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**EDITOR-IN-CHIEF**

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# STRATEGIC EDUCATION OF MANAGERS FOR LEADERSHIP IN HANDLING CRISIS

Varghese P. George, University of Massachusetts, Boston, Massachusetts, USA

## ABSTRACT

*Crisis management, at best, is all about execution without margin for errors, and at worst, organizational dysfunction on steroids. This paper builds on the foundational knowledge in management to manage crises effectively. A right strategic posture for a crisis becomes possible only with accurate risk perception. Many techniques are presented: getting the 'outside' view, eschewing inside anchoring, relying on historic statistics, fighting bounded-awareness, following evidence-based practice, using checklists, remaining motivated to be accurate, etc. Given the diversity of external organizations involved, and known complaints about failures in coordination and information, the paper proposes devising adaptive structures and processes, matching the needs for coordination, information, and synergy anticipated for the specialized missions related to a crisis. The students of management at all levels can be taught all these as a direct extension of their current knowledge.*

**Keywords:** Crisis Management, Crisis Management, Management Education, Strategy, Communication, Organizational Design, Cognitive Biases, Coordination, Information, Synergy

## 1. INTRODUCTION

Performance in a crisis may never be perfect. However, it should be much better than what it has been for most crises in the past. There has been considerable hand wringing after some recent crises emanating from disasters such as the Hurricane Katrina, the recent global recession, and Fukushima Daiichi nuclear accident. Managers and organizations have room for considerable improvements in their anticipation and response to crises. They can do so without neologistic theories. Our well-established theories in cognition, strategy, communication, and organizing show why we are falling short and how we can improve. These, we can teach.

## 2. LITERATURE REVIEW - STRATEGIES AT INDIVIDUAL AND ORGANIZATIONAL LEVELS

It has been more than a quarter of a century since Perrow's claims about 'normal accidents' (1984) about disastrous failures of complex industrial and technological systems found its way into scholarly discourse. Keeping aside the fact that many crises are of natural and non-technical origin, such as from weather disasters and economic turmoil, and were not part of Perrow's original inventory, his imputation that 'unanticipated' interaction of tightly coupled engineered sub-systems cause accidents has been known for long by technical professionals to be incorrect. The techniques for effectively modeling interactions in technological systems had been well-established (NRC, 1975) and has since bloomed into a full-fledged field of study (Zio, 2007, Zio, 2009).

Scholars in the social sciences have been agnostic, if not antagonistic, to such clinically analytic approaches (Loewenstein et al., 2001, Gephart et al., 2009, Miller, 2009), but there have been calls recently to roll in reliability and risk analyses (e.g. Jackson, Sullivan Faith, & Willis, 2011) to improve emergency management. It is also clear that scientists can model, predict, and understand other crisis-prone *natural* phenomena too, and not just engineering systems, fairly well (e.g. Keane, Burgan, & van Wagendonk, 2001; Lynch, 2008; Peixoto & Oort, 1992). Analytic models for diverse crisis conditions now have extraordinary power and utility. The recent Hurricane Irene along the eastern seaboard of the US is an excellent case in point.

The problem, therefore, for most part, is not non-awareness of pathways of disastrous interactions in a complex system. Most major plausible crises have been deeply examined, historically calibrated, technically analyzed, and thoughtful solutions and ameliorations, albeit less than perfect, put forward. Thus, like taxes and death, most classes of crises leave no excuse to be unexpected or unanticipated.

Yet, our responses to crises seem to be way behind the sciences that meaningfully analyze, explicate, and track them. There are many reasons for this.

### 3. HUMAN AND ORGANIZATIONAL ERRORS

It is true that temporal and spatial starting points of a crisis usually come as a surprise. Instantaneous diagnosis and remediation are also unlikely. However, should that happen, either because of smartly designed technical system's response, nature's own abatement, or a human intervention, the crisis would have been averted by definition. In many instances, however, caught by surprise, humans react in ways that exacerbate the failures of nature and machines. After the first individuals respond, the organizational apparatus that follows on, with altered locus of power, levels, structure, and controls – intended to manage the crisis and, therefore, different from usual – compound errors even further. These observations are borne out extensively in research.

James Reason (1995b, 1990b) claims based on his extensive studies in the healthcare field that, "Human rather than technical failures now represent the greatest threat to complex and potentially hazardous systems." He adds 'organization errors arising in the upper echelons' as a root cause in "a significant number of large-scale disasters in a wide range of hazardous, well-defended technologies." (Reason, 1990a, Reason, 1995a, Reason et al., 2001, Sasou and Reason, 1999) Other scholars have widely confirmed these claims about human and organizational errors in diverse settings (Reinach and Viale, 2006, Spencer, 2000, Wiegmann and Shappell, 2001). Although Perrow (2009) would readily concede that his Normal Accident Theory 'focuses upon system aspects rather than human behavior,' more spectacular of the failures and shortcomings related to recent crises and their management have all had dominant human and organizational components.

This is neither to blame humans for their response to disasters nor to deny the extreme danger triggered in disasters with origins in nature, in complex technologies, and in humans interacting with them. The evidence shows, however, that iterations of design of technological systems have significantly accomplished two classes of improvements. First, designs have steadily improved the safety of technological systems through redundant fail-safe features providing defense in depth and, second, sophisticated techniques identify with remarkable clarity the residual risk. Although they will never completely vanish, the triggering events need to be minimized and capabilities for handling the post-trigger cascade of events need to be improved. As Reason and others have identified, there is much to be gained in this regard from developing individual skills and organizational capabilities.

### 4. CHARACTERIZING DISASTERS THAT LEAD TO CRISIS

The Centre for Research on the Epidemiology of Disasters (CRED) compiles worldwide data on disasters. While conceding, "there remains huge variability in definitions, methodologies, tools and sourcing," CRED provides the following definition for a disaster:

*Situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; An unforeseen and often sudden event that causes great damage, destruction and human suffering. Though often caused by nature, disasters can have human origins. (CRED, 2011)*

Although the above articulation is somewhat abstract, it is helpful as it highlights the boundary-spanning processes needed and points to the potential horrors. The definition also leaves considerable ambiguity, as disasters come in a range of forms and intensities. Some classifications that CRED uses are helpful in delineating certain bounds of the concept. CRED's Emergency Event Database (EM-DAT) of worldwide disasters divides them first into two generic categories: natural and technological. The natural disasters have five sub-categories: Geophysical, Meteorological, Hydrological, Climatological, and Biological. The technological disasters have three: Industrial, Transport, and Miscellaneous. These sub-categories are further divided, with a hurricane appearing, for example, under Climatological and a nuclear accident under industrial.

The potential danger from a disaster is calibrated for some of these sub-sub-categories. For example, hurricanes are characterized by Saffir-Simpson Hurricane Windscale (Schott et al., 2010) and nuclear accidents by The International Nuclear and Radiological Event Scale (IAEA, 2011). For all the definitions,

classifications, and risk scales, the continuous temporal and transitional nature of disaster-related events that make them ripe for human and organizational failures cannot be overstated.

In the US, the Federal emergency declaration and response process is covered under the Stafford Act (1988) and administered by Federal Emergency Management Agency (FEMA). When requesting FEMA's (Federal) assistance, the Stafford Act requires that the Governor of a State should certify that the disaster exceeds local capabilities, among other things. The law "restricts the use of arithmetical formulas or other objective standards as the sole basis for determining the need for federal supplemental aid" and therefore, FEMA **"assesses a number of factors to determine the severity, magnitude, and impact of a disaster event."** (FEMA, 2011)

All these, from abstract definitions to extreme diversity of classes of events to fuzzy parameters, as well as the low frequency and high impact nature, make crisis planning, preparations, and management easier to shortchange than to stay ahead. However, the many processes related to these issues are not entirely different from those related to company's essential strategic initiatives and organizing capabilities, with many elements in common except perhaps some aspects of organizational control and the nature of consequences.

For our purposes in this paper, we should adapt, and tighten a bit, the CRED's definition and Stafford Act's framing of a disaster to a single organization's context. We would like to keep aside 'ordinary' accidents, unfortunate though they are. An organizational disaster, thus, may be conceptualized as an event, endogenously or exogenously triggered, which overwhelms the local organization's capacity and which has a high potential for not only great internal damage and destruction, but also for cascading external damage, necessitating state, national or international level of assistance.

Fukushima accident would certainly fall in this class. So would an uncontrolled chemical fire, triggered due to damages from a hurricane or from an internal mishap, in an urban factory that the factory workers and the local fire department cannot manage and, therefore, threatens a city. If that chemical fire was contained and managed by the local fire department, it would not be deemed a disaster for our discussions, but an accident. The most significant characteristic of a disaster in our parlance (in this paper), which necessitates 'crisis management', is the intense requirement of external, cross-multiple-boundary transactions and management for its mitigation.

There are issues in handling a crisis across organizational boundaries that are truly more stubborn, complex, and difficult than the challenges within. Although we will remain generally cognizant of these external issues and incorporate their impact tacitly on internal matters, the primary focus of this paper will be internal, and about what firms and people can do in response to crises. In other words, while keeping in mind some of these external problems, we will not throw up our arms here and give up, but march forth to find the best internal posture and solutions despite those problems.

## 5. CRISIS MANAGEMENT VERSUS DAY-TO-DAY MANAGEMENT

At the risk of some oversimplification, among the things that we teach our students of management are how to evaluate the external and the internal environments of their companies, to design structures, and to execute an action schema. These are aimed at creating a superior fit between the two environments. The vastness of the external environment and the unpredictability of the forces therein cannot be overstated. From political, legal, and sourcing uncertainties to fleeting consumer preferences to emerging technologies, there are infinite possibilities for unexpected and sudden impact on a company. It is not too difficult to see that a successful company really needs to come to full grips with uncertainty for its survival about a whole set of highly diverse issues.

Although probabilities and uncertainties about business events are not precisely measured and many of them would not have the extreme low frequency and high damage of a disaster, we can say with confidence that the survivors in business – who are many – generally manage to anticipate such events better than the non-survivors – who are more. Businesses constantly need to handle imprecise, incomplete information, make judgments about risk, and consequently adjust their day-to-day work. Greater the entrepreneurial nature of the company, more severe would be such need and more extreme its risk.

Most good educational programs in business, management, or entrepreneurship train their students to be comfortable with assessing risk from sparse and ambivalent data and to utilize it for their company's advantage. It would be only reasonable to claim, therefore, that the genetics of a business entity necessarily carries with it a characteristic to be able to make sense of an uncertain world and to respond to it in self-preserving manner. This should ordinarily help, if straight extrapolations were valid, in disaster recognition and mitigation. I will shortly bring up a unique factor that impedes this.

We should also remember that a successful company would need to have figured out the right adaptive relationship with the entities in its macro, meso, and local environments. Therefore, whether upstream or downstream, through cooperation or competition, the company has relationships that provide the right information, enable the coordination of its value chain, and permit extraction of synergies. The range of connections can run the whole gamut from government agencies to a unique supplier at the far end of the globe. These too should position a company, one might argue, to have superior capabilities to manage the different layers of agencies involved in a crisis. Yet, the dominance of human and organizational errors related to crisis management show that such capabilities somehow do not help, at least certainly not enough, under the supercharged conditions of a disaster. Heightened ability to take on business risk and capabilities for organizing across levels are not adequate to manage a crisis.

It would seem that a professional manager or an entrepreneur and an affiliated business organization, due to their professionally practiced approach to risk and the requisite boundary-spanning capabilities - unlike, for example, a teacher and a school - should be much better positioned to handle disasters and its aftermath. It turns out that there are unique features of disasters that nullify, and even negate, such seeming advantages.

First, the risk that a manager or an entrepreneur normally embraces is to seek some direct benefit, or to avoid some direct damage, to the focal firm. There is serious worry even under ordinary circumstances that the natural human and organizational tendency is to privatize the benefits and to externalize, as far as possible, the costs. There is every reason that this will only be aggravated for a crisis. The intuitive risk calculus, already askew with cognitive and behavioral distortions, which we will briefly address a little later, really has very little room in the face of competitive pressures to include preventive measures for 'accidental' damages to *external* entities. It would seem too far-fetched to expect altruistic anticipations, preparations, or ameliorations for a disaster, when external consequences would be so large as to require the assistance of entities from several levels up, and internal damage also would be so bad as to need, more likely than not, writing off the affected unit.

Disasters have left banks too big to fail, nuclear reactors the wards of the state, and citizens almost having to fend entirely for themselves. If organizations and managers internalize this perception related to disasters instinctively, it would seem only 'smart' to externalize the responsibilities. Whatever is done is done less than perfectly, mainly due to the coerced authority of weakly enforced regulations. This is not to belittle the sacrifices, for example, of the radiation workers at Fukushima, but to validate Reason's claim that "an active failure pathway ... originates in top-level decisions and proceeds via error-producing and violation-promoting conditions..." (Reason, 1995a) Any super-tuned risk taker does so for calculated benefits for oneself and at the behest or on behalf of an organization. It should come as no surprise that anybody in such a role would have little incentive or motivation for taking responsibility for societal or national safety and well-being.

Second, to make matters worse, the locus of power shifts unyieldingly and inevitably to external entities as a crisis unfolds. Crisis planning in an organization is therefore really about anticipating conditions for surrender of control. Crisis management phase would find the insiders working in a subordinate role to these external agencies. For all their experience under non-disaster conditions, of mediating and interconnecting with external business organizations, they would never have become quite ready for this.

Except for the above two crucial differences, crisis management may well be thought of as any other organizational initiative with long gestational strategy and a short and intense implementation opportunity. As discussed above, the natural proclivity to socialize large risks and the reluctance to relinquish control severely compounds the challenges of crisis management. If we can communicate ways to overcome the two particular difficulties and to sharpen uniquely for a disaster the already available techniques to strategize, structure, and execute, we will be very much ahead of the game.



## 6. STRATEGIC PREPAREDNESS FOR A CRISIS

Although the ambivalence elicited by the potential negative externalities of a disaster is a very important factor, most of the other aspects of crisis preparedness can be deemed to be quite akin to strategic preparedness. Any significant change or disequilibrium – or, the likelihood for the same - provides the opportunity for a contingent strategic response. (Grant, 2010) Disasters usually bring change and disequilibrium unmatched in severity. Therefore, all the highest order elements (frameworks) in classic strategy formulation can move over effectively, especially internal and external analyses as well as the notion of finding the fit between the two, for readying the postures and preparation for the change/disequilibrium a disaster would bring.

Some of the finer grained analyses would need to be adapted for crisis management. Local environment analysis, for example, would not be a Five-Force Industry Analysis. The entities involved in this case should be those needed to help with the crisis. The analysis should be to evaluate critically both for adequacies and for gaps. Such adaptive rendering of the frameworks is quite straightforward conceptually and we need not elaborate on it here. Some undergirding elements can be highly influential in the development of crisis preparedness. We identified earlier the more difficult ones, such as the proclivity to socialize the damage and to disown responsibility under moving locus of authority, in the context of a crisis. There are other annoying issues, which are troublesome even under normal conditions, and which can become worse in the particular case of low probability, high uncertainty disasters. We turn to these next.

## 7. RISK PERCEPTION AND COGNITIVE ANCHORS FOR LOW PROBABILITY EVENTS

Any complex decision and implementation regime, to have a reasonable chance at success, would have to begin with a robust understanding of related risks. We do know that cognitive biases are dangerous for developing a business strategy. (Barnes, 1984, Das and Teng, 1999) It can be deadly for developing crisis preparedness. Many cognition-related problems vitiate the proper deciphering and understanding of risk even under ordinary conditions. Since disasters are highly fraught, these issues become even more aggravated than usual.

Risk perception and acceptance are highly subjective. Starr showed many decades ago (1969) that “the public is willing to accept “voluntary” risks roughly 1000 times greater than “involuntary” risks” and that the “social acceptance of risk is directly influenced by public awareness of the benefits of an activity, as determined by advertising, usefulness, and the number of people participating.” Later studies have borne out that related constructs such as familiarity, control, catastrophic potential, equity, and level of knowledge mediate risk acceptance. (Slovic, 1987, Fischhoff et al., 1978)

We know that the evolutionary ‘experiential system’ arrives at answers that can be at odds with the rational ‘analytic system,’ a matter captured in the celebrated Prospect Theory that takes into account the human cognitive anchors. (Kahneman and Tversky, 1979) Mishan’s (1976) provides the oft-noted classic example (also quoted by Starr and Whipple (1980)) of cognitive bias: “One chance in 50,000 of winning a lottery, or of having one’s house burned down, seems a better chance, or greater risk, than it actually is.” As Starr and Whipple (1980) states: “This can be extremely important for low probability, high-consequence risks, because probabilities lying below an intuitively understandable range may be overestimated.”

However, there are additional evolutionary forces at play. Zeckhauser and Viscusi (1990) states:

*Perhaps the most fundamental problem is that individuals have great difficulty comprehending extremely low-probability events, such as differentiating a risk of  $10^{-7}$  from  $10^{-5}$ , a risk 100 times as large.*

They identify a list of consequences as follows:

*Society's system for managing risks to life and limb is deeply flawed. We overreact to some risks and virtually ignore others. Often too much weight is placed on risks of low probability but high salience (such as those posed by trace carcinogens or terrorist action); risks of commission rather than omission; and risks, such as those associated with frontier technologies, whose magnitude is difficult to estimate. Too little effort is spent ameliorating voluntary risks, such as those involving automobiles and diet. When the*

*bearers of risk do not share in the costs of reduction, moreover, extravagance is likely. [emphasis added]*

As can be easily seen, under low probability conditions, omissions are discounted and every incentive exists to shift the ownership of the problem and to ignore it, all of which occur rampantly in crisis management. We should not underestimate the implicit ignoring, disowning and socialization of disaster risk. Although the theoretical and phenomenological anchors are too complex to cover in depth in this paper, our solutions here should attempt to minimize their impact.

## **8. OVERCOMING ANCHORS AND BIASES FOR EFFECTIVE CRISIS PREPAREDNESS**

It might be reasonable, and quite acceptable, for individuals and society to forestall a new technology based on intuitive assessments. Communities should be able, for example, to prevent a nuclear reactor or a coal-fired plant from being built in their neighborhood. However, it would be self-defeating and altogether dangerous to society, if evolutionary intuition with known biases is allowed the upper hand in crisis preparedness against disasters.

Although there is really no way to eliminate these biases, we should make every effort to minimize them. We also should watch out against negative fall-out from such biases in ordinary organizational decisions. However, considerable margin for error and room for recovery exist in its implementation, which is nearly absent in crisis management. A large literature exists around compensating for error producing anchors. Kahneman and Lovallo (1993) show that decision makers have “strong tendency to consider problems as unique”, “neglect the statistics of the past”, anchor predictions on “an inside view of the problem” and arrive at “overly optimistic forecasts.” They also argue in a later paper (2003) that misplaced optimism undermines executives’ decisions, showing that inside anchoring and competitor neglect combined with organizational pressures lead them to initiatives “doomed to fall well short of expectations.” They urge the executives to follow “reference-class forecasting” or an “outside view” to temper the biases and expectations.

Extending this work further with Sibony, Kahneman and Lovallo recently reported (2011) on the remarkable success on a 12-question checklist. The checklist is intended to unearth and neutralize defects in teams’ thinking, by examining “whether a team has explored alternatives appropriately, gathered all the right information, and used well-grounded numbers to support its case” and “whether the team might be unduly influenced by self-interest, overconfidence, or attachment to past decisions.” Neglecting the statistics of the past is a common pitfall in Crisis Management. Suggestion by Cirka and Corrigan (2010), of an exercise using metaphors to proactively imagine and prepare for an expanded set of potential crises may be a good start and a creative bridge to tabulated and analyzed pre-existing evidence.

As has become prominent in medicine, Pfeffer and Sutton (2006) vigorously call for evidence-based practice in management as well, saying that, “managers (like doctors) can practice their craft more effectively if they relentlessly seek new knowledge and insight, from both inside and outside their companies, so they can keep updating their assumptions, skills, and knowledge.” Bazerman and Chugh (2006) make a related point about the need for managers to make “decisions without blinders,” for which they must to eschew “bounded awareness,” caused when “cognitive blinders prevent a person from seeing, seeking, using, or sharing highly relevant, easily accessible, and readily perceivable information during the decision-making process.” They make a point particularly relevant for crisis management:

*“The key is being mindful. If executives think an error could generate almost irrecoverable damage, then they should insist on getting all the information they need to make a wise decision.”*

Bazerman had earlier reported with Watkins (2003) that most surprises are predictable and we should anticipate disasters – a point made repeatedly in the literature on crisis management. Although their examples of ‘disasters’ are not of the size and potential envisaged in this paper, their points about the need to overcome psychological, organizational, and political vulnerabilities are on the mark here. For overcoming such vulnerabilities, they suggest, “more than just the usual environmental scanning and contingency planning,” and what they label the “RPM approach,” requiring “a chain of actions - recognizing, prioritizing, and mobilizing - that companies must meticulously adhere to.”

All the above arguments favoring seeking of true evidence and adjusting for possible biases, follow, perhaps not very consciously or deliberately, Kunda's exhortation (1990) to guard against (wrong) directional goals in motivations known to affect reasoning. "The motivation to be accurate enhances use of [those] beliefs and strategies that are considered most appropriate," he tells us, "whereas the motivation to arrive at particular conclusions enhances use of those that are considered most likely to yield the desired conclusion." Arguing that "people are more likely to arrive at those conclusions that they want to arrive at," Kunda warns that, although there is a case some scholars make that "the resulting illusions promote mental health" and that such "unrealistically positive views of oneself and the world are often adaptive," "*motivated illusions can be dangerous* when they are used to guide behavior and decisions, especially in those cases in which objective reasoning could facilitate *more* adaptive behavior." [emphasis added] Thus, although this has been only a partial review of the related research, the conclusion is very clear. There are well thought-out methods and techniques available, and required, to be communicated to students to have them get prepared, without misperceiving the risk, for crisis management at their work places.

## 9. ORGANIZING FOR RESPONSIVENESS AND EXECUTION

Mohammad Ali, the famed boxer, is said to have claimed, when asked how he managed to beat an opponent thought to have had an impeccable strategy, "I beat the living daylight out of him." An appropriate strategic posture towards disasters, evaluated and arrived at without cognitive biases or blinders, is just a good starting point. Effective execution, for organizations as for Mohammed Ali, is everything. Here too, we will take the point of view that *most* of our organizational knowledge can readily move over for use in crisis management.

The internal evaluation and preparation for crisis management, therefore, should take into account, as for non-crisis situations, the appropriateness of structures, processes, and incentives. The actual deployment and execution of a given plan should be brisk from dry-run practices, but highly improvisational, as necessary. All this is very easily said, but the important point is that most of our current knowledge and practices do come in handy in crises as well.

There are unique additional requirements and demands of crisis management, however. As we mentioned earlier, due to the nature of the phenomenon, margins for error can be little or non-existent. There usually will not be a second chance to get things right. A business can launch a product a week or a month later. It cannot ask the hurricane to come a little later, or the toxic spill to shut itself off. Therefore, particularly unforgiving time pressures are part of any crisis. The nature of authority and organizational lines also will be quite different from normal.

Boin (2004) highlights the particular challenges of traversing individual, meso, and macro levels in managing crises. Less than perfect intermeshing of agencies at different levels with different cultures and goals is one thing. Locus of power moves to outside organizational boundaries in ways unnerving and unsettling to stable hierarchies, which is the other major thing that has always been truly troublesome. The ensuing problems are widely documented. Comfort and colleagues report on the tragic failures of *coordination* and non-availability of *information* after Hurricane Katrina and present these as a failure of *communication*. (Comfort and Haase, 2006, Zagorecki et al., 2010, Comfort et al., 2004, Comfort and Kapucu, 2006, Comfort, 2007) Information failures were rampant also after the Fukushima Daiichi accident (Hayashi, 2011), a matter of special concern because of the continuing danger from radiation toxicity.

Just as we focused on the issues related to risk perceptions for crisis preparedness, it appears that, for proper crisis response, we need to pay closer attention to lines of control and communication. It turns out that much use can be made from the scholarship on communication especially from the field of managing technological innovation (Allen, 1977), with its focus on performance under knowledge-intensive conditions. The strong influence of organizational and physical boundaries in fracturing communication networks (Allen and Henn, 2006, Allen, 2007) and the powers and the limits of technology for mediating information-intensive communications (Allen, 1986, Allen and Scott Morton, 1994) are well known and particularly relevant for crisis management. Many of the problems that Comfort and colleagues reported arose for the same reasons.

In order to structure and organize effectively for innovation, it was found useful to classify communication for the primary purpose for which it is undertaken. Three types of communication have been put forward (Allen, 1986, 2007): for the coordination of activities, for exchanging information, and for creating synergy. We will examine each type in bit more detail shortly. Suffices to say here, if we analyze and understand the needs around these goals, just as for innovating teams, we will be able to build structures and processes that best match a particular crisis management team. Needs under each these communication goals, at the very least, can be anticipated and planned. Communication needs are the needed inputs in the design of structure and processes. If used well, the typology of needs will allow us to unpack and examine phenomena we need tackle in depth and then organize the response in terms of fitting structures and processes.

Although scholars have been using the three types extensively, it would be safe to state that *each* type has had more of an independent scholarly tradition. Coordination has received great attention in organizational studies (e.g. Van de Ven et al., 1976, Malone, 1987, Kogut and Zander, 1996, Gulati and Singh, 1998), in economics (e.g. Cooper and John, 1988, Becker and Murphy, 1992, Ellison, 1993), in operations research (e.g. Gottlieb et al., 1983, Chen et al., 2002, Jadbabaie et al., 2003), in information technology (e.g. Malone et al., 1987, DeSanctis and Jackson, 1994, Fritz et al., 1998), and elsewhere.

Information has also been a topic for great scholarly attention from diverse points of view (Alchian and Demsetz, 1972, Argyris, 1977, Daft and Lengel, 1986, Shapiro and Varian, 2000, Maier, 2007, Comer, 1991). In order to fine-tune the rather broad meaning of 'information,' scholars have suggested using a hierarchy consisting of - in order of increasing value - data, information, knowledge, understanding, and wisdom (Ackoff, 1989). It is easy to see that a fine-grained analysis of the needs for coordination and information for the different functions for crisis management and the resulting anticipatory designs can be quite helpful.

Synergy, the motivation behind the third type of communication, is based on the simple idea that a combination of entities may have the capacity to produce results they independently cannot. Many examples can be observed in human activities, ranging from the music of orchestras to the partnerships of couples to raise children. Scholars have investigated in depth synergy in organizational groups by checking improved performance (Hackman, 1987, Lasker et al., 2001, Cattell, 1951, Hall and Watson, 1970, Tattersall, 1984, Hall, 1971). Economics and strategy employ a related term, of *economies of scope* (Berger et al., 1987, Panzar and Willig, 1979, Panzar and Willig, 1981, Teece, 1980), which captures the idea underlying synergies from combining of groups and products. While we have known of gaps in coordination and information related to crisis management, failure to capture *positive* synergy do not even seem to be well articulated yet. There is no dearth, however, for the bitter examples of *negative* synergies. (e.g. Comfort, 2006, Zeckhauser and Viscusi, 1990, Reason et al., 2001)

If we examine carefully the meaning of each of the types of requisite communication presented above, and ask what *else* may be a goal for communication, the answers, in all likelihood, will be subsumed in one of these three types. They are collectively exhaustive, though not entirely orthogonal. The Coordination/Information/Synergy typology is also quite elemental. An evaluative analysis using the typology, and flexible designs for organizing for disasters and anticipatory plans for flexible executions based on such analysis, can effectively help traverse organizational boundaries a bit better and, perhaps, a lot faster.

## 10. DISCUSSION

Crisis management, at best, is all about execution without margin for errors, and at worst, organizational dysfunction on steroids. Temptations abound to socialize the damages, to succumb to atavistic cognitive errors, to economize on preparation, to blame others, and to throw up hands in helplessness. Yet, human story is one of triumph over crises. A community that can survive a crisis well will manage lesser challenges ever better.

For all its idiosyncrasies, many of the skills for crisis management not only can be taught, but also improved. The idiosyncrasies need special attention, however. This paper builds on foundational strategic formulation, strategy implementation, and organizational design.

We argued that abstraction in the frameworks for strategy, essentially dividing and deciphering a challenge and resynthesizing a solution, can be translated easily for crisis management. We dealt with at length the difficult problem of risk perception, especially for low probability events. Accurate risk perception is essential precedent to the ability to come to the right strategic posture about a crisis. We examined techniques – getting the ‘outside’ view, eschewing inside anchoring, including historic statistics, fighting bounded-awareness, following evidence-based practice, using checklists, remaining motivated to be accurate, etc. - to get as close as possible to the truth about the risks involved.

Capability analysis for crisis management too can mostly borrow the abstraction in strategy’s corresponding analysis. However, given the diversity of external organizations involved, and known complaints about failures in coordination and information, this paper proposed devising adaptive structures and processes, matching the needs for coordination, information, and synergy anticipated for the specialized missions related to a crisis. If they are sufficiently anticipatory, flexible, tested, and practiced, they will provide the quick-response structures that allow temporally improvised execution.

