archived data sets and programing code were easily accessible online. The archived twitteR datasets were mined for specific tweets at certain events, locations, times, and days. The output was programmed to be displayed as word clouds. This presentation will explain the lecture, tools used, programming code, archived datasets and most importantly student’s reactions to the possibilities and impact our usage social media technologies.
HYPOVIGILANCE AND MOTOR BEHAVIOUR: IMPACT ON DRIVING ABILITY

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KEYWORDS
sleep-awake transition; detection vigilance decreasing; alertness; prevention safety; railways

ABSTRACT
We studied vigilance devices in locomotive cabins. Operator deficiencies have been found to be responsible for about 75% of train collisions and derailments. Their nature is not yet totally elucidated but it is reasonable to consider that lack of vigilance plays a major role. It is generally admitted that driver vigilance declines with sleepiness, tiredness, monotony, increasing fatigue, response inefficiency and accident risk. The French vigilance monitoring system (VACMA) was built to follow the train driver reactions. It was tested using a scoring method analyzing the correlation between vigilance parameters and driver behaviour. In these studies, vigilance monitored the actions of the driver which were registered by the system. It allowed to analyze the ability of the security system to indirectly detect decreases in vigilance. The current technology used to assess and prevent vigilance decline, was based on particular devices such as eye tracker or steering wheel movements. The activation of the VACMA system was under the control of the safety “dead man circuit”. We checked for a relationship between motility behaviour (regular activation of a command), vigilance variations (with non-invasive methods) and responses to signals on a screen. A simplified monotonous driving task was used to study the physiological and attitudinal parameters that we discuss. Efficient and reliable determination of hypovigilance is required in many areas, particularly transportation. Such a system offers new perspectives for detection of vigilance decrease in many ways of driving including cars, buses, lorries (trucks), ships and airplanes.

INTRODUCTION
The determination of driver vigilance states, sleep-awake transition remain the fundamental parameters for better safety (Torsvall and Åkerstedt, 1988; Sommer et al., 2009; Åkerstedt, et al., 2005). When the driver becomes dangerous, the modification of its behaviour can be exploited in order to prevent it by anticipation, with the aim to help setting up decision-making tools, Kaplan et al, (2007), Larue et al (2011), Sauvignon, M., (1995, 2011, 2013, 2014). Human errors were caused by reduced alertness while driving is one of the main causes of railway traffic accidents. The highest risks occur early in the morning, in the mid-afternoon and late at night. The recorded consistent temporal pattern of physiological events and performance-related incidents suggest that such critical human errors are due to brain mechanisms. They control sleep and many other oscillatory processes underlying human physiology and behaviour. Until now, it was not proved that human responses and errors occurring in most (or all) of these incidents or/and accidents resulted of lowered alertness, lack of attention, or delayed reaction due to active sleep-related processes (Santamaria and Chiappa, 1987; Duta et al., 2004). However, it appears that the important accidents depend on inadequate human response and the functional capacities of the human operator. The increased automation of the operator's cabin as well as the long travelled distances are factors provoking a lowered vigilance.
during critical periods. A safe driving behaviour is necessary for all public vehicles and particularly for trains. We studied the rhythm of human alertness which showed these episodes of low vigilance occurred at foreseeable times of the day.

EXPERIMENTAL SETUP
The main part of the apparatus was a life-sized model of an engineer's console in an electric locomotive additionally equipped for the experimental task with the final design presented on Figure 1 A. In the present studies, we used the VACMA system which represents a paced secondary motor task expected to monitor French railways train drivers. The modern VACMA is a sophisticated step following the traditional « safety-dead-man circuit ». Biomechanical data were recorded via electrical contacts, force and angle transducers with characteristics (ELF-25, M-520) fixed under the pedals to determine foot pressure and foot angle. The VACMA functions (temporisation of alarm mechanism and emergency stopping) are detailed on Figure 1B.

The train driver had to maintain pressure on a pedal or a steering wheel and to periodically release this pressure. If the driver either maintained this pressure for a too long period or released it for a too long period, a bell ringed during 1,5 second and the train stopped. The control elements were composed of right and left foot pedals, several levers, buttons in various parts of the driver's cabin and the “dead-man” handle in monotonous situation. Whereas the traditional dead-man handle had to remain constantly weighted to carry out the appropriate function, the VACMA handles had to be released at least every 60 seconds. 240 minute experiments were settled.

Figure 1: Driving task
A- Attention-task for train driver in real work environment.
B- Recording of behaviour. The subject operated a VACMA simulator with a real VACMA-horn in an isolated chamber. Bioelectric signals (EEG, EOG) and parameters (angle, pressure) were registered simultaneously and stored on analogue tape. A small monitor screen allowed the visualisation of synthetic images and coloured spots in the upper right corner of the screen. Data
reproduction was possible by means of a strip-chart-printer, oscilloscope, polygraph or via data processor.

The prototype of VACMA system allowed: a)- the conductor to be able to choose the pressure-angle on the pedal, b)- to reduce the effort on the pedal, c)- the system to continuously measure biomechanical parameters (average pressure on the pedal, duration of period of activation, duration of release of the pedal) in order to detect and prevent variations in vigilance. Force and angle data were sampled at 2 Hz beginning 30 milliseconds prior to stimulus onset and for 2 minutes 30 seconds stimulus onset. The automatic detection was based on the convergence of few biomechanical parameters: average pressure on the pedal, duration of the period of activation, duration of release of the pedal, (Fig. 1B).

Twenty volunteer drivers performed 57 driving tasks during nine sessions, (reproducibility). They were all professional drivers and were 39 to 54 years old with a minimum of 10 years-VACMA practical use. All the drivers agreed with the experimental conditions which permitted a measurable reduction of vigilance and a record of VACMA operations. Sensory deprivation by means of a silent chamber affected by a monotonous sound of 20 decibels quickly reduced the subjects’ vigilance when performed at a 20°C room temperature. The original VACMA pedal connected to a VACMA-cycle simulator allowed the simulation of actual VACMA practice. Subjects had to operate the VACMA-cycle simulator with open eyes in front of the screen.

RESULTS
Determination of hypovigilance is required in many areas, particularly transportation. We present a more general approach of data fusion of many features utilizing computational intelligence methods, like Support-Vector Machines (SVM). Here, the activation of security-system emerge with the VACMA tools. A correlation between vigilance and data of VACMA device was achieved by a simultaneous registration of the data of VACMA operation, EEG and time response (Fig. 1B). In normal subjects, two periods are critical for the maintenance of wakefulness: 01h00AM-05H00AM and 01h00PM-05H00PM. For this reason, the experiment was conducted between 01h00 PM and 05h00 PM. We present a more general approach of power spectral densities (PSD) for alpha rhythms associated omission to have an approach of detection-vigilance-decreasing. An example of variations of level of vigilance is reported on Figure 2.
Figure 2: Experiments with driver n°17.

- left: Example of level variations of vigilance (evolution of alpha rhythms and (RT)*. The omission of response for subject 17 during the 9th experiment of 04 hours is reported, *(RT)=response time at two different symbols (S) open circles and BP(VG) black circles.
- right: Motor behaviour and vigilance. Evolution of PSD and pressure on the VACMA by driver n°17 during 16 periods of 15 minutes.

Arrows show hypovigilance periods after 1h30 and 2h30 (augmentation of the PSD or alpha power and non response to the signals). A decrease was observed for the foot pressure on the security command, probably due to a modification of the activation.

The evolution of the brain alpha waves PSDα during the experiments was noticeable on Figure 3:
The cohort of drivers was affected of a first and a second number for the reproducibility of experiments. The Power Spectral Density (PSD) $\alpha$ was evaluated during 4 hours to analyze the fluctuations (standard deviation) of the rhythmic alpha production and its variability. Consequently, the variations of PSD evidenced the typology of EEG rhythms as reported on Table 1:
Table 1

<table>
<thead>
<tr>
<th>Class</th>
<th>PSDα</th>
<th>Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>%Pa &gt; 50%</td>
<td>14</td>
</tr>
<tr>
<td>II</td>
<td>10 % ≤ %Pa ≤ 50%</td>
<td>27</td>
</tr>
<tr>
<td>III</td>
<td>%Pa &lt; 10%</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 1: EEG class and experiment stability.

This results showed for whole the experiments, the possibility of affect class I, II or III if the subject present less than 10 %, 10 % ≤ %PSD ≤ 50% or more than 50%. This also evidenced the domination and fluctuation of alpha activity (8.0–12.0 Hz).

DISCUSSION, CONCLUSION AND FUTURE DIRECTIONS.

Two classes of α rhythm were discriminated: slight and strong hypovigilance results as from Karolinska Sleepiness Scale (KSS) and from variation of lane deviation (VLD). The first is a measure of subjectively self-experienced hypovigilance, whereas the second is an objective measure of performance decrements. Results were compared with PERCLOS (percentage of eye closure), an oculomotoric variable utilized in several FMT systems, (Dinges and Grace, 1998). However we noticed that EEG and EOG bio-signals are substantially more suited to assess driver's hypovigilance than the PERCLOS bio-signal. In addition, computational intelligence performed better when objective class labels were used instead of subjective class labels. In Figure 3, appeared clearly 3 classes of hypovigilance.

Our test was based on the power density of the EEG during ‘eyes-open’ or ‘eyes-closed’. Alpha and theta power density increased with sleepiness in the eyes-open condition, whereas alpha power density decreased and theta power density increased during the eyes-closed condition. During ‘eyes-open’ in normal alertness, brain activities are dominated by waves within the beta band (>13 Hz). With increased drowsiness in ‘eyes-open’, the proportion of alpha and theta activity is increased. During ‘eyes-closed’ and alertness, brain activity is dominated by alpha activity (8.0–12.0 Hz) which is replaced by theta activity with increasing sleepiness.

The system (Figure 1) achieved enhanced reliability and minimised false alarm rates by supporting continuous, instead of discrete, event-related driver monitoring, strong system personalisation to driver characteristics and traffic situation awareness. In case of hypo-vigilance, the system will provide an adequate warning to the driver, with various levels of warnings, according to the estimated driver's hypo-vigilance state and also to the actual traffic environment (Reyner and Horne, 1998; Horne, 2010; Sommer et al, 2009; Benoit and Caplier, 2005; Anderson et al,, 2010; Knipling, 1998). This system will operate reliably and effectively in all highway scenarios.

The results of this study indicated clearly that a monotonous environment, the automatism of movement and the physiological effort which was required in order to regain a level of alertness could be modified. This signified that drowsy train drivers were able to boost their vigilance to a degree that permitted appropriate and timely response to the intermittent operation of VACMA. We presented a model of vigilance derived from computational principles and biological data. The initial goal of this project was to build a neural bridge between vigilance and motor behaviour. Over the last few years a major focus of traffic research has been driver fatigue as one of the most important causes of road accidents. 10-20% of all accidents are related to hypo-vigilant driver states. Furthermore, accidents related to driver hypo-vigilance are more serious than other types of accidents, since sleepy drivers present highly disturbed way of driving. The problem might be also directly related to the introduction in the market of various Advanced Driver Assistance Systems (ADAS) in the next years.
Assistive or even automated driving systems may also induce fatigue and stress to the driver caused by prolonged driving under monotonous driving conditions. In other words, cases of driver hypovigilance may be well enhanced due to the introduction of ADAS when this technology may be the right answer to fight this problem.