All of the above build on our current organizational and management knowledge. However, the adaptations are singularly targeted to focus and solve known problems and to improve crisis performance. Whether these changes will be adopted and whether they will be successful are open empirical questions. The fact remains that the adaptations are eminently valid solutions for the major issues that are clearly known to exasperate and have not been solved for a long time.

The students at undergraduate or graduate level can be taught all these without rolling in strange or difficult new topics or courses. To master the related skills, no special prerequisites need be specified. Although more work will be needed to flesh out the details, the ideas here are quite scalable. For example, the students can benefit from one lesson on overcoming cognitive anchors or from a whole elective on Biases and Blinders.

We can deploy the ideas, therefore, in a capstone-like integrative class, diffused in multiple courses in a general program, elaborated in few courses in a focused program, or in a carefully designed, term-long, experiential exercise. Complexity and depth can be adjusted separately for graduate and undergraduate levels. Given the nuanced theoretical aspects and the practical translations required, my own recommendation will be for a term-long, experiential exercise. Such exercises are widely used and highly effective for student learning. (Comer, 1993)

Finally, the lessons learned through the ideas presented here will be useful for students and their affiliated organizations even if they never face a disaster. Imagine how improved their ‘normal’ strategies will be shorn of cognitive biases, informational blinders, and false optimism. Imagine how streamlined their organizations will be after their elemental redesign. Learning to prepare for crises can not only make safer communities, but also better managers and organizations.

## **11. CONCLUDING REMARKS**

This paper grappled with issues that bedevil crisis management. Existing knowledge in management provide pathways to solving some of the difficult issues. We seized them with both hands in the hope that they will bring synergistic advantages for our students and our communities. It remains to be seen whether our students will manage to shed the atavistic anchors in risk perception and whether they will be given the needed resources and cooperation to design the needed trans-organizational structures and processes. We should remain hopeful, however. We should also remain mindful there is much more work that needs to be done in this field. A particularly difficult problem is the adaptive tendency of humans to discount the future. (Penn, 2003, Smith and Winterhalder, 1992) We see it everywhere, in our own lives, on the Wall Street, and in Chemical and Nuclear Plants. Cognitive issues related to risk perception are just one manifestation of this stubborn problem. Much more work is needed in this context.

## REFERENCES

- Ackoff, R. L. 1989. From Data To Wisdom. *Journal Of Applied Systems Analysis*, 16, 3-9.
- Act, R. T. S. D. R. A. E. A. 1988. Robert T. Stafford Disaster Relief And Emergency Assistance Act.
- Alchian, A. A. & Demsetz, H. 1972. Production, Information Costs, And Economic Organization. *The American Economic Review*, 62, 777-795.
- Allen, T. J. 1977. *Managing The Flow Of Technology: Technology Transfer And The Dissemination Of Technological Information Within The R&D Organization*, Cambridge, MA, MIT Press.
- Allen, T. J. 1986. Organizational Structure, Information Technology, And R&D Productivity. *IEEE Transactions On Engineering Management*, 33, 212-217.
- Allen, T. J. 2007. Architecture And Communication Among Product Development Engineers. *California Management Review*, 49, 23-41.
- Allen, T. J. & Henn, G. 2006. *The Organization And Architecture Of Innovation: Managing The Flow Of Technology*, Butterworth-Heinemann.
- Allen, T. J. & Scott Morton, M. S. 1994. *Information Technology And The Corporation Of The 1990s : Research Studies*, New York, Oxford University Press.
- Argyris, C. 1977. Organizational Learning And Management Information Systems. *Accounting, Organizations And Society*, 2, 113-123.
- Barnes, J. H. 1984. Cognitive biases and their impact on strategic-planning. *Strategic Management Journal*, 5, 129-137.
- Bazerman, M. H. & Chugh, D. 2006. Decisions Without Blinders. *Harvard Business Review*, 84, 88-+.
- Becker, G. S. & Murphy, K. M. 1992. The Division Of Labor, Coordination Costs, And Knowledge. *The Quarterly Journal Of Economics*, 107, 1137-1160.
- Berger, A. N., Hanweck, G. A. & Humphrey, D. B. 1987. Competitive Viability In Banking : Scale, Scope, And Product Mix Economies. *Journal Of Monetary Economics*, 20, 501-520.
- Boin, A. 2004. Lessons From Crisis Research. *International Studies Review*, 6, 165-194.
- Cattell, R. B. 1951. New Concepts For Measuring Leadership, In Terms Of Group Syntality. *Human Relations*, 4, 161.
- Chen, B., Jamieson, K., Balakrishnan, H. & Morris, R. 2002. Span: An Energy-Efficient Coordination Algorithm For Topology Maintenance In Ad Hoc Wireless Networks. *Wireless Networks*, 8, 481-494.
- Cirka, C. C. & Corrigan, E. A. 2010. Expanding Possibilities Through Metaphor: Breaking Biases To Improve Crisis Management. *Journal Of Management Education*, 34, 303-323.
- Comer, D. R. 1991. Organizational Newcomers' Acquisition Of Information From Peers. *Management Communication Quarterly : Mcq (1986-1998)*, 5, 64-64.
- Comer, D. R. 1993. An Experiential Capstone For Students Of Organizational Behavior. *International Journal Of Organizational Analysis (1993 - 2002)*, 1, 97.
- Comfort, L. K. 2006. Cities At Risk - Hurricane Katrina And The Drowning Of New Orleans. *Urban Affairs Review*, 41, 501-516.
- Comfort, L. K. 2007. Crisis Management In Hindsight: Cognition, Communication, Coordination, And Control. *Public Administration Review*, 67, 189-197.
- Comfort, L. K. & Haase, T. W. 2006. Communication, Coherence, And Collective Action. *Public Works Management & Policy*, 10, 328.
- Comfort, L. K. & Kapucu, N. 2006. Inter-Organizational Coordination In Extreme Events: The World Trade Center Attacks, September 11, 2001. *Natural Hazards*, 39, 309-327.
- Comfort, L. K., Ko, K. & Zagorecki, A. 2004. Coordination In Rapidly Evolving Disaster Response Systems - The Role Of Information. *American Behavioral Scientist*, 48, 295-313.
- Cooper, R. & John, A. 1988. Coordinating Coordination Failures In Keynesian Models. *The Quarterly Journal Of Economics*, 103, 441-463.
- Cred. 2011. Em-dat: the international disaster database [online]. Brussels: the centre for research on The Epidemiology Of Disasters. Available: <http://www.emdat.be/> [Accessed 11 October 2011].
- Daft, R. L. & Lengel, R. H. 1986. Organizational Information Requirements, Media Richness And Structural Design. *Management Science*, 32, 554-571.

- Das, T. K. & Teng, B. S. 1999. Cognitive Biases And Strategic Decision Processes: An Integrative Perspective. *Journal Of Management Studies*, 36, 757-778.
- Desanctis, G. & Jackson, B. M. 1994. Coordination Of Information Technology Management: Team-Based Structures And Computer-Based Communication Systems. *Journal Of Management Information Systems*, 10, 110.
- Ellison, G. 1993. Learning, Local Interaction, And Coordination. *Econometrica: Journal Of The Econometric Society*, 61, 1047-1071.
- FEMA. 2011. Declaration Process Fact Sheet: The Emergency Response Process [Online]. Washington, D.C.: Federal Emergency Management Agency, U.S. Department Of Homeland Security. Available: [Http://Goo.Gl/Kphhr](http://Goo.Gl/Kphhr), Accessed 11 October 2011.
- Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S. & Combs, B. 1978. How safe is safe enough - psychometric study of attitudes towards technological risks and benefits. *Policy Sciences*, 9, 127-152.
- Fritz, M. B. W., Narasimhan, S. & Rhee, H. S. 1998. Communication And Coordination In The Virtual Office. *Journal Of Management Information Systems*, 14, 28.
- Gephart, R., Van Maanen, J. & Oberlechner, T. 2009. Organizations And Risk In Late Modernity. *Organization Studies*, 30, 141-155.
- Gottlieb, A., Lubachevsky, B. D. & Rudolph, L. 1983. Basic Techniques For The Efficient Coordination Of Very Large Numbers Of Cooperating Sequential Processors. *ACM Transactions On Programming Languages And Systems (Toplas)*, 5, 189.
- Grant, R. M. 2010. *Contemporary Strategy Analysis*, Hoboken, NJ, John Wiley & Sons.
- Gulati, R. & Singh, H. 1998. The Architecture Of Cooperation: Managing Coordination Costs And Appropriation Concerns In Strategic Alliances. *Administrative Science Quarterly*, 43, 781-814.
- Hackman, J. R. 1987. The Design Of Work Teams. In: Lorsch, J. W. (Ed.) *Handbook Of Organizational Behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Hall, J. 1971. Decisions, Decisions, Decisions. *Psychology Today*, 5, 51-54.
- Hall, J. & Watson, W. H. 1970. The Effects Of A Normative Intervention On Group Decision-Making Performance. *Human Relations*, 23, 299-317.
- Hayashi, Y. 2011. Radiation Expert: More Threats Ahead For Japan. *The Wall Street Journal*, 2 July 2011.
- Jadbabaie, A., Lin, J. & Morse, A. S. 2003. Coordination Of Groups Of Mobile Autonomous Agents Using Nearest Neighbor Rules. *IEEE Transactions On Automatic Control*, 48, 988-1001.
- Kahneman, D. & Lovallo, D. 1993. Timid Choices And Bold Forecasts - A Cognitive Perspective On Risk-Taking. *Management Science*, 39, 17-31.
- Kahneman, D., Lovallo, D. & Sibony, O. 2011. Before You Make That Big Decision. *Harvard Business Review*, 89, 50-+.
- Kahneman, D. & Tversky, A. 1979. Prospect Theory - Analysis Of Decision Under Risk. *Econometrica*, 47, 263-291.
- Kogut, B. & Zander, U. 1996. What Firms Do? Coordination, Identity, And Learning. *Organization Science*, 7, 502-518.
- Kunda, Z. 1990. The Case For Motivated Reasoning. *Psychological Bulletin*, 108, 480-498.
- Lasker, R. D., Weiss, E. S. & Miller, R. 2001. Partnership Synergy: A Practical Framework For Studying And Strengthening The Collaborative Advantage. *Milbank Quarterly*, 79, 179-205.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K. & Welch, N. 2001. Risk As Feelings. *Psychological Bulletin*, 127, 267-286.
- Lovallo, D. & Kahneman, D. 2003. Delusions Of Success - How Optimism Undermines Executives' Decisions. *Harvard Business Review*, 81, 56-+.
- Maier, R. 2007. *Knowledge Management Systems: Information And Communication Technologies For Knowledge Management*, New York, NY, Springer Verlag.
- Malone, T. W. 1987. Modeling Coordination In Organizations And Markets. *Management Science*, 33, 1317-1332.

- Malone, T. W., Yates, J. & Benjamin, R. I. 1987. Electronic Markets And Electronic Hierarchies. *Communications Of The Acm*, 30, 484-497.
- Miller, K. D. 2009. Organizational Risk After Modernism. *Organization Studies*, 30, 157-180.
- Mishan, E. J. 1976. *Cost-Benefit Analysis*, New York, Praeger.
- NRC 1975. Reactor Safety Study. An Assessment Of Accident Risks In U. S. Commercial Nuclear Power Plants. Executive Summary: Main Report. (PWR And BWR). Washington, DC: Nuclear Regulatory Commission.
- Panzar, J. C. & Willig, R. D. 1979. Economies Of Scope, Product Specific Economies Of Scale And The Multi-Product Competitive Firm. *Bell Laboratories Economics Discussion Paper*, 152.
- Panzar, J. C. & Willig, R. D. 1981. Economies Of Scope. *American Economic Review*, 71, 268-273.
- Penn, D. J. 2003. The Evolutionary Roots Of Our Environmental Problems: Toward A Darwinian Ecology. *Quarterly Review Of Biology*, 78, 275-301.
- Perrow, C. 1984. *Normal Accidents: Living With High-Risk Technologies*, New York, Basic Books.
- Perrow, C. 2009. What's Needed Is Application, Not Reconciliation: A Response To Shrivastava, Sonpar And Pazzaglia (2009). *Human Relations*, 62, 1391-1393.
- Pfeffer, J. & Sutton, R. I. 2006. Evidence-Based Management. *Harvard Business Review*, 84, 62-+.
- Reason, J. 1990a. The Age Of The Organizational Accident. *Nuclear Engineering International*, 35, 18-19.
- Reason, J. 1990b. The Contribution Of Latent Human Failures To The Breakdown Of Complex-Systems. *Philosophical Transactions Of The Royal Society Of London Series B-Biological Sciences*, 327, 475-484.
- Reason, J. 1995a. A Systems-Approach To Organizational Error. *Ergonomics*, 38, 1708-1721.
- Reason, J. 1995b. Understanding Adverse Events: Human Factors. *Quality In Health Care : QHC*, 4, 80-9.
- Reason, J. T., Carthey, J. & De Leval, M. R. 2001. Diagnosing "Vulnerable System Syndrome": An Essential Prerequisite To Effective Risk Management. *Quality In Health Care : QHC*, 10 Suppl 2, li21-5.
- Reinach, S. & Viale, A. 2006. Application Of A Human Error Framework To Conduct Train Accident/Incident Investigations. *Accident Analysis And Prevention*, 38, 396-406.
- Sasou, K. & Reason, J. 1999. Team Errors: Definition And Taxonomy. *Reliability Engineering & System Safety*, 65, 1-9.
- Schott, T., Landsea, C., Hafele, G., Lorens, J., Taylor, A., Thurm, H., Ward, B., Willis, M. & Zaleski, W. 2010. The Saffir-Simpson Hurricane Wind Scale (Online). Miami, FL: National Hurricane Center, National Weather Service. Available: <http://www.nhc.noaa.gov/sshws.shtml> [Accessed 11 October 2011].
- Shapiro, C. & Varian, H. R. 2000. *Information Rules*, Boston, MA, Harvard Business School Press
- Slovic, P. 1987. Perception Of Risk. *Science*, 236, 280-285.
- Smith, E. A. & Winterhalder, B. 1992. *Evolutionary Ecology And Human Behavior*, New York, Aldine De Gruyter.
- Spencer, F. C. 2000. Human Error In Hospitals And Industrial Accidents: Current Concepts. *Journal Of The American College Of Surgeons*, 191, 410-418.
- Starr, C. 1969. Social Benefit Versus Technological Risk. *Science*, 165, 1232-1238.
- Starr, C. & Whipple, C. 1980. Risks Of Risk Decisions. *Science*, 208, 1114-1119.
- Tattersall, R. 1984. In Defense Of The Consensus Decision. *Financial Analysts Journal*, 40, 55-57.
- Teece, D. J. 1980. Economies Of Scope And The Scope Of The Enterprise. *Journal Of Economic Behavior & Organization*, 1, 223-247.
- Van De Ven, A. H., Delbecq, A. L. & Koenig Jr, R. 1976. Determinants Of Coordination Modes Within Organizations. *American Sociological Review*, 41, 322-338.
- Watkins, M. D. & Bazerman, M. H. 2003. Predictable Surprises: The Disasters You Should Have Seen Coming. *Harvard Business Review*, 81, 72-+.



- Wiegmann, D. A. & Shappell, S. A. 2001. Human Error Analysis Of Commercial Aviation Accidents: Application Of The Human Factors Analysis And Classification System (HFACS). *Aviation Space And Environmental Medicine*, 72, 1006-1016.
- Zagorecki, A., Ko, K. & Comfort, L. K. 2010. Interorganizational Information Exchange And Efficiency: Organizational Performance In Emergency Environments. *Jasss-The Journal Of Artificial Societies And Social Simulation*, 13.
- Zeckhauser, R. & Viscusi, W. 1990. Risk Within Reason. *Science*, 248, 559-564.
- Zio, E. 2007. *An Introduction To The Basics Of Reliability And Risk Analysis*, Singapore; Hackensack, N.J., World Scientific.
- Zio, E. 2009. *Computational Methods For Reliability And Risk Analysis*, Singapore; Hackensack, NJ, World Scientific.

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# ENTREPRENEURIAL COMPETENCIES AND PERCEIVED MARKET PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES: AN INTERNATIONAL STUDY

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## ABSTRACT

*The purpose of the study was to examine the relationship between entrepreneurial competencies, and perceived market share. This study was focused on an international domain: areas surrounding Kigali city (Rwanda). It attempts to explore the relationship between entrepreneurial competencies, psychological and perceived market share of SME's. A sample of 200 SME's was selected using cross sectional, qualitative and quantitative survey design was undertaken. The research findings of the correlation coefficient of the total sample of (200) revealed that there is a positive relationship between entrepreneurial competencies and perceived market share, Entrepreneurial competencies and perceived market share however results from the regression analysis revealed that only entrepreneurial competencies was a significant predictor of perceived market share. Using this finding, SME are recommended to ensure that entrepreneurial competencies are developed since this finding has revealed that the presence of entrepreneurial competencies in SME's will predict perceived Market Share.*

**Keywords:** Entrepreneurial competencies, and Perceived market share

## 1. INTRODUCTION

Small and medium enterprises are found in every sector of the economy and are essential for sustained long term growth and employment (MacDonald, 2007).

Entrepreneurs in Rwanda are continuing to take their market shares in the global market though at a slow pace, and in their own learning model (Hollensen, 1998). In the Rwandan context, micro enterprises are those engaging up to 4 people, in most cases family members or employing capital amounting up to Rwandan Francs 5 million. The majority of micro enterprises fall under the informal sector. Small enterprises are mostly formalized undertakings engaging between 5 and 49 employees and with capital investment from Rwf 5 to Rwf 200 million. Medium enterprises employ between 50 and 99 people and use capital investment from Rwf 200 to 800 million (Rwanda SME's Development policy, 2003, Apr.p.5).

The concept of entrepreneurial competence comprises different important aspects such as knowledge, motive, traits, self-images, social roles and skills which results in venture birth, survival and growth and this may be a factor for these firm performances in the market (Bird, 1995). Entrepreneurial expertise is built upon the competence to identify and pursue new opportunities as well as organizing competence which involves acquisition and management of necessary resources to realize the opportunity (Erikson, 2002). Research confirms the high importance of entrepreneurship education. It recognizes influences on the emergence of entrepreneurial intentions, as well as on the quality of entrepreneurship on the survival rate of new businesses and on their growth in the market share (Lans, 2008).

Due to lack of knowledge, motive, traits, self-images, social roles and skills, small and medium enterprises in Kigali are not able to win the market share.

There is a need for small traders to put in place various means of improving their business performances and effectiveness.

## 2. PURPOSE OF THE STUDY

The study seeks to examine the relationship between Entrepreneurial competencies, and perceived market share.

### 2.1. Objectives of the Study

- a) To assess the relationship between entrepreneurial competencies and perceived market share.
- b) To establish the relationship between working capital management and perceived market share.

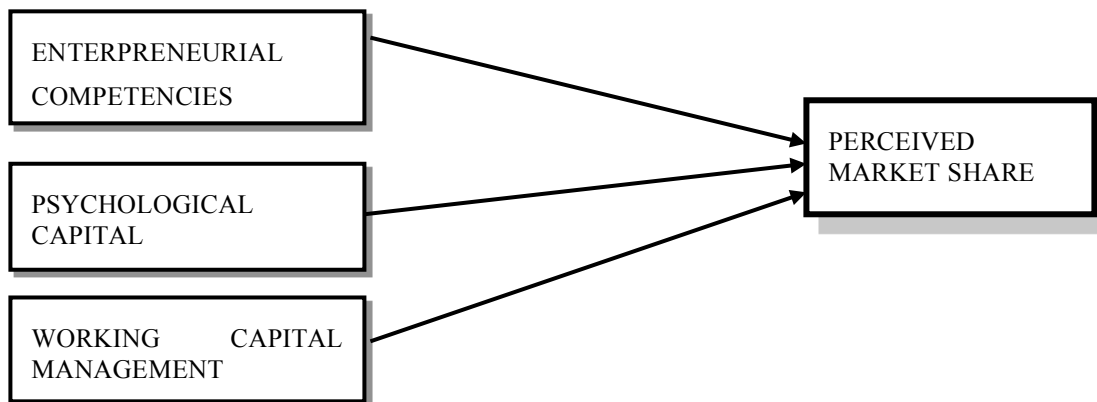
## 2.2. Research Questions

- a) What is the relationship between entrepreneurial competencies and perceived market share?
- b) What is the relationship between psychological capital and perceived market share?
- c) What is the relationship between working capital management and perceived market share?

## 3. CONCEPTUAL FRAMEWORK

The following Conceptual framework was developed after the review of existing literature to investigate the research questions at hand. The framework shows Entrepreneurial competencies, psychological capital and working capital management practices as the independent variables used to explain perceived market share as the dependent variable. In order to facilitate the study, the researcher developed a conceptual Frame work drawn from the works done by different scholars; Entrepreneurial competencies as stated by (Lans, 2008) that could lead to perceived market share. For the purpose of this research, working capital management was determined in respect to inventory management, receivables management payables management and cash flow management as described by Kwame, (2007) and Psychological capital was adopted from the work of Luthans & Avey (2007).

**FIGURE 1. CONCEPTUAL FRAMEWORK**



**Source:** Lans, 2008., Luthans., 2007 & Kwame 2007

It is conceptualized that entrepreneurial competencies, psychological capital, working capital management influences competitive advantages of small and medium business enterprises.

## 4. CASE ANALYSIS

As a consequence of the coexistence of formal and informal activities in Tanzania, the small and medium enterprises sector is highly diverse, with structures, problems, growth potential and access to support differing widely between segments (Calcopietro & Massawe, 1999). World over, SME's sector had acquired a significant and pivotal position in the entire development process making significant contribution to the national/global economy, and UNIDO, (2006) observed that, a recent cross country regression revealed a strong correlation between large SME sector and per capita growth of growth domestic product (GDP). SMEs can achieve high growth by focusing on particular product groups, avoiding spreading their marketing activities too widely, and avoiding operating in markets dominated by large firms by choosing carefully the markets in which they operate (Adams & Hall, 1993). It is estimated that SMEs make up more than 90% of all business establishments worldwide (Lin, 1998). In Tanzania, it is estimated that approximately 50% of the industrial output originates from SMEs (United Republic of Tanzania, 2001). The rest of the discussion below is based on the report provided by the Tanzania Chamber of Commerce Industry and Agriculture, 2003:

## **5. LITERATURE REVIEW**

### **5.1. The relationship between entrepreneurial competencies and perceived market share**

Proper entrepreneurial competences are required to a successful start, operation and ensuring the survival of a new business in the market (Onstenk, 2003). There are some empirical studies that have shown that entrepreneurial competencies not only increase competitive advantages; but also are predicted to influence firm performance (Man, Lau, and Chan, 2002).

The concept of competence has a direct relationship with the small enterprise's effectiveness. Caird (1992) stipulate that competences are recognizable, assessable and relevant for practice which can be developed, learned and described on different levels, and it is supposed that there is a strong relationship between competence and organizational effectiveness. Competence helps the business to grow and compete effectively in the market. Competencies are capacities that exist in a person which lead to behavior that meets the job demands within the parameter of the organization environment and that in turn bring about desired results. This means that there is evidence that indicates that possession of the characteristic precedes and leads to effective and/or superior performance on the job (Boyatzis, 1982).

### **5.2. The relationship between psychological capital and perceived market share**

Psychological capital helps small and medium enterprises to improve on their effectiveness. Research has supported the synergistic and higher order factor of psychological capital and demonstrates that psychological capital is open to human resource development for the return of performance improvement and competitive advantage in the market (Avey and Luthans, 2007).

Psychological capital involves four components namely Self efficacy, optimism, hope and resilience. This can be seen from the work of Lazarus (2003) who specifically identifies self-efficacy, optimism, hope, and resilience as relevant avenues of exploration for enhanced understanding of how humans adapt and cope.

Organizational psychological capital can be regarded as a strength that should be retain and manage in promoting the personal development and performance at personal level and in increasing the leverage, performance, income and competitive advantage at the organizational level (Luthans V.D., 2007 & Wright, 2003). Organizational psychological capital is the whole of these positive attributes changing and improving with the education or development (Luthans & Youssef, 2007). Thus psychological capital is becoming a positive improvable construct intended to enhance and redirect the organizational and personal performance. Psychological capital may be developed with the short practices during group training (Luthans, 2006). According to Larson and Luthans (2006), there is a positive relationship between general psychological Capital and job satisfaction. This is again discussed further that general psychological capital construct is positively related to performance, satisfaction, and commitment (Luthans, 2008).

Avey (2009), also asserts that there is strong and positive relationships between promotion-oriented psychological ownership and employee commitment, job satisfaction and intentions to stay with the organization. The obtained results of this study support all of these findings that hope, optimism and resilience was positively related to organizational commitment and job satisfaction. In the case of rapidly changing technology, employees resist a new technology, not because of their fear of the technology itself, but because of their lack of confidence in their psychological capacity to successfully use the technology and to perform adequately (Hill et al. 1987).

### **5.3. The relationship between working capital management and perceived market share**

Proper working capital helps the performance of any firm. Pandey (1995) argues that the better the management of assets, the larger the amounts of sales, Peel and Wilson(1996) have stressed the efficient management of working capital, and more recently good credit management practice as being pivotal to the health and performance of the small firm sector winning their market competition. Small and medium enterprises have not developed their financial management practices to any great extent and they conclude that owner managers should be aware of the importance and benefits that can accrue from improved financial management practices.

The pioneer work of (Shin & Soenen, 1998) and the more recent study of (Deloof, 2003) have found a strong significant relationship between the measures of Working capital management and corporate profitability. Their findings suggest that managers can increase profitability by reducing the number of day's accounts receivable and inventories. This is particularly important for small growing firms who need to finance increasing amounts of debtors.

For small and growing businesses, an efficient working capital management is a vital component of success and survival; i.e. both profitability and liquidity (Peel & Wilson, 1996). Working capital management assist SME's to be stable. Smaller company should embrace formal working capital management practices with the hope of minimizing the probability of business failure, as well as to enhance business performance (Wilson, 1996). While the performance levels of small businesses have traditionally been attributed to general managerial factors such as manufacturing, marketing and operations, working capital management may have a consequent impact on small business survival and growth (Kargar & Blumenthal, 1994).

## 6. SUMMARY OF RESULTS

### 6.1. Bivariate Correlation Test

Bivariate correlation test was used to find out the relationships between the objectives of the study. Results are interpreted under the subsections that follow, guided by the objectives.

**TABLE 8. BIVARIATE CORRELATION TEST**

	1	2	3	4
Entrepreneurial competences [1]				
Psychological capital [2]	.647**	1.000		
Working capital management [3]	.581**	.486**	1.000	
Perceived market share [4]	.204**	.098	.079	1.000

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

### 6.2. Entrepreneurial competencies and perceived market share

The results from the table showed a positive and significant relationship between entrepreneurial competencies and perceived market share ( $r = 0.204^{**}$ ,  $p < 0.01$ ). This implies that a change in entrepreneurial competencies is associated with positive change perceived market share indicating that as entrepreneurial competencies increase, then perceived market share also increases.

### 6.3. Psychological capital and perceived market share

There was no significant relationship between psychological capital and perceived market share ( $r = .098$ ,  $p = .110$ ). This implies that the workers hope, confidence, resilience and optimism is not associated with perceived market share.

### 6.4. Working capital and perceived market share

Working capital management and perceived market share did not show any significant relationship ( $r = .079$ ,  $p = .198$ ). This showed that working capital management is not associated with perceived market share.

**TABLE 9. REGRESSION ANALYSIS**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	SE	Beta		
1	(Constant)	3.146	.505		6.232	.000
	Entrepreneurial competences	.404	.133	.264	3.040	.003
	Psychological capital	-.086	.146	-.047	-.587	.557
	Working capital management	-.076	.114	-.051	-.668	.505
Dependent Variable: Perceived market share R <sup>2</sup> = .045, Adjusted R <sup>2</sup> = .034, F = 4.075, Sig = .007						

**Source:** Primary data

From the findings, entrepreneurial competencies predicted 26% of the variance in perceived market share. There was a significant relationship between perceived market share and entrepreneurial competencies (sig. = .003).

The findings indicated that, the adjusted R value is 34% (that is, Adjusted R value = .034). This implies that 3.4% of the variance in perceived market share can be attributed to entrepreneurial competencies, psychological capital and working capital management. A combination of these independent variables appear as statistically significant predictors of perceived market share (Sig. = .007). However, it should be noted that entrepreneurial competencies can independently predict perceived market share.

## 7. DISCUSSIONS AND CONCLUSIONS

### 7.1. Examining the relationship that exists between the study variables

This section interprets and discusses findings in relation to the three research questions

#### 7.1.1. Relationship between entrepreneurial competencies and perceived market share

Results in table 8 indicate a significant positive relationship between entrepreneurial competencies and perceived market share (.20\*\*). Small enterprises are likely to succeed when they embrace entrepreneurial competencies. This is in agreement with some empirical studies that have shown that entrepreneurial competencies do not only increase competitive advantages, they are predicted to influence firm performances within the market (Man, Lau, and Chan, 2002; Ahmad, 2007; Ahmad et al., 2010).

With regards to the resource based view, SMEs are suggested to place emphasis on developing and utilizing competencies because these are important intangible assets that are able to increase superior performance (Reed & Defilippi 1990), to create barriers to replications (Hamel & Prahalad 1994, & Wickham 2006), and to develop and sustain competitive advantage in the market (Zaugg & Thom 2003).

The entrepreneur has a responsibility to utilize required resources for creating value (Vesper 1980), and has an ability to foresee and evaluate business opportunities, to gather the necessary resources in order to take advantage of them, to create and build value from non-value resources, and to initiate appropriate action to ensure success in the competitive market (Meredith et al. 1982, & Timmons, 1989). As a result, small and medium enterprises require individual who has efficient entrepreneurial competencies for enhancing and sustaining organizational competitive advantage (Zaugg & Thom 2003). Entrepreneurial competencies for the study are combinations of knowledge and skills which are considered as key contributions for great performance in the market (Bosma et al. 2012, & Hayton & Kelly 2006).

**7.1.2. Relationship between psychological capital and perceived market share.** The results indicated that there is no significant relationship between psychological capital and perceived market share (.098). This implies that in the context of this study, psychological capital has no bearing on perceived market share.

**7.1.3. Relationship between working capital management and perceived market share.** The results indicated that there is no significant relationship between working capital management and perceived market share (.079). This implies that in the context of this study, working capital management has no bearing with perceived market share.

## **7.2. Conclusions**

The study established that entrepreneurs who had entrepreneurial competencies were very likely to succeed in their markets. This implies that for entrepreneurs to succeed in their market, they should undergo training on business skills. More so the results from table 8 showed that entrepreneurial competencies have positive relationship with psychological capital and working capital management. This implies that entrepreneurial competencies should be improved to enable among others, the proper management of working capital of SME's in Dar es Salaam. The relationships between psychological capital and perceived market share have not shown any relationship to entrepreneurs in Dar es Salaam. This implies that in the context of this study, psychological capital has no bearing on perceived market share. The relationships between working capital management and perceived market share have not shown any relationship among entrepreneurs in Dar es Salaam. This implies that in the context of this study, psychological capital has no bearing on perceived market share.

## **7.3. Research limitations and direction for further research**

### **7.3.1. Limitations.**

The researcher anticipated a problem of minimal or lack of response from some of the traders. Some took too long to fill the questionnaires and others not fill them at all. Due to language problem in the part of respondents, the researcher with the help of Google translator, decided to change the questionnaires in to Swahili language. Despite these limitations, the researcher believes that the findings of this study were useful in filling the knowledge gap that the study set out to fill.

### **7.3.2. Areas for Further Research**

Areas recommended for further research are: This study did not show any significant relationships between psychological capital, working capital and perceived market share. The same study should be carried out among SME's in other regions in Tanzania to find out the reality since there is a significance relationship between psychological capital, working capital management and perceived market share contrary to previous studies.

## **REFERENCES**

- Adams, G. & Hall, G. (1993). Influences on Growth of SMEs: An International Comparison. *Entrepreneurship and Regional Development*, 5, 73–84.
- Adams, V.H., Snyder, C.R., Rand, K.L., King, E.A., Sigman, D.R., & Pulvers, K.M. (2002). Hope in the workplace, In Gicolone R, Jurkiewing C (Eds), *Workplace spirituality And organization performance*, Newyork, Sharpe.
- Avey, J.B., B.J., Avolio, C.D., Crossley and F., Luthans, 2009. "Psychological Ownership: Theoretical Extensions, Measurement and Relation to Work Outcomes", *Journal Of Organizational Behavior* 30, pp. 173–191.
- Avey, J.B., Patera, J.L., & West, B.J. (2007). The implications of positive psychological capital on employee absenteeism. *Journal of Leadership and Organizational Studies*, 42-60.
- Bandura, A. (1998). Personal and collective efficacy in human adaptation and change. In Adair JG, Belanger D, Dion KL (Eds.), *Advances in psychological science*, Vol. 1: Personal, social and cultural aspects (pp. 51–71). Hove, UK: Psychology Press.
- Bandura, A., 1997. *Self-efficacy: the Exercise of Control*, New York: W.H. Freeman.
- Berryman, J. 1983. "Small Business Failure and Bankruptcy: A survey of the Literature", *European Small Business Journal*, 1(4), pp47-59.

- Bird, B. 1995. "Toward a Theory of Entrepreneurial Competency". In J. A. a. B. in Katz, R.H.( Eds), *Advances in Entrepreneurship, Firm Emergence, And Growth*, vol. 2,. 51-72, Greenwich, CT: JAI Press.
- Bird, B. (1988). Implementing Entrepreneurial Ideas: The Case for Intention, *Academy of Management Review*, 13, 442-453.
- Bird, B. (2002). Learning Entrepreneurship Competencies: The self- Directed Learning Approach, *International Journal of Entrepreneurship Education*, 1, 203-227.
- Bonanno, G.A., 2005. "Resilience in the Face of Potential Trauma", *Current Directions in Psychological Science* 14 (3), pp. 135-138.
- Bosma, N., Wennekers, S. & Amoros, J.E., 2012. *Global Entrepreneurial Employee Across the Globe*, 2011 Extended Report: Entrepreneurs and Entrepreneurial Employees across the Globe. GERA.
- Boyatzis, R.E. (1982). *The Competent Manager: A Model for Effective Performance*. New York: Wiley.
- Caird, S. (1992). Problems with the identification of enterprise competences and the implications for assessment and development. *Management Education and Development* 6-17.
- Calcopietro CM, Massawe D (1999). Tanzania small and medium scale enterprise policy Proposals. Tanzanian Government In Collaboration With United Nations Industrial Development Organisation (UNIDO), Dar Es Salaam, Tanzania.
- Chandler G.N. & Jansen E. (1992). The Founders Self- assessed Competence and Venture Performance, *Journal of Business venturing*, 7, 223-236.
- Chandler, G., & Hanks, S. (1994). Founder Competence, the Environment, and Venture Performance. *Entrepreneurship Theory & Practice*, 18(3), 77-89.
- Chiou, Jeng-Ren, Li Cheng and Han-Wen Wu, 2006. "The determinants of working capital Management," *Journal of American Academy of Business*, Cambridge. Vol.10, Iss.1, Hollywood. pp.149-55.
- Chittenden, F., Poutziouris, P., Michaelas, N. 1998. "Financial Management and Working Capital Practices in UK SMEs", Manchester, Manchester Business School.
- Cunningham, B., & Lischeron, J. (1991). Defining entrepreneurship. *Journal of small Business Management*, 29 (1), 45-61.
- De Chazal Du Mee. 1998. "Research Study on Small and Medium Enterprises", Final Report.
- Deloof, M. (2003). Does Working Capital Management Affect Profitability of Belgian Firms? *Journal of Business, Finance and accounting*, 573-587.
- Dickerson, Campey Bringham (1985) introduction to financial management, (fourth edition) European Industrial Training, 7,5.
- Emery, G. W. (1984). Measuring short-term liquidity. *Journal of Cash Management*.
- Ericsson, K., Charness, N., Feltovich, P., & Hoffman, R. (2006). *The Cambridge handbook of expertise and expert performance*. Cambridge: Cambridge University Press.
- Erikson, T. 2003. Towards taxonomy of entrepreneurial learning experience among potential Entrepreneurs. *Journal of Small Business and Enterprise Development* 10 (1): 106–112.
- European Commission. 2002. Final report of expert group 'Best Procedure' project on education and training for entrepreneurship. European Commission, Enterprise Directorate-General, 2008. Entrepreneurship in higher education, especially in non-business studies: Final Report of the expert group. European Commission, Enterprise and Industry Directorate-General.
- Fredrickson B.L, Joiner T. (2002). Positive emotions trigger upward spirals toward Emotional wellbeing. *Psychological Science*, 13, 172–175.
- Gamble, (2004). Counting the benefits of working capital management.
- Garcia –Teruel, Pedro Juan and Pedro Martinez –Solano (2007). "Effect of working capital management on SME profitability", *International Journal of Managerial finances* 3: 3:2 ,pp.
- Gibb, 2005, „The Entrepreneur as the Core Competence of the Firm: Implications for Management Educators. *Entrepreneurship, Innovation and Small Business Network*, Vol. 2, pp.2.
- Gibb, A. (1990). Training the trainers of small business. *Journal of European Industrial Training*, 14, 17-25.
- Grablowsky, B. J. (1984). Financial Management of Inventory. *Journal of Small Business Management*, 22, 59-65.



- Gustafsson, V. (2006). *Entrepreneurial decision-making: individuals, tasks and cognitions*. Cheltenham, UK: Edward Elgar.
- Hamel, G. and Heene, A. (Ed.) (1994), *Competencies-Based competition*. New York: John Wiley.
- Hamel, G. & Prahalad, C.K. 1994. *Competing for the Future*. Harvard Business School Press.
- Hayton, J.C. & Kelly, D.J. 2006. "A Competency-Based Framework for Promoting Corporate Entrepreneurship". *Human resource Management*. Fall 2006. 45(3). pp.407-427.
- Herrington M, Wood E (2003). *Global entrepreneurship monitor, South African report* Available on <http://www.gbs.nct.ac.za>, accessed on 20th October 2010.
- Hollensen, S. (1998). *Global Marketing: a market-responsive approach*. Hertfordshire: Prentice Hall.
- Hill, T., Smith, N. D. and Mann, M. F. (1987). 'Role of efficacy expectations in predicting the decision to use advanced technologies'. *Journal of Applied Psychology*, 72, 307–14.
- Hood, J. N. & Young, J. E. (1993). *Entrepreneurship's Requisite Areas of Development: a Survey of Top Executives in Successful Entrepreneurial Firms*, *Journal of Business Venturing*, 8, 115-135.
- Horne, J. & Orr, J. (1998). 'Assessing behaviors that create resilient organizations'. *Employment Relations Today*, 24, 4, 29–39.
- Howorth C., P. Westhead. (2003). "The focus of working capital management in UK small firms". *Management accounting research* 14, pp97-111, Black well publishing.
- Kagar J. & Blumenthal, R.A. (1994). "Leverage impact of working capital in small business", *TMA Journal*, Vol. 14, No. 6, pp 46.
- Kaplan, R.S. (1992). *Measures that drive performance*, Harvard Business.
- Kiggundu, M.N. (2002). *Entrepreneurs and entrepreneurship in Africa: What is known and what needs to be done*. *Journal Developmental Entrepreneurship*, 7(3), 239-258.
- Kloot, L (1999). "Performance measures in SMEs". *The international journal of Management*, Vol.12.
- Kwame, B. Agyeyi-Mensah. (2007). *Working capital management practices of small firms in the Asante region of Ghana* retrieved from <http://ssrn.com> on 21th October 2010.
- Lans, T. W., H., Hulsink, H., Baert, and M. Mulder. 2008. *Entrepreneurship education and training in the small business context: Insights from the competence-based approach*. *Journal of Enterprising Culture* 16 (4): 363–83.
- Larson, M., & Luthans, F. 2006. "The Potential Added Value of Psychological Capital in Predicting Work Attitudes", *Journal of Leadership and Organization Studies* 13, pp. 44–61.
- Lin, C.Y. (1998) *Success Factors of Small-and- Medium-Sized Enterprises in Taiwan: An Analysis Of Cases*. *Journal of Small Business Management*, 36(4), 43–65.
- Lazarus, R.S. (2003). Does the positive psychology movement have legs? *Psychological Inquiry*, 14, 93-109.
- Luthans, F. & Jensen S.M. (2002). Hope: A new positive strength for human resource development. *Human Resource Development Review*, 1, 304–322.
- Luthans, F. (2002). Positive organizational behavior: Developing and managing psychological strengths. *Academy of Management Executive*, 16, 57-72.
- Luthans, F., Avolio, B., Avey, J. B., & Norman, S. M. (2007). Psychological capital: Measurement and relationship with performance and job satisfaction. *Personnel Psychology*, 541-572.
- Luthans, F., J.B., Avey, B.J., Avolio, S.M., Norman and G.M., Combs, 2006. "Psychological Capital Development: Toward a Micro-intervention", *Journal of Organizational Behavior* 27, pp. 387–393.
- Luthans, F., S.M., Norman, B.J., Avolio and J.B., Avey, 2008. "The Mediating Role of Psychological Capital in the Supportive Organizational Climate Employee Performance Relationship", *Journal of Organizational Behavior* 29, pp. 219–238.
- Luthans, F. & Youssef, C. M. (2004). 'Human, social, and now positive psychological Capital Management: Investing in people for competitive advantage'. *Organizational Dynamics*, 33, 143–60.
- Macdonald, S., Assimakopoulos, D. and Anderson, P. (2007), "Education and training for Innovation in SMEs: a tale of exploitation", *International Small Business Journal*, Vol.25 No.1, pp. 77-95.
- Maddi, S. R. (1987). *Hardiness training at Illinois Bell Telephone*. In P. Opatz (Ed.), *Health Promotion evaluation* (pp. 101–115). Stevens Point, WI: National Wellness Institute.

- Man, T. W. Y., Lau, T. and Chan, K. F. (2002). The competitiveness of small and medium Enterprises - A conceptualization with focus on entrepreneurial competences. *Journal Of Business Venturing*, 123-142.
- Marcus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, 41, 954-969.
- Masten, A.S., Reed MGJ. (2002). Resilience in development. In Snyder, C.R, Lopez & S.J(Eds.), *Handbook of positive psychology* (74–88). Oxford, UK: Oxford University Press.
- Meyer, J.P. and N.J. Allen, 1991. "A Three-component Conceptualization of Organizational Commitment: Some Methodological Considerations", *Human Resource Management Review* 1, pp. 61-98.
- Meredith, G.G., Nelson, R.E. & Neck, P.A. 1982. *The Practice of Entrepreneurship* Geneva: International Labour Office.
- Nadiri, M. I. (1969). The determinants of Trade Credit in the U.S. Total Manufacturing Sector. *Econometrica*, 408-423.
- Narasimham,M,S., and Murty, I.,S.(2001). "Emerging manufacturing industry, a financial persectives.
- O'mara,C (1995)." Performance measurement and strategic change" *Strategic management journal*, Vol 8. No 3, pp7
- Onstenk, J. (2003). Entrepreneurship and education. *European Educational Research Journal*, 2 (1), 74-89.
- Ouyang, L. Y., Teng, J. T., Chuang, K. W., & Chuang, B. R. (2005). Optimal inventory policy with non instantaneous receipt under trade credit. *International Journal of Production Economics*, 290-300.
- Peel, M. J., Wilson, N., & Howorth, C. (2000). Late Payment and Credit Management in the Small Firm Sector: Some Empirical Evidence. *International Small Business Journal*,17-37.
- Peel, M.J and Wilson, N (1996). "Working capital and financial management practices in the small firms sector", *International Small Business Journal*, Vol 14, no 2, pp52.
- Peterson, C. (2000). The future of optimism. *American Psychologist*, 55, 44–55.
- Poutziouris Panikkos Dr., michaelas nicos. Dr., & soufani khaled Dr. (1998) financial management of trade credits in small medium sized businesses *Practice and Education*, Vol 8 No 2, pp. 37-45.
- Read, S., & Sarasvathy, S. (2005). Knowing what to do and doing what you know: effectuation as a Form of entrepreneurial expertise. *The Journal of Private Equity*, 9(1), 45-62.
- Reed, R., & Defillippi, R. 1990. "Causal Ambiguity, Barriers to Imitation, an Sustainable Competitive Advantage". *Academy of Management Review*. 15 (1). pp.88-102.
- Richardson, G.E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58, 307–321.
- Saccurato, F. 1994. "The Study of Working Capital", *Business Credit*, January, pp. 36-37.
- Sarasvathy, S. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26, 243-263.
- Sarasvathy, S. (2008). *Effectuation. Elements of Entrepreneurial Expertise*. Cheltenham, UK: Edward Elgar.
- Scheier, M. F. & Carver, C. S. (1985.) 'Optimism, coping, and health: Assessment and implication of generalized outcome expectancies'. *Health Psychology*, 4, 219–47.
- Schneider, S.I. (2001). In search of realistic optimism. *American Psychologist*, 56, 250–263.
- Schulman, P. (1999). 'Applying learned optimism to increase sales productivity'. *Journal of Personal Selling and Sales Management*, 19, 31–37.
- Scott, W.R. & Meyer, J.W. (1991), "The rise of training programs in firms and agencies. An institutional perspective", pp. 297-326, JAI Press, Greenwich, CT, Vol. 13.
- Seligman, MEP. (1998). *Learned optimism*. New York: Pocket Books.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.
- Sheldon, K., King L. (2001). Why positive psychology is necessary. *American Psychologist*, 56(3), 216–217.

- Snyder, C.R., Irving, L., & Anderson J. (1991). Hope and health: Measuring the will and the Ways. In Snyder CR, Forsyth DR (Eds.), *Handbook of social and clinical psychology* (pp. 285–305). Elmsford, NY: Pergamon.
- Snyder, C.R. (2000). *Handbook of hope*. San Diego: Academic Press.
- Stajkovic AD, Luthans F. (1998b). Social cognitive theory and self-efficacy: Going beyond traditional motivational and behavioral approaches. *Organizational Dynamics*, 26, 62–74.
- Stoof, A. (2005). *Tools for the Identification and Description of Competencies*, Thesis Dissertation, Open University of Nederland.
- Strischek, D., 2001. "A banker's perspective on working capital and cash flow management," *Strategic Finance*, Vol.83, Iss.4, Montvale. pp.38-45.
- Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86(2), 320–333.
- Tugade, M.M., Fredrickson, B.L, Barrett, L.F. (2004). Psychological resilience and positive emotional granularity. *Journal of Personality*, 72, 1161–1190.
- UDBS, (2007). *The use of accounting information in decision making of SME's. The case of Dar-es-salaam Region*.
- UNIDO (2006). *Productivity Enhancement and Equitable Development: Challenges for smes Development. Combating Marginalisation and Poverty. Through Industrial Development (COMPID)*, Vienna, Austria.
- United Republic of Tanzania (2003). *Small and Medium Enterprises (SMEs) Policy*. Government Printers, Tanzania.
- United Republic of Tanzania (URT) (2001) *Draft: Small and Medium Enterprise Development Policy 2002–2012*. Ministry of Industry and Trade, Dar es Salaam.
- Vesper, K. 1980. *New Venture Strategies*. NJ: Prentice Hall.
- Walker, E., & Petty, W. 1978. "Financial Differences between Large and Small Firms", *Financial Management*, Winter, 61-68.
- Walker, D. (1989). Financing the small firm. *Small Business Economics*, 1, 285-296.
- Wright, T.A., 2003. "Positive Organizational Behavior: An Idea Who's Time Has Truly Come", *Journal of Organizational Behavior* 24, pp. 437–442.
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace: The Impact of hope, optimism, and resilience. *Journal of Management*, 33(5), 774–800.
- Youssef, C.M. (2007). Emerging positive organizational behavior. *Journal of Management*, 33, 321–349.
- Zaugg, R. J. & Thom, N. 2003. "Excellence through Implicit Competencies: Human Resource Management – Organizational Development – Knowledge Creation", *Journal of Change Management*. 3(3). pp.199-211.

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# MANAGERIAL PSYCHOLOGICAL TYPE AND EMPLOYEE EMPOWERMENT

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## ABSTRACT

*This study sought to discover if a relationship existed between the personality type of a group of managers and their empowering performance, and attempted to ascertain which personality types empowered their direct-reports more than others. The Myers-Briggs Type Indicator (MBTI) was utilized to determine the personality types of the participating managers and a One-way Analysis of Variance (ANOVA) was performed to examine the relationships existing between the participating managers and a base population of managers (CAPT Atlas of Type Table #8629331). Participating managers were shown to prefer the personality preference of Extraversion ( $p \leq 0.01$ ) compared to the base population of managers. Analysis of the MBTI mental pairs revealed a statistical significance ( $p \leq 0.01$ ) existed for the Sensing-Thinking (ST) preference among the managers compared to the managerial base population. The two most frequent MBTI types reported in the study were ENTJ (23.81%) and ESTJ (17.86%). The two most common mental functions reported by managerial participants were the Sensing-Thinkers (ST) and the Intuitive-Thinkers (NT). The use of the Balance of Empowerment model (Briggs, 1999) was utilized to determine the level of empowerment provided by each of the managers, across 9 interrelated leadership behaviors, as viewed by their individual direct-reports. These nine behaviors are grouped under the headings of Trust, Enablement, and Encouragement. Managers with a personality preference for either Sensing or Feeling were shown to provide greater levels of Trust and Encouragement ( $p \leq 0.01$ ), as opposed to their dichotomous opposites. The findings also confirmed a statistical difference ( $p \leq 0.01$ ) in perceived empowerment among the subordinate behaviors of Responsibility, Resources, Mentorship, and Communication in the managers with a personality preference for Sensing; and a statistical difference ( $p \leq 0.01$ ) in perceived empowerment among the subordinate behaviors of Responsibility, Authority, Resources, Mentorship, and Motivation in the managers with a personality preference for Feeling. No statistical significance was found between Extraverted and Introverted managers and their perceived ability to empower their direct-reports across any of the behaviors of the Balance of Empowerment model.*

**Keywords:** Empowerment, Personality Type, Leadership, MBTI, and Training

## 1. INTRODUCTION

The validity of many managerial philosophies that were once well-accepted ways of motivating employees is being questioned in light of the current global economy. One of these philosophical debates focuses on the concept of management versus leadership, and the empowerment of subordinates.

Traditionally, management encompassed five critical areas, consisting of a) planning, b) leading, c) organizing, d) controlling, and e) analyzing (Robbins & Judge 2013). Of the five critical areas, controlling is one of the most essential and as Kouzes and Posner (1995) point out, the concept of managerial control has long been associated with the traditional job requirements of a manager. Management controls money, time, materials, and people. Fundamentally, the relationship that existed between managers and followers is a utilitarian process of accepting managerial authority in exchange for various rewards of an intrinsic or extrinsic in nature (Toor & Ofori 2008).

Leadership, on the other hand, does not involve the customary and outdated concept of command and control (Covey, 1992; Kouzes & Posner 1995). Leadership focuses on the enhancement of relationships and the promotion of creativity (Pearman, 1999) among employees, which is central to a successful corporation operating in a global economy (Gordon, 2002). Additionally, unlike management, leadership is viewed as a "... reciprocal process between those who choose to lead and those who choose to follow" (Kouzes & Posner 1995, p. 19). Therefore, without the power given by those who follow, a leader cannot exist, and managers who rely solely on authoritative power to motivate subordinates to accomplish

objectives is one of the biggest inhibitors in transforming a manager into a leader. It is through this sharing of managerial power with subordinates which allows for ordinary managers to become inspirational leaders (Gordon, 2002).

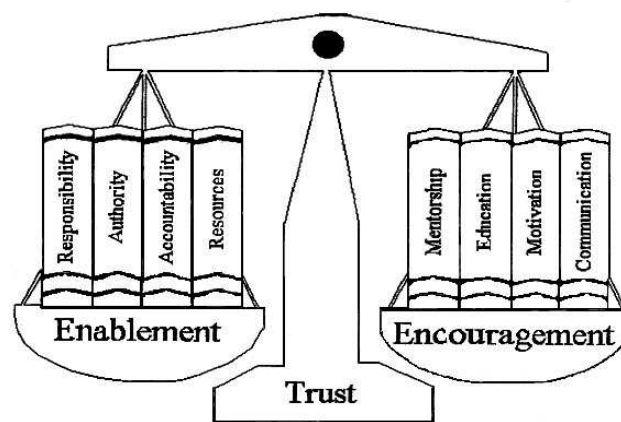
As mentioned by several researchers, the personality type of a manager can be viewed as a factor in the ability to effectively share managerial power, and thus, the level of empowerment demonstrated (Briggs 1999; Berr, Church & Waclawski 2000; Gordon, 2002). Therefore, the exploration of type dynamics and leadership development, as it relates to empowering employees, offers powerful potentials for increasing the effectiveness and growth of leaders.

## 2. STUDY BACKGROUND

The literature is abundant with a wide variety of definitions and various models of what actually constitutes the leadership behavior of empowerment (Berr, Church & Waclawski, 2000; Cacioppe, 1998; Randolph & Kemery, 2011). "Depending on who's describing it, it can sound like participative management or resource and information sharing or outright delegation of authority or enabling" (Kizilos, 1990, p. 48). Various research demonstrated that the ability to effectively empower employees stems from the personality type of the leader (Briggs 1999; Gordon 2002; Johnson & Golden 1994).

The Balance of Empowerment model (Figure 1) provides this needed definition of empowerment and is a tool which describes empowerment as consisting of three main components. The foundation of the model is the concept of Trust and the remaining two components are the equal arms of Enablement and Encouragement. The latter two are further subdivided, into the managerial behaviors of Responsibility, Authority, Accountability, and Resources constituting Enablement; and Mentorship, Education, Motivation, and Communication which constitutes Encouragement (Gordon, 2002).

**FIGURE 1. THE BALANCE OF EMPOWERMENT**



"According to Jung's theory, each of us develops a preference early in life and sticks with it. And the more we practice those preferences – intentionally or unintentionally – the more we rely on them with confidence and strength" (Kroeger & Thuesen 1988, p. 14). Therefore, while personality preference may influence managerial behavior, it will not necessarily dictate these (Jung, 1971). While it is entirely possible that individuals have difficulty empowering others or to facilitate the behaviors of empowerment, regardless of their personality type, compelling evidence exists which suggests that the relationship between personality preference and empowerment performance extends beyond mere influence (Gordon, 2002).

## 3. PROBLEM STATEMENT

Managers often view themselves as able to empower to their employees, while at the same time subordinates feel they are not empowered enough (Blanchard, Carlos & Randolph 2001). A possible

reason for this disparity could be related to the personality type preference of the manager, as it has been demonstrated that personality type plays a role in the level of empowerment obtained by the employee from the manager (Briggs, 1999; Gordon, 2002). By discovering which personality types across the four dichotomous scales empower subordinates more effectively, organizations will be able to develop better training programs for selecting managers.

#### **4. PURPOSE**

The purpose of this research was to examine the empowering performance of a group of managers based on their personality type. Using the Myers-Briggs Type Indicator (Form M) questionnaire (a copy of which can be obtained by Consulting Psychologists Press, Inc., of Palo Alto, California) and the Managerial Empowerment Assessment – Direct Reports (MEADR) survey developed by Briggs (1999), the study determined if individual managers who fail to empower, or who empower effectively, share certain MBTI-related personality preferences.

#### **5. STUDY DESIGN AND RESEARCH QUESTIONS**

This study was a quasi-experimental study and used a descriptive survey as its method of research. This quasi-experimental design was chosen because random selection of the study participants was not possible due to the setting in which the research was conducted.

RQ1. Is there a relationship between individual managers' performance of empowerment behaviors and their personality type?

H1: There is a relationship between individual managers' personality type and their demonstration of empowerment behaviors.

H1<sub>0</sub>: There is no relationship between individual managers' personality type and their demonstration of empowerment behaviors.

RQ2. Are Extraverted MBTI type managers more likely to demonstrate empowering behaviors than are their Introverted MBTI type counterparts?

H2: Managers who report preferences for Extraversion on the Myers-Briggs Type Indicator will be more likely to demonstrate empowering behaviors than will their Introverted counterparts.

H2<sub>0</sub>: Managers who report preferences for Extraversion on the Myers-Briggs Type Indicator will be less likely to demonstrate empowering behaviors similar to their Introverted counterparts.

#### **6. METHODOLOGY**

The MBTI (Form M) and the MEADR survey were the two research instruments utilized in this study. Each of these survey instruments was scored upon their completion and return from the study participants. The MEADR survey was scored in each of the nine empowering behaviors by adding the Likert-based ratings for each of the four-question groupings, and then calculating a mean for the four questions. The same procedure was then repeated to derive scores for each of the major subdivisions of the Balance of Empowerment model – Trust (4 questions), Enablement (16 questions), and Encouragement (16 questions). A total empowerment score was then obtained by adding the scores from the subdivisions and calculating the mean.

Once the scores were obtained for individual direct-reports, a total direct-report empowerment score for each manager was calculated by deriving the mean scores from the combined assessments of all participating subordinates' assessments in the categories for Trust, Enablement, and Encouragement. This overall score was the managers' Empowerment Quotient (EQ). "In this manner, extreme or potentially biased assessments ... are compensated for as much as possible in the computation of the managers' empowerment scores" (Briggs, 1999, p. 96).

## 7. SELECTION AND SOURCE OF DATA

The subjects utilized in this research were selected from a Fortune 500 company and divided into two categories. The first category consisted of those 340 individuals who were officially designated as a manager with a least two or more employees directly reporting to them. The second category consisted of the employees that directly report to these managers.

## 8. DATA COLLECTION INSTRUMENTS

Two data collection instruments were used for this study. The first was the Myers-Briggs Type Indicator (Form M). The other instrument was the Managerial Empowerment Assessment – Direct-Reports (MEADR) survey.

### 8.1. Myers-Briggs Type Indicator (MBTI)

The Myers-Briggs Type Indicator (MBTI) Form M determined a personality type for the managerial participants. The 93-item questionnaire contains both word-pair and phrase questions and takes approximately 30 minutes to complete.