Our data clearly showed that drivers could automatically answer to the alert signals when they reached a pre-sleeping state. Consequently, the further studies have to manage a detection system able to reveal this state and to anticipate the “at risk” behaviour with modelisation of biomechanical parameters.

ACKNOWLEDGEMENTS
The present was partially supported by grants of the French railways society (SNCF). We also thank the drivers for their constant good will and good mood. We thank the Département de la Construction, Paris, France for its help and constant assistance, C. Renaud for the computerization and statistics and Professor M. L.J. Moncany for fruitful discussions and revision of the manuscript.

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STUDENT PANEL ABSTRACT

Dr. Madhav P. Sharma
Bloomsburg University of Pennsylvania

ABSTRACT
It is believed that a combination of demographic and economic changes will reshape the global higher education landscape by 2020, according to a new report (2013) by the British Council. As a result, institutions of higher learning in the United States need to rethink their educational policies in recruiting and retaining international students.

Bloomsburg University is located in a rural county of the Commonwealth of Pennsylvania. The community both inside as well as outside of the University is relatively homogeneous with about 98% of the residents being of white, Caucasian ancestry. The university is considered by the community as the main source of diverse cultural programs. The Office of International Education Services (IES) in association with various international student associations is the most important single source of international cultural program of diversity and distinction. As these programs directly address many diversity issues, the presenters will focus on the following points:

GOALS AND OBJECTIVES
(1) To discuss programs that foster the awareness of cultural diversity on/off campus
(2) To provide BU students and the faculty opportunities for global and multi-cultural experience by interacting with representative from many countries of the world

SESSIONS
(1) Cultural Diversity and internationalization issues of campus: Perspective from six countries

Dr. Madhav P. Sharma, Chair
Presenters
Abouelfotouh, Mohammed \hspace{1em} Egypt
Delgadillo, Ana \hspace{1em} Bolivia
Angelique, De Rock \hspace{1em} Aruba
Figaro, Andy \hspace{1em} Haiti
Kaminski, Mathew \hspace{1em} USA
Sun, Yiji \hspace{1em} China

(2) International students’ perceptions of US academic issues: Cases from four countries

Dr. Madhav P. Sharma, Chair
Presenters
Haque, Salman \hspace{1em} Bangladesh
Alqahtani, Munahi \hspace{1em} Saudi Arabia
Piar, Kumar-Tadvia \hspace{1em} Aruba
Kaminski, Mathew \hspace{1em} USA
(3) Comparative education: A case study of five countries

Dr. Madhav P. Sharma, Chair

**Presenters**
- Tuhin, ASM, Bangladesh
- Zelda, Aura Ruth, Bolivia
- Navas, Javier, Honduras
- Abouelfotouh, Mohamed, Egypt
- De Rock, Angelique, Aruba

(4) USA and Saudi Arabia: A Comparative Analysis

Dr. Madhav P. Sharma, Chair

**Presenters**
- Alajmi, Hammad
- Sultan, Almalki
- Alotaibi, Mashary
- Alnuhait, Tameem
- Bader, Muzaffar

(5) Perception Of USA: A comparative analysis from five countries

Dr. Madhav P. Sharma, Chair

**Presenters**
- Adane Michael, Ethiopia
- Sandman Mondalib, Bangladesh
- Ikechukwill Ukonze, Nigeria
- Amir Shyer, Bangladesh
- Jean Paul Jones, Ecuador
RESEARCH ON THE CAUSES OF DISTORTION OF ACCOUNTING INFORMATION FROM AN ACCOUNTING ENTITY

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KEYWORDS  
Accounting Information, Distortion of Accounting Information, Accounting Entity, Accounting Errors, Accounting Fraud

ABSTRACT  
Distortion of accounting information has been a stubborn disease which hinders the development of the economy of China. It is a serious problem which affects the society and economy greatly. Accounting information distortion is caused by many factors, one of which is accounting fraud perpetrated by accounting entities acting in their own interests. Preventing accounting falsehoods and improving accounting information quality have become urgent problems in the accounting field.

1. THE HARM CAUSED BY ACCOUNTING INFORMATION DISTORTION

1.1 The harm to the accounting entity

The accounting entity is the object of accounting services (the specific unit and organization that carries on accounting and supervision, the body of recognition, measurement and reporting for accounting. Accounting entities include: sole individual proprietorship enterprises and partnership enterprises, limited liability corporations and other for-profit corporations, along with the administrative organs and public institutions that serving for society and maintained by government budget allocations.

Accounting information distortion disturbs the factuality, reliability and usefulness of financial reporting information, making the financial reporting of enterprises unable to accurately reflect their economic activities, distorts the real consequences of enterprise management decisions, the enterprise's own financial evaluations and the judgments of its future development. As a potential consequence, the corporation will make wrong decisions while facing fierce competition and may lose its sustainable development capabilities. The truthfulness of accounting information is very...
important to the decisions of those using the information. Accounting information distortion has weakened the credibility of financial reporting, badly damaged the confidence of investors, in turn affecting the financing and investment of businesses and making the successful development of enterprises more difficult to achieve.

Accounting information distortion also harms the administrative organs and public institutions that serve society, which makes the organs and public institutions lose their credibility, waste national public finances, and produce corruption and degeneration.

1.2 The harm to the nation
There are two harms of accounting information distortion for government. First, accounting information distortion affects the decision-making of the government. Under the market economic system, the government plays not only the role of macroeconomic regulation and control, but also the role of manager of the microeconomic entities operators. The accounting information distortion of a business makes the macroeconomic regulation confusion and causes much loss of state capital. Zhou Zhixin, the director of China's national statistics bureau, admitted that some business figures might not reflect the corporation's real situation. To address this situation, each government ministry must conduct general surveys, spot checks, summarizing and correcting the figures as needed, then report to the central leadership the correct data as a basis for better decision-making. Although the statistical bureau which develops strategic allowed local governments to report the figures accurately, false reporting still occurred frequently. According to a report on CCTV News in late January 2011, China's GDP for 2013 is 56.9 trillion yuan, but the combined GDP of China’s 26 provinces exceed that figure by more than 1 trillion yuan. The numbers reveal that the objectionable behavior continues despite efforts to halt it. The false statistical data affects the accuracy of statistical prediction and policy making, introduces unnecessary confusion into economic development, makes national macroeconomic regulation and control not provide the expected results, causes the course of national economic policy to deviate from actual conditions, affects the implementation of national economic policies, and retards the pace of national economic development.

Second, accounting information distortion causes loss of state revenue and state-owned assets. Accounting information distortion happens for many reasons, but the result is that the capital which originally belongs to the state or collectives and enterprises to the small collectives or individuals is wrongly diverted. For example, some businesses inflated expenditures and concealed incomes to avoid taxes. Other businesses depressed the value of state-owned assets during operating system transition, which caused a huge loss of state-owned assets.

1.3 The harm to economic markets
The greatest damage of accounting information distortion for economic markets, though, may be the endangerment of the normal social order (i.e., the corrosion of domestic tranquility). The modern market economy is a credit-based economy, and requires strict observance of the order of fair competition. And one of the conditions of open, fair competition, is that both sides of market transaction must abide by the principle of fairness and justice. Accounting information provides important economic information to enterprises, government and society. Companies that provide false or misleading information about securities and the companies mislead normal investors. That makes for information inequality, dulls the critical faculties of investors, disturbs the order of securities markets and threatens the regular order of the market economy.
2. SOURCES OF ACCOUNTING INFORMATION DISTORTION BY ACCOUNTING ENTITY

2.1 Accounting Information Distortion in Non-Listed Companies
Most of the non-listed companies are small and medium-sized enterprises, consisting primarily of sole proprietorship and limited-liability corporation forms. Non-listed company accounting information distortion generally comes from two sources: 1) accounting error, or the wrong calculation and copy of original records and accounting data, based in misunderstanding about the accounting events recorded; 2) accounting fraud, forged or made-up records or certificates, misappropriation of assets, hiding or deleting transactions or events, recording false transactions or events, or deliberate use of improper accounting policies, including deliberate accounting information distortion.

2.2 Listed Company Accounting Information Distortion
Listed companies is the limited liability company, generally for big companies except the gem small company, they have the complete organization structure and internal management system, the performance of listed company’s accounting information distortion is accounting fraud, that is “lack of timely disclosure of important items of the company, falsification of records, seriously inaccurate sales forecasts intended to mislead, or failure to perform the other related duties according to law.” The problems mainly involve the overstating or understating of assets, profits and costs. Take Dazu for example. This company published its 2009 annual report of 2009 on February 26, 2010, reporting net profit of 70.9908 million yuan. The company later published a correction notice of that said the net profit was 3.0245 million yuan, a reduction of 67.9663 million yuan from the original report. The ministry of finance website reported accounting irregularities that Tianjin Songjiang Company undercounted 120 million yuan in assets and 120 million yuan debts, thus avoiding 560 million yuan taxes. By the end of 2009, this company and its subsidiaries saved 190 million yuan business taxes and surcharges, 150 million yuan land value increment taxes and 208 million yuan corporate income taxes according to the rules. The company subordinates Songjiang Tuanbo Investment Corporation undercounted 120 million yuan project engineering costs for the Jinghai Tuanbo Stadium. The ministry of finance website reporting involves several companies, including China CNR, BOE Technology, Holly Corporation, iFly Corporation, MESNAC Corporation, Yutong Bus, and Accelink.

2.3 Administrative Institution Accounting Information Distortion
Administrative institutions are the institutions that serve and manage on behalf of the society and includes research institutes, non-profit institutions, and other organizations. Examples of accounting information distortion include accounting fraud, involving false transactions and events that have been made up from whole cloth (drawing up false account and accounting vouchers by false evidence); changing the appearance of an entity’s performance or activity (deliberately distorting facts of accounting information, casually increasing, decreasing or even deleting original records); extracorporeal circulation (some or some part of income or earnings is not in the accounting system of the unit, but has been transferred out of the unit, after which payment is taken from the coherent units). The common extracorporeal circulation involves the extracorporeal circulation of non-budgetary financial funds, the extracorporeal circulation that administrative units shall have the right to penalties and charges). All of these are sources of corruption.
3. ANTECEDENT FACTORS OF ACCOUNTING INFORMATION DISTORTION FROM ACCOUNTING ENTITIES

3.1 Non-Listed Companies
Analysis of non-listed companies’ accounting information distortion indicates that that the main factors of accounting error are the low professional quality of accounting personnel, poor accountability of accounting standards and professional system understandings, improper use of relevant clauses and accounting processing errors, all of which leads to firms to fall short of acceptable professional accounting information standards of performance. The factors of accounting fraud are: accounting personnel forge or alter accounting documents, account book or other accounting material, or submit false financial accounting statement for partial and local interests of accounting entity, all of which can also lead to inadequate reporting accounting information result and facts.