### 8.2. Managerial Empowerment Assessment – Direct Reports (MEADR)

The Managerial Empowerment Assessment – Direct Reports (MEADR) Survey assessed the empowering behaviors of the managers which constitute the Balance of Empowerment model. The 36-item questionnaire requires the participant to use a 10 point Likert-scale to rate the empowerment performance of their manager based on the nine empowering behaviors of the Balance of Empowerment model.

The first four questions of the self-assessment are derived from behaviors related to the category of Trust, which represents the underlying basis for empowerment. The second 16 questions represent the four behaviors of Enablement – Responsibility, Authority, Accountability, and Resources. The final 16 questions require self-rating in the four Encouragement behaviors of Mentorship, Education, Communication, and Motivation. (Briggs 1999, p. 94)

## 9. DATA ANALYSIS

Once the Empowerment Quotient and MBTI Type were established for each participating manager, they were compared using the Analysis of Variance (ANOVA) statistical method. The Analysis of Variance was accomplished against the three individual components of the Balance of Empowerment model (Trust, Enablement, and Encouragement), the subsets which make up Enablement (Responsibility, Authority, Accountability, and Resources) and Encouragement (Mentorship, Education, Motivation, and Communication), and finally, the resultant Empowerment Quotient (EQ) for managerial subjects.

Empowerment performance was measured among a sample of participating managers (N=84) in which their direct-reports provided an assessment of perceived performance of 11 managerial behaviors, comprising the Balance of Empowerment model. Of the managers sampled, 67.9% were males (N=57) and 32.1% were females (N=27). The average age of the managers participating in the study was 43 years and they each had an average of 10 direct-reports. The majority had been employed with the company from between 6 to 10 years (36.4%) or 11 to 15 years (37.5%), and most (52.9%) had less than five years of experience as a manager.

Each direct-report subordinate (N=857) of the participating managers was contacted and a response rate of 51.9% (N=445) was achieved. The sample of direct-reports, whose average age was 39 years, consisted of 202 males (45.4%) and 243 females (54.6%). The majority (96%) reported to their current manager less than five years, while 63.8% were employed with the company less than five years.

The two most frequently reported MBTI types by the participating managers were ENTJ (23.8%) and ESTJ (17.9%). The least reported types were ISTP and ESFP, both of which had zero respondents. More participating managers preferred Extraversion (78.57%) over Introversion (21.43%), Thinking (67.86%) over Feeling (32.14%), and Judging (75%) over Perceiving (25%). The Sensing and Intuition scale showed a relatively equal preference among the managers in the study, with 44.05% and 55.95%



respectively. When analyzing the data based on gender, the most common MBTI preferences for the male respondents were ENTJ (29.82%) and ESTJ (24.56), while female respondents had a preference for ENFJ (25.93%) and ENTJ (11.11%). Comparing the sample of participating managers to the base population (CAPT Atlas Table #8629331) of general managers revealed that a greater preference existed for the mental function of Sensing-Thinking (ST) in the population of participating managers than would statistically be expected ( $p=0.01$ ).

Empowerment performance, based on the eight individual MBTI preferences, was shown to be statistically significant ( $p \leq 0.01$ ) among the Trust and Encouragement behaviors of the Balance of Empowerment model with regard to the Sensing/Intuition scale and the Thinking/Feeling scale. This finding allowed for the acceptance of Hypothesis 1, which stated that there is a relationship between individual managers' personality type and their demonstration of empowerment behaviors, and the rejection of the null hypothesis ( $H_1$  accepted and  $H_{1_0}$  rejected). No statistical significance, however, was achieved with the empowering behavior of Enablement on any of the eight MBTI preferences. In addition, no statistical significance was found to exist for the Empowerment Quotient (EQ) when performing the one-way ANOVA on the composite behaviors of the Balance of Empowerment model (Table 1).

**TABLE 1. EMPOWERING BEHAVIORS ACHIEVING STATISTICAL SIGNIFICANCE**

Empowering Behavior	MBTI Preference	P-value
Trust	Sensing/Intuition	0.001
	Thinking/Feeling	0.001
Enablement	----	----
Encouragement	Sensing/Intuition	0.007
	Thinking/Feeling	0.005
Empowerment Quotient (EQ)	----	----

Three of the four (Responsibility, Authority, and Accountability) individual component behaviors of Enablement and three of the four (Mentorship, Motivation, and Communication) individual component behaviors of Encouragement also achieved statistical significance ( $p \leq 0.01$ ) among one or both of the Sensing/Intuition and Thinking/Feeling scales of the four dichotomous MBTI preferences (Table 2 & Table 3). These findings also allowed for the acceptance that there is a relationship between individual managers' personality type and their demonstration of empowerment behaviors (Hypothesis 1), and the rejection of the null hypothesis ( $H_1$  accepted and  $H_{1_0}$  rejected).

**TABLE 2. COMPONENT BEHAVIORS ACHIEVING STATISTICAL SIGNIFICANCE (ENABLING)**

Enabling Behavior	MBTI Preference	P-value
Responsibility	Sensing/Intuition	0.001
	Thinking/Feeling	0.009
Authority	Thinking/Feeling	0.001
Resources	Sensing/Intuition	0.004
	Thinking/Feeling	0.003
Accountability	----	----

**TABLE 3. COMPONENT BEHAVIORS ACHIEVING STATISTICAL SIGNIFICANCE (ENCOURAGING)**

Encouraging Behavior	MBTI Preference	P-value
Mentorship	Sensing/Intuition	0.005
	Thinking/Feeling	0.001
Education	----	----

Motivation	Thinking/Feeling	0.001
Communication	Sensing/Intuition	0.001

Lastly, the research findings were unable to statistically show that managers who reported preferences for Extraversion on the Myers-Briggs Type Indicator would be more likely to demonstrate empowering behaviors than would their Introverted counterparts (Hypothesis 2). Therefore, the null hypothesis (H2<sub>0</sub>) could not be rejected.

## 10. RECOMMENDATIONS

The study results supported that a preferred managerial personality type does exist. Moreover, managers with a Sensing MBTI preference are perceived by their subordinates to be more empowering across the majority of the Balance of Empowerment model. This finding is equally applicable to managers who show a preference for Feeling in their MBTI profile.

### 10.1. Trust

In the overall assessment of the empowering behavior of Trust, the data illustrated that managers with a Sensing MBTI preference and those with a Feeling MBTI preference tended to be viewed as exhibiting the empowering behavior of Trust more than those managers which possessed an MBTI preference for Intuition and an MBTI preference for Thinking. Statistically, the results of the one-way ANOVA for Trust provided support ( $p \leq 0.01$ ) for the first hypothesis (H1), which stated that there is a relationship between individual managers' personality type and their demonstration of empowering behaviors.

This finding is consistent with the literature which states that Sensing types prefer to give "... complete instructions indicating both the end result and the specifics about how to get there" (Demarest 1997, p. 6). Conversely, Intuitive types give more general instructions, thereby providing a more long-range view of the desired results (Demarest, 1997; McCaulley, 1990). This finding is relevant to the empowering behavior of Trust, as it is important for direct-reports to know exactly what is expected of them for empowerment to be effective. Therefore, the data depicts that when employees understand what managers explicitly expect from them, they perceive a higher level of Trust to exist in the manager-subordinate relationship.

The results are also consistent with the literature pertaining to Feeling types. Managers exhibiting a preference for Feeling are naturally appreciative of the ideas and contributions of their subordinates, while managers with a preference for Thinking are more often critical of the ideas of others (Demarest, 1997). Again, as it relates to the empowering behavior of Trust, the direct-reports will perceive a greater level of Trust exhibited by their managers when the manager is more appreciative and willing to listen to various ideas and proposals.

### 10.2. Enablement

The overall assessment of the empowering behavior of Enablement failed to provide evidence to support the hypothesis of a relationship existing between a managers' personality type and their demonstration of empowering behaviors. This failure to reach the level of statistical significance required by this study could be related to the low number of managers involved in the study (N=84).

However, individual component behaviors of Enablement did reach statistical significance ( $p \leq 0.01$ ). Similar to the findings presented for Trust, those managers with a Sensing MBTI preference tended to be viewed as exhibiting the enabling behaviors of Responsibility and Resources more than those managers exhibiting an MBTI preference for Intuition. Also, those managers with a Feeling MBTI preference tended to be viewed as exhibiting the enabling behaviors of Responsibility, Authority, and Resources more than those managers exhibiting an MBTI preference for Thinking. These results are consistent with the literature, as managers who are Sensing MBTI types and Feeling MBTI types are more apt to delegate responsibility to their subordinates and to provide them with the resources to accomplish the task (Benfari 1995; Martin, 1997).

While there were no statistically significant findings for the empowering behavior of Enablement, three out of the four behaviors that comprise the enabling component of the Balance of Empowerment model

reached a statistically significant level ( $p \leq 0.01$ ) to provide support for the hypothesis (H1) that stated a relationship exists between personality type and empowering performance.

### 10.3. Encouragement

Data for the overall assessment of the empowering behavior of Encouragement was similar to that found for the empowering behavior of Trust. Statistically, the results of the one-way ANOVA for Encouragement and its subordinate behaviors provided support ( $p \leq 0.01$ ) for the first hypothesis (H1), which states that there is a relationship between individual managers' personality type and their demonstration of empowering behaviors.

The findings illustrated that managers with a Sensing MBTI preference and those with a Feeling MBTI preference tended to be viewed as exhibiting the empowering behavior of Encouragement more than those managers exhibiting the opposite dichotomous preferences ( $p \leq 0.01$ ). These findings were also present in the various component behaviors of the Encouragement arm of the Balance of Empowerment model. Participating managers with a Sensing MBTI preference were viewed as exhibiting the encouraging behaviors of Mentorship and Communication, while those managers with a Feeling MBTI preference were statistically more likely to exhibit the encouraging behaviors of Mentorship and Motivation ( $p \leq 0.01$ ).

Again, this is consistent with the literature on Sensing MBTI types and Feeling MBTI types versus their dichotomous opposites. Managers with a Sensing preference tend to be down-to-earth and very meticulous, and those managers with a Feeling preference tend to be very people-oriented and affirming of others (Demarest, 1997). All of these qualities are the characteristics that would be expected from a manager who communicates openly with his or her employees, tries to mentor them when possible, and is relied upon for motivational support.

### 10.4. Empowerment Quotient (EQ)

Interestingly, statistical significance was not achieved when analyzing the combined empowering behaviors of Trust, Enablement, and Encouragement, for an overall Empowerment Quotient (EQ). This was quite surprising, as statistical significance was achieved ( $p \leq 0.01$ ) with two of the three primary empowering behaviors (Trust and Encouragement) on individual analysis. While there is no specific inferences from the data obtained that could properly explain this phenomena, the low overall number of managerial participants in this study could have contributed negatively to the EQ score and therefore, to a lack of statistical evidence in this area of the Balance of Empowerment model.

## 11. CONCLUSION

The outcomes of this study provide evidence that a relationship between personality preference, as measured by the MBTI, and employee empowerment does exist. However, it would certainly be a mistake to conclude from the research that only managers with a preference for Sensing and Feeling, or a mental function of Sensing-Feeling (SF) empower effectively. As all variations of the eight preferences have been shown to assume leadership and managerial positions to some degree of success (McCaulley 1990), and leaders and managers are most effective when they learn to develop their natural preferences to their fullest and then, learn to utilize the non-preferred areas as appropriate (Myers 1998).

With this knowledge, the information from this study can assist in the development of management training programs. These management programs should contain elements of instruction inclusive of all the 16 MBTI types, thereby encouraging participants to make better use of all the eight dichotomous preference, with a focus on Sensing and Feeling. This would provide managerial leaders the ability to understand and appreciate themselves and their individual personality preferences, while allowing for the understanding and appreciation of the other preference. As McCaulley (1990) stated, there is definitely a need for "... leaders to develop all the processes of type – those that come naturally, and those less preferred" (p.36).

## REFERENCES

- Benfari, R 1995, *Changing your management style*, Lexington Books, New York.
- Berr, SA, Church, AH, & Waclawski, J 2000, 'The right relationship is everything: Linking personality preferences to managerial behaviors', *Human Resource Development Quarterly*, vol 11, no 2, pp. 133-157. Available from ProQuest: [17 October 2014]
- Briggs, GW 1999, *Introversion, extroversion, and empowerment performance of aerospace managers* Doctoral dissertation, The Fielding Institute University. Available from Microfilms International, No: 9932731.
- Blanchard, K, Carlos, JP, & Randolph, A 2001, *The 3 keys to empowerment*, Berrett-Koehler Publishers, San Francisco.
- Cacioppe, R 1998, 'Structured empowerment: An award-winning program at the Burswood Hotel', *Leadership and Development Journal*, vol 19, no 5, pp. 264-274.
- Covey, SR 1992, *Principle centered leadership*, Simon & Schuster, New York.
- Demarest, L 1997 *Looking at type in the workplace*, Center for Applications of Psychological Type, Gainesville, FL.
- Gordon, BA 2002 *Empowerment performance of pharmaceutical managers as a function of personality type* (Doctoral dissertation, Capella University). Available from University Microfilms International, No: 3055898.
- Johnson, DA & Golden, JP 1994, 'How psychological type influences effective leadership: The survey of management practices and the Type Differentiation Indicator (TDI)', Paper presented at The Myers-Briggs Type Indicator and Leadership Research Conference, pp. 89-97, College Park, MD.
- Kizilos, P 1990, 'Crazy about empowerment', *Training*, vol 27, no 12, pp. 47-56.
- Kouzes, JM & Posner, B Z 1995, *The leadership challenge*, Jossey-Bass, San Francisco.
- Kroeger, O & Theusen, JM 1988, *Type talk*, Dell Publishing, New York.
- Martin, C 1997, *Looking at type: The fundamentals*, Center for Applications of Psychological Type, Gainesville, FL.
- McCaulley, MH 1990, *The Myers-Briggs type indicator and leadership*, Center for Applications of Psychological Type, Gainesville, FL.
- Myers, IB 1998, *Introduction to type*, 6th edn, Consulting Psychologist Press, Palo Alto, CA.
- Pearman, R 1999, *Enhancing leadership effectiveness through psychological type*, Center for Applications of Psychological Type, Gainesville, FL.
- Randolph, WA & Kemery, ER 2011, 'Managerial use of power bases in a model of managerial practices and employee psychological empowerment', *Journal of Leadership & Organizational Studies*, vol 18 no 1, pp. 95-106. Available from SAGE Journals: [7 November 2014]
- Robbins, SP & Judge, TA 2013, *Organizational behavior*, 15th edn, Prentice Hall, San Francisco.
- Toor, S & Ofori, G 2008, 'Leadership versus management: How are they different, and why', *Leadership & Management in Engineering*, vol 8, no 2, pp. 61-71.

## AUTHOR PROFILE

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## E-RECRUITMENT IN LUXEMBOURG?

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### ABSTRACT

*The purpose of this study is to explain the cultural and language characteristics of Luxembourg that may influence the tendency of human resources specialists in Luxembourg to be reluctant to utilize new social networking technologies such as LinkedIn, Viadeo, Xing, Facebook and Twitter in recruitment. The study is the result of the link between language, culture and e-HRM (Martin and Reddington, 2010) in Luxembourg. Interviews and questionnaires have been used in 31 companies in Luxembourg. Luxembourg's high score on Hofstede's cultural dimension 'Uncertainty Avoidance' might be the reason for the reluctance to use e-recruitment. The fact that the Luxembourgish language is used as an identifier in the Grand Duchy might represent an amplifier for the reluctance in the adoption and use of digital social networking technologies.*

**Keywords:** International Entrepreneurship, e-recruitment, Digital Social Networking, cross-cultural management, Hofstede's cultural dimensions, Luxembourg

### 1. INTRODUCTION

This study explains the impact of social networking technologies on human resources practices in Luxembourg while analyzing the cultural pattern of Luxembourg. Digital social networks like LinkedIn, Viadeo, Xing, Facebook and Twitter have revolutionized human resources practices, not so in Luxembourg. The research will be undertaken within the specific political, economic and historical context of Luxembourg. Hofstede's dimensions of culture are discussed: 'Individualism/Collectivism', 'Power Distance', 'Masculinity/Femininity', 'Uncertainty Avoidance', 'Long-Term Orientation/Short-Term Orientation', 'Indulgence versus Restraint' and 'Monumentalism'. The hypothesis is discussed that this reluctance to use digital social networking technologies is founded in Luxembourg's high score on 'Uncertainty Avoidance'. Also the fact, that Luxembourgish language is used as an identifier in the Grand Duchy, might represent a brake to the extent of use of new social networking technologies. Human Resources practices have a historical background and have developed throughout the years. While standard HR management was for a long time exclusively about HR administration, it is nowadays still about HR administration but also about recruiting and staffing, best practices, talent management, and more and more about communication, new social technologies and e-HRM. The research question is: Why have human resources specialists in Luxembourg been reluctant to utilize new social networking technologies? Interviews and questionnaires have been performed in 31 companies in Luxembourg. Results are presented. Discussion and references follow.

### 2. LITERATURE REVIEW

#### 2.1. Culture And Language

Kashima and Kashima (1998) studied the relationship between 'culture and language' by testing the use of first- and second-person singular pronouns ('I' and 'you') in correlation with Individualism, and by doing so the correlating between language and culture. The relationship between 'cultural background', 'language', 'geographic region' and 'ethnic identity' was researched by Taylora et al. (1973), while Lewis (2006) focuses his research on 'language programming' in relation with cross cultural leadership. Sherzer (2009) investigates the relationship between grammar and culture, where language conditions thought, perception and world view. Biculturals ability of frame switching through language has been researched by Briley et al. (2005) and Hong et al. (2000). Language has been defined as a manipulator of consumers' behavior (Briley et al., 2005; Hong et al., 2000) and as identifier by Schinzel (2012, 2013 a,b). As argued earlier, Luxembourg with its special Luxembourgish language as well as other official languages, and its unique demand for the command of Luxembourgish as a condition for citizenship, provides an

appropriate background for testing the role of language as an identifier of culture. Luxembourg's language is described next, followed by the relevant hypothesis.

## 2.2 Luxembourgish Language

Today, 320,000 people are Luxembourgish native speakers. The Luxembourgish language has become the discriminating factor to distinguish between those who are able to benefit from Luxembourgish citizenship and those who are not. Luxembourgish possesses the characteristics of a dialect, proven by the fact that there is no translation of the Bible into Luxembourgish. Luxembourgish is a spoken language and does not have a long written tradition (Spizzo, 1995). The language defines the in-group (Briley, 2005) and the out-group. Those who speak Luxembourgish are part of the in-group and those who do not speak the language are part of the out-group. Official documents are in French or in German. Mostly, French is used for bureaucratic issues, and German is used for the religious ceremonies. This dialect has become the discriminating element for citizenship. In order to benefit from all of the advantages of the Luxembourgish nationality one has to be able to speak Luxembourgish. Citizenship is only awarded to people who speak Luxembourgish (Spizzo, 1995). The language, therefore, provides access to the advantages and rights associated with citizenship.

Luxembourgish authorities are an example of long-term orientation; they were able to adapt and react to some of the crises in the steelmaking industry and in the banking system, always with the objective of guaranteeing stability and wealth for the people. It seems as if there was an invisible line of stability and wealth that was guaranteed throughout the centuries. Typical words for the national identity are wealth, privileges, and stability through the maintenance of the attractiveness of the country compared to neighboring countries, because of its industry, its labor market, and its fiscal benefits, all key for the success of the country. Being part of this system and the feeling it gives is the glue of the country, the sense of being part of it (Spizzo, 1995).

Following the description of Luxembourg and its culture, it is argued that Luxembourg's dimensions of culture are not proxies for the average values found by Hofstede in France and Germany, but rather are unique and a result of Luxembourg's language, which is also the official country language since 1984.

## 2.3. Human Resource Management And Social Networking Technologies

Human Resources Practices have a historical background and have developed throughout the years and with the changing world of work. Twenty years ago, Human Resources Policies were mostly related to Administration (Mahoney and Deckop, 1986): salary, vacation, absence, work hours, headcount and accounting. In many companies, the accounting department was part of the Human Resources Department. Following this administrative trend, arrived a movement focused on motivation (Kuvaas and Dysvik, 2009). Human Resources became centred on motivation of employees, recruiting, training, evaluation, and recognition. More recently Human Resources is driven by communication (Bada and Madon, 2006), international HR (McLean and McLean, 2001), recruiting in the globalized HR world (Sparrow, 2007) and networking (Tixier, 2004; Slagter, 2009). Digital social networks like LinkedIn, Facebook (Kirkpatrick, 2010) and Twitter have revolutionized human resources practices. Google has changed the way we see our world (Auletta, 2009) and changes our habits (Jarvis, 2009), and the internet does modify our brain (Carr, 2010). Some even wish to make the internet stop (Zittrain, 2009). Due to the social technologies, we have to reconsider how we can live and win in a transformed world (Li and Bernoff, 2008), and how we interact in times of Facebook (Stengel, 2010), where the new digital generation grows up with naturally, contrary to the generations before them (Tapscott, 2009).

*Hypothesis: HR specialists in Luxembourg are reluctant to utilize new social networking technologies due to their specific cultural identity. As a result, the practical techniques used related to recruiting, integration, evolution, training, talent management and the evaluation of employees remain largely unchanged.*

What causes this reluctance? Specific cultural facts (American Chamber of Commerce, 2010; Dumont et al., 2008), differences in nationalities, or age, or gender or other facts (Reddington et al., 2010)? What has been the extent of the use of new social networking technologies in Luxembourg? Why have human resources specialists in Luxembourg been reluctant to utilize new social networking technologies? How do they do HRM? How to make them use the new technologies?

My work will show that Luxembourg is different from other markets, confirming Greenwald and Kahn's (2005) "All Strategy is Local". Luxembourg has a specific work environment that is not in-line with the theories of the globalized world (IPSE, 2010; AmCham, 2010).

## 2.5. Dimensions Of Culture

Geert Hofstede (1980), in his monumental research on culture at IBM, has instigated worldwide research efforts. Culture has been found to have dimensions, the question is not if, but how many. Hofstede initially came up with four dimensions - Individualism versus Collectivism, Uncertainty Avoidance, Power Distance, and Masculinity versus Femininity. He later added a more dimensions: Long-term versus Short-term Orientation, Indulgence versus Restraint, and Monumentalism.

Hofstede (1980) defines culture as the "collective programming of the mind which distinguishes the members of one human group from another, see <http://geert.hofstede.nl>.

Today, Hofstede's work is known, accepted, praised, replicated, and also criticized. Some significant culture studies have followed Hofstede.

Geert Hofstede's research has not only been subject to enthusiasm but also to criticism, contestation and controversy. The five main criticisms of Hofstede's approach have been enumerated by Hofstede (2002) himself: "(1) Surveys are not a suitable way of measuring cultural differences; (2) Nations are not the best units for studying cultures; (3) A study of the subsidiaries of one company cannot provide information about entire national cultures; (4) The IBM data are old and therefore obsolete; and (5) Four or five dimensions are not enough."

This study takes on the second challenge of Hofstede's criticism, namely, that national boundaries are not the best unit of analysis of studying culture, and uses the example of Luxembourg to demonstrate that language is a better identifier of culture rather than geographical boundaries of nations. It compares data collected in three subsidiaries of one company in Germany, France and Luxembourg, to demonstrate that Luxembourg's dimensions of culture are not proxies for the average values found by Hofstede in France and Germany, but rather are unique and a result of Luxembourgish, which, along with French and German, is one of the official languages of the Grand Duchy. Hence, the next section delineates background information about Luxembourg such as economic, geographical, political, social, historical and language, as well as some research reports about culture and happiness in Luxembourg, followed by a set of hypotheses.

## 3. METHODS

a) Collecting primary data via Participant Observation, following Saunders et al. (2009): participation at seminars, conferences, meetings, dinners, breakfasts, networking events. b) Collecting primary data via Face-to-Face Interviews. c) Collecting primary data via different questionnaires, in paper or online. My questionnaire has been used in paper and online to enquire about HRM practices and the impact of digital social networks on these HRM practices in Luxembourg and Hofstede's (2001) original questionnaire has been used to measure his cultural dimensions. The questions concerning HRM practices are: (1) 'What means is your company using in recruiting?' (2) 'Which digital social networks does your company use?' (3) 'During the recruitment process, how does your company gather information about a candidate?' (4) 'After the recruitment process, how does your company gather information about its employees?' (5) 'What are the advantages of digital social networks?' (6) 'What are the disadvantages of digital social networks?' (7) 'Did the use of digital social networks change the role of the human resource specialists in Luxembourg? If yes, how? If not, why not?' (8) 'Do you see any risks, dangers while using digital social networks in the human resource practices of recruiting, evaluation, evolution, training...?' (9) 'Which internet pages are accessible in your company? (Is Facebook accessible?)' (10) 'How is networking mainly done in Luxembourg?'

## 4. RESULTS

Human Resource Managers in Luxembourg are reluctant to use digital social networks, due to their cultural identity. Human Resources practices have a historical and cultural background and has developed throughout the years. The recruitment sector has been revolutionized by Facebook, LinkedIn,

Xing, Twitter and Blogger, but not so in Luxembourg. This is given by the high score in 'Uncertainty Avoidance' following Hofstede.

**a) "What means is your company using in recruiting?"** was answered as follows: Newspapers (25) and spontaneous applications (23), Monster (21), CV Database (20), Student Fair (14). Digital social networks (8) are far the less used mean in recruiting.

**b) "Which digital social networks does your company use?"** was answered as follows: LinkedIn (20), Facebook (12), Newsletter (10), and Xing (9), Twitter (1) Blogger (0), Viadeo (0).

**c) "During the recruitment process, how does your company gather information about a candidate?"** was answered as follows: using mainly the CV (36) and the Interview with the candidate (35), References (27), Telephone interview (26), Other employers (15), Hear-Say (13), Other employees (12), and digital social networks (7) and Friends (6) are the least used means.

**d) "After the recruitment process, how does your company gather information about an employee?"** was answered as follows: mainly through discussion with the employee (35) and the annual performance evaluation (21), less via other employees (6), Hear-Say (4), digital social networks (3) and Friends (2) and are the least used means.

**e) "Which internet pages are accessible in your company? (is Facebook accessible?)"** was answered as follows: most companies have restricted their internet access (21), compared to unlimited access (20).

**f) "How is networking mainly done in Luxembourg?"** was answered as follows: networking is mainly done through private contacts, (37), followed by meetings, events, seminars (33), clubs and associations (25) and leisure (19). Digital social networks represent only 8.

**g) "What are the advantages of Digital Social Networks?"** was answered as follows:

- You can grow your network, connect to former colleagues or friends out of contact.
- Increases network, spreads brand awareness, no cost.
- (Re) connecting to people; discover other social network forms. Contacting people without facing or calling them. Timeless networking (anytime in day and night).
- It can help to find someone who can answer you a specific question. Especially LinkedIn is very useful there.
- The world just got smaller!
- Easy to use and to find information you need.
- Speed.
- It gives you a first impression to be confirmed or not.
- I have 2 daughters: 24 and 22 years old who are on Facebook, with the style of life of the students' live, Erasmus contacts, their way of keeping contact in the entire world, with students they didn't see for some months. To find back friends that one wishes to find back. To exchange information.
- Faster creation of a network, widening of one's network.
- Broad database, normally quite actual information.
- Big space of information, fast work, easy communication.
- Accessibility, information available quicker.
- Being able to reach fast a number of people whom I couldn't contact by any other means. Our site: "Your future at Deloitte": We find them at their homes, they don't need to move. The number of people! The different profile of the people, their diversity, the entire world, the world is getting very small.
- Contact passive candidates.
- Contact candidates out of location.



**h) “In your opinion, what are the disadvantages/dangers of DSN?”** was answered as follows:

- The main risk is that it is so easy to use / make contact / that there is a temptation to leave “face-to-face”-contact by side.
- Preservation of private life.
- Low quality.
- If you allow too many details to be shown to public users there might be a lack in privacy.
- People may lie about their experience, job title...
- Lack of personal touch.
- Very little usage potential for finding the right staff. People tend to exaggerate their skills and don't talk about deficiencies. Endorsements might help a bit, but when you look at them they don't seem to be more than a friendly turn.
- It's not always easy to control if information found is trustfully.
- No confidentiality.
- No control on distribution of information.
- Private info, not always accurate.
- The content is not trustful.
- It is an advantage and a disadvantage: fast communication, a lot of information.
- The contact has to be private, personal. I don't want to make public what is private. It's the illusion of transparency.
- To share too much information with everyone.
- One can create a profile that isn't true. One can create an identity without being it.
- Information is not as complete as a CV. As a recruiter you have to be extra careful.
- This mix of private life – professional life. Facebook has a non-stop memory. You cannot delete the memory of Facebook. Even if I have nothing to hide, I don't want to show it to everyone.
- The limits of the network: “ok, we are linked, yes, and what now?” The weak border between the private and the professional.
- Reliability of information, respect of personal data, standard demand driven streamlining of data, over-simplification of search = interesting profiles not taken into account.
- Risks in confidentiality. Risks of copies. Risks of discretion.
- Yes: reputation. Information is spread fast, without control. Not to be deleted: it is on the net, it will stay there forever.
- Privacy. Not suitable photos.

## 5. DISCUSSION AND IMPLICATIONS

The purpose of this study was to explain the cultural and language characteristics of Luxembourg that may influence the tendency of human resources specialists in Luxembourg to be reluctant to utilize new social networking technologies such as LinkedIn, Viadeo, Xing, Facebook and Twitter.

The study is the result of the link between literature on standard HRM practices, e-HRM (Martin and Reddington, 2010) and practice in Luxembourg business life (IPSE, 2010; AmCham, 2010).

The aim is to analyze Luxembourg and its way of business while continuing to evolve with changing technologies. The main question is: Who wants e-HRM? The questions discussed go deep into the analysis of everyday business life, cultural identity, language and international trade in Luxembourg (Horner, 2009; Kingsley, 2009; Davis, 2009). One must genuinely accept and understand the meaning of “Mir welle bleiwe wat mir sinn”. If one does not make an effort to integrate into Luxembourg's specific business culture, success in Luxembourg may never be possible (Background Notes, 2006; Neefs and Laures, 2010).

This research on ‘who wants e-HRM’ could be used by HR practitioners, recruiters, head-hunters and HR directors in Luxembourg who would like to consider evolving technologies and their potential use in Luxembourg's business environment with its cultural identity (Jameson, 2007) in international trade (Rauch, 2001). As the interviews and questionnaires were performed mainly in 2010 and 2011, things might have changed since then.

HR Managers will be made aware of the dangers of digital social networks and may potentially reflect on if and how to implement them into their current HRM Practices (Guler and Guillen, 2010). On the other hand, the question is asked: do we really want e-HRM? While internet security is in the core of the discussion by evoking the dangers of digital technologies, the traditional ways of HRM, forgotten for a while, regain their importance.

Future research could focus on dangers of e-HRM practices, confidentiality, data security and protection of our private life alongside with rising *digital* criminality. Traditional HRM practices have proven their quality over the years. Maybe HR practitioners were too fast in adopting new digital technologies?

## REFERENCES

- American Chamber of Commerce (Eds.). (2010). *Working in Luxembourg* (3<sup>rd</sup> ed.). Luxembourg: AmCham.
- Auletta, K., 2009. Googled. The end of the world as we know it. London: Virgin Books.
- Background Note Luxembourg, 2006. Luxembourg, Geography, Ethnology. *Background Notes on Countries of the World*, 1-6.
- Bada, A.O., and Madon, S., 2006. Enhancing human resource development through information and communications technology. *Information Technology for Development*, 12(3), 179-183.
- Briley, D.A., Morris, M.W. and Simonson, I. (2005). Cultural Chameleons: Biculturals, Conformity Motives, and Decision Making. *Journal of Consumer Psychology*, 15(4), 351-362, available at: <http://works.bepress.com/briley/5/html> (accessed 25 November 2014).
- Carr, N., 2010. *The shallows. What the internet is doing to our brains*. New York, NY: W.W. Norton and Company.
- Davis, K., 2009. Language identities, ideologies, and policy relevance: Reflections on Luxembourg studies. *Language Problems and Language Planning*, 33, 174-183.
- Dumont, P., Kies, R., and Poirier, P., 2008. Luxembourg. *European Journal of Political Research*, 47(7/8), 1060-1070.
- Greenwald, B., and Kahn, J., 2005. All Strategy is Local, *Harvard Business Review*, Sept-Oct., pp. 94-107.
- Guler, I., and Guillen, M.F., 2010. Home country networks and foreign expansion: Evidence from the venture capital industry. *Academy of Management Journal*, 53(2), 390-410.
- Hofstede, G., 1980. *Culture's consequences: international differences in work related values*. Sage, Beverly Hill, CA.
- Hofstede, G., 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations*. Sage, Thousand Oaks, CA.
- Hofstede, G., 2008. *Values Survey Module 2008*. Institute for Research on Intercultural Cooperation, Maastricht, the Netherlands.
- Hofstede, G. available at: <http://www.geerthofstede.com/html> (accessed 25 November 2014).
- Hofstede, G., Hofstede, G.J., and Minkov, M., 2010. *Cultures and Organizations: Software of the Mind: Intercultural Cooperation and Its Importance for Survival* (3<sup>rd</sup> ed.). Mc Graw Hill, New York, NY.
- Hofstede, G.J., Pederson, P.B., and Hofstede, G., 2002. *Exploring Culture: Exercises, Stories and Synthetic Cultures*. Intercultural Press, Yarmouth, ME.
- Hong, Y.-Y., Morris, M. W., Chiu, C.-Y., and Benet-Martínez, V., 2000. Multicultural Minds. A Dynamic Constructivist Approach to Culture and Cognition. *American Psychologist*, 55(7), 709-720.
- Horner, K., 2009. Language policy mechanisms and social practices in multilingual Luxembourg. *Language Problems and Language Planning*, 33, 101-111.
- IPSE – IdentitEs, Politique, SociEtEs, Espaces (Eds.), 2010. *Doing identity in Luxembourg. Subjektive Aneignungen – institutionelle Zuschreibungen – sozio-kulturelle Milieus, Kultur und soziale Praxis*. Bielefeld: Transcript Verlag.
- Jameson, D. (2007). Reconceptualizing cultural identity and its role in intercultural business communication. *Journal of Business Communication*, 44(3), 199-235.

- Jarvis, J., 2009. *What would Google do?* New York, NY: Harper Collins.
- Kashima and Kashima, 1998. Culture and Language: The Case of Cultural Dimensions and Personal Pronoun Use, *Journal of Cross-Cultural Psychology*, May 1998, Vol. 29, pp. 461-486.
- Kingsley, L., 2009. Explicit and implicit dimensions of language policy in multilingual banks in Luxembourg: An analysis of top-down and bottom-up pressures on practices. *Language Problems and Language Planning*, 33, 153-173.
- Kirkpatrick, D., 2010. *The Facebook effect. The inside story of the company that is connecting the world.* New York, NY: Simon and Schuster.
- Kuvaas, B., and Dysvik, A., 2009. Perceived investment in employee development, intrinsic motivation and work performance. *Human Resource Management Journal*, 19(3), 217-236.
- Lewis, R.D., 2006. *When cultures collide. Leading across cultures* (3<sup>rd</sup> ed.), Boston, MA, London: Nicholas Brealey International.
- Li, C., and Bernoff, J., 2000. *Groundswell. Winning in a world transformed by social technologies.* Boston, MA: Harvard Business Press.
- Mahoney, T.A., and Deckop, J.R., 1986. Evolution of concept and practice in personnel administration/human resource management (PA/HRM). *Yearly Review of Management of the Journal of Management*, 12(2), 223-241.
- Martin, G., and Reddington, M., 2010. Theorizing the links between e-HR and strategic HRM: a model, case illustration and reflections. *International Journal of Human Resource Management*, 21(10), 1553-1574.
- McLean, G.N., and McLean, L., 2001. If we can't define HRD in one country, how can we define it in an international context? *Human Resource Development International*, 4, 313-326.
- Minkov, M., 2011. *Cultural Differences in a Globalizing World.* United Kingdom, North America, Japan, India, Malaysia, China: Emerald Group Publishing Limited.
- Neefs, P., and Laures, G., 2010. Luxembourg is adapting to international standards. *International Tax Review* 54, 27-31.
- Paperjam, June 2009. Hors-sErie - Etude sur le marchE du travail et du recrutement sur le Grand- DuchE du Luxembourg. Luxembourg: Mike Koedinger.
- Rauch, J. E., 2001. Business and social networks in international trade. *Journal of Economic Literature*, 39(4), 117-1203.
- Reddington, M., Martin, G., and Bondarouk, T., 2010. Making Sense of HRM: Understanding Barriers to Transformation Through Technological Lenses, in *Electronic HRM in Theory and Practice*, eds. T. Bondarouk, H.J.M. Ruel, and J.C. Looise, Elsevier Science.
- Saunders, M.N.K., Lewis, P., and Thornhill, A., 2009. *Research Methods for Business Students* (5<sup>th</sup> ed.). Harlow: FT Prentice Hall.
- Sherzer, J., 2012. Langage et culture: une approche centrEe sur le discours, Langage et sociEtE1/2012 (n. 139), p. 21-45, URL: [www.cairn.info/revue-langage-et-societe-2012-1-page-21.htm](http://www.cairn.info/revue-langage-et-societe-2012-1-page-21.htm). DOI:10.3917/lis.139.0021.
- Schinzel, U. 2012. Hofstede in Luxembourg. An Intercultural Comparison with France and Germany. Applying Geert Hofstede. In Collaboration with Lindab. *Doctoral Thesis*.
- Schinzel, U. 2013a, How to get a Doctorate – and more – Distance Learning, Frieling Verlag, Berlin.
- Schinzel, U. 2013b. Why are people in Luxembourg happy? An exploratory study of happiness and culture measured by the dimension of a language as identifier in the Grand Duchy. *Journal of Customer Behaviour*, 12(4), pp.315-340. doi: 10.1362/147539213X13575568505822
- Slagter, F., 2009. HR practices as predictors for knowledge sharing and innovative behaviour: A focus on age. *International Journal of Management Resources Development and Management*, 9(2-3), 223-249.
- Sparrow, P.R., 2007. Globalization of HR at function level: four UK-based case studies of the international recruitment and selection process. *International Journal of Human Resource Management*, 18(5), 845-867.
- Spizzo, D., 1995. *La nation luxembourgeoise. Genèse et structure d'une identitE.* Paris: L'Harmattan.

- Stengel, R., 2010. The 2010 Person of the Year. Only Connect. Mark Zuckerberg and Facebook are changing how we interact – and what we know about each other. *Time*, Dec. 27, 2010 / Jan. 3, 2011.
- Tapscott, D., 2009. Grown up digital. How the net generation is changing your world. New York, NY: McGraw Hill.
- Tixier, J., 2004. Does the evolution of the human resources practices imply the implementation of an information system? *International Journal of Human Resources Development and Management*, 4(4), 414-430.
- Zittrain, J., 2009. The Future of the internet and how to stop it. London: Penguin.

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# TECHNOLOGICAL INTENSITY AND CURVILINEAR FORMATION OF INTERFIRM ALLIANCES

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## ABSTRACT

*There is considerable support in the current literature for the view that alliance formation is positively associated with technological intensity and therefore, also with innovation. Findings from classic innovation research suggest caution. Alliances interpose additional boundaries in the flow of technology that could turn out to be detrimental to innovation. The apparent contradiction is investigated using a US economy-wide dataset of alliances and due to the extraordinary complexities in the comprehensive dataset using a rather unconventional technique of local regression. Moderate technological intensity of a firm was associated with the highest level of alliance formation. Alliance formation was either negligible or non-existent under extreme technological intensity. Thus, alliances can be considered as an innovation-related phenomenon, but hardly an innovation-intensive one. When technological intensity is moderate, if the intermediating technology is developed enough to need only minimal cross-boundary support, then they can serve as a para-organizational locus of innovation. In other words, they can provide a new pathway for technology transfer and for modest developments, although they do not necessarily offer a great arena for aggressive inventive activities.*

**Keywords:** Interfirm Alliances, Technological Innovation, Technological Intensity, Local Regression

## 1. INTRODUCTION

Technological progress affects everyone. It affects the users of technology, with faster transportation, greater computing power, easier communication, better medicines, and in many other known and unknown ways. It affects providers of technology, who have to strive constantly to deliver more quickly products that are better and cheaper. Driven by technological change, competition in industries is intensifying and markets for their products are becoming increasingly global. These have elicited a range of responses from managers. Important among these are formal cooperative arrangements among firms. Scholars investigating the alliance phenomenon are in general agreement that it enables innovation and is positively associated with technological intensity. However, by their very nature alliances add new organizational and geographical boundaries that obstruct the flow of technology. Classic innovation research has shown us how important the integrative processes for innovation are, and how fragile they become in the presence of boundaries. It is possible that alliances can indeed thwart the innovation processes. In this paper, I attempt to resolve this apparent contradiction and to calibrate the role of alliances in managing innovation.

## 2. LITERATURE REVIEW

At first glance, entering into alliances might seem like any other activity in an organization. However, cooperative ventures are not stand-alone activities. Organizations link up to multiple partners using these ventures, and through them to even more partners, in a web of relationships that is intended to satisfy the diverse needs of disparate constituents. Due to this inherent complexity there are numerous ways to study the phenomenon of interfirm cooperation. Historic research does reflect diverse approaches, seen in the levels of analysis – ranging from individual (e.g. Cartwright and Cooper, 1989, Salk and Shenkar, 2001) to alliance (e.g. Hagedoorn, 1993, Harrigan, 1986, Gulati et al., 2009) to firm (e.g. Bleeke and Ernst, 1993, Chesbrough and Teece, 1996) to industry levels (e.g. Mowery, 1987, Gerlach, 1992, George, 1993). Similarly, many theoretical anchors have also been employed – ranging from transaction cost (e.g. Kogut, 1988, Parkhe, 1993) to resource dependence (e.g. Boyd, 1990, Pfeffer and Nowak, 1976) to game theory (e.g. Parkhe, 1993, Sinha and Cusumano, 1991) to strategy process models (e.g. Harrigan and Newman, 1990, Fornell et al., 1990, Mudambi and Tallman, 2010) to trust (e.g. Gulati, 1995, Zaheer and Venkatraman, 1995).

The extraordinary diversity of theoretical approaches and levels of analyses historically seen in the inquiries related to alliances is testament to the complexity of the underlying phenomenon. It is not surprising therefore, that, since the studies follow different strands, many of the findings remain incommensurable. However, in spite of the apparently diverging set of theoretical perspectives, and the confounding multiple levels of analysis, one interesting consensus has emerged. There is unambiguous support to the view that interfirm alliances are strongly associated with technological intensity and innovation. (Zeng et al., 2010, Todtling et al., 2009, Yli-Renko et al., 2001, Nielsen and Nielsen, 2009)

The main thrust of the supporting argument is that under conditions of increasing technological intensity, indicated by high technology-related expenses and consequent need for compensatory access to markets, it would be beneficial to form cooperative links that would help in hedging the bets on developmental investments, by bringing complementary technological skills and providing market access. (Badaracco Jr., 1991, Chesbrough and Teece, 1996, Fusfeld and Haklisch, 1985, Hagedoorn and Schakenraad, 1992, Hagedoorn, 1990, Hagedoorn, 1993, Hladik, 1985, Hladik, 1988, Mowery, 1985, Mowery, 1987, Pennings and Harianto, 1992). Alliance literature is now replete with such studies that claim a positive association between alliance formation and technological intensity or its proxies of high levels of knowledge exploration or exploitation. (Zeng et al., 2010, Foss et al., 2010, Whittington et al., 2009, Todtling et al., 2009, Rothaermel and Alexandre, 2009, Ozcan and Eisenhardt, 2009, Nielsen and Nielsen, 2009, Greenhalgh et al., 2004)

The current beliefs and findings about technological anchors of alliances are not quite in line with the established research in technological innovation. Communication networks within organizations are already too fragmented (Allen, 1984), integrative processes too over-extended (Roberts, 1987) and cultural chasms across groups too difficult to bridge (Katz, 1997) that significant managerial skills and efforts are still needed for mending and improving internal innovation processes. It would seem that an external locus of innovation through alliances can only hinder the process. Additional organizational and geographical boundaries that interfirm alliances impose can only damage the process, if not thwart it entirely. The overwhelming failure rate of alliances (Chowdhury, 1992, Harrigan, 1985, Park and Russo, 1996, Shennan, 1992) could be one important clue related to this. Further, economic appropriability arguments (Levin et al., 1987), particularly the protection of tacit knowledge (Polanyi, 1966) do not favor the creation of formal cooperative links that might enable one partner to engage in opportunistic behavior detrimental to the other.

It should also be apparent from the brief review of the literature that scholars have been partitioning the problem theoretically and analytically. There are both empirical and theoretical reasons to be cautious about the currently popular notions of technological anchors of alliances. In this paper, I explore the drivers of interfirm alliances by identifying the structure of a comprehensive economy-wide network of US public firms. I will pay particular attention to the technological anchors while considering several competing hypotheses.

### 3. RESEARCH QUESTIONS & HYPOTHESES

The overarching research question in this paper is what characteristics of firms explain the alliances they form? That is important to understand the motivations of firms that use alliances more than others do. It is a first step in understanding the business landscape that is being continually changed by alliances. Just as there are firms that are traditionally R&D intensive (e.g. in pharmaceuticals, computers and biotechnology), manufacturing intensive (e.g. in paper, aluminum and chemical), and advertising intensive (e.g. in pharmaceuticals, food and cigarettes), are there firms that are alliance-intensive? How can we distinguish these firms based on their characteristics that we already know? Further, given that there is consensus about positive association between alliances and technological intensity, how does one explain the seeming impediments to innovation? We ask such questions in this paper.

The hypotheses are given below under the following organizing areas: (a) control variable for size, (b) performance variable based on profitability, and, (c) "value-chain" variables for technological and marketing intensity, based on R&D, manufacturing and advertising expenses. The control variable essentially partials out the relatively uninteresting effect of size. The other variables allow us to test competing hypotheses. The value-chain variables, in particular, help us to identify whether high or low intensity in one of the three elemental components (R&D, manufacturing, advertising) predict formation of

alliances. It suffices to state here that all operationalizations are straightforward. For example, size is measured by assets, financial performance by income normalized by sales, marketing intensity by advertising expense normalized by sales, and technological intensity by R&D and manufacturing expenses normalized by sales.

**Size of the Firm:** There is considerable face validity to the argument that large firms are likely to enter into greater number of alliances than small firms. A small firm could be thought of as representing a limited resource set around which only a small number of alliances can be fashioned. On the other hand, one should also consider the possibility that small firms usually represent nascent opportunities that have not reached their full potential. These small firms would be collaborating vigorously with suitor firms with complementary capabilities. Such a scenario could neutralize the effect of size in alliance formation. Taking into account these opposing arguments, I propose the following hypotheses:

H 1-0: Alliance formation is unrelated to the size of the firm.

H 1-1: Alliance formation is positively related to the size of the firm

**Financial Performance:** Whether the alliances are entered into predominantly by highly profitable, distressed, or neutral firms is an important question relevant to this paper. There is considerable evidence that firms enter into alliances because of some type of distress. One classic case in point is AT&T, which entered into a large number of alliances after its divestiture. Extrapolating from the observed phenomena, the following hypotheses are proposed:

H 2-0: Formation of alliances is independent of the financial performance of firms.

H 2-1: Formation of alliances is negatively related to the financial performance of firms.

**Marketing Intensity:** It would be interesting to contrast the effect of marketing intensity with that of technological intensity (see below) on alliance formation. Firms “closer” to their consumers should have higher marketing intensity as evident from larger advertising expenses. The following hypotheses are proposed to test whether the alliances are driven by the need to share the markets in such consumer driven environments.

H 3-0: Formation of alliances is independent of marketing intensity of firms.

H 3-1: Formation of alliances is positively related to marketing intensity of firms.

**Technological Intensity:** In reviewing the literature in the previous section, I presented two opposing theoretical points of view regarding the effect of technological intensity on interfirm cooperation. One, which is widely held and has impressive empirical support, is based on the apparent need to extend the firm boundaries, or at the least to extend processes across them, with increasing technological intensity. The opposing view suggests that such extensions would be extraordinarily burdensome on the fragile innovation processes and make precious internal knowledge vulnerable to misappropriation. The two opposing arguments are captured in the following hypotheses:

H 4-0: Technological intensity of firms is positively related to the formation of alliances.

H 4-1: Technological intensity of firms is negatively related to the formation of alliances.

#### 4. DATA

I assembled the firm level alliance network data from the abstracts of news items in the Wall Street Journal (WSJ). The WSJ abstracts from January 1985 to December 1990 were searched electronically for three key phrases: “joint venture,” “license,” and “alliance.” A subset of abstracts containing the key phrases were then electronically filtered and parsed, with manual supervision for each record, to generate a dataset containing the following variables: (i) companies in a relationship, (ii) additional information about companies: e.g. nationality, (iii) date, and, (iv) announced purpose of the relationship. The dataset is comprehensive and devoid of any selection bias based on the type of industry or business segment. Further, it includes alliances irrespective of its purpose (e.g. R&D, manufacturing, marketing, etc.). However, since the source is the WSJ, the information is “centered” on US public firms.

The WSJ attempts to publish all information that has relevance to the market value of the public firms in the US. Although important information related to US-private, and non-US, firms are included in the journal, one cannot expect the same consistent coverage as for US public firms. A bias in the selection of

articles, acknowledged by the WSJ (Brennan, 1992), is that it does not usually report alliances involving less than \$10 million. For the analyses in this paper, I use only the data for US public firms that existed during 1985–1990. The choice of the public firms is made not just because of relative absence of selection biases in this subset, but also because the firm-level financial and other characteristic data are only available for the public US firms. The final dataset includes 7515 public US firms with 1435 relationships.

The data on public US companies were obtained from COMPUSTAT (Standard & Poor, 2004), a commercial database that carries various financial and related information. Table 1 provides the definitions for the basic firm level measures. The units for each of these measures are also provided in the table. I will describe in the following sections how these measures are converted to variables used in the analyses.

**TABLE 1. BASIC MEASURES USED TO COMPUTE VARIABLES IN THE STATISTICAL MODELS**

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<b>Number of Relations (<math>N.rel^{FIRM}</math>):</b>	Number of alliances that a firm entered into during the period of the study as reported in the Wall Street Journal. (Count)
<b>Total Assets (<math>AT^{FIRM}</math>):</b>	Current assets plus net plant plus other noncurrent assets including intangible assets, deferred items, and investments and advances. (Millions of dollars)
<b>Net Sales (<math>SALE^{FIRM}</math>):</b>	Gross sales (the amount of actual billings to customers for regular sales completed during the period) reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers. (Millions of dollars)
<b>Income Before Extraordinary Items (<math>IB^{FIRM}</math>):</b>	Income of a company after all expenses, including special items, income taxes, and minority interests—but before provisions for common and/or preferred dividends. This item does not reflect discontinued operations (appearing below taxes) or extraordinary items. (Millions of dollars)
<b>Advertising Expense (<math>XAD^{FIRM}</math>):</b>	Cost of advertising media (radio, television, periodicals, etc.) and promotional expenses. (Millions of dollars)
<b>Research and Development Expense (<math>XRD^{FIRM}</math>):</b>	All costs incurred during the year that relate to the development of new products or services. (Millions of dollars)
<b>Net Machinery and Equipment (<math>NME^{FIRM}</math>):</b>	Capitalized cost, less accumulated depreciation, of machinery and equipment used to generate revenue. (Millions of dollars)

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Source: (Standard & Poor, 2004)

## 5. RESEARCH METHOD

We have in Figure 1 the operationalizations of the constructs from the hypotheses presented earlier. Suffices to reiterate here that the main goal is to understand how the variables, such as size, financial state, R&D intensity and the like, influence the structure of the firm alliance network. In order to accomplish this, we need to construct indicators describing both the differential formation of network structures and the characteristics of firms. I described in the previous section how the basic data were collected. I describe below how they are transformed for the analyses. The variables of Table 1 were converted for use in the analyses as provided below:

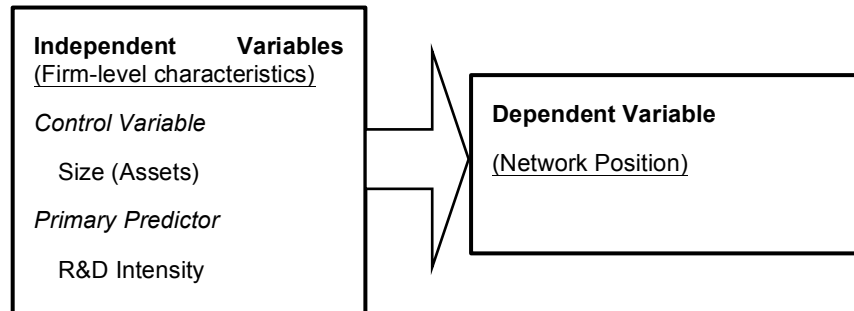
**Dependent Variable (DV):** Degree-based centrality of the firms in their alliance network is our dependent variable. This is computed by simply summing up all the alliances each firm entered into during 1985–1990. There is no need to normalize this variable,  $N.rel^{FIRM}$ , since, as I set up the alliance data, all firms have the same national boundary for their alliances.

**Independent Variables (IV):** These are computed from the yearly firm level data, presented earlier in Section 4, as follows. For a given year, the measures of financial performance, advertising intensity as well as the two measures of technological intensity (R&D and manufacturing), are computed by dividing income, advertising expense, R&D expense and capitalized cost of machinery and equipment by net sales. These normalized measures and assets, which need not be normalized, are finally averaged over



the period of the study, 1985–1990, to obtain the base line IVs used for the analyses. The descriptions of the variables are given in Table 2.

**FIGURE 1. BASIC RESEARCH DESIGN**



## 6. BASIC ANALYTIC STRATEGY

If we were to follow a classic analytic strategy, based on the hypotheses from Section 3.2 and using the variables given in Table 2, the equation below would summarize the overall model that we would attempt to fit to our data:

$$N.rel^F = \beta_0 + \beta_1(\overline{AT})^F + \beta_2(\overline{IB/SALE})^F + \beta_3(\overline{XAD/SALE})^F + \beta_4(\overline{XRD/SALE})^F + \beta_5(\overline{NME/SALE})^F + \varepsilon \quad (1)$$

It turns out that such a classic strategy fails in our case, and linear models do not explain the variance in the data. I offer possible explanations for the failure in the next section. I offer in the succeeding sections alternate graphical and computational analyses that reveal the complex relationships that undergird the data. The techniques are remarkably effective in bringing out the patterns in the data, and in answering our research questions.

**TABLE 2. FIRM LEVEL VARIABLES**

Variable	Description
$N.rel^F$	Number of relationships (alliances) by the firm
$(\overline{AT})^F$	Size of the firm - computed as the averaged assets of the firm for the period of study
$(\overline{IB/SALE})^F$	Financial performance averaged for the period - computed for each year as the ratio of income before depreciation of the firm and total sales of the firm
$(\overline{XAD/SALE})^F$	Advertising intensity averaged for the period - computed for each year as the ratio of advertising expense and total sales of the firm
$(\overline{XRD/SALE})^F$	Technological intensity, Measure #1: R&D Intensity averaged for the period - computed for each year as the ratio of R&D expense and total sales of the firm
$(\overline{NME/SALE})^F$	Technological intensity, Measure #2: Manufacturing intensity averaged for the period - Computed for each year as the ratio of capitalized cost, less accumulated depreciation, of machinery and equipment used to generate revenue, and total sales of the firm

Note: Input data for above variables were assembled for each year, 1985-1990, the period of the study

## 7. RESULTS

As can be well imagined for a comprehensive dataset of public companies used in this paper, the range for several of the variables extends over several orders of magnitude. This can be seen in Table 3, in which the summary statistics of all the measures are given. The huge ranges also come with discontinuities and other problems not easily discerned in their summary statistics calculated from their distributions. These also cannot be sufficiently corrected with the usual transformations. Lack of linear relationships was confirmed also with various other summary statistics, including zero-order correlations and several diagnostic graphics. These are available with the author and not included here only to avoid taking space for displaying 'null' results. Taken together, such problems make fitting of the usual straightforward linear models or regressions impossible.

**TABLE 3. SUMMARY STATISTICS OF THE DISTRIBUTIONS OF THE FIRM LEVEL VARIABLES**

	Min.	1stQu.	Median	Mean	3rdQu.	Max.
$N.rel^F$	0.00	0.00	0.00	0.20	0.00	52.00
$(\overline{AT})^F$	0.01	8.20	46.00	1200.00	290.00	2.0e+05
$(\overline{IB/SALE})^F$	-1863.67	-0.08	1.3e-02	-1.50	0.06	1245.80
$(\overline{XAD/SALE})^F$	0.00	0.00	0.00	0.05	0.02	112.00
$(\overline{XRD/SALE})^F$	0.00	0.00	0.00	0.36	0.02	338.00
$(\overline{NME/SALE})^F$	0.00	0.00	0.00	0.32	0.13	671.00

Note: See Table 1 for the definitions of the basic firm level measures and their units.