3.2 Listed Companies
For state-owned enterprises, the absence of property rights understanding or legal protection may lead to collusion and/or fraud of intra-company benefits. The antecedent factors are as follows:
1) The intra-company interest group would collude to defraud by exploiting information asymmetry for the maximization of its interest;
2) the asymmetry of managers’ incentives and constraints (primary listed company managers’ incentive is from the spiritual part, not from the material level) creates perverse incentives for creative accounting and confidence tricks that allow managers and accountants alike to gain promotion, raises or share appreciation;
3) Listed companies may draw up deceptive financial reports by manipulating profits;
4) In order to facilitate reduction of enterprise income tax as well as the individual manager’s income tax evasion, firms may present fake records or documents, deliberately use improper accounting policies, overstate company expenses and/or understate company profits;
5) Independent financial auditing has not played a strong regulatory role in Chinese markets. Similarly, in China the common shareholders meeting doesn’t exercise the power of engaging the public accountant office; instead, the real power resides in the authorities. In order to win the customers in the competition, the certified public accountant accommodate the listed company even intrigued with the enterprise management to show false audit reports;
6) The intensity of government regulation is inadequate, and sanctions levied against listed companies are weak. According to Wind information, there are 39 A-share listed companies, which were punished a combined 42 times by the Chinese Regulatory Commission between January 1, 2010 and March 8, 2011> Fines were levied as punishment 18 times; the minimum fine was 30,000 yuan. The other punishment was public criticism (to be sure, in a culture such as China’s this can be a substantial sanction). The corporations involved in public criticism include ST East Carbon, ANNE and TMSP (all were published twice);
7) Local government often abets the company falling into financial distress in order to retain the shell resources.

3.3 Administrative Institutions
In order to increase unit welfare, public funds for tourism and entertain, some exception leader’s postgraduate study, hide certain violations, the managers of administrative institution want to have the definite right to control budget fund and receipts not covered in the state budget of unit, this practice fraud made the administrative institution’s accounting information distortion.
4. THE MANAGEMENT ADVICE OF ACCOUNTING INFORMATION DISTORTION

The central government formulated several laws and regulations including accounting law, corporate law, accounting standards for business enterprises, to restrict the accounting information distortion of listed company and administrative institution. The central government conducts external audit supervision annually, but there has not been sufficient enforcement to date, which has weakened the functioning of the system of laws and regulations. At present, false accounts have become a conspicuous problem, and have brought great loss to enterprises and to the government. Remedies would be implemented through the following four areas:

4.1 Strengthen the Legal System, Raise Legal Consciousness of Accounting Entities

To strengthen the legal system the existing accounting laws and regulations should refine the punishment and sentencing basis and reduce the use of fuzzy or ambiguous terms. It should first quantify the specific justification of punishment and increase the supplementary provisions of additional regulations, to enhance its maneuverability. Secondly, combine the Accounting law and Company Law with Accounting Standards for Business Enterprises, increase the legal provision, it should specifies definitely the director of the responsibility entity to assume the law consequence. If there is serious distortion of accounting information because of fraud on accounting information systems, it must pursue the first person of accounting entity of criminal punishment, let the punishment fit the crime.

To raise the legal consciousness of accounting entities, the accountant should strengthen the learning and assessment of law and moral construction, and eliminate the use of irregular accounting practices. Unprofessional accounting conduct must give rise to both criminal penalties and civil liability as appropriate to the offense. There must be an effort to perfect laws and regulations, a substantial effort at publicity on legal and regulatory compliance, and an effort to promote accountants’ legal consciousness.

4.2 Establish and Strengthen the Supervision Mechanism within Accounting Entities

To establish and improve accounting internal supervision mechanism, avoid the happening of the accounting information distortion from the subjective consciousness of accounting entity. According to national regulations, listed companies must usually appoint a chief financial officer to oversee both the treasurer’s and the controller’s work, and put an end to the phenomenon of false accounting and financial information. Where this has unfortunately not been the case, it is because the chief financial officer didn't play his or her role to its full potential. The financial director supervision system should be improved, their responsibilities codified and confirmed, and supervision in general increased with emphasis on supervisory responsibility.

For other accounting entities, the state should establish internal audit systems, especially for administrative institutions. Most non-listed companies already set have internal audit services: for example, an accountant that performs the function of internal audit. Even here, though, the audit quantity guarantee system is lacking, and the work of the accountant may not be complete and in place, leading to accounting information distortion. The accountants in question are supervised by the first manager of accounting entities, compromising their ability to exercise their functions and powers independently. In the face of this situation, the accountant appointment in administrative institutions will be required to stop information distortion.

For non-listed companies, the accountants are accredited by industry committee and construct the system of internal accounting control. Auditors should clarify their responsibilities, carry out
necessary internal auditing work, and prevent accounting information distortion.

4.3 Establish a Sound Regulatory Mechanism and Strengthen Social Supervision
To establish a sound regulatory mechanism and strengthen social supervision, regular and random external audits of accounting entities are required. Social auditing supervision is the action that certified public accountants should evaluate the entity’s performance independently and deliver audit opinions objectively and fairly. An accounting firm is established by law for social audit of the self-financing of social intermediary organizations, and are compensated from the profits from the project. Some accounting firms have therefore had an incentive to show false audit reports in order to increase their profits. We should strengthen the management of CPA industry that strengthen the quality supervision of auditing businesses and the construction of system, and perfect the related laws and rules.

Government supervision consists mainly of the supervision of accounting work on an accounting entity by the financial department. Audit institutions must perform the duties of instructing and supervising public audit organizations along with the Ministry of Finance, the relevant tax administration, the People's Bank of China, Securities Supervision, and bodies responsible for insurance supervision, all in accordance with relevant laws and regulations. The Ministry of Finance regularly inspected state holding corporations annually and found a great deal of accounting fraud. The audit institutions of the government also inspected the administrative institutions annually and found considerable evidence of accounting misconduct. The phenomena of accounting information falsification has surfaced now and then, due to a lack of punishment and supervision. The remedy is to establish a sound regulatory mechanism and strengthen social supervision.

4.4 Strengthen Training and Education. and Improve the Professional Quality of Accountants
The main distortion of accounting information is attributable to accounting error, attributable in turn to the accountant’s low professional quality, whether from failing to be familiar with relevant accounting policies and regulations, or the incorrect use of terms, which may lead to false accounting information. We need to strengthen the training and education of accountants and improve their professional quality. Accounting practitioners not only need to grasp knowledge regarding their specialties, but also to master relevant policies, laws and regulations of accounting. This should improve their overall quality and ability to use legal means to fight against offenses and crimes such as faked records, help build up appropriate professional morality, and ensure truthful, accurate, complete and timely disclosures of financial information. Improving the quality of accounting personnel is the root precaution against accounting information distortion.

It is of great importance to improve the quality of accounting information. With development of the socialistic market economy, as accounting laws and regulations are established and perfected step by step, internal control systems of accounting business will be strengthened, and accounting information quality will be guaranteed.

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7. (2014), “The ministry of finance released the accounting information quality – some companies were punished, such as China CNR,” *China Securities Journal*, 1.


MASS-BESTOSIS: EXAMINING THE AMERICAN ASBESTOS LITIGATION PHENOMENON

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ABSTRACT
This paper examines all relevant factors of the American asbestos litigation phenomenon, including the factual and legal precedents of modern asbestos litigation, the historical evolution of asbestos liability, asbestos litigation data and trending statistics, the business effects of asbestos exposure lawsuits, the relationship between asbestos liability and insurance, the causes and contributing factors of the asbestos litigation surge, and the future of asbestos liability in the United States.

INTRODUCTION
By now, you must have seen the advertisements – “Do you or a loved one have mesothelioma … have you ever worked in a textile mill … your asbestos trust money is waiting for you … call this number.”

Yes, asbestos attorney advertising is everywhere. It has steadily increased on television since 2004, spiking over the last five years with plaintiffs’ firms spending an average of over $30 million per year on commercials since 2009.58 The asbestos plaintiffs’ bar devotes even more to internet advertising, spending an average of $50 million per year on keywords.59 60 In fact, several studies suggest that “mesothelioma”, a cancer commonly associated with asbestos exposure, is one of the most expensive keywords on the web, with attorneys spending as much as $80 per click for the term.61

This omnipresence is no coincidence, either. Rather, it is indicative of a pervasive reality – personal injury asbestos exposure litigation has exploded in the United States over the last several decades, and is showing little signs of abating. RAND, the nonprofit research institution that has performed the most comprehensive analysis of asbestos litigation to date, categorized the asbestos groundswell as “the longest-running mass tort litigation in U.S. history.”62

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59 Id.
60 Keyword advertising is a form of marketing that places online advertisements on certain webpages that show results from specific search engine queries e.g., “mesothelioma”.
Supreme Court has referred to it as an “elephantine mass”... and for good reason. According to the National Bureau of Economic Research, lawsuits for injurious exposure to asbestos involve more plaintiffs, more defendants and higher costs than any other type of personal injury litigation in American history. Defendants and their insurers have spent over $70 billion on asbestos litigation, which has involved over 730,000 plaintiffs and 8,400 defendants. In September 2011, the United States Government Accountability Office found that over 100 companies have filed for bankruptcy due to asbestos-related liability to date. Further, the American Academy of Actuaries has estimated that the ultimate costs arising from United States asbestos exposure could total between $200 and $265 billion.

This paper will examine all relevant factors of the American asbestos litigation phenomenon, including: the factual and legal precedents of modern asbestos litigation; the historical evolution of asbestos liability; asbestos litigation data and trending statistics; the business effects of asbestos exposure lawsuits; the relationship between asbestos liability and insurance; the causes and contributing factors of the asbestos litigation surge, and the future of asbestos liability in the United States.

ASBESTOS – COMPOSITION AND CHARACTERISTICS

Asbestos is a set of six naturally occurring silicate minerals that are found in different types of soils and rocks on every continent around the world. It is typically mined and processed until separable into extremely thin fibers; such fibers are then mixed with materials that bind them together so that they can be inserted into certain products. Throughout history, asbestos has been an extremely popular building and insulation material because its fibers are naturally strong, durable, heat and fire-resistant, sound absorptive, and resistant to corrosion, chemicals and electric current.

Asbestos Through History

The usefulness and flexibility of asbestos is no new discovery. In fact, asbestos use spans back over 2,000 years – it was coined “inextinguishable” by the Ancient Greeks – with documented usage throughout history by the Ancient Greeks, the Ancient Romans, the Ancient Egyptians, Charlemagne and Marco Polo. However, it was not until the late 1800s and the Industrial Revolution that asbestos use and manufacturing truly took off, with the mechanization of asbestos mining, a growing world population and an increased need for cost-effective, mass-produced building

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65 Carroll, Stephen, et al., Asbestos Litigation.
71 Id.
materials. The growth of asbestos manufacturing only accelerated in the early 1900s, with worldwide asbestos production tripling from 1900 to 1910.

**Asbestos Use in the United States**

The United States, with its burgeoning population and increasing demand for inexpensive construction material, quickly became the biggest asbestos user in the world early in the 20th century. By 1937, the United States consumed 37% of the world’s asbestos, and by 1942, 60%. The United States even considered asbestos to be a “strategic mineral” during World War II, in relation to shipbuilding and other military construction operations. American asbestos use only increased in the post-World War II era with the expansion of the U.S. transportation system, the general development of the economy and the sustained production of military hardware through the Cold War. Ultimately, asbestos use in the United States peaked in 1973 at nearly one million tons of consumption.

It was not until 1974, that American asbestos use began to decrease. The decline was sharp, however, as the public quickly began to realize the connection between asbestos exposure and certain health problems, as detailed below. By 1990, U.S. asbestos consumption was only 6% of its 1975 level. By 2000, the United States only accounted for 1% of the world’s asbestos use. In 2002, the last American asbestos mine closed, ending over a century of domestic U.S. asbestos production.