## 8. VISUALLY EXPLORING THE COMPLEX STRUCTURE IN THE DATA

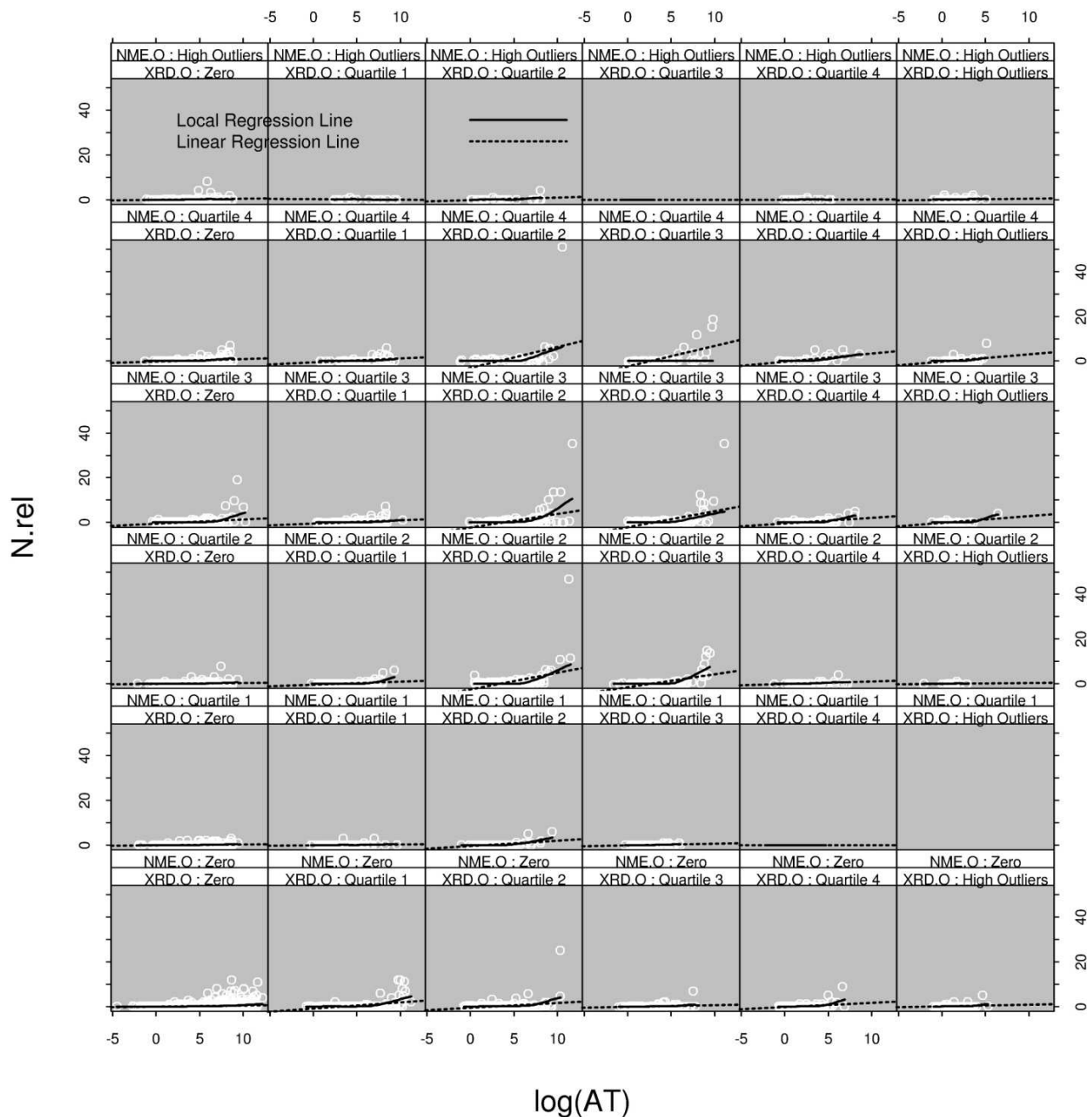
Trellis graphical displays (Becker and Cleveland, 1991, Cleveland, 1993), based on advanced visual analytical approach, proved helpful to unravel the elements of the structure in the data and to deploy subsequently a well matched analytical technique. For example, if we want to examine the relationship between salary and age conditioned by educational qualification, a single Trellis display will show multiple graphs (panels), one each for the categories in educational qualification. In each graph (panel), salary will be plotted against age. Thus, we can examine not only the relationship between two variables, but also the direct and conditioning effects of a third.

There are several ways to refine the basic idea behind Trellis displays. One can add more conditioning variables. This will result in a separate panel for each cross-classified category. If one wanted to use a continuous variable for conditioning, that would be possible by declaring the ordinal ranges (usually slightly overlapping) into which the variable should be split. It is also possible to superimpose smoothing and regression lines in each panel of the Trellis display. A 'local' regression fit is an agglomeration of *fits* in neighborhoods (containing the IVs) in which the regression surface is approximated by a linear or quadratic surface. The reader should note, however, that local linear fits can turn out to be curvilinear globally. Further, the closer the visual match between trends in scatter plots and either of the regression lines, the greater the likelihood that an analytical model would fit to the data. Thus, Trellis displays with superimposed regression lines will be very helpful, in our case, for exploring the relationship between firm level formation of alliances and characteristics of firms, as well as for deciding on an appropriate statistical technique for the data.

We need to declare the ordinal ranges into which our continuous variables are to be split for use in the Trellis displays. For this paper, the ranges for the categories are essentially based on quartiles and outliers, except for variables with a large number of 'zeroes'. For those, 'Zero' is declared the first ordinal category, and the rest of the range is split into quartiles and outliers. Categories for a given "VARIABLE" were named very simply: VAR.O.Zero, VAR.O.Quartile1, VAR.O.Quartile2, etc., with "VAR" replaced, of course, by the root name of the original ordinal variable. Thus, we have XRD.O.Zero, XRD.O.Quartile1, XRD.O.Quartile2, etc. and other such variables.

Nearly all simpler visualizations using the Trellis displays, in combinations of a single IV against the DV, yielded no clear patterns. There was a very subtle hint of some remote influence of the size of the firm on its number of alliances in some Trellis panels. That did not seem consistent or linear. On considering cross categories of pairs of IVs, however, some panels showed more noticeable patterns. One that was among the more promising Trellis displays, presented in , shows the combined conditioning by Manufacturing Intensity and R&D Intensity. I postpone an elaborate discussion on the nuances in the data to the concluding section; here I review the broad trends to arrive at a suitable modeling technique.

**FIGURE 2. ALLIANCES AS A FUNCTION OF ASSETS IN CROSS CATEGORIES OF R&D INTENSITY AND MANUFACTURING INTENSITY**



Clustering of data and consequent patterns are distinctly visible in the diagram. We can safely state that Size has a positive influence on the formation of alliances in certain niches. However, the extreme categories (Zero, Quartile 1 and 4, and High Outliers) of the three predictor variables, and particularly their interactions, appear not to be helpful for the formation of alliances. Firms with most alliances fall into a few cells just below and to the left of the top, right cell. Although from the visual display we cannot ascertain which effects are independent and which more pronounced, it is now certain that there are effects, they are not linear, and, consequently, the analytics of the model to be fitted must be adjusted. The superimposed regression lines are now matched closely to the trends in the data and the local regression lines even more so. Given the high level of interaction effects and the curvilinearity present in the data, it does make sense that local regression offers the better match. Further, we should remember that the fit that we observe in the Trellis displays are valid only for each cell. We can safely conclude, as also indicated earlier in the context of exploratory data analyses, that the usual *linear* regression techniques would be quite inadequate to apply to the entire data. With the telling insights from the graphical analysis, *local* regression modeling with appropriate partitioning for interactions appears to be the more suitable technique for our use.

## 9. FITTING AN ANALYTICAL MODEL USING LOCAL REGRESSION

We can summarize what we discovered from the Trellis Displays as follows: (i) the formation of alliances at the firm level is primarily a function of Size and interaction terms of other independent variables, (ii) there are considerable non-linearities in the relationships, and, (iii) there are distinct neighborhoods where the alliances occur more frequently. Our goal in this section is to derive a parsimonious analytic model.

While it has the remarkable ability to fit a model closely to the data without being subject to any global constraints, local regression, our preferred candidate to fit the data, also has the disadvantage that it is non-parametric. Classic least-squares regression models, as well as models in similar classes, yield coefficients and parameters that are very intuitive. This is clearly not possible in the case of local regression since the technique fits a model to “local” neighborhoods. We have only two recourses to interpret the results. We could query the “fit” repeatedly for predictions about interesting “neighborhoods.” Alternately, we can go back to the graphical displays, armed with the information from the fit about significant effects, to observe and comment about patterns and trends. We will choose the latter alternative for our purposes.

I test a hierarchy of local regression models, beginning with a base model with a size-based control variable. Next, I add a second term to the base model. The following are added individually as the second term: (i) each continuous predictor variable, (ii) each categorical predictor variable, (iii) each interaction between any two continuous variables, (iv) each interaction between any two categorical variables, and, (v) each interaction between any continuous and any (non-corresponding) categorical variable. We would prefer, in general, to have the continuous variables appear in the model, since they are not transformed in any way. However, our earlier graphical analyses strongly suggest that the underlying structure of our data may not permit this and we may have to work with the recoded categorical equivalents.

Next, each of the two-term models is compared with the base model. The following two criteria are used to decide whether the second term is to be a candidate to be included in the model to create a new base model: (i) the residual sum of squares for the compared model is less than for the base model, and, (ii) the models are statistically different (using F-test). After all the second term candidates to be included in the model are identified, they are rank-ordered inversely based on the residual sum of squares. Each term is then added one after another to the model. Each term is retained, or rejected, using the same two criteria for model comparison stated above. Once a term is retained, of course, other candidate terms have to show sufficient additional, independent explanatory power to be retained. The traditional practice is to include the interaction terms only after the respective constituent terms already have made their way into a model. However, based on the insights from the graphical analyses, I allow for the possibility of an interaction term to be included irrespective of whether its constituent terms are already in the model.

**Recoding Dependent Variables:** The independent and dependent variables for the analysis are essentially the same as the ones we used in the graphical analysis earlier. The only difference is that, as shown in

Table 4, some ordinal categories of variables are merged. If this were not done, as we test some interaction effects, the consequent undesirable segmentation will result in neighborhoods without sufficient data for the model to fit.

**TABLE 4. MERGING FACTORS OF THE FIRM LEVEL CATEGORICAL VARIABLES**

Recoded from AT.O	Recoded to AT.O2		Recoded from IB.O	Recoded to IB.O2		Recoded from XAD.O	Recoded to XAD.O2	
	Low	High		Low	High		Low	High
Quartile 1	√	-	Small Outliers	√	-	Zero	√	-
Quartile 2	√	-	Quartile 1	√	-	Quartile 1	√	-
Quartile 3	-	√	Quartile 2	√	-	Quartile 2	-	√
Quartile 4	-	√	Quartile 3	-	√	Quartile 3	-	√
High Outliers	-	√	Quartile 4	-	√	Quartile 4	-	√
			High Outliers	-	√	High Outliers	-	√

Recoded from XRD.O	Recoded to XRD.O2			Recoded from NME.O	Recoded to NME.O2		
	Low	Medium	High		Low	Medium	High
Zero	√	-	-	Zero	√	-	-
Quartile 1	√	-	-	Quartile 1	√	-	-
Quartile 2	-	√	-	Quartile 2	-	√	-
Quartile 3	-	√	-	Quartile 3	-	√	-
Quartile 4	-	-	√	Quartile 4	-	-	√
High Outliers	-	-	√	High Outliers	-	-	√

The following guidelines were used for merging the categories: (i) keep as many categories as the model would permit, (ii) prevent “neighborhoods” without sufficient data, and, (iii) have bins of comparable size, if possible. From the Trellis displays in the last section, we can see that some panels have neither data nor superimposed regression lines. It is possible to force the graphics ‘skip’ the panel under such conditions. Unfortunately, it is not possible to have the model skip a neighborhood while fitting. Therefore, the model would just fail in its entirety. The recoding of the categorical variables was carried out just to prevent such failures. The model selection was done strictly along the strategy described earlier. From the complete hierarchy of models tested, the key elements of the model selection are given in Table 5. The final model and results from the fit are given below:

#### SPECIFICATIONS

Model:  $N.rel^F \sim \log(\overline{AT})^F +$   
 $XRD.O2^F : AT.O2^F + XRD.O2^F : NME.O2^F + XRD.O2^F : XAD.O2^F +$   
 $AT.O2^F : (\overline{XAD/SALE})^F$

Span: 0.64

Degree: 2 (Quadratic local fit)  
 Number of Observations: 7067

### Results from the fit:

Multiple R-squared 0.73  
 Residual Standard Error 0.78  
 Equivalent Number of Parameters 288.0

The multiple  $R^2$  of 0.73 for a model based on a U.S. economy-wide dataset shows that it indeed fits remarkably well to the data. The model has the assumption of Gaussian errors, and the Q-Q plot (not presented here) showed that the assumption is appropriate. The model reinforces our earlier finding from the graphical analysis regarding the dominant influence of size and R&D Intensity (through several interaction terms) on alliance formation. It is also interesting that Advertising Intensity has found its way into the model.

**TABLE 5. KEY STEPS IN BUILDING THE FINAL LOCAL REGRESSION MODEL**

Term Added or Change to the Model	Mult. Rsq.	Increment to Mult. Rsq.	P(F) <sup>a</sup>
$\log(\overline{AT})^F$	0.15	-	-
$XRD.O2^F : NME.O2^F$	0.48	0.33	< 0.001
$XRD.O2^F : AT.O2^F$	0.53	0.05	< 0.001
$XRD.O2^F : XAD.O2^F$	0.59	0.06	< 0.001
$AT.O2^F : (\overline{XAD/SALE})^F$	0.62	0.03	< 0.001
Span reduction <sup>b</sup>	0.64	0.02	< 0.001
Outlier rejection	0.73	0.09	< 0.001

<sup>a</sup> The model compared contains all the preceding terms.

<sup>b</sup> To 0.64 from 0.75

## 11. DISCUSSION

Three elements of the model should be specially noted. First, the control variable for the size of the firm has a statistically significant influence on the formation of alliances. However, we can see that the influence is rather modest from and the multiple  $R^2$  of 0.15 in Table 5. The reason for this is simply the following. Although firms with a high number of alliances are usually large (e.g. GE, IBM, ATT, GM, etc.), there are many large firms with no, or just a few, alliances (e.g. Morgan Stanley, Federal Home Mortgage, Phillip Morris, Amoco, Bankers Trust, etc.).

Second, R&D intensity appears in three statistically significant interaction terms. This indicates, of course, the central place that R&D intensive firms have in the creation of cooperative ventures. We see from Table 8 that of the three interaction terms, the one between R&D intensity and Manufacturing intensity has the largest effect ( $\Delta R^2 = 0.33$  with a  $p < 0.001$ ). These two terms in combination form the strongest Technology intensity measure in our study. The presence of this interaction term and its dominant effect tell us that not just R&D intensity, but also a general Technology intensity plays an important role in the formation of alliances. It should be stressed that their effect is seen only in certain niches and it is usually non-linear. The other two interaction terms, with Size and Advertising intensity, have much smaller effects. It is interesting to note that though we have Size as a control variable, it appears again with R&D intensity in the model.

Third, the final term in the model indicates the interaction between Size and Advertising Intensity. If we examine the data carefully, we would find a small group of firms that have a large number of alliances, no or low R&D intensity, and fairly high Advertising Intensity. These are the firms that induce the last term. They belong to, as observed from a close and selective scrutiny of the data, industries such as Telecommunications, Airlines, Entertainment, and Food and Beverage. Without the interaction-laden local regression analysis that we used, we might not have been alerted to their role in their particular niche.

It might at first blush seem that this last term confounds the general findings so far about technological intensity and alliance formation. After examining the purpose of the alliances in our original dataset, we can logically breakdown the set that induced the last term into two classes: (i) There exists one class of alliances within this set for which technology mediation is minimal. These alliances are intended primarily to consolidate markets. Close examination of the data show that most alliances in the Food and Beverages industry and some in the Airline industry fall into this category. (ii) There exists a second predominant class in this set, in which alliances are strongly mediated by technology, although the parents are not technology intensive by classical definition. Examples are: (a) Communication hardware and software related alliances in the Telecommunication industry, (b) information systems related alliances (for “reservation” systems) in the Airline industry, and, (c) specific production and distribution resources related alliances in the Entertainment industry. It is ironic that the Advertising intensity of the parent firms brought the presence of this class of alliances into the model. Firms in these industries are clearly heavy users of advanced technological products and processes. Neither R&D intensity nor Manufacturing intensity can capture this phenomenon. Therefore, we identify a measurement problem in this context, but this class of alliances still suggests drivers based on technology, albeit indirectly.

We can observe several trends in the data from the Trellis diagrams that will add to the understanding based on Local Regression modeling. To begin, high outlier regions in the Trellis diagram (top row and right column) have fewer alliances than regions immediately below and to the left of them. The highest frequency of alliances is seen in a cluster of few cells below and to the left of the top right cell. Only about 200 firms fit this niche. For example, pharmaceutical firms (SIC 2834) with 9% average R&D intensity have many relationships. However, biotechnology firms (SICs 2836, 8731 and 2835, with average R&D intensities of 35%, 13% and 10%) have far fewer relationships, although still a considerable number. Similar examples of firms with relatively high R&D intensity and low number of alliances are found also in the following industries: Telegraph and Other Messaging Communication (SIC: 4822), Prepackaged Software (SIC: 7372), and Instrumentation (SIC: 3825 and 3826).

Note also that the discovered curvilinearity occurs even after controlling for size, and it goes against the near consensual belief of a *linear* positive association between technological intensity and alliance formation. Nonetheless, such retroflected alliance formation provides one of the strongest support to the notion that alliances are used to support innovation. The pattern identified in the data shows that in technology intensive environments, firms fall into either one of two categories: medium/high level R&D intensity with outlier level alliances, or outlier level R&D intensity with medium/high level alliances. This seeming ‘substitutability’ of alliances and R&D is an important finding of this study. It suggests that alliances serve as a locus for innovation and firms use them to complement their R&D efforts.

## 10. CONCLUSIONS

For a reader concerned about the causal direction asserted in this paper, please recall that we examined the structure of alliance networks on the assumption that they are the consequence of action prescribed by the characteristics of the parent firms. Since these characteristics are fairly stable over time, and since alliances are small in comparison to their parents by any measure, causal direction is unambiguous. Alliances do not make a firm large or more R&D intensive. A large and moderately R&D intensive firm enters into more alliances.

Our dataset has an inherent bias in favor of public companies and “larger” alliances, or, equivalently a bias against private companies and smaller alliances. It is relevant to note here that I am not aware of any findings to date elsewhere that are contradictory to our own either for private firms or for small-sized alliances. Anecdotal evidence, from the popular and business press, suggests that trends are similar both for public and private companies. In addition, small-sized alliances seem to be even more aggressively innovation-driven. It appears that small-sized alliances are created almost exclusively for

either accessing new technology or for developing new customer base. Alliances that involve neither new technologies nor new customers, intended primarily to consolidate old markets, are usually large. They would be better represented in our own dataset and not among the small-sized alliances it missed. I have also not used industry controls in the analyses. If I had attempted to include in our analyses the controls for the 427 industries in our dataset, that would have made the analyses enormously complex and difficult to interpret.

The analyses reported here are based on one of the most comprehensive dataset on alliances assembled for a study of this nature. The comprehensiveness offered the advantage of examining the true “big picture.” Most studies on alliances are limited to certain segments or industries, and their generalizability is severely restricted. Our economy-wide dataset allows for much greater generalizability. However, on the other hand, the comprehensiveness intrinsically limited our ability to do fine-grained analyses. The sources of our data also constrained how fine grained our variables can be. For example, financial variables from COMPUSTAT had to be limited to “aggregates” such as R&D Intensity, Manufacturing Intensity, etc., and business of the parent firm had to be characterized by its principal SIC code. While this practice is common in studies of this genre, it would have been helpful if one could unpack the variables into finer components, and given that most companies operate in multiple industries, assign the correct portions of the variables to the appropriate SIC-based segment of the parent company.

The scholars of the alliance phenomenon were quick to classify it as part of the innovation processes mainly based on the claims that they appear in technology intensive environments, and partly based on the observation that they appear often to link a technological “source” to a market “sink.” It was also inferred that higher the technological intensity, the greater the alliance intensity. This line of research paid little attention to the counter argument that layers of additional boundaries imposed in an alliance might indeed be detrimental to innovation. The findings presented in this paper help us primarily to resolve and calibrate the roles of an alliance in enabling innovation, on the one hand, and in possibly disrupting it, on the other. Our main clue lies in the evidence that, contrary to widely popular beliefs, alliance intensity does not rise with technological intensity. Under conditions of extreme technological intensity, alliances are almost non-existent. The pursuit of innovation becomes insular and unperturbed by intervening boundaries.

We also saw in this paper that under conditions of moderate technological intensity, however, alliances thrive, and truly becomes a para-organizational locus of innovation. It is reasonable to wonder if boundaries would not be a handicap. Anecdotal evidence related to performance of alliances seems to suggest they might be, at least to some extent. However, given that technological intensity is moderate, if the intermediating technology is developed enough to need only minimal cross-boundary support, then the para-organizational locus becomes viable. In other words, alliances can be an innovation-related phenomenon, but hardly be an innovation-intensive one. They can provide a new pathway for technology transfer and for modest developments, not necessarily a great arena for aggressive inventive activities.

## REFERENCES

- Allen, T. J. 1984. *Managing the Flow of Technology*, Cambridge, MA, The MIT Press.
- Badaracco Jr., J. L. 1991. *The Knowledge Link: How Firms Compete Through Strategic Alliances*, Boston, Harvard Business School Press.
- Becker, R. A. & Cleveland, W. S. 1991. Take a Broader View of Scientific Visualization. *Pixel*, 2, 42-44.
- Bleeke, J. & Ernst, D. (eds.) 1993. *Collaborating to Compete: Using Strategic Alliances and Acquisitions in the Global Marketplace*, New York: John Wiley & Sons, Inc.
- Boyd, B. 1990. Corporate Linkages and Organizational Environment. *Strategic Management Journal*, 11, 419-430.
- Brennan, B. 1992. Personal Communication with the Editor of News Desk. *Wall Street Journal*, February.
- Cartwright, S. & Cooper, C. L. 1989. Predicting success in joint venture organisations in information technology. *Journal of General Management*, 15, 39-52.



- Chesbrough, H. W. & Teece, D. J. 1996. When is Virtual Virtuous? Organizing for Innovation. *Harvard Business Review*, 74, 65-71.
- Chowdhury, J. 1992. Performance of international joint ventures and wholly owned foreign subsidiaries: A comparative perspective. *Management International Review*, 32, 115-133.
- Cleveland, W. S. 1993. *Visualizing Data*, Summit, NJ, Hobart Press.
- Fornell, C., Lorange, P. & Roos, J. 1990. The cooperative venture formation process: A latent variable structural modeling approach. *Management Science*, 36, 1246-1255.
- Foss, N. J., Husted, K. & Michailova, S. 2010. Governing Knowledge Sharing in Organizations: Levels of Analysis, Governance Mechanisms, and Research Directions. *Journal of Management Studies*, 47, 455-482.
- Fusfeld, H. I. & Haklisch, C. S. 1985. Cooperative R&D For Competitors. *Harvard Business Review*, 63.
- George, V. P. 1993. Technological Intensity & Interfirm Cooperation: An Industry Level Study of Alliance Networks of US Public Firms, 1985-1990.
- Gerlach, M. L. 1992. *Alliance Capitalism: The Social Organization of Japanese Business*, Berkeley, University of California Press.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P. & Kyriakidou, O. 2004. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82, 581-629.
- Gulati, R. 1995. Does familiarity breed trust? The Implications of Repeated Ties for Contractual Choice in Alliances. *The Academy of Management Journal*, 38, 85-112.
- Gulati, R., Lavie, D. & Singh, H. 2009. THE NATURE OF PARTNERING EXPERIENCE AND THE GAINS FROM ALLIANCES. *Strategic Management Journal*, 30, 1213-1233.
- Hagedoorn, J. 1990. Organizational modes of inter-firm cooperation and technology transfer. *Technovation*, 10, 17-30.
- Hagedoorn, J. 1993. Understanding the Rationale of Strategic Technology Partnering: Interorganizational Modes of Cooperation and Sectoral Differences. *Strategic Management Journal*, 14, 371-385.
- Hagedoorn, J. & Schakenraad, J. 1992. Leading companies and networks of strategic alliances in information technologies. *Research Policy*, 21, 163-190.
- Harrigan, K. R. 1985. *Strategies for joint ventures*, Lexington, MA, Lexington Books.
- Harrigan, K. R. 1986. *Managing for Joint Venture Success*, Lexington, MA, Lexington Books.
- Harrigan, K. R. & Newman, W. H. 1990. Bases of Interorganization Cooperation: Propensity, Power, Persistence. *Journal of Management Studies*, 27, 417-436.
- Hladik, K. J. 1985. *International Joint Ventures: An Economic Analysis of US-Foreign Business Partnerships*, Lexington, MA, Lexington Books.
- Hladik, K. J. 1988. R&D and International Joint Ventures. In: CONTRACTOR, F. J. & LORANGE, P. (eds.) *Cooperative Strategies in International Business*. Lexington, MA: Lexington Books.
- Katz, R. 1997. *The Human Side of Managing Technological Innovation*, New York, Oxford University Press.
- Kogut, B. 1988. Joint Ventures: Theoretical and empirical perspectives. *Strategic Management Journal*, 9, 319-332.
- Levin, R. C., Klevorick, A. K., Nelson, R. R. & Winter, S. G. 1987. Appropriating the Returns from Industrial Research and Development. *Brookings Papers on Economic Activity*, 3, 783-831.
- Mowery, D. C. 1985. Commercial Aircraft: Cooperation and Competition Between the US and Japan. *California Management Review*, 27, 70-92.
- Mowery, D. C. 1987. *Alliance Politics and Economics: Multinational Joint Ventures in Commercial Aircraft*, Cambridge, MA, Ballinger Pub. Co.
- Mudambi, S. M. & Tallman, S. 2010. Make, Buy or Ally? Theoretical Perspectives on Knowledge Process Outsourcing through Alliances. *Journal of Management Studies*, 47, 1434-1456.
- Nielsen, B. B. & Nielsen, S. 2009. Learning and Innovation in International Strategic Alliances: An Empirical Test of the Role of Trust and Tacitness. *Journal of Management Studies*, 46, 1031-1056.

- Ozcan, P. & Eisenhardt, K. M. 2009. ORIGIN OF ALLIANCE PORTFOLIOS: ENTREPRENEURS, NETWORK STRATEGIES, AND FIRM PERFORMANCE. *Academy of Management Journal*, 52, 246-279.
- Park, S. H. & Russo, M. V. 1996. When competition eclipses cooperation: An event history analysis of joint venture failure. *Management Science*, 42, 875--890.
- Parkhe, A. 1993. Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Interfirm Cooperation. *Academy of Management Journal*, 36, 794-829.
- Pennings, J. M. & Harianto, F. 1992. Technological networking and innovation implementation. *Organization Science*, 3, 356-381.
- Pfeffer, J. & Nowak, P. 1976. Joint Ventures and Interorganizational Interdependence. *Administrative Science Quarterly*, 21, 398-418.
- Polanyi, M. 1966. *The Tacit Dimension*, Garden City, NY, Doubleday and Company, Inc.
- Roberts, E. B. 1987. *Generating technological innovation*, New York, Oxford University Press.
- Rothaermel, F. T. & Alexandre, M. T. 2009. Ambidexterity in Technology Sourcing: The Moderating Role of Absorptive Capacity. *Organization Science*, 20, 759-780.
- Salk, J. E. & Shenkar, O. 2001. Social identities in an international joint venture: An exploratory case study. *Organization Science*, 12, 161-178.
- Shennan, S. 1992. Are strategic alliances working? *Fortune*.
- Sinha, D. K. & Cusumano, M. A. 1991. Complementary resources and cooperative research: a model of research joint ventures among competitors. *Management Science*, 37, 1091-1106.
- Standard & Poor 2004. Research Insight North America Data Guide. Colorado: McGraw-Hill Companies.
- Todtling, F., Lehner, P. & Kaufmann, A. 2009. Do different types of innovation rely on specific kinds of knowledge interactions? *Technovation*, 29, 59-71.
- Whittington, K. B., Owen-Smith, J. & Powell, W. W. 2009. Networks, Propinquity, and Innovation in Knowledge-intensive Industries. *Administrative Science Quarterly*, 54, 90-122.
- Yli-Renko, H., Autio, E. & Sapienza, H. J. 2001. Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic Management Journal*, 22, 587-613.
- Zaheer, A. & Venkatraman, N. 1995. Relational Governance as an Interorganizational Strategy: An Empirical Test of the Role of Trust in Economic Exchange. *Strategic Management Journal*, 16, 373-392.
- Zeng, S. X., Xie, X. M. & Tam, C. M. 2010. Relationship between cooperation networks and innovation performance of SMEs. *Technovation*, 30, 181-194.