Unfortunately, however, the damage had already been done. It is estimated that over 100 million Americans were occupationally exposed to asbestos in the 20th century. By the time the EPA attempted to impose a complete ban on asbestos in 1989, there were approximately 3,500 asbestos-containing products in the United States commercial system. Simply put, the seeds of the asbestos litigation epidemic had already been sown.

**20th Century Asbestos-Containing Products and Materials in the United States**

For a sampling of United States asbestos usages throughout the 20th century, see the following listing of commonly produced American asbestos-containing products and materials: insulation for steam pipes, turbines, boilers, kilns, ovens; cement; millboard; electrical panel paper and wiring insulation; fire-retardant spray; roofing and flooring compounds; thermal insulation; gaskets; automotive clutches; automobile brake pads, linings and gaskets; adhesives; chalkboards; ceiling panels, texture and tiles; chimney lining, ducts, pipes, shingles siding and wall panels; fire blankets,
curtains and doors; elevator car brake shoes and equipment panels, and coffee pots, toasters, popcorn poppers, crock pots, irons and hair dryers.

Asbestos and Health Awareness

Though the ancient Greeks (specifically, geographer Strabo) and Romans (specifically, Pliny the Elder) associated asbestos exposure with a “sickness of the lungs”, it was not until the early 20th century that the nexus between asbestos exposure and disease was definitively documented. The first ever diagnosis of asbestosis (a common asbestos-related disease) was made in female British factory worker Nellie Kershaw in 1924. Though the diagnosis triggered several studies and legislative responses in Great Britain, it took much longer for the United States to follow suit.

Beginning in the 1930s, medical organizations and journals throughout the United States began to regularly publish findings regarding the dangers of asbestos exposure. American asbestos manufacturers themselves even began to research the deleterious effects of asbestos, both collaboratively and internally. Many of these companies, including John-Mansville and Raybestos-Manhattan, were later found to have participated in cover-ups of their adverse findings. To this day, these cover-ups form the basis of causes of action for “Conspiracy” in plaintiffs’ standard asbestos master complaints around the country.

Asbestos Regulation in the United States

It was not until the 1970s and the establishment of the Occupational Safety and Health Administration that the United States began regulating asbestos use and exposure. OSHA first regulated asbestos in 1971, when it adopted permissible exposure limits under the Walsh-Healey Public Contracts Act. OSHA has issued dozens of regulations tightening exposure limits and standards since. It comes as no surprise that American asbestos consumption began to plummet in the mid-1970s, as the above-detailed informational literature and federal legislation became more prevalent and lawsuits increased. Thereafter, in 1986, the United States Government passed the Asbestos Hazard Emergency Response Act, which mandated asbestos inspection and abatement in the school system.

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89 Asbestos Resource Center, History of Asbestos.
91 Id.
93 Id.
97 Id.
Ultimately, after conducting an extensive ten-year study, the United States Environmental Protection Agency imposed a complete ban on asbestos use in the Toxic Substances Control Act.\footnote{Environmental Working Group, The Failed EPA Asbestos Ban, March 4, 2004, http://www.ewg.org/research/asbestos-think-again/asbestos-still-not-banned} The asbestos manufacturing industry promptly challenged the law and, incredibly, the United States Fifth Circuit Court of Appeals overturned the ban, finding that the EPA had failed to demonstrate that the imposition was the “least burdensome alternative” for eliminating the unreasonable risk of exposure to asbestos, largely due to the lack of available harm-free substitutes.\footnote{Corrosion Proof Fittings, et al. v. The Environmental Protection Agency and William K. Reilly, Administrator, 947 F.2d 1201 (5th Cir. 1991).}

**Asbestos Legislation in the United States Today**

Though federal legislation regarding asbestos usage has grown increasingly restrictive over the last several decades – exposure limits are heavily restricted and it is currently banned in corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, fireplace embers, wall patching compounds, pipe and block insulation on facility components, and spray-applied surfacing – it is, remarkably, still legal in the United States.\footnote{United States Environmental Protection Agency, U.S. Federal Bans on Asbestos, , http://www2.epa.gov/asbestos/us-federal-bans-asbestos} According to the EPA, asbestos is still permitted in the following products and materials: cement corrugated sheet; cement flat sheet; clothing; pipeline wrap; roofing felt; vinyl floor tile; cement shingle; millboard; cement pipe; automatic transmission components; clutch facings; friction materials; disk brake pads; drum brake linings; brake blocks; gaskets; non-roofing coatings, and roof coatings.\footnote{Id.}

**ASBESTOS LITIGATION IN THE UNITED STATES – BOREL AND PRODUCTS LIABILITY LAWSUITS**

Though the deleterious effects of asbestos exposure were known in the United States by the 1930s, it was not until 1969 that the *Borel vs. Fibreboard Paper Products* case lay the groundwork for the modern day asbestos litigation explosion. Prior to that, victims of occupational asbestos exposure were limited to making workers’ compensation claims against their employers to obtain recompense for their asbestos-related diseases.\footnote{O’Malley, Christopher J., Breaking Asbestos Litigation’s Chokehold on the American Judiciary, University of Illinois Law Review.} The *Borel* case, however, changed everything. It involved insulation worker Clarence Borel suing several asbestos manufacturers for their failure to warn of the dangers of handling asbestos.\footnote{Borel v. Fibreboard Paper Products Corp., 493 F.2d 1076 (5th Cir. 1974).} Mr. Borel alleged that he had been occupationally exposed to the defendants’ asbestos over a period of 33 years, which caused him to develop asbestosis and mesothelioma.\footnote{Id.} The court ultimately ruled in favor of Mr. Borel, awarding him almost $80,000.\footnote{Id.}

With the *Borel* ruling, asbestos claimants throughout the United States were handed a new and more lucrative game plan – products liability. Workers’ compensation benefits, limited to lost wages and medical benefits, paled in comparison to the potential for products liability verdicts.\footnote{See, e.g., https://www.workerscompensation.com.} Products liability, on the other hand, takes the form of a traditional American lawsuit, with the potential for consequential damages, recovery for pain and suffering, and runaway verdicts. Beyond that, the
numbers game clearly favors the products liability side of things – each employee only has one employer, and thus only one insurer, from which to seek benefits in workers’ compensation. However, that same employee could have been exposed to the asbestos of dozens of asbestos manufacturers throughout his or her career, all of which can be named as defendants to a products liability lawsuit, and all of which likely have products liability insurers behind them. Simply put, there are more, and deeper, pockets available for the products liability plaintiff than for the workers’ compensation claimant. Not surprisingly, with failure to warn becoming a viable products liability claim in the asbestos context, claims spiked rather quickly – over 25,000 were filed in the decade following the Borel case.108 The aforementioned RAND study (see page 2) also provides a telling glimpse of the trajectory of asbestos cases filed in federal court in the decades following the Borel case. Through the end of the 1970s, 950 asbestos cases had been filed in federal court; from 1980 to 1984, 10,000 federal asbestos cases were filed, and from 1987 to 1989, 37,000 federal asbestos cases were commenced.109

**Johns-Manville Bankruptcy and Asbestos Trust**

As asbestos products liability litigation increased in the 1970s and 1980s, asbestos manufacturers and producers began to suffer financially. This led to one of the main drivers of asbestos claim activity in the United States over the last 40 years – the asbestos bankruptcy trust. It started in 1982, when Johns-Manville Corporation, the largest manufacturer asbestos in U.S. history, filed for bankruptcy due to its asbestos-related liabilities.110 The asbestos claims against Johns-Manville had continued to mount, and by the early 1980s, the asbestos giant could not absorb all of the defense and indemnity costs any more. In 1972, there were 159 cases filed against it, by 1976, 792 cases, and by 1982, 6,000.111 Therefore, Johns-Manville filed for Chapter 11 bankruptcy reorganization in order to shield the remainder of its assets from said litigation, and formed the Manville Personal Injury Settlement Trust via a court-imposed injunction, through which all of its asbestos-related liabilities were thereafter channeled.112 In essence, Johns-Manville simply distributed its limited remaining assets into the aforementioned trust, so that injured workers who were exposed to Manville products could recover a percentage share of their total claim amount (first 100%; then 10%; now 5%) in a mechanized manner, without the need to actively litigate.113 Given the scope of Manville’s past asbestos production, the Trust immediately took off, and has not significantly slowed down, even to this day. In the first nine months after its approval by the Southern District of New York Bankruptcy Court in 1986, over 12,600 claims, with about $500 million in pay-outs, were filed with the trust.114 By 1989, there were over 89,000 Manville Trust claims.115 Though there was a brief dip in claims in the mid-1990s, they re-emerged at the turn of the

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108 White, Michelle, *Asbestos Litigation ...*
113 Povtak, Tim, *History of Asbestos Litigation*
115 Id.
21st century, with almost 90,000 new claims in 2001 and 2003, respectively. Since 1988, the Manville Trust has paid out over $2.7 billion to 443,000 claimants.

Other American Asbestos Trusts

To say that the Manville bankruptcy reorganization and consequential trust formation started a trend is an understatement, as a bevy of other large asbestos producers, including Owens-Corning, W.R. Grace and U.S. Gypsum, have since followed suit. As noted above, to date, over 100 companies have declared bankruptcy due to asbestos-related liability. Well, according to the United States Government Accountability Office, since 1988, 60 asbestos trusts have been formed pursuant to Chapter 11 and §524(g) of the Federal Bankruptcy Code, with approximately $37 billion in assets and $17.5 billion in pay-outs to date. Simply put, asbestos trusts have been, and remain today, a smash hit with asbestos claimants throughout the United States, and why not? The money is there, without a fiercely contesting litigant guarding it, for those who qualify.

21st Century United States Asbestos Litigation Statistics

Incredibly, despite countless prognostications that asbestos litigation would have dried up by now, it is still going strong in the 21st century. Asbestos trusts have become exhausted, tighter recovery restrictions have been imposed on them. For this reason, and others, asbestos claimants continue to resort to litigation at a rapid rate to maximize their end game. Though asbestos case filings remained stagnant for much of the 1990s, they truly spiked in the late 1990s and early 2000s – filing figures went from 20,000 per year in the early 1990s to around 101,000 per year by 2003. By 2005, the Congressional Budget Office estimated that there were 322,000 asbestos bodily injury cases pending in the United States Court System. Though filing numbers have somewhat plateaued over the last five years or so, the figures remain robust, with an average of 52,000 new cases filed yearly. As if this was not enough, after taking into account the long latency periods of asbestos-related diseases and the recent proliferation of secondary, “take home” asbestos exposure suits, several studies are now indicating that asbestos cases are not expected to dry up until well after 2050.