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# THREAT VECTORS ON PRIVACY: THE TRAIL OF “DIGITAL IDENTITY CRUMBS©”

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## ABSTRACT

*This research study is the next iteration of an overarching longitudinal study associated with the phenomenological impact of advanced technological information creation, dissemination and ultimate use, identification and leverage of digital footprints. In this study, the authors examined and evaluated the various aspects associated with digital footprints which leave everlasting remnants that can easily identify the person who has created these imprints. The imprints have been termed “Digital Identity Crumbs ©”. Through exhaustive examination of existent research, current events and emerging trends, the research has concluded that significant exposures exist in the protection of identities, personal data and long lasting ramifications of their use. Near completion of this research, news was reported that several Hollywood stars had their personal images stolen from personal digital images and were now susceptible to these being made fully public. It is the ongoing intent of follow on research to continue capturing all major aspects related to the digitation of society (a phrase coined by the authors in the initial vestiges of this longitudinal study), and provide conclusions as to the viability of control, use and leverage of such data creation.*

**Keywords:** “Digital Identity Crumbs©”; Information technology; Information security

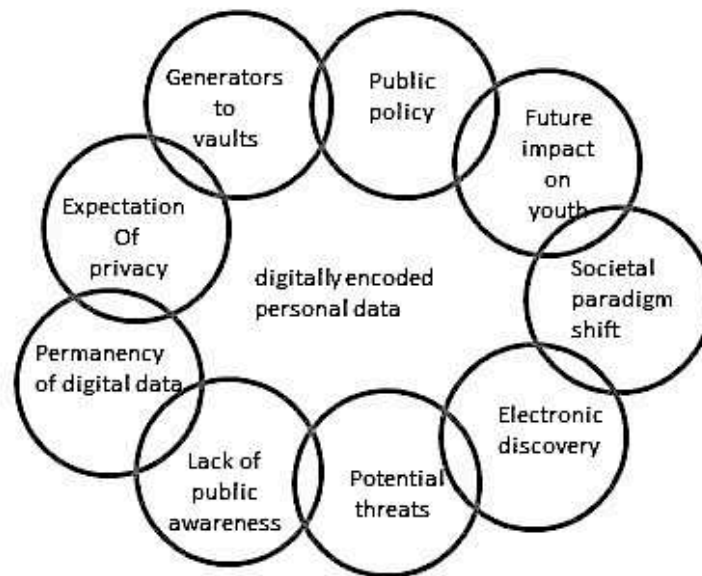
## 1. INTRODUCTION

Fox News published on February 10<sup>th</sup> 2014: “The U.S. government reportedly is ordering some drone strikes based on the location of terror suspects' cell phones -- without necessarily confirming the location of the suspects themselves -- raising concerns about missiles hitting unintended targets” (Fox, 2014, p1) (Scahill & Greenwald, 2014). The research in this paper is not intended to argue or support the appropriateness of these actions but rather to point out that existent digital footprints which the authors term “Digital Identity Crumbs©” are being dropped by each individual, leaving a trail that is easily tracked (and potentially used for nefarious purposes) by others. This research expands on the phenomenological study: *Computer Technology, Digital Transactions, and Legal Discovery: A Phenomenological Study of Possible Paradoxes* (Ponschock, 2007), that examined the sources of existing digitally encoded personal data and how the innovations projected along a 10-year continuum with a potential impact of creating new challenges for control, use and leverage of that information and data. The research attempted to better understand how digitally encoded personal data might impact the common person or organization. The model included an examination of how the trail of digital transactions can also be compiled into a personal dossier and even used in litigation, or for purposes other than the original author's intent. In addition to secondary usage, “Digital Identity Crumbs©” are left on the digital trail are “Data Exhaust”. “Data Exhaust” is a byproduct of society's actions and movements. “Data exhaust” is being harvested, recycled and even becomes learning data. Amazon's recommendation capability is a notable example. (Schonberger & Cukier, 2013)

In the seminal study, an argument was developed that society has embraced the conveniences and efficiencies that technologies have advanced. The research has shown that the use of the technological conveniences have provided an opportunity for personal information generated by these transactions to be collected. Collection begins at the point a consumer signs an application and continues through a continuum of infinite usage. The research provided clarity that transactions collected and stored in digital format approach an infinite permanency. It can be argued that a combination of the two tenets, collection and longevity, result in greater volume of data in digital form than was present in tangible forms in the past, inferring from the expert participants' opinions and knowledge, a conclusion that there has been an increase in data collection, data permanency, and public access to the personal information that may be readily available via the Internet (Ponschock, 2007). The study is now several years old, and the research herein is intended to employ the seminal findings while bringing current content to that research. The nine

themes depicted in figure 1 emerged while analyzing the narrative responses of the subject matter experts in the seminal research.

**FIGURE 1. DIGITALLY ENCODED PERSONAL DATA THEMES**

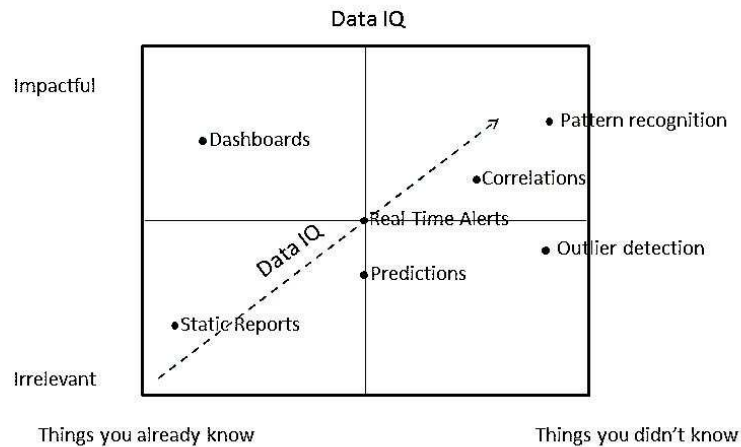


Adapted from : Computer Technology, Digital Transactions, and Legal Discovery:  
A Phenomenological Study of Possible Paradoxes (Ponschock, 2007)

## 2. BACKGROUND INFORMATION

Digital records are at the very core of society's business environment, and personal lives (Osterman, 2003). Even a small company can easily store terra-bytes of digital data. A terra-byte is a measure of computer data storage equivalent to one thousand billion characters of information. An individual leaves a trail of personal data while buying groceries, banking, FACEBOOK, or just driving past video cameras. These "Digital Identity Crumbs©" are contained within an individual's personal computer, throughout the company's network, and beyond. Each day the news has been inundated with corporate litigation that surfaced illegal activity and injurious information found in e-mails, data, and even deleted records; or exposed a breach in securing these records (Rosenburg, 2014). The "Digital Identity Crumbs©" and the information that they contain can be aggregated, and bought and sold (Schonberger & Cukier, 2013) on both legitimate and dark markets.

This research examined the sources of existing "Digital Identity Crumbs©" and how the innovations projected along an analytical continuum might impact those sources or create challenges for businesses, individuals, and society as a whole.

**FIGURE 2. DATA IQ MODEL (SCHONBERGER & CUKIER, 2013)**

Adapted from The secrets of big Data Revolution

The research spawned an understanding of how “Digital Identity Crumbs©” may impact society. The model includes an examination of how the trail of digital transactions can be compiled into a personal portfolio and those portfolios combined with other demographic data points can be used for purposes other than the owner’s intent. The secondary uses of these data may not even have been imagined during the initial collection period. (Schonberger & Cukier, 2013) This analysis is a continuation of a broader longitudinal and (conceptually qualitative) meta-analysis research related to the ongoing paradigmatic shift (Kuhn, 1996) based on technological and societal transformations associated with “digitation”. This paper is a data point toward understanding how humankind is on a continuum to a transformation - the “digitation of society”.

Benjamin Franklin with his Kite and key may have created a greater impact than that of the Industrial Revolution (Manzano, 1999). Electronic technology the forbearer of the digital era has dramatically influenced society as a whole. Scholars and common citizenry alike have studied with intrigue the obscure force of electricity. Some are bewildered and others are overwhelmed by this phenomenon. Consumers have been using electronic devices for the greater part of their lives, often taking for granted their existence. Electronic devices have crossed the line of tools to ubiquitous computers. These same individuals are not always cognizant of the trail of “Digital Identity Crumbs©” that are left behind and how others can misuse these digital DNA markers.

Back in 2010, Eric Schmidt then CEO of Google – stated that we now create as much data every 2 days as we did from the dawn of man through 2003. (The Big Data Revolution). We create about 2.5 quintillion bytes of data daily. Google receives 2,000,00 searches every minute of every day. As this research will quantify, even these searches leave “Digital Identity Crumbs©” - a personal identity trail (Hemnes, 2012). The following table are some generators of “Digital Identity Crumbs©”.

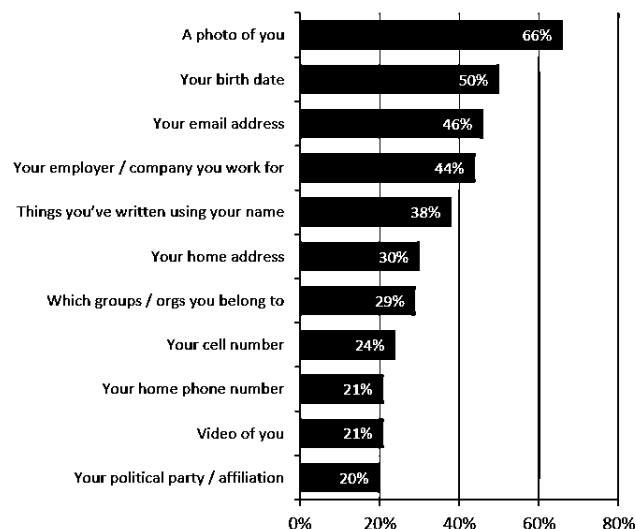
**TABLE 1. DIGITAL IDENTITY CRUMBS© GENERATORS**

<b>Video Camera – Public</b>	<b>Video Cameras – Private</b>	<b>Fast pass cards</b>	<b>Credit cards with swipe chip</b>
<b>Credit card transactions</b>	Financial transactions	Toll booths	Caller ID
<b>E-commerce transactions</b>	Internet Cookies	Internet history	Face book and other social media postings
<b>Social media meta-data ownership</b>	Making financial transactions with cell phones	The computer in your car	Geico's auto "Snapshot"
<b>GPS'</b>	Cell Phone locator chip	Retail loyalty cards	Security checkpoints
<b>Border crossings</b>	License plate readers	E-mail	ATM machines – transactions and cameras
<b>Video cameras and the public crowd sourcing</b>	DNA	Finger prints	Library card
<b>TSA</b>	GOOGLE mapping cars and WIFI	Toll booth EZPASS tags	Legal/Government documents
<b>Driver's license</b>	Marriage	Passport	Student loans
<b>Mortgages</b>	Rental agreements	NSA	Unintended consequences
<b>Security breach</b>	Unwanted advertising	E-discovery	Tweets in the library of congress
<b>Google</b>	Search engines	AMAZON	

Digital footprints and the corresponding volumes of statistics are not just about the other guy. According to the PEW research center; the majority of users know that there is a plethora of personal data about them on the internet. (Figure 2) (Rainie, 2013)

**FIGURE 3. PERSONAL INFORMATION MODEL****Personal information online**

% of adult internet users who say this information about them is available online



**Source:** Pew Research Center's Internet & American Life Project Omnibus Survey, conducted July 11-14, 2013, on landline and cell phones. N=792 for internet users and smartphone owners. Interviews were conducted in English on landline and cell phones. The margin of error on the sample is +/- 3.8 percentage points.

### 3. RIGHTS AND PRINCIPLES IN A CYBER ERA

As technology becomes embedded and approaches invisibility; our daily lives and personal privacy may be pressured or even partially surrendered (Ghadar & Spinder, 2005). The concern over leaking digitally encoded personal data has stirred headlines from many privacy action groups. As individuals browse through Web sites, parties on the other end of those sites may be browsing through their personal information and using that information for their own purposes (AT&T, 2005b). The Privacy Rights Clearing House estimated in a posting last updated November 4, 2005, that more than 51 million United States citizens may have had their personal data compromised since February 2005 (Rosenburg, 2014). Visionaries predict that benign computer intelligence may soon be in our homes, cars, and workplaces (Fisher, 2004). Intel and Philips have spent millions of dollars developing the concepts underlying this model. Recent reports of the 2013 Target credit card breach Bloomberg reported that the Target breach may have affected the equivalent of 1/3 of the population of the U.S. and the Ebay breach of 2014 "The magnitude of the reported eBay data breach could be of historic proportions, and my office is part of a group of other attorneys general in the country investigating the matter," stated Florida Attorney General Pam Bondi. These massive breaches exemplify a growing trend line.

As the computer becomes less visible, information appliances will expand in numbers and become embedded in objects used in unambiguous ways (Norman, 1999). Recently, the Progressive auto insurance company released Information appliances interact in fresh and creative ways (Norman, 1999). The information appliance also inflicts pressure on the law of transactional volumes. Amaravadi (2004) affirmed that the number of digital transactions will increase with the maturation of society. For example, global credit card transactions translate into \$213 billion and are projected to hit \$393 billion by 2010. Visa transactions totaled 43 billion entries in 2004 (Visa International, 2004).

As information appliances meld into our consciousness, their transactions take on forms that are common, frequent and forgotten. Ubiquitous transaction generators are telephone calls, digital pictures, and e-mail messages. Automobiles commonly inform the service department through wireless connections that the check-engine light has been illuminated. Automobiles produce vast amounts of data even if driven or parked. Acceleration rates, braking distances and battery charging needs for electric cars or hybrids are only a few of the sensory data points being continuously monitored and tracking data collected. These numerous sensors continue to stream data. (Noor, 2013) Through a wireless link to remote diagnostics, the performance of the automobile's critical components can be analyzed (Lynch, 2005). "The data-recorders that are in most cars capture the activities of a vehicle a few seconds prior to an airbag activation have been known to 'testify' against car owners in court in disputes over the events of accidents." (Schonberger & Cukier, 2013, p.156) Data points are being generated by almost every action of our very existence. Insect drones have also become a reality. A drone with a 16.5-centimeter wingspan can carry a camera, communications systems and an energy source. (Piore, 2013) A swarm of insect drones can collect "Digital Identity Crumbs©" without us observing their presence. Combined with facial recognition and Wi-Fi interception our every move can be datafied (Schonberger and Cukier, 2013).

As fast as the Internet gains ethical use and acceptance, individuals, companies, and even countries have found ways to exploit its technology. The Chinese government pressured Yahoo to relinquish records, resulting in the arrest and conviction of at least two dissidents (Fagarty, 2006). The National Security organization (NSA) a Spy agency of the U.S. government has intercepted cellphone transmissions of even foreign diplomats. "The NSA snooped on as many as 122 foreign heads of state in 2009, ranging from Merkel to Ukrainian Prime Minister Yulia Tymoshenko" (Fingas, 2014, P1).

Innovations transition through a present state and mature into new developments that are then positioned to begin the maturation cycle (Norman, 1999; Treloar, 2005). Many of today's electronic or digital innovations are ready to begin the metamorphic transition into levels that were previously imagined only by science fiction writers, visionaries, and futurists (Lindeman, 1999; Naisbitt, 1982). Straddling the life cycle of today's technology with the vision of tomorrow provides a balance between the deliverable and the abstract nature of a vision (Norman, 1999). The telephone provides an example of this principle. Alexander Graham Bell's notebook entry of 10 March, 1876, describes his successful experiment with the telephone. Speaking through the instrument to his assistant, Thomas A. Watson, in the next room, Bell utters these famous first words, "Mr. Watson, come here. I want to see you" (Bell, 1876). The telephone has matured from the operator connected device, to rotary dial, to the touch-tone phone. The cordless

phone began to provide freedom of movement denied by the wired telephone because it allowed for mobility (Bellis, 2006). This wireless capability matured into the cell phone of today, which delivers video streams and e-mail. While the cell phone was maturing, the Internet and Web phone also came into focus. Voice over Internet Protocol (VoIP), both on private networks and across the public Internet, has changed the revenues models of many telephone companies (Evalueserve, 2005). As the cell phone industry grows, the potential privacy violations also increase. Cell phones naturally leave "Digital Identity Crumbs®". Rep. Phil Montgomery, R-Ashwaubenon is noted as saying "this is a personal infringement on people's privacy" (Schuller, 2006, p. 1). Montgomery (2006) also said

It's frightening just how easy it is to obtain someone's phone record. Basically, all anyone needs is a name, number, and address for the number they want to check. With that information, all that's required is a little money and access to the Internet (p. 1).

"The NSA collects nearly 5 billion records a day on the locations of cell phones overseas to create a huge database that stores information from hundreds of millions of devices, including those belonging to some Americans abroad." (FoxNews.com, 2013, p1)

#### 4. BEYOND DATA'S ORIGINAL USE

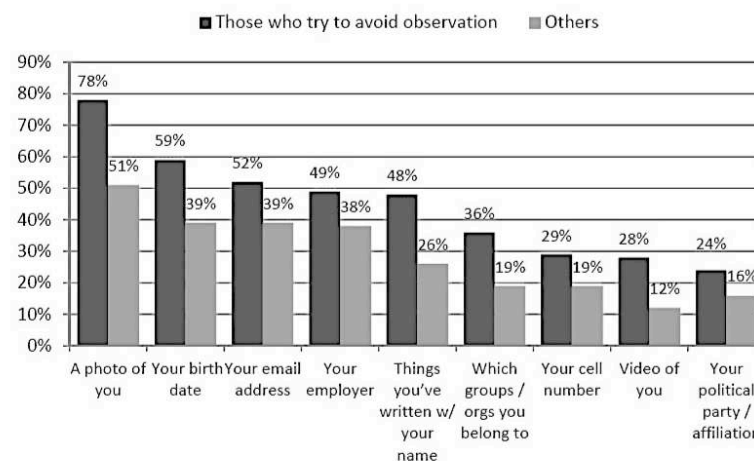
The chart below shows how the 55% of internet users who have taken steps to hide from someone or an organization compare with those who have not tried any avoidance strategies when it comes to key pieces of personal information that are available online. The internet users who try to avoid others also often have the most personal information available online.

For years now the citizenry has struggled with the issue of who owns data. The courts with their recent ruling are well on their way to establishing an answer. Facebook tracks a massive amount of data from each of their users. In 2012 it was reported that Facebook collects over 500 terabytes of data every single day (Constine, 2012). The data Facebook records includes: 2.7 billion "Likes," and 300 million photo uploads a day. In addition, Facebook also scans about 105 terabytes a day every thirty minutes.

**FIGURE 4. DATA AVOIDANCE RESEARCH (RAINIE, 2013)**

**The internet users who try to avoid others also often have the most personal information available online**

*% of adult internet users who have taken steps to avoid observation by others compared with non-avoiders on the kinds of personal information that is available about them online*



**Source:** Pew Research Center's Internet & American Life Project Omnibus Survey, conducted July 11-14, 2013, on landline and cell phones. N=792 for internet users and smartphone users. Interviews were conducted in English on landline and cell phones. The margin of error on the sample is +/- 3.8 percentage points.



Data is typically gathered with a specific purpose in mind (Schonberger and Cukier, 2013). The significance produced from using the data as intended will produce primary value. Extensible data, or data preserved in a way others can easily access and use, is potentially important to unlocking its secondary value. Value from “Digital Identity Crumbs©” generators surface in three ways in addition to the primary intended use. First is the basic reuse, where the same data is used to provide insight that was not previously noticed or sought. The second comes from merging of datasets. One set may not have been useful on its own, but when analyzed with another, new insights emerge. The third is finding the recombinant data, which is when two or more unrelated data sets are combined to generate previously dormant value (Schonberger and Cukier, 2013). The typical internet day is made up of favorite website mines with “Digital Identity Crumbs©” that the private citizen unknowingly leaves behind. In a Wall Street Journal article of 2014; it was predicted the typical online internet user’s activity is tracked over 2000 a day with every click, hover, logon and even delete. Twitter tracks the activity of visitors to over 868 websites out of 2510 of the most popular sites in the U.S.; while Facebook tracks the activities on 1205 of those same sites. The secondary uses of these “Digital Identity Crumbs©”, individual data, bring enormous value to these organizations (Dwoskin, 2014).

## 5. PERMANENCY

When you swipe your credit card you are making an entry in a data vault somewhere. Ed Gibson, during a speech at the Counter Terror Expo, stated “data that is posted on the internet should be regarded as permanent after 20 minutes, even if the originator has deleted the file.” (Ryan, 2011, p1) This is also true with the personal information that you post on social media sites, e-mail, snap chats, and all of the new media internet communication venues. These digital imprints last forever and can haunt you in ways that you cannot imagine at the point of entry.

## 6. E-DISCOVERY

E-mail to some attorneys is equivalent to the proverbial ambulance chaser and analogous to the slippery banana peel (Eckberg, 2004). In today’s business climate and litigation-prevalent environment, the size of a company no longer dictates the risk of e-mail showing up in a court room. Instant messaging is as vulnerable as E-mail. Whether running a single-person company or a multinational organization, allowing employees to operate email or instant messaging without monitoring or controlling its content potentially places a company’s assets, reputation, and future at risk. E-mail and instant messaging are the electronic equivalent of DNA evidence (Eckberg, 2004), enveloped as digitally encoded personal data (Ponschock, 2007). The use of pre-trial discovery and particularly e-discovery is growing geometrically. The citizenry is generating digitally encoded personal data at an inconceivable volume. Organizations and most citizenry are unaware that their e-mails or other e-communications might end up being subpoenaed. Similarly, most individuals are unaware that their computer, their network, and even the computer servers that the e-mail is contained on can become involved as evidence in litigation (Zweig & Goldberg, 2003).

What is now known as *Zubulake V* has become a seminal, precedent setting, and defining e-discovery case. Electronic discovery (or *e-discovery* or *eDiscovery*) refers to discovery in civil litigation or government investigations which deals with the exchange of information in electronic format (often referred to as electronically stored information or ESI) (Zubulake, 2003). What can’t be seen can harm individuals. E-discovery forensic specialists are asked to retrieve deleted correspondence in their attempt to reconstruct a data evidence chain. E-mails are harder to permanently erase than other data files because they often reside in many locations along a computer network (Hooper, 2002). E-mail messages can invisibly reside on an employer’s central server, the employee’s offline work drive, and other cache files along the delivery path.

The Zubulake landmark decision has taken on new legs with the advancement of BIG DATA and predictive analytics. In the case of *Bridgestone Americas, Inc. v. Int. Bus. Machs. Corp.*, No. 3:13-1196 (M.D. Tenn. July 22, 2014) the court approved the request from the plaintiff to use predictive analytics in the review of over 2,000,000 documents. Big Data and predictive analytics will be discussed more in future research (Gates, 2014).

## 7. HEADLINES FORM TREND-LINES

Avid television watchers and media historians of the 1950's may recall "Dragnet" or "Badge 714". During these series sergeant Joe Friday frequently worked the bunco squad. The bunco squad was a special investigative group within the police force that investigated confidence scams. During the roaring 20's and prohibition, gambling parlors sprung up. Thus the detectives that raided the illegal gambling establishments were known as the "Bunco" squad. Bunco a combination of cards and dices was introduced in the United States in 1855 in San Francisco by a shady gambler. Fraud, confidence games, scams, and rip-offs are not new. The confidence game is one of the oldest scams. In the new millennium, these "artists" employ the use of computers over the internet and the landscape of cyberspace. It is probably safe to say that anyone with an e-mail address has received a notice from what appeared to be a familiar lender, a respectable e-commerce web site, or some other previously used supplier that carries with it trust and security. Phishing is today's "Bunco". It is a cyber technique used by frauds and thieves that lull the e-mail recipient into believing that one of these trusted partners actually sent the message and actually need updated information from you.

Phenomenological studies synergize data collected from subject matter experts or environmental trends on the subject with the end goal of painting clearly illustrated picture of the portents. To support the authors' contention of "Digital Identity Crumbs©" it would be negligent to ignore the headlines of the analyzed period. Headlines can be interpreted to sensationalize an event. However a collection of headlines can also depict a trend line.

Foxnews reported on an article originally printed in the WashintonPost that the NSA collected 444,743 email address books from Yahoo, 105,068 from Hotmail, 82,857 from Facebook, 33,697 from Gmail and 22,881 from other providers back in 2012. This same report discovered that contact lists permit NSA specialists to create a detailed scatter diagram of a person's life and social connections including political, professional and religious affiliations (Foxnews, 2013). The NSA collects nearly 5 billion records a day on the locations of cell phones overseas to create a huge database that stores information from hundreds of millions of devices, including those belonging to some Americans abroad (Gellman & Soltani, 2013).

One of the nation's largest information services has begun warning more than 100,000 people across the country they may be objects of a con and subsequent fraud. ChoicePoint Incorporated inadvertently sold personal and financial records to fraud artists apparently involved in a massive identity theft scheme. This security breach resulted in least 800 cases of identity theft (O'Harrow Jr., 2005). The breach was as recent as 2005, however, in 2014 Target warned approximately 110 million individuals that their credit card data may have been compromised. Shortly after the tsunami arrived, Ebay announced a breach that one headline reported as "The 'Inexcusable' Impact on 233 Million Customers." The story went on to state: "exposed customer names, email addresses, physical addresses, phone numbers, and birthdays -- all of which had not been encrypted. Financial information, which had been encrypted on PayPal, was not affected. EBay suggested that all users change their passwords. (Reisinger, 2014) Exposed personal data can lead to identity theft.

Much is well known about Eric Snowden and his breach of National Security information while working for the US Government. Now a fugitive in Russia, many issues related to information privacy, security considerations and overall disposition of digital crumbs is under scrutiny. Key ramifications include how such vital and secure information could be compromised, as well as the ultimate culpability and disposition for the offender. How safe is digital data, and what can be anticipated for the use of personal data (Wemple, 2014).

Jennifer Barrett (2004) reported in a January Newsweek article; "The e-mail address seems legitimate. The logo and the return address match your bank's, and the official looking letter below warns that fraudulent activity has been detected. ..." (Barret, 2004, p 1). The unobservant recipient would be tempted to reply to this common "phishing" attempted argued Barrett. The Anti-Phishing Working Group (APWG) is an industry association focused on eliminating the identity theft and fraud describes this "Bunco" as an attack using "both social engineering and technical subterfuge" to steal consumers' personal identity data and financial account credentials. Social-engineering schemes use 'spoofed' e-mails to lead consumers to counterfeit websites designed to trick recipients into divulging financial data such as credit card numbers, account usernames, passwords and social security numbers. Hijacking

brand names of banks, e-retailers and credit card companies, phishers often convince recipients to respond. Technical subterfuge schemes plant crimeware onto PCs to steal credentials directly, often using Trojan keylogger spyware. Pharming crimeware misdirects users to fraudulent sites or proxy servers, typically through DNS hijacking or poisoning (Srivastava, 2007).

Kevin Mitnick, the computer hacker extraordinaire and felon described in his book "The Art of Deception" that the confidence game is a social engineering skill and is all about gaining someone's trust by lying to them and then abusing that trust for fun or profit. The fraudsters that go phishing need two components, a hook and a catch to reel in. (Mitnick & Simon, 2002). They use SPAM to push out massive volumes of e-mail. SPAM is a broadcast or bulk mailing of e-mail to thousands (or millions) of recipients simultaneously. Perpetrators of such spam ("spammers") gather addresses from web pages, databases, or simply guess by using common domains. SPAM occurs without the permission of the recipients and in the United States spamming is regarded as a crime. (Calburn, 2005) Having located this potential catch, "school of phish", the hook needs to be baited in a way that a bite is taken. Phishers typically create a story that makes the potential victim feel obligated to respond. Stories most frequently make the reader believe that an urgent response is needed to one of their accounts from being frozen, or some other unattractive event will occur if this message is ignored. The message normally is worded to build trust, importance, and urgency. The response is designed to be simple and usually asked for the "phish" to simply verify what should already be known by the trusted sender. If the "phish" responds, the reply goes to a web site that will look very much like the one the "phish" believes he is responding to, but actually is redirected to the web site of the fraudster. Fraudsters have not stopped with simple phishing. The bar has been raised to a new level called pharming. Pharmers redirect as many users as possible from the legitimate commercial websites they'd intended to visit and lead them to malicious ones. Michelle Delio submits "The most alarming pharming threat is DNS poisoning, which can cause a large group of users to be herded to bogus sites. DNS -- the domain name system -- translates web and e-mail addresses into numerical strings, acting as a sort of telephone directory for the internet. If a DNS directory is "poisoned" - altered to contain false information regarding which web address is associated with what numeric string -- users can be silently shuttled to a bogus website even if they type in the correct URL (Delio, 2005, p1)"

Some information is just given away. Unsubscribing to e-mail SPAM lets the spammer know that there is a legitimate recipient at the address. The spammer will either further exploit that new intelligence or sell the information. Livingston (2006) submitted that some offenders are large prominent corporations. He gave Gevalia Kaffe, a subsidiary of Kraft food, as an example (Livingston, 2006). Phishing is a scam that relies on the unsuspecting recipient. In one case, the hoax redirected legitimate inquires for www.GovBenefits.gov to their own site to capture personal data (Ryst, 2005). Other phishing approaches ask the recipient to verify bank account numbers or state that the IRS needs additional information. Many willing-to-please individuals are too eager to provide that information. Everyone must protect themselves from giving away "Digital Identity Crumbs©" that can be used to exploit, defraud, harm, and possibly bankrupt the true owner. Error on the side of caution when asked to validate an account number, social security number, driver's license, or other crumb of potential identity.

Information technology has offered astounding global growth over the past few decades (World Information Trade and Service Organization, 1999). Biotechnology has developed from its nascent research beginnings into commercial applications and uses for social benefits. Biotechnology also brings with it skepticism and cultural concerns (Krimsky, 2005). Biotechnology also has the potential for adding security and contributing to identity theft prevention. Applying DNA to access systems may assist in combating identity fraud. One system in development is intended for both authentication and identification of the individual (Margolis, 2004). Using a set of DNA chip cards assigned with a specific DNA code (Group ID), along with the individual's identification information; biometrics, password, and other profile information recorded in the chip's memory. The individual using the card must be a perfect match with the DNA on the chip (Margolis, 2004).