An Evolving Liability

Perhaps the most remarkable thing about asbestos litigation, aside from its longevity, is its adaptability. The asbestos plaintiffs’ bar continues to find new ways to prolong the asbestos tidal

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116 Id.
117 Id.
118 Povtak, Tim, History of Asbestos Litigation
121 Brierton, Janet, Asbestos Litigation Reform; White, Michelle, Asbestos Litigation ...: Biggs, et al., Overview of Asbestos Claims Issues and Trends.
123 Couretas, Catherine, Preview: National Asbestos Litigation Conference
124 Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation.
125 I.e., asbestos exposure suits commenced by the co-habitants of asbestos workers, which allege that said workers brought asbestos fibers home with them on their clothing, thereby secondarily exposing the co-habitant plaintiffs thereto.
126 See, e.g., id.
wave – new defendants … new diseases … new medical evidence … new forums … new insurance triggers … new laws. Along these lines, we will spend the remainder of the paper examining the causes and contributing factors of the continued prevalence of asbestos litigation in the United States.

Asbestosis, Mesothelioma and Lung Cancer

One of the main ways by which asbestos litigation has evolved over the years has been the shifting focus of plaintiffs on certain asbestos-related diseases rather than others. First, let’s discuss the epidemiology of asbestos-related diseases. According to the American Cancer Society, people are primarily exposed to asbestos by inhaling thin asbestos fibers present in the air, though these fibers can also be swallowed. Asbestos fibers can easily become airborne during processing, installation, renovation, demolition or manufacturing processes. When asbestos fibers are inhaled, they can pass into the lungs and the outer linings of the chest wall, or the pleura, irritate the cells, and cause cancer. According to the Agency for Toxic Substances and Disease Registry, the risk of developing an asbestos-related disease is proportionate to the duration, frequency and concentration of exposure. As such, it comes as no surprise that those who worked in the asbestos industry – for example, shipbuilders, insulation workers and construction workers – are at the highest risk of developing asbestos-related diseases, and account for the bulk of plaintiffs in the asbestos litigation arena.

The three most prevalent and commonly associated diseases relative to asbestos are asbestosis, mesothelioma and lung cancer – unsurprisingly, all are pulmonary or respiratory in nature. Asbestosis can be characterized as a scarring in the lungs that is caused by long-term inhalation of asbestos fibers. The most common symptoms of asbestosis are shortness of breath, chronic coughing and decreased respiratory function. Like most asbestos-related diseases, asbestosis is characterized by a lengthy latency period, meaning that it takes several years from first exposure for the disease to develop and become symptomatic. Though statistics vary, the average latency period for asbestosis is 15 to 40 years. As it is a non-cancerous, slow-progressing and generally non-malignant disease, asbestosis case values are often much lower than their mesothelioma and lung cancer counterparts.

Mesothelioma is a rare cancer that most often forms in the mesothelial cells lining the lungs, though it can also develop in the abdomen, heart or testicles. Symptoms include chest pain, shortness of breath, generalized weakness and weight loss. Mesothelioma has an extremely long latency period – an average of 30 to 40 years. However, from diagnosis forward, the statistics are

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127 The American Cancer Society, Asbestos
128 Id.
129 Id.
131 See, e.g., The American Cancer Society, Asbestos.
132 See, e.g., Andreas Salivar and Vicki Soto, Asbestos in the United States: Occurrences, Use and Control.
134 See, e.g., The American Cancer Society, Asbestos.
139 Id; The Mesothelioma Center, Mesothelioma and Lung Cancer
dire – the majority of those diagnosed with mesothelioma die quickly, with only 39% still living a year after their diagnosis and only 4% still alive a decade afterwards. Further, the nexus between mesothelioma and asbestos exposure is incredibly close – some studies suggest that as many as 80% of mesothelioma cases are related to asbestos exposure. However, as up to 20% of mesothelioma diagnoses are unrelated to asbestos exposure, asbestos defendants are able to point to a variety of other causal factors in defending mesothelioma cases, such as genetics, erionite, carbon nanotubes, taconite, radiation, talc and vermiculite. Nevertheless, mesothelioma cases are generally the highest value asbestos cases of them all, in light of the mortality rates, the close causal relationship with asbestos, and the notion that it causes a painful and suffocating death. For instance, in December 2007, Mealey’s Litigation Report estimated that the average mesothelioma claimant recovers between $1 million and 1.4 million.

Unlike mesothelioma, lung cancer develops inside the lung itself – it is a malignant covering of the bronchii that expands to the surrounding tissue. Also unlike mesothelioma, the causal relationship between asbestos exposure and the development of lung cancer is the source of great debate. Of late, lung cancer plaintiffs have been aggressively pushing the “synergy” argument i.e., that the combined effect of asbestos exposure and cigarette smoking creates a synergistic effect which greatly increases the risk of lung cancer. And the argument is not without support – the Agency for Toxic Substances and Disease Registry has estimated that a cigarette smoker exposed to asbestos is 50 to 84 times more likely to develop lung cancer. However, asbestos defendants strongly oppose synergy, and given the prevalence of non-asbestos related causes – asbestos exposure is attributable to only 4% of lung cancer diagnoses – medical causation is still difficult to prove. Further, lung cancer patients fare much better than mesothelioma patients in the long term – a decade after diagnosis, 10% of lung cancer patients are alive. For these reasons, lung cancer cases are generally valued lower than mesothelioma cases. See Table 1 following for additional information.

### Table 1. Asbestos-Related Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>Relation to Asbestos</th>
<th>Latency</th>
<th>Value</th>
<th>Smoking-Related?</th>
<th>Cancerous?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestosis</td>
<td>100%</td>
<td>15-40 yrs.</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>80%</td>
<td>30-40 yrs.</td>
<td>Highest</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>4%</td>
<td>15-35 yrs.</td>
<td>High</td>
<td>Yes (90%)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Asbestos-Related Disease Litigation Statistics

Claims for non-malignant asbestos-related diseases, such as asbestosis, have generally driven the increase in asbestos filings over the last few decades. RAND estimates that 65% of all asbestos liability compensation has gone to non-malignant claimants. Amazingly, RAND has also found that the majority of non-malignant asbestos claimants are "functionally unimpaired" i.e., that asbestos

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140 Id.
141 Id.
142 Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation.
144 Biggs, et al., Overview of Asbestos Claims Issues and Trends.
146 Id.
147 Id.
148 Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation.
149 Carroll, Stephen, et al., Asbestos Litigation.
exposure has yet to affect their daily life. Clearly, by establishing exposure, the asbestos plaintiff’s bar has found a way to recover, largely from trusts, even when their clients have lacked manifestation.

However, as non-malignant claims have increasingly clogged the courts and diluted malignant claims, court and trust scrutiny has increased. As such, non-malignant filings have decreased sharply in recent years. On the other hand, despite the fact that many have predicted their demise for years, mesothelioma filings have remained remarkably steady, and even increased, throughout the 21st century, accounting for about 20% of all asbestos cases. This is largely attributable to the fact that mesothelioma diagnoses are at an all-time high, with about 3,000 new cases diagnosed each year (more than four times the 1980 diagnosis rate), and not predicted to return to background levels until 2055. Mesothelioma is thought to be the current, and future, driver of asbestos litigation the United States.

The most significant disease-related trend in asbestos litigation, however, relates to lung cancer. Asbestos lung cancer claims have increased sharply over the last two years, with certain active plaintiffs’ firms pushing the synergy argument hard. For instance, Napoli Bern Ripka Skolnick, the firm with the third most asbestos filings in 2012, filed 117 asbestos lung cancer cases, out of their 130 total filings, in the first eight months of 2012 alone. Further, Barry Julian, a partner at Gori Julian & Associates, the second largest asbestos filer in 2012, addressed the emergence of asbestos lung cancer filings at a 2013 asbestos litigation conference. The motivation driving the trend is obvious – opportunity. Over 200,000 Americans are diagnosed with lung cancer each year, as opposed to just 3,000 with mesothelioma. Simply put, if the plaintiff’s bar can make some headway on causation, the case numbers, and rewards, could be great.

In sum, non-malignant filings, subject to increased scrutiny, have decreased; mesothelioma filings have remained steady, and lung cancer filings are trending upwards in noteworthy fashion.

Statutes of Limitations for Asbestos Exposure Lawsuits

Given that American asbestos consumption began to plummet in the 1970’s, you may be wondering how so many claimants are permitted to file lawsuits several decades after their last alleged exposure – isn’t there a statute of limitations barring that? The short answer: “no”. Given the aforementioned long latency periods of asbestos-related diseases, states legislatures around the country, out of equitable considerations, have enacted statutes of limitations which do not begin to

150 Carroll, Stephen, et al., Asbestos Litigation.
151 Mary Elizabeth Stern, Lucy Allen and Adelina Halim, Snapshot of Recent Trends in Asbestos Litigation, 2011 Update, NERA Economic Consulting, July 21, 2011; Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation.,
152 Id.
153 White, Michelle, Asbestos Litigation ...; Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation: Brierton, Janet, Asbestos Litigation Reform.; Price, Bertram, What will the asbestos litigation look like in 15 years?, DRI Asbestos Medicine Seminar, November 2011
155 See, e.g., Sheila Doyle Kelley and Allison N. Fihma, United States: Recent Trends in Asbestos Litigation,
157 Id.
run until diagnosis of the subject disease, or death therefrom. A sampling of these statutes follows in Table 2:

<table>
<thead>
<tr>
<th>State</th>
<th>Statute Of Limitations</th>
<th>Wrongful Death Statute</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>1 Year from Diagnosis</td>
<td>1 Year from Death</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3 Years from Diagnosis</td>
<td>3 Years from Death</td>
</tr>
<tr>
<td>Florida</td>
<td>4 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
<tr>
<td>Illinois</td>
<td>2 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3 Years from Diagnosis</td>
<td>3 Years from Death</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
<tr>
<td>New York</td>
<td>3 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
<tr>
<td>Texas</td>
<td>2 Years from Diagnosis</td>
<td>2 Years from Death</td>
</tr>
</tbody>
</table>

**New Defendants, New Industries**

Another signature of the asbestos litigation phenomenon has been the ability of the plaintiffs’ bar to find new defendants and industries to target. One would have thought that, with over 100 companies bankrupted, the supply of viable defendants would have dwindled by now. But, with asbestos lawsuits having been waged against 8,400 defendants across 75 (out of 83) industries, the plaintiffs’ bar has obviously been able to adapt.\(^{159}\) Defendant targets have ranged from manufacturers, to incorporators, to sellers, to distributors, to component makers … from insulation, to boilers, to shipbuilding, to engines, to aviation. Rest assured, every entity, in every industry, has been targeted.

**Wash, Rinse, Repeat**

There is no doubt that plaintiffs’ attorneys have been the principal drivers of asbestos litigation in the United States over the last few decades. After all, RAND has estimated that plaintiffs’ attorneys have recovered over $19 billion in asbestos litigations.\(^ {160}\) This is accentuated by the fact that a number of large plaintiffs’ firms have increasingly dominated the asbestos landscape, filing hundreds of asbestos claims per year. In 2012, for instance, the top three plaintiffs’ firms combined to file almost 1,000 cases.\(^ {161}\) The proliferation of these mass-filing firms has spelled an unfortunate reality for asbestos defendants – their adversaries are experienced, connected and flush with resources. Obviously, by prosecuting hundreds of asbestos lawsuits per year, these super firms amass a load of knowledge in the field. They know where to file; where to sue; who to sue; when, where and how asbestos was used; who manufactured asbestos and who incorporated it into their products; they know the judges, clerks, and the law. Simply put, they know how to get the largest possible recoveries for their clients. Further, and along the same lines, given that these firms have litigated the same types of suits over and over, they already have them worked up. For the most part, they can utilize form pleadings and discovery documents, simply plugging the new claimants’ names therein. They can use the same experts. They can regurgitate the same allegations … the same arguments … the same motions. Given that the plaintiff’s bar has this process automated, the time

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159 Brierton, Janet, *Asbestos Litigation Reform*.

160 Carroll, Stephen, et al., *Asbestos Litigation*.

161 Krajelis, Bethany, *Lung cancer suits are new trend in asbestos litigation*. 

192
and resource expenditures for each case are drastically reduced. Such expenditures often act as natural deterrents to plaintiffs’ attorneys filing weak cases. But, the plaintiff super firms do not have to worry about wasting time and money on low value cases – they can just wash, rinse and repeat – and this process is cost-effective.

**The Numbers Game**

Similarly, another driver of asbestos litigation relates to the sheer number of defendants plaintiffs can sue in each case. As most asbestos claimants allege exposure over the course of decades, naturally, they may have been exposed to asbestos manufactured, used or sold by countless entities. As such, plaintiffs’ firms generally sue dozens and dozens of defendants in each suit – the average mesothelioma claimant recovers from 20 to 30 defendants\(^{162}\) – whether they have a shred of evidence against them or not. Defendants are selected solely on the basis that these entities could have exposed their clients to asbestos at some point and that it will all be “sorted out” in discovery. Of course, this increases the amount of pockets from which to collect, especially when you consider that many defendants, even when there is no evidence against them, will agree to low “nuisance value” settlements simply to get out of the case and buy their peace. When you combine this with the fact that the plaintiff will probably be able to recover larger amounts from their target defendants (against which there is some exposure evidence), the amount of recovery adds up quickly. For instance, let’s take a hypothetical mesothelioma case in which the plaintiff sues 40 defendants (the average mesothelioma plaintiff sues less than 50 defendants).\(^{163}\) Assume the plaintiff voluntarily dismisses 25 of the defendants for a complete lack of evidence (#1-25 below), collects $5,000 in nuisance value settlements from ten low liability defendants (#26-35 below), collects $100,000 from three of the higher liability target defendants (#36-38 below), and $200,000 from the top two target defendants (#39-40) … well that’s $750,000 from a case which contains little or no evidence against almost 90\% of the defendants! With margins like that, it’s easy to see why these cases have become so popular. See Table 3 following for further information.

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163 *Id.*
Table 3: Litigation Resolution by Number of Defendants

<table>
<thead>
<tr>
<th>Defendant(s)</th>
<th>Settlement/Resolution</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>26-35</td>
<td>$5,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>36-38</td>
<td>$100,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>39-40</td>
<td>$200,000</td>
<td>$400,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>$750,000</strong></td>
</tr>
</tbody>
</table>

**Forum Shopping and Procedural Advantages**

Another key feature of asbestos litigation over the last several decades has been the ability of plaintiffs’ firms, due to the broad jurisdictional reach associated with mass defendant asbestos cases, to repeatedly file suits in forums which provide procedural advantages to plaintiffs. Many of these forums contain judges who are closely connected to the plaintiffs’ bar, having received substantial campaign support therefrom. These forums have a bevy of procedural and substantive rules in place which favor asbestos plaintiffs. These include: liberal joinder rules (allowing plaintiffs’ attorneys to join hundreds of claims from all over the country into one consolidated action), plaintiff-friendly litigation schedules (for instance, permitting discovery to continue until the eve of trial, thereby creating the opportunity for plaintiffs to develop product identification evidence right on the brink of trial and exert pressure on defendants to settle thereafter), and pro-plaintiff motion practices (scheduling summary judgment hearing dates for the eve of trial, or even during trial, thereby depriving defendants of the opportunity to obtain dismissals and almost coercing them into settlement). Of course, many of these forums contain plaintiff-oriented jury pools, as well. A brief glimpse at filing statistics confirms the above – plaintiffs’ firms will travel far and wide to file in the same jurisdictions time and again. For instance, prior to 1988, Mississippi, New York, West Virginia, Ohio and Texas handled only 9% of asbestos filings.\(^{164}\) From 1998 to 2000, they oversaw 66%.\(^{165}\) The current epicenter of asbestos filings in the United States is Madison County, Illinois, which the yearly filing data listed below in Table 4 demonstrates\(^{166}\):

Table 4: Asbestos Case Filings, 2006-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Asbestos Filings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>325</td>
</tr>
<tr>
<td>2007</td>
<td>455</td>
</tr>
<tr>
<td>2008</td>
<td>639</td>
</tr>
<tr>
<td>2009</td>
<td>814</td>
</tr>
<tr>
<td>2010</td>
<td>840</td>
</tr>
</tbody>
</table>

**Insurance and Allocation**

The last contributor to the asbestos litigation wave that we’ll examine is insurance. RAND estimated that the insurance industry had paid more than $36 billion in connection with asbestos liability by the end of 2006 and prognosticated that it will ultimately bear between $60 billion to $70 billion.\(^{167}\) Clearly, the availability of insurance has played a huge role in this context. Despite the

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\(^{164}\) Brierton, Janet, *Asbestos Litigation Reform*.

\(^{165}\) Id.


\(^{167}\) Biggs, et al., *Overview of Asbestos Claims Issues and Trends*. 

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fact that the dangers of asbestos use become known many years previous, standard commercial general liability policies did not incorporate complete asbestos exclusions until 1986. Many peripheral industries did not insert the exclusion into their policies until the early 2000s. The availability of insurance all the way up until the 1980s, or even afterwards, has undoubtedly fueled asbestos litigation; there are just so many policies, insurers, and large policy limits to target, from the plaintiff’s point of view. Further, in light of the progressive and continuous nature of asbestos exposure and disease, many states have adopted insurance trigger rules which hold that every insurance policy in effect from the date of a claimant’s first exposure until the claimant’s date of diagnosis, death or lawsuit filing is triggered in connection with asbestos lawsuits.168 As such, if a mesothelioma claimant alleges that he was exposed to asbestos in the course of his employment as a factory worker from 1950 to 1990, every defendant he sues may have up to 36 years of insurance available for the loss – 1950 to 1986 – or more. Simply put, there are a great many pockets from which to collect.

CONCLUSION
In sum, as comprehensively discussed above, the proliferation of asbestos litigation in the United States is no coincidence. It is preceded by a lengthy history of mass asbestos consumption, slow legislative responses and permissive court rulings. It is also fueled by a complicated web of factors, such as a powerful, adaptive and resourceful plaintiffs’ bar; a well-funded network of trusts; a bevy of plaintiff-friendly forums and procedural mechanisms, and a seemingly limitless supply of defendants and insurance money. In the absence of drastic tort reform or a complete overhaul of the asbestos litigation system, the faucet of asbestos suits will continue to run for several decades to come.

(Editor’s note: Because this paper comes from a legal studies perspective, it was decided to adhere to the citation and footnoting practices of that discipline.)

168 For a list of each state’s insurance trigger law in the asbestos context, see: http://www.insurerereport.com/files/trigger.of.coverage-1.pdf
USING NATURAL LANGUAGE PROCESSING AND CONTENT ANALYSIS TO ENHANCE VIRTUAL DISCUSSION GROUPS

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ABSTRACT
Virtual discussion groups are a critical aspect to online learning environments and are implemented in course and learning management systems such as Blackboard, Desire2Learn, and Angel. Combining Natural Language Processing with Content Analysis (NLPwCA) has the potential to reveal new and novel methods toward impacting learning and comprehension. NLPwCA can parse the text of the discussions and make recommendations from various academic data sources such as Science Direct, EBSCO, or Google Scholar. Similar systems have been implemented to assist users with technology where a user has the ability to click and enter into an interactive help environment which employs crowdsourcing to answer user questions (Chilana, Ko, & Wobbrock, 2012). Our proposal is to develop a system that uses NLP to process the text of a discussion group and content analysis to extract key topics. Next, terms in the discussion group would be annotated and the learner would be able to follow the annotated links to scholarly literature. This research has the ability to improve online learning outcomes while integrating scholarly library resources into learning management systems.
INFLUENCE OF INTERNATIONAL TRADE AND GLOBALIZED ECONOMY ON THE DEVELOPMENT OF FOREIGN TRADE AND ECONOMY OF CHINA

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ABSTRACT
International trade and economy globalization has brought a large opportunity to China’s foreign trade and economy. The development of China’s international trade and economy has three factors as follows: the demand factor by enterprises, supplying factor, and trade factor. These three factors may encourage and influence the development of China’s economy and trade. The supplying factor consists in turn of three conditions: human resources, technology, and capital. Besides the above, in order to make enterprises superior, high quality production must have a combination or integration of the “five Ps”: the power of humans, planning, production, price, and promotion. The five Ps have ability to make productive enterprises achieve competitiveness in world markets, so that international trade and economy can be developed to a high state. In order to expand and develop China’s economy and trade, trade protectionism should be prevented. The policy of China is to achieve mutual benefit and profit between partner countries or in international markets.

KEYWORDS
Influence, globalization, trade, factors, 5Ps integration, trade risk, superior, mutual benefit, and profit.

THE NEW TECHNOLOGY OF INTERNATIONAL ECONOMY AND TRADE
Since the 20th century, international and trade have been developing day by day. Due to the need for economic development of most countries, international trade and economic expansion has driven the rise of a globalized economy. Because of this, the economic organization of every country and region has begun mutual communication, mutual cooperation and mutual influence. Finally, these countries will join a great globalized unity and will form a great global market. On the basis of this economic unity, the global economic system has to be established; this in turn will provide a framework for global economic strategy. During economic globalization international markets will open to the global economy.

THE STRENGTH OF TRADE LIBERALIZATION
Economic globalization can actually be seen a consequence of trade liberalization. During the last 90 years, owing to the rapid development of science and technology, the international division of labor (the comparative advantage of nations) has become pronounced. Most countries in the world, regardless of the challenges met, must make their antennae contact every place of the world. Not only commodity trade is implicated, but investment trade, finance, service and technology are also affected.

Since trade liberalization has begat globalization, the economy of any individual country has been bound together with international markets and international trade. Relations between different countries have become dependent on each other and cannot be separated from each other; thus trade barriers must be broken down, and access to world resources reasonably arranged, so that costs will
be decreased and global profits will be increased.

The Development of Regional Economic Communities
In order to strengthen economic cooperation between regional countries and strengthen competition against other regional entities, at present, several economic groups have been formed, such as the European Union, the Asia-Pacific Economic Community, Shanghai Cooperation Organization, and Russia Independent Countries United Unity, African Community and North American Free Trade Agreement, and so on.

WAYS AND MEANS OF DEVELOPING CHINA’S ECONOMY IN INTERNATIONAL BUSINESS MARKETS

Actively developing IT enterprises for foreign trade
China utilizes its own advantage to catch the global strategy of transnational corporation, technology of transnational corporation and capital overflow interest in order to realize its own striking across development. On the basis of the development of productive enterprises, China has been opened to the international market to provide competitive products as IT products export as well as China is willing increase investment for manufacturing IT products and Key products in order to promote export trade.

Expanding trade range and strengthening the markets diversifying strategy
On the way to open markets, China needs to complete the following steps:
To set down and complete export rebate and export credit, export credit insurance and etc.
To keep the stability of export rebate policy, to expand the space of export credit insurance and to increase support of import and export credit of the middle and small enterprises.
Continuously improve customs, quality inspection and foreign exchange service for the improvement of international business level.
To insist on markets multi-field strategy and to strengthen African, European and Japanese markets, to enforce opening Central Asian, Middle Eastern, African, Latin American and Central/Eastern European emerging markets.
D) To insist on high quality export products competition and to strengthen reasonable price competition.
E) To open fairs at home or abroad for attracting middle and small enterprises products to be showed on the fairs.

Three factors of international trade make China’s enterprises structure be superior.

Demand factor
The demand of market decides an enterprises existential value. The demand has a direct influence on the change of enterprises.

a) The shift to a more consumer-based economic structure greatly influences the change of enterprise structures. Other changes include the increase of people’s income, life necessities, consumer goods and services, agriculture, light industry, heavy industry and business services.
b) Enterprises have the more requirement, their products property the higher.
c) Consumer investment directly influences development of consumer enterprises.

Supplying factor
Alternative forms of productive element structure will lead to investigation of alternative enterprise
structures, which in turn will play an important role in developing and altering China’s overall enterprise structure.

a) **Technology is a factor of enterprises structure which makes it superior.** Technological improvement contributes to the increase of productivity, the decrease of cost of products and the expansion of markets, so that new materials, new technique, and new power resource appeared. Such situation influences alter nation of export and import and will alter international competitive general layout.

b) **The quantity and quality of human resources are a necessary condition to improve enterprise structures.** Generally speaking, if human power is satisfactorily provided, investment will go into labor-intensive enterprises. In contrast, it is necessary to develop capital-intensive enterprises.

c) **Capital is a direct factor to alter enterprise structures.** Capital is a basic factor that makes an enterprise able to be developed to a high state. On the basis of satisfied capital, there must be quality products for export and efficient export service. The condition of an export enterprises success should consists of 5Ps combination or integration, except capital, as follows:

1st P: **Power of Humans**
Since people are the chief resource used by a manager, and is dependent on their actions to achieve results, it is vital for him/her to understand why people behave as they do. Human resource management is an art. The manager should know what employees need, what they think, and what good ideas they have to increase productivity.

2nd P: **Planning**
Planning is established process of action. Whether taken by government or by private enterprises, a group of working people must be able to anticipate one another’s actions. There must be some consistency or pattern of behavior. Superior planning could make an enterprise become successful: otherwise it may be defeated.

3rd P: **Price**
Price is a competitive condition of export products in international market. Once a reasonable price is established, cost of products can become lower, high quality products can be offered to international markets, potentially creating a large amount of foreign exchange to develop China’s economy.

4th P: **Production**
Production is one of the elements which ensures the continuous development of an enterprise. For example, imported advanced electronic digital control equipment has helped manufacture the products that have expedited the changing perception of China’s manufacturing industry.

5th P: **Promotion**
All products to be sold, no matter whether intended for domestic markets or abroad, should be promoted particularly into international markets, by experienced international trade promoters. International economic development will be enhanced by the benefit, profit and the results gained by China’s international trade.

**Trade Factor**
Commodity and labor export has promoted forward continual development of China’s relevant enterprise, and has efficiently provided light and heavy industrial enterprises production to China.
Meanwhile, it has raised the competitiveness of China in international markets. To import foreign resources could meet the needs of China’s economic continual development. China’s international trade has been attracting advanced foreign technology. It is very helpful to encourage the rise of technological level of relevant enterprises as well as to have an influence on alteration of enterprises structure in order to achieve superior market performance.

*Enforce the Legal Protection of International Trade*

In order to prevent a new wave of protectionism and to keep WTO rules in place, China and its trade partners must safeguard general international trade power. And at same time we also need to prevent international trade from partner country protectionism. China must participate in different international trade organizations and their management mechanisms to facilitate international cooperation and to protect international trade from trade risks.

**CONCLUSION**

In a word, as mentioned above, at present, a new tendency appeared during developing international trade, which is a new product, a phenomenon, that is, international economy has become globalized movement. No matter what tendency pushes forward globalized economy and trade, the different tendencies have to be integrated and influenced on each other. Accompanying development must be a suitable strategy to develop the foreign trade and economy of China. Under such conditions, China will be to gain a large amount of foreign exchange, so that the country can expedite developing its economy continuously to become a great and strong economic power.
THE ESSENCE AND MECHANISMS OF MAIN AND COLLATERAL CHANNELS (JING LUO)

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ABSTRACT
This article takes the position that main and collateral channels (Jing Luo) is a special self-organizing system of the organism. It has no fixed form, in the gap dimension of the organism. The tissue liquid in the gap dimension is main and collateral channel material; it provide information, material, energy and space for the self-organizing adjustment behavior of “determining life and death, curing diseases, adjusting deficiency and excess”. The tissue liquid in the pericardial space depends on the beating of heart to make the main and collateral channel material of body’s gap dimension continuously disturbed; this is the normal power of the Jing Luo. This article is part of corresponding investigation and reflection for treatment and health care from the combination of theory and practice.

1. JING LUO’S ESSENCE AND DEFINITION FROM ITS ORIGINAL CONCEPT
In the ancient medical classic “Huang Di internal medicine”, there is a discussion of “so-called Jing Mai (meridians), which can “determine life and death, cure diseases, adjust deficiency and excess, and must be unobstructed,” and “It walks between skin and meat, and never stops”. In the modern medical college textbook Traditional Chinese Medicine, is the passage “Jing Luo is the path of body’s running gas and blood, contacting organs and viscera, internal and external communication, running through the up and down...... Jing Luo communicates organs with the surfaces of the body, connects the tissues and organs such as five Zhang-organs and six Fu-organs, four limbs and hundred bones, five sense organs and nine orifices, skin, meat, and tendons etc., into an organic whole, makes the function of all parts of the body maintain relative harmony and balance”[1].

The well-known book “Anatomy” records the form and position of all tissues and organs of the human body, the distribution of the body’s blood vessels, lymphatic vessels and nerves, etc. The anatomy has concrete position and form; the thoracic and abdominal cavities have large voids, separated by the diaphragm in the middle, many organs have specialized serosa. On the basis of modern anatomy’s achievements, people will be asking: What kinds of tissues and organs and their corresponding function can connect the above-mentioned five Zhang-organs (heart, liver, spleen, lung, kidney) and six Fu-organs (small intestine, bile, gastric, colorectal, bladder, triple burner), four limbs and hundred bones, five sense organs and nine orifices, inside and outside and up and down into an organic whole?

The answer is important. If we don’t have the tissues and systems to connect all organs into a whole, the situation of the function of all parts of the body to maintain relative harmony and balance cannot be achieved. In addition, modern medicine has elucidated the following: blood vessels and lymphatic vessels provide nutritional and metabolic opportunities for each organ; the coronary artery, for example, provides nutrition for the heart. Thus, what kind of tissues are responsible for nutrition of each cell: vascular, lymphatic, nerves bones?

As a medical worker in decades of practice, these two problems are always in my mind. I always think about them; therefore, we often pay attention to, the books and related literature, and
often exchange impressions after reading. A source of inspiration came from fractal geometry, from “Science and technology” by the mathematician Mander Pabo (B. Mandelbrot). Gao Ge said: “Fractal geometry proves, any material and movement cannot fill the three-dimensional space: all fill two dimensions; then what kind of form and what kind of movement exist in the remaining gap dimension? This is a new problem we may face.”[2] That leads us to think about Jing Luo. Main and collateral channels have no entity in anatomy, perhaps because it is like a leaf’s veins that arrange in a crisscross pattern, located heavily in the gap dimension in the human body. Only the gap dimension can be connected into a whole, an all-pervasive “supergiant” system. “Physiological basis” by Peking University says that even the “capillary vessel wall also has many small holes, which are caused by the cracks between endothelial cells when they connected to each other.” Each cell membrane has ion channels and is communicated with the gap dimension. So the human tissue gap dimension exists everywhere in the body; it is not blank, it is full of tissue fluid, perhaps the main and collateral channels’ substance. All the elements in the human body can be found in the tissue fluid. We believe that we can assume that it is the material foundation which can “determine life and death, cure diseases, and adjust deficiencies and excesses.” In "Huang Di internal medicine", main and collateral channels (the tissue fluid in the gap dimension we assumed) are located in the middle of meat and skin, is of considerable scientific important. Sweat leaks from the two gap dimensions, the epithelial cells and sweat pores; farmers spray pesticides and are poisoned by skin contact of pesticides, and in the laboratory skin is accidentally exposed to poison and so on. These observed phenomena are evidence of inside and outside communication of the gap dimension in the skin and fur.

If Jing Luo is the tissue fluid in the body’s gap dimensions, then where is the tissue fluid coming from, and where is it going to? According to “basic physiology,” “…the tissue fluid is from the blood of capillaries… The amount of filtered-out liquid must be more than the amount of filtrated-in liquid; this part of the excess fluid will enter the lymphatic capillary in the tissue space to form lymphatic liquid (lymph). Systemic lymph finally goes into the thoracic duct and the right lymphatic duct, and then into the blood circulation. This leads us to propose that the tissue fluid from the blood can provide nutrients, energy and information; finally return to the circulation of the blood to bring out the waste that our body doesn’t need. These functions, are the specific operation of Jing Luo material of “determine life and death, cure diseases, and adjust deficiencies and excesses” in tissue liquid gap dimensions.

So far, we seem to be able to define main and collateral channels (Jing Luo): Jing Luo is the extensive self-organizing system of our body. It has entity without form, located in the gap dimension in the body, the tissue fluid in the gap dimension is the main and collateral channels’ substance. Alternatively, Jing Luo is the gap dimension system of our body; working through the tissue fluid in it to implement the life operations of “determine life and death, cure diseases, and adjust deficiencies and excesses”, making the human body the nuclear chromosomes of cells connect five Zhang-organs and six Fu-organs, four limbs and hundred bones, five sense organs and nine orifices, skin meat and tendons into an organic whole, and maintain the overall harmony and balance of the body.

THE POWER OF JING LUO OPERATION FROM THE CORRESPONDENCE OF THE PERICARDIUM AND “TRIPLE ENERGIZERS” (TRIPLE BURNERS)

Acupuncture is an important means to implement and accelerate Jing Luo’s functions; this will be discussed below. Here the power source of normal physiological operation of Jing Luo tissue liquid in the gap dimension will be emphasized.

Chinese medicine stresses Yin and Yang balance. The five zhang-organs including pericardium belong to Yin, six fu-organs including three energizers belong to Yang. The rules of Yin
and Yang symmetry of organs are: lung to large intestine, spleen to stomach, heart to small intestine, kidney to bladder, liver to bile; both the remaining pericardium in five Yin zhang-organs and the remaining three energizers in six Yang fu-organs don’t fit the rules. Through research, we propose that correspondences of the pericardium and three energizers are correspondences of the gap dimension, from which we can think of the normal power of fluid residing in tissues in the gap dimension.

The pericardium here is a concept of Chinese medicine. In Western anatomy, there is only the heart capsule, officially called the cardiac pericardium. In contrast, Chinese medicine calls the cardiac pericardium the envelope of the heart. The cardiac pericardium is divided into three layers: the inner layer tightly close to the heart, contains the tissue fluid, which becomes the lubricating fluid of the beating heart; the middle layer has tissue fluid inside and outside, and the outer layer is thicker than the other two layers and less elastic (this point is very important, to ensure that the tissue fluid’s disturbance cannot be offset by the elasticity, in order to preserve the tissue fluid’s relatively greater power). This outer layer extends into the roots of large blood vessels excepting the inferior vena cava, from which can be understood that the gap dimension of large blood vessels peripherally communicate with each other, in order to pass the power of Jing Luo system via the body’s heartbeat. The outside of the outermost layer is the chest, the chest and the abdominal cavity below the diaphragm are the biggest gap dimensions, also namely so-called “three energizers”.

According to Lei Jing in “traditional Chinese medicine,” the so-called three energizers are actually “one fu-organ, outside the Zhang-organs and Fu-organs, one inside the shell of the body, which includes all Zhang-organs, and one cavity’s big Fu-organs.”

We believe that this "outside of organs, inside of shells" is a precise typical description of the gap dimension. So far, it fully explains the scientific nature of correspondence of pericardium and three energizers. The heart beating must cause the disturbance of pericardial fluid. The outermost layer of the pericardium extends into the surrounding of all large vessels except the inferior vena cava, and so, this disturbance of pericardial fluid will inevitably spread to the tissue liquid of major vascular periphery. When the heart contracts, the blood is pushed out of the heart, the heart shrinks, the gap dimension of cardiac pericardium is enlarged, the negative pressure is the opportunities of tissue liquid’s centripetal disturbance. Because the inferior vena cava is the large circulation’s path of blood return, the gap dimension of cardiac pericardium does not spread to its periphery, which is the masterpiece of the self-organizing function. When the heart is relaxed, the venous blood returns, but the heart dilates, the three cavities of gap dimensions of the cardiac pericardium narrow, tissue fluid is extruded, and power opposite the blood flow is expressed. According to the records from “Basic physiology,” the flow speed of lymph in lymphatic vessels is 1/10 that of venous blood flow velocity. The tissue liquid flow in the gap dimension is slower than lymph, is often in the status of disturbance other than pericardial fluid disturbances, and also from the disturbance caused by the internal and external environment ‘scontraction and relaxation of capillaries and lymphatic tube. According to Jing Luo theory (the better and bigger gap dimension such as Jing Luo acupuncture point has the “angel phenomenon,” from the connection of the gap dimension) the power of disturbance is not great, so that different acupuncture methods can occur up and down needling sensation. This is a kind of disturbance of physics, acupuncture against the direction of Jing Luo can have the feeling of upward numbness, akin to turning the water with a spade to force in a slowly flowing river, can also cause visible upstream ripples. (This is proved in our acupuncture experiment of our body, and also get good achievements in acupuncture practice.

At the same time in this physical disturbance, the tissue fluid is rich in trace elements, and the tissue fluid all have the properties of liquid crystal [4], sensitive to the changes of the environment, so
also can occur in some elements (especially calcium and iron ions) as the carrier of the electrochemical oscillation [5], and then the proton and electron coupling transfer [6], to complete the needs of the adjustment and the balance belong to the concrete contents of “determine life and death, cure diseases, and adjust deficiencies and excesses”. We believe, this is probably the basic principle of acupuncture’s cure of diseases and maladies. In the case of no acupuncture, normal human body’s Jing Luo communicates well, according to self-organizing principles, practice “a self-completing process, this process is its embodiment. Protein is inherent, born with it; without this process, the protein doesn’t exist” [7].

Self-organizing theory therefore is based on a self-organizing system, according to the new situation to determine self-structure and function: a summary of rules and characteristics. The self-organizing system is embodiment of self-balance ability, based on nature (including the human body); without this kind of natural reason, no science and discipline will happen. Injection of cardiac stimulant is actually an obedience to the natural phenomenon of heart beating. Acupuncture is the respect and obedience given to the natural reason of Jing Luo, which exactly expresses the human wisdom to comply with natural power. Acupuncture, no matter whether used for treatment or health care, is the only without additional materials other than nutrients accepted by the body; any additional material is a kind of imbalance factor which is imposed upon the natural body. Side effects of medicine are exactly a kind of response to imbalance, but depend on mobilizing the inherent function of protein, to self-regulate according to biofeedback. Because humans are “too smart” (able to manipulate their internal and external environments in a variety of ways), the human are the most interfered-with living things with respect to this kind of regulation ability; one may argue that now it’s time to wake up.

The correspondence of triple energizers and the pericardium, just make the tissue fluid of body’s gap dimension acquire corresponding weak continuous power from heart beating, make the Jing Luo system able to complete its task of regulating life. However, because of relative power weakness and gap narrowness, it is easy to block significantly, leading to pain without communication. From this point of view, acupuncture and Jing Luo exercise to cure diseases and build our body are easily understood.

**JING LUO’S LEVELS AND FUNCTION FROM DISCUSSION ON THE PROCESS OF EXTERNAL EVIL INVASION**

Pathogenic factors can invade the body from the gap dimension of the surface of the body skin. "Internal medicine" has a very incisive explanation:

"When evil guests invade, they stay in the skin and fur, don’t leave, enter Sun Mai (minute collaterals), don’t leave, enter Luo Mai (collaterals), don’t leave, enter the Jing Mai (meridians), inward connect to five Zhang-organs, disperse in intestines and stomach, Yin and Yang both feel, five Zhang-organs hurt, this kind of evil enter from the skin and fur, then enter five Zhang-organs. In this paper, the skin and fur, minute collaterals, collaterals and meridians exactly can be understood as the four levels of space group.

The modern publication, “Chinese medicine Jing Luo”, said the smallest branches in Jing Luo system are called ‘minute collaterals, all over the body, difficult to count. We think so-called “skin and fur” in” Internal medicine”, is the gap dimension from the cells of skin and the gap dimension from sweat pores periphery. So-called “minute collaterals” (Sun Mai) is so-called “minute
collaterals” (Sun Luo). We think, that is exactly the gap dimension of capillaries surroundings “Physiological basis” mentioned, all over the body, it is difficult to count, completely correct.

The four levels of main and collateral channels, from the size of the gap dimension, is from small to large; from the internal and external is from the external to the internal. The first layer so-called skin and fur. "Internal medicine" describes this as the gap dimension of epithelial cells and sweat pores. The second layer is Sun Mai: according to “Internal medicine” (in Chinese medicine called Sun Luo, also known as collaterals), the gap dimension outside the lymphatic vessels. The third layer is the collateral: in the parlance of “Internal medicine,” the gap dimensions of neural, vascular, muscular peripheral and cells, also known as Bie Luo. The fourth layer is the meridians (also called Jing Bie Ze). Per “Internal medicine,” these are the three energizers, the big Fu-organs residing outside the intradermal organs.

This fully shows that acupuncture can prevent diseases. China's famous expert of acupuncture Wang Zhongxiang, editor of "Exercise Jing Luo hundred years’ health – the three one two Jing Luo training methods," introduces, 105 year old female god of longevity who insists on Jing Luo exercise still beam fairly and be in God’s eyes. Thus, we can imagine scientifically. The extensive system of main and collateral channels is automatic maintenance and operating system of high quality life, as long as it all communicate well, failure of any part will do self-organizing maintenance by biofeedback. Of course, it need to be within the threshold of maintenance.

Some people may not be familiar with the mechanism of biological feedback, but practically everyone makes use of this practice; it can self-organize and adjust and does not require active, conscious response. For example: A man is asleep; if there is a fine cilia to scratch his nose, he can, while still sleeping, raise a hand to stop the itching. This is a clear example of biological feedback (biofeedback). Of course, to “determine life and death, cure diseases, adjust deficiency and excess” using these biofeedback mechanisms is more complex than scratching. Using molecular biology, even quantum biology to see the cause of disease, no matter what the direct or external factor is, the external factor always works through the internal factors to cause negative effects. The internal factor is the imbalance of biomacromolecules, is namely to find the cause of the electron and proton behavior. For a variety of conformational disorders, the normal physiological function must be partially or wholly lost. The clinical manifestation may be a variety of symptoms; and any symptom of biofeedback will cause self-organizing adjustment, which will more intricate and microcosmic than self-organized scratching as described in our sleeping-man example above. Instead, it is usually the transfer of protons and electrons with high speed, efficiency and specificity; hydrogen bonds from the DNA double strand break, then are restore. The functional disorder resolves into functional order; such adjustments can occur in microseconds or nanoseconds. Specific Report said that, in every second, macromolecular conformation of protein backbone can occur millions of times. Ion channels on the each cell membrane, permit the passage of 1,000,000 ions every second, to adjust the activity of various enzymes and hormones. All these adjustments require an unblocked Jing Luo system to provide information, material, energy and space. So, as you can imagine, by exercising the main and collateral channels the health care potential is great. One may think of this as equivalent to “increase the freight volume per trip” and “increase the number of trips;” the main and collateral channels system “cross-strait” cells fully enjoy material and information security, meet the needs of their adjustments, and provide the body as high a level of coordination and balance as possible. So it discharges the main and collateral channels’ self-organizing function’s “vocation.”
4. ACUPUNCTURE AND MAIN AND COLLATERAL CHANNELS’ PHYSIOLOGICAL FUNCTION
A patient with edema continuously sought the treatment of Chinese medicine and western medicine for many years, but there was no significant effect. In recent years, we made a pathologic analysis of the mechanism of edema, proposing that edema is the result of excess tissue liquid which ooze from capillary to the skin and fur and minute collaterals. Basic physiology tells us that generation and infiltration of tissue fluids depend on “effective filtration pressure” of the capillary. Effective filtration pressure is composed of four kinds of biopressure: the formula is:

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\text{Effective filtration pressure} = (\text{capillary pressure and tissue fluid colloid osmotic pressure}) - (\text{interstitial fluid hydrostatic and colloid osmotic pressure of plasma})
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If effective filtration pressure is positive, plasma oozes from capillary wall; if effective filtration pressure is negative, then the fluid moves back into the blood through the capillary wall. In general, liquid exudation is little more than liquid infiltration, to bring the metabolism substances in the tissue liquid into the lymphatic capillary in gap dimension of minute collaterals, and then into the thoracic duct and the right lymphatic duct and then into the blood circulation. Acupuncture functions by physically disturbing the gap dimension in the tissue fluid, increasing electrochemical oscillations caused by various ions, which will significantly improve the interstitial fluid’s hydrostatic pressure, and continue to get the time that effective filtration pressure is negative. This not only makes excess tissue fluid retention in gap dimension of minute collaterals (so bloated) have filtration pressure into the capillary, but also into the lymphatic capillary.

After conducting the research, thought, and clinical experience of the multiple levels, the following proposition may be advanced: “know Jin Luo, use Jing Luo.” This is the route one must take of eliminating self-interference, reducing foreign interference, and living more healthily. One can conceptualize the human body as a highly automated “living computer” system in order to realize “self-maintenance” as the route to reducing negative interference from chemical drugs in the future, and of being able to improve the quality of life. We think, our country will finally make more contributions to global civilization, to human physiology, pathology, and health care, by the understanding of Jing Luo’s essence and the scientific explanation and practical verification of the mechanisms by which it works.

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(Editor’s note: Because this paper comes from a Chinese medical studies perspective, it was decided to adhere to local citation and footnoting practices rather than the disciplines from which the other papers in these proceedings are drawn.)