Many of the tasks performed daily create digitally encoded personal data and leave a trail of "Digital Identity Crumbs©". Every day, potential exists to give away personal information and individuals might not even realize when it happens ("Privacy rights survival guide," 2005). These various tasks can be generically referenced as digital transaction generators. A growing number of people on the technology side of the digital divide use the internet frequently. It is increasingly noticeable that certain online retailers

are getting smarter and smarter. These store fronts appear to know what was purchased last and many other profile characteristics. This feedback is possible because the retailer stored information about you in information nuggets called “cookies” (Slayton, 1996). Cookies are messages that the browser and the server exchange with each other. A cookie exchange with a reputable Web site like Amazon results in convenience. It is certainly convenient if Amazon reminds the buyer about previous purchases. However, if the retailer requires a user name and password and stores this information in a cookie, an unscrupulous third party can exploit the digitally encoded personal data. Amazon even records clickstream data showing whether a certain page in a digital book was heavily annotated (Schonberger & Cukier, 2013).

Many individuals drive the toll roads of the nation. To save time, and in some instances money, drivers purchase a toll collection device that electronically records and collects funds as the driver uses the freeway. In New Jersey it is called an E-Z Pass. In the process of acquiring an E-Z Pass, several pieces of personal data are collected. The device reduces congestion and may be perfectly safe (Grygo, 2000), particularly because the passes are issued by a government agency. The three digital generators seem perfectly safe and a convenient part of a technology driven life style. Most users of these transactions or others are aware that there were over 130 recorded privacy breaches between February 15, 2005, and February 23, 2006, affecting 53,416,240 individuals. The breaches in the statistic were recorded because they compromised personal information. Congress is considering several bills requiring notification of individuals when a breach occurs. Over 20 states have similar legislation in place. No single industry or business sector can be singled out. These personal information leaks ranged from hotels and banks to government agencies and those areas detailed earlier (Rosenberg, 2014). A programmer and user of E-Z Pass alerted officials when he was able to access and view account information via the system’s e-mail (Grygo, 2000). As the result of a stolen laptop, 1,400 Safeway Value members’ information was compromised (Rosenberg, 2014).

An argument can be developed that society has embraced the conveniences and efficiencies that technologies have provided during the last 10 years. This research has shown that the use of the technological conveniences have provided an opportunity for personal information generated by these transactions to be collected. Collection begins at the point a consumer signs an application and continues through a continuum of infinite usage. This research provided clarity that transactions collected and stored in digital format approach a permanent life span. It can be argued that a combination of the two constructs, collection and longevity, result in greater volume of data in digital form than was present in tangible forms of the past, and that greater amounts of data exist for a more expansive life cycle.

The Internet has broadened access to collected, aggregated, and mined personal information. At this point in the chain of logic, there is no distinction between data collected through the daily transactional activity, e-mail, or conversations via the many social networking facilities.

## **8. EMERGING ECONOMIC FOOTPRINTS**

Historically, financial transactions have been tracked based upon physical movement of funds (albeit in many cases using technological interventions). This metamorphosis of digitation as related to financial transactions is now evolving further with potential archaeological considerations minus the physical presence of currency. The Bitcoin has emerged on the scene with much fanfare and equally many questions as to its viability, backing and sustainability. “Bitcoin is the digital currency that thrills nerds, inspires libertarians, and incites the passions of economists who debate the value of money made from nothing but ones and zeros” (Vance & Stone, 2014, p. 48). Regardless of its sustainability, this novel creation of currency is creating quite a stir in the financial markets with multiple vendors experimenting with it for payment of goods and services, and its presence and ability to digitally track it has been expanding exponentially.

Digital cottage industries are now forming, growing and expanding based on the creation of the Bitcoin. Additionally, a new form of crime is being leveraged from traditional hacking of computer resources, as well as being used for illicit purposes. In 2013, Silk Road (a provider of illegal drugs) was tracked down by the FBI and shuttered based on their acceptance and use of Bitcoins. (Lee, 2014)) Subsequently Silk Road went back into business and was hacked out of \$2.6 million in 2014. (Burns, 2014) The key aspect of this development is that Bitcoin is serving as a digital footprint upon which it can be tracked, and it

appears that the hackers of Silk Road are in the sites of authorities. "With no government oversight or central database to track transactions, how do you prevent fraud?" (Vance & Stone p.48).

Another cottage industry developing is the proliferation of accelerated servers and software to crack the code of mysterious puzzles inherent in the mining of the Bitcoins. Bit coin emerged on the market in 2008 as a more elaborate manifestation of digital currency similar to forerunners such as DigiCash and Bit Gold. A key differentiator appears to be the more elaborate and continually evolving algorithms required to continue mining Bitcoins. It appears that this approach is a never ending amoeba type of puzzle that keeps recreating and uncovering more Bitcoins for circulation. Hence, the need for advanced technological power and speed to continually solve these elaborate equations resulting in mined Bitcoins!

This digital footprint appears to be a story that is still being written. Its viability and sustainability have yet to be truly tested; but, it also has spurred legal and illegal activities and more importantly has emphasized the evolving ability to track ones steps based on their digital footprints. Additional research is required here to longitudinally track this evolving phenomenon, and its ultimate journey (or demise).

## 9. CORRELATION AND PREDICTIVE ANALYTICS – (FROM A PILE OF "CRUMBS")

Big data moves data analysis away from mining, summarizing, and reporting transactions to understanding within and among the aggregation of "Digital Identity Crumbs®". The sum is more valuable than the individual transactions. Big data's seminal principal is the correlation and statistical relationships between data values (Schonberger & Cukier, 2013). "Big data marks an important step in humankind's quest to quantify and understand the world. A preponderance of things that could never be measured, stored, analysed and shared before becoming *datafied*" (Schonberger & Cukier, p. 18). Data is a resource that when used does not get consumed or diminish in value. Data can even be used simultaneously in diverse ways. Almost a story told around the campfire illustrates "What Target Knows". First published in the New York Times magazine back in 2012 and now a legend explains how a predictive analytics scientist and Target employee, Pole, created the pregnancy-prediction model. Some twelve months after Target began using Pole's pregnancy-prediction model,

"... a man walked into a Target outside Minneapolis and demanded to see the manager. He was clutching coupons that had been sent to his daughter, and he was angry, according to an employee who participated in the conversation.

"My daughter got this in the mail!" he said. "She's still in high school, and you're sending her coupons for baby clothes and cribs? Are you trying to encourage her to get pregnant?"

The manager didn't have any idea what the man was talking about. He looked at the mailer. Sure enough, it was addressed to the man's daughter and contained advertisements for maternity clothing, nursery furniture and pictures of smiling infants. The manager apologized and then called a few days later to apologize again.

On the phone, though, the father was somewhat abashed. "I had a talk with my daughter," he said. "It turns out there's been some activities in my house I haven't been completely aware of. She's due in August. I owe you an apology" (Duhigg, 2012, p.1).

This extrapolation was possible because during the prior month, this high school student may have purchased a large container of unscented lotion, an assortment of supplements such as zinc and calcium and a large purse from Target. Using Pole's pregnancy prediction model, Target even projected that the shoppers due date was in five months (Duhigg, 2012).

## 10. CONCLUSION

The continuum and velocity of change continues to proceed and accelerate regarding the digital footprints that are being emblazoned for future archaeological consideration. Many prior physical remnants from history are being unearthed to this day, while many others have been lost forever. Far fewer data oriented remnants will disappear forever and remain for future discovery, assimilation and explanation of what has transpired during our lifetime. Although the future historical considerations may be value added and positive in nature, the existence of these "Digital Identity Crumbs ©" also provide current security risks,

concerns and lack of regulatory guidance for their protection and use. Individuals remain exposed to nefarious use of their “crumbs”, and attention/protection are required via the individual themselves. Future considerations based on this phenomenological and longitudinal study include the various considerations for individual protection, use and dissemination of their personal information. Additionally, all aspects of this phenomenological study must be coalesced so as to provide the holistic picture of risks, exposures, proactive individual action plans, and longer term ramifications for institutions, corporate entities and society at-large.

## REFERENCES

- Amaravadi, C. S. (2004). The laws of information systems. *Journal of Management Research*, 4(3), 130-136.
- AT&T. (2005a). 1958: Laser. Retrieved October 28, 2005, from <http://www.att.com/atllabs/reputation/timeline/58laser.html>
- AT&T. (2005b). 2002: Privacy bird. Retrieved October 28, 2005, from <http://www.att.com/atllabs/reputation/timeline/02privacy.html>
- Barrett, J. (2004, January 26). When Crooks Go 'Phishing'. *Newsweek* retrieved March 12, 2014 from <http://www.highbeam.com/doc/1G1-112417862.html>
- Bell, A. (1876). Bell's experimental notebook, 10 March, 1876. Alexander Graham Bell Family Papers, Manuscript Division, Library of Congress. Retrieved March 11, 2006, from <http://memory.loc.gov/ammem/bellhtml/bell1.html>
- Bellis, M. (2006). History of the telephone. Retrieved April 14, 2006, from <http://inventors.about.com/library/inventors/bltelephone.htm#patent>
- Burns, E., (2014). Known Bitcoin Flaw Results In \$2.6M Stolen From New Silk Road Site. Retrieved September 14, 2014 from <http://www.redorbit.com/news/technology/1113072057/silk-road-results-in-bitcoin-theft-021414/#OJ0eEc24uFYI7A1J.99>
- Calburn, T., (2005). Spam cost Billions. Retrieved May 12, 2014 from <http://www.informationweek.com/spam-costs-billions/d/d-id/1030111?>
- Constine, J., (2012). Facebook Ingests 500+ Terabytes Every Day. Retrieved October, 10, 2014 from <http://bigdata-io.org/facebook-ingests-500-terabytes-every-day>.
- Delio, M., (2005). Pharming out scams phishing. Retrieved September 15, 2014 from <http://archive.wired.com/techbiz/it/news/2005/03/66853?currentPage=all>
- Duhigg, C. (2012). How companies learn your secrets. Retrieved July 29, 2014 from [http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?pagewanted=all&_r=0)
- Dwoskins, E. (2014). Give me back my privacy. *Wall Street Journal*. Retrieved September 1, 2014 from <http://online.wsj.com/news/articles/SB10001424052702304704504579432823496404570>
- Eckberg, J. (2004, July 24). E-mail: Messages are evidence: Someone may be watching. *Cincinnati Enquirer* [Electronic version]. Retrieved March 13, 2006, from [http://www.enquirer.com/editions/2004/07/27/biz\\_biz2a.html](http://www.enquirer.com/editions/2004/07/27/biz_biz2a.html).
- Evalueserve. (2005). P2P VoIP impact on Telecom service providers. Retrieved April 13, 2006, [http://jyoung.im.ntu.edu.tw/teaching/distributed\\_systems/2005EMBA/ImpactofSkypeonTelecomServiceProviders.pdf](http://jyoung.im.ntu.edu.tw/teaching/distributed_systems/2005EMBA/ImpactofSkypeonTelecomServiceProviders.pdf)
- Fagarty, K. (2006). Hypocrisy taints U.S. accusations against Google China. *CIO Central* [Electronic version]. Retrieved March 7, 2006, from <http://www.ciocentral.com/article/hypocrisy+taints+US+accusations+against+china>
- Fingas, J. (2014). NSA may have spied on 122 foreign leaders. Retrieved September 11, 2014 from <http://www.engadget.com/2014/03/29/nsa-may-have-spied-on-122-foreign-leaders/>
- Fisher, R. (2004, December 10). Hidden agenda. *Engineer*, 16-17. Retrieved October 20, 2005, from <http://www.e4engineering.com/Home/Default.aspx>
- Fox. (2014, February 10). US government reportedly ordering drone strikes based on cell phone location. Retrieved September 10, 2014 from [Http://www.foxnews.com/politics/2014/02/10/us-government-reportedly-ordering-drone-strikes-based-on-cell-phone-location/](http://www.foxnews.com/politics/2014/02/10/us-government-reportedly-ordering-drone-strikes-based-on-cell-phone-location/)

- Foxnews. (2013). NSA reportedly collects 5 billion cell phone location records a day. Retrieved July 14, 2014 from <http://www.foxnews.com/politics/2013/12/05/nsa-reportedly-collects-5-billion-cell-phone-location-records-day/>
- Gates, K., L. (2014). Court Allows Plaintiff to “switch horses in midstream” and Use Predictive Coding to Review Documents Initially Screened with Search Terms. Retrieved October, 15, 2014 from <http://www.ediscoverylaw.com/2014/09/articles/case-summaries/court-allows-plaintiff-to-switch-horses-in-midstream-and-use-predictive-coding-to-review-documents-initially-screened-with-search-terms/>
- Gellman, B., & Soltani, A. (2013). NSA tracking cellphone locations worldwide, Snowden documents show. Retrieved August 23, 2014 from [http://www.washingtonpost.com/world/national-security/nsa-tracking-cellphone-locations-worldwide-snowden-documents-show/2013/12/04/5492873a-5cf2-11e3-bc56-c6ca94801fac\\_story.html](http://www.washingtonpost.com/world/national-security/nsa-tracking-cellphone-locations-worldwide-snowden-documents-show/2013/12/04/5492873a-5cf2-11e3-bc56-c6ca94801fac_story.html)
- Ghadar, F., & Spinder, H. (2005, July/August). IT: Ubiquitous force. Industrial Management [Electronic version]. Retrieved October 15, 2005, from <http://www.allbusiness.com/periodicals/article/511919-1.html>
- Grygo, E. (2000, October 25). New Jersey Turnpike electronic toll collection system hacked. Retrieved March 1, 2006, from <http://www.infoworld.com/articles/hn.xml/00/10/25/00125hnezipass.html>
- Hemnes, T. (2012). The Ownership and Exploitation of Personal Identity in the New Media Age. Intellectual Property Law, 12(1), 2013. Retrieved October, 10, 2014 from <http://repository.jmls.edu/ripl/vol12/iss1/1/>
- Hooper, I. D. (2002, January 26). Enron's electronic clues: Computer scientists seek to recover "deleted" files. Associated Press. Retrieved November 12, 2005, from [http://www.futurist.com/futuristnews/archive/future\\_courts.htm](http://www.futurist.com/futuristnews/archive/future_courts.htm)  
<http://online.wsj.com/news/articles/SB10001424052702304704504579432823496404570>
- Krimsky, S. (2005). From Aslonar to industrial biotechnology: Risks reductionism and regulations. Science as Cultures, 14, 309-323.
- Kuhn, T.S. (1996). Structure of scientific revolutions. Chicago: University of Chicago Press.
- Lee, D., (2104, February). Silk Road: How FBI closed in on suspect Ross Ulbricht. Retrieved September 14, 2014 from <http://www.bbc.com/news/technology-24371894>
- Lindemann, M. (1999). Megatrends: Then and now. Retrieved April 10, 2006, from <http://www.gsreport.com/articles/art000088.html>
- Livingston, B. (2006, February 7). Corporations have an unsubscribe problem. Retrieved September 10, 2014, from [http://www.datamation.com/columns/executive\\_tech/article.php/3583221/Corporations-Have-an-Unsubscribe-Problem.htm](http://www.datamation.com/columns/executive_tech/article.php/3583221/Corporations-Have-an-Unsubscribe-Problem.htm)
- Lynch, C. G. (2005, November). Virtual mechanic. CIO, 19(4), 22.
- Manzano, Y. (1999). Technology's influence in 20th century life and its difference from industrialization's influence in 19th century life. Retrieved January 3, 2006, from <http://ww2.csf.fsu.edu/~manzano/writing/essays/history/technology/html>
- Margolis, J. (2004). Applied DNA Sciences introduces its DNA-embedded contactless reader system at the International Security Conference West. Retrieved April 3, 2006, from <http://www.secureidnews.com/news/2004/04/04/>
- Mitnick, K. D., & Simon, W. L. (2002). The art of deception: Controlling the human element of security. Indianapolis, Ind: Wiley Pub.
- Montgomery, P. (2006, January 11). Legislation to create penalties for phone record sales. Retrieved February, 15, 2006, from press release, Wisconsin State Representative Phil Montgomery (R-Ashwaubenon).
- Naisbitt, J. (1982). Megatrends: Ten new directions transforming our lives. New York: Warner Books.
- Noor, A. (2013). Putting big data to work retrieved July 24, 2014 from <https://www.asme.org/wwwasmeorg/media/ResourceFiles/Network/Media/Mechanical%20Engineering%20Magazine/1013BigData.pdf>
- Norman, D. A. (1999). Invisible computer. Cambridge, MA: MIT Press.
- O'Harrow, R. (2005). No place to hide. New York, NY: Free Press.

- Osterman Research. (2003). Impact of regulations on e-mail archiving requirements [White paper]. Retrieved October 15, 2005, from <http://www.sdmsoftware.co.uk/xdm-new/assets/pdfs/email.pdf>
- Piore, A. (2014). Rise of the insect drone retrieved February 14, 2014 From <http://www.popsci.com/article/technology/rise-insect-drones>
- Ponschock, R. L. (2007). Computer technology, digital transactions, and legal discovery: A phenomenological study of possible paradoxes (Doctoral dissertation, Capella University, 2007) (UMI No. 3246872).
- Privacy Rights Clearing House, (2014) breaches
- Rainie, L. Et. Al. (2013). Anonymity, Privacy, and Security Online. Pew Research Center. Retrieved September 19, 2014 from [http://www.pewinternet.org/files/old-media//Files/Reports/2013/PIP\\_AnonymityOnline\\_090513.pdf](http://www.pewinternet.org/files/old-media//Files/Reports/2013/PIP_AnonymityOnline_090513.pdf)
- Reisinger, D., (2014). eBay hacked, requests all users change passwords. Retrieved September 22, 2014 from <http://www.cnet.com/news/ebay-hacked-requests-all-users-change-passwords/#!>
- Rosenberg, B., (2014). Chronology of Data Breaches Security Breaches 2006 – Present. Retrieved September 10, 2014 from <http://www.privacyrights.org/data-breach>
- Ryan (2011). Data on the internet is permanent after 20 minutes. Retrieved September 14, 2014 from <http://www.fedcyber.com/2011/04/21/data-on-the-internet-is-permanent-after-20-minutes/>
- Ryst, S. (2005, March 1). Phishing: Beware the Internal Revenue scam. Technology News [Electronic version]. Retrieved March 1, 2006, from <http://www.technewsworld.com/story/47686.html>
- Scahill, J., & Greenwald, G. (2014). The NSA's Secret Role in the U.S. Assassination Program. Retrieved from <https://firstlook.org/theintercept/2014/02/10/the-nsas-secret-role/>
- Schonberger, V., & Cukier, K. (2013). Big data: A revolution that will transform how we live, work, and think. New York: Houghton Mifflin Harcourt Publishing Company.
- Schuller, K. (2006, January 13) 5 Investigates: Cell phone records for sale. Retrieved February 26, 2006, from [http://wfrv.com/consumer/local\\_story\\_013093607.html](http://wfrv.com/consumer/local_story_013093607.html)
- Slayton, M. (1996). Risks of cookies. Lycos. Retrieved March 7, 2006, from <http://www.webmonkey.com/webmonkey/geektalk/96/53/index4a.html>
- Srivastava, T., V. (2007). Phishing and Pharming – The Deadly Duo. SANS Institute. Retrieved October 10, 2014 from <http://www.sans.org/reading-room/whitepapers/privacy/phishing-pharming-evil-twins-1731>
- Treloar, A. (2005). Products and processes: How innovation and product life-cycle can help predict the future of electronic scholarly journals. Retrieved January 5, 2006, from [www.bth.se/elpub99/](http://www.bth.se/elpub99/)
- Vance, A., & Stone, B. (2014). The Bitcoin-Mining Arms Race Heats Up. Retrieved March 20, 2014 from <http://www.businessweek.com/articles/2014-01-09/bitcoin-mining-chips-gear-computing-groups-competition-heats-up>
- VISA International. (2004). Company annual report. Retrieved November 11, 2005, from <http://corporate.visa.com>
- Wemple, E. (2014). NBC News's Brian Williams interviews Snowden, Greenwald. Washington Post May 22, 2014.
- Zubulake v. USB Warburg LLC, 55 FRS 3d 622 (SDNY May 13, 2003).
- Zweig, M. P., & Goldberg, M. J. (2003). Electronic discovery: A brave new world. Retrieved October 25, 2004, from <http://www.loeb.com/CM/articles/article57.asp>

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## CO-MOVEMENTS OF THE WORLD'S STOCK MARKETS BEFORE AND AFTER THE 2008 STOCK MARKET CRASH

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### ABSTRACT

*The 1987 and 2008 stock market crashes are the two most important stock market crashes in U.S. history since the Great Depression. Although there are many studies examining the effects of the 1987 stock market crash on global portfolio diversification, the effects of the 2008 stock market crash on global portfolio diversification has not been sufficiently studied. In this paper, we study this issue by comparing the co-movements of global stock markets in the 2003-2007 pre-crash period and in the 2009-2013 post-crash period with the Principal Components Analysis (PCA) multivariate technique. Our empirical findings show that the benefits of global portfolio diversification decreased significantly after the 2008 stock market crash.*

**Keywords:** 2008 Stock Markets Crash, Principal Components Analysis, Portfolio Diversification

### 1. INTRODUCTION

Studying global portfolio diversification has been a popular research topic in finance. Empirical studies demonstrate the benefits of global portfolio diversification and identify the best global portfolio diversification prospects. The Principal Components Analysis (PCA) and Cointegration Analysis (CA) techniques are generally used in studying the comovements of national stock markets. If two national stock markets are not cointegrated and if they do not have closely positively correlated movements, they are considered to be good prospects for global portfolio diversification.

Meric and Meric (1996 and 2004) study the long-term co-movements of national stock markets. Their findings indicate that the benefits of global portfolio diversification have been diminishing as national stock markets become more and more closely positively correlated in the long-run.

The affects of stock market crashes on the comovements of national stock markets have received considerable attention in the literature. Arshanapalli and Doukas (1993), Lau and McInnish (1993), Lee and Kim (1993), and Meric and Meric (1997 and 1998) study the cointegration between and the comovements of national stock markets before and after the 1987 stock market crash. They find that there are less global portfolio diversification opportunities after the crash compared with the pre-crash period.

The 2008 global stock market crash is one of the two most important global stock market crashes since the Great Depression. However, the effects of this crash on the comovements of national stock markets have not been sufficiently studied. The objective of this paper is to undertake such a study with the PCA technique. The study covers the five-year period before the 2008 crash (the 2003-2007 period) and the five-year period after the 2008 crash (the 2009-2013 period). We compare the comovements of 48 global stock markets during the pre-crash and post-crash periods to determine if the 2008 global stock market crash has any significant effects on the co-movements of global stock markets.

### 2. THE 2008 FINANCIAL/ECONOMIC CRISIS AND THE WORLD ECONOMY

The 2008 financial/economic crisis originated in the U.S., which officially went into recession in the fourth quarter of 2007 (December 2007). This eighteen month recession was later referred to as the "Great Recession," the longest and deepest U.S. contraction since World War II (Stock and Watson, 2012). The "Great Recession" was unusual in that other countries experienced similar declines in GDP, consumption, and investment. These co-movements were much more closely synchronized than in earlier business

cycles. Virtually all countries were affected (Bussiere, 2013). As shown in Table 1 below, the euro area (and the EU as a whole) suffered the most, “its worst financial and economic crisis.” (Jeasakul, et. al., 2014). The Commonwealth of Independent States experienced a larger percent decline in GDP in 2009, but grew at respectable rates both before and after that year, albeit more slowly than before the crisis, whereas EU growth dipped into negative territory in 2012, and was at a standstill in 2013.

**TABLE 1. GROSS DOMESTIC PRODUCT % SHARE OF WORLD TOTAL**

Country Group Name	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
World	3.8	5.1	4.7	5.2	5.3	2.7	-0.4	5.2	3.9	3.2	2.9
United States	2.8	3.8	3.4	2.7	1.8	-0.3	-2.8	2.5	1.8	2.8	1.9
Euro area	0.7	2.2	1.7	3.3	3.0	0.4	-4.4	2.0	1.5	-0.6	-0.4
Major advanced economies (G7)	2.0	3.0	2.5	2.6	2.2	-0.3	-3.8	2.8	1.6	1.7	1.2
Other advanced economies	2.7	4.9	4.2	4.8	5.0	1.7	-1.1	5.9	3.2	1.9	2.3
European Union	1.7	2.7	2.4	3.6	3.4	0.6	-4.4	2.0	1.7	-0.3	0.0
Central and eastern Europe	4.8	7.3	5.9	6.4	5.4	3.2	-3.6	4.6	5.4	1.4	2.3
Commonwealth of Independent States	7.7	8.1	6.7	8.8	8.9	5.3	-6.4	4.9	4.8	3.4	2.1
Developing Asia	8.6	8.6	9.5	10.3	11.5	7.3	7.7	9.8	7.8	6.4	6.3
Latin America and the Caribbean	2.1	6.0	4.7	5.6	5.7	4.2	-1.2	6.0	4.6	2.9	2.7
M East, N Africa, Afghanistan, Pakistan	6.8	7.9	6.0	6.7	5.9	5.0	2.8	5.2	3.9	4.6	2.3
Sub-Saharan Africa	4.8	7.0	6.3	6.4	7.1	5.7	2.6	5.6	5.5	4.9	5.0

Sources: U.S. Dept. of Commerce, Bureau of Economic Analysis and International Monetary Fund, World Economic Outlook Database.

The pattern in the Central and East European region was similar to that of the CIS. Asia, as a whole, fared much better, with some countries (Australia, China, and Indonesia) avoiding an economic downturn entirely, and others recovering quickly after an initial downturn (Korea, Malaysia, and Singapore) (Jeasakul, et. al., 2014). The other regional groups experienced growth slowdowns rather than declines in GDP, except for Latin America and the Caribbean, which bounced back quickly after negative growth in 2009. After 2010, the world economy grew at a slower pace through 2013.

### 3. DATA AND METHODOLOGY

The stock market index returns used in the study were computed with the MSCI global stock market indices downloaded from the DataStream database. The study includes all global stock markets in the database with no missing information for the period of study.

Principal Components Analysis (PCA) is a statistical technique widely used in empirical studies to study contemporaneous correlation between global stock markets. A detailed discussion of the technique can be found in Marascuilo and Levin (1983). The PCA technique clusters global markets with similar movement patterns in the same principal component. Stock markets with high factor loadings in the same principal component are highly correlated and could provide only minimal portfolio diversification benefit. Investors can maximize the benefits of portfolio diversification by choosing stock markets with high factor loadings in different principal components.

Makridakis and Wheelwright (1974), Philippatos, Christofi, and Christofi (1983), and Meric and Meric (1989) have made the use of the PCA multivariate technique popular in studying the contemporaneous co-movements of national stock markets. We use the PCA technique in this paper to study the contemporaneous co-movements of 48 global stock markets during the 2003-2007 and 2009-2013 periods.

#### 4. PRINCIPAL COMPONENTS ANALYSIS FOR THE 2003-2007 PRE-CRASH PERIOD

To determine the principal components of the stock markets with similar contemporaneous movement patterns, the correlation matrix of the weekly returns of 48 global stock markets was used as input in the PCA computer program. The Varimax rotation was used to maximize the factor loadings of the stock markets in each principal component with similar movement patterns. Using Kaiser's significance rule, statistically significant principal components with eigenvalues greater than unity were retained for analysis.

**TABLE 2. PRINCIPAL COMPONENTS ANALYSIS: 2003-2007 PRE-CRASH PERIOD**

Countries	P.C. #1	P.C. #2	P.C. #3	P.C. #4	P.C. #5	P.C. #6	P.C. #7
France	<b>0.894</b>						
Germany	<b>0.873</b>						
Netherlands	<b>0.864</b>						
Switzerland	<b>0.841</b>						
Italy	<b>0.827</b>						
Belgium	<b>0.814</b>						
Spain	<b>0.804</b>						
U.K.	<b>0.779</b>						
Sweden	<b>0.773</b>						
U.S.	<b>0.715</b>					0.402	
Denmark	<b>0.641</b>						
Finland	<b>0.632</b>						
Ireland	<b>0.585</b>						
Israel	<b>0.515</b>	0.430					
Mexico	<b>0.495</b>					0.446	
South Africa	<b>0.494</b>		0.469				
Austria	<b>0.482</b>		0.460				
Canada	<b>0.478</b>						
Greece	<b>0.467</b>						
Hong Kong		<b>0.742</b>					
Singapore		<b>0.735</b>					
Korea		<b>0.699</b>					
Malaysia		<b>0.695</b>					
China		<b>0.688</b>					
Taiwan		<b>0.661</b>					
Indonesia		<b>0.653</b>					
Philippines		<b>0.634</b>					
India		<b>0.612</b>					
Japan		<b>0.593</b>					
Thailand		<b>0.547</b>					
Egypt		<b>0.372</b>	0.354				0.318
Hungary			<b>0.728</b>				
Russia			<b>0.705</b>				
Czech Republic			<b>0.629</b>				
Poland			<b>0.623</b>				
Norway			<b>0.538</b>				

Argentina			<b>0.525</b>				
Turkey		0.432	<b>0.495</b>				
Brazil	0.420		<b>0.488</b>			0.469	
Colombia			<b>0.433</b>				
New Zealand				<b>0.777</b>			
Australia	0.457	0.470		<b>0.542</b>			
Peru				<b>0.406</b>		0.376	
Morocco					<b>0.648</b>		
Pakistan	0.463				<b>0.467</b>		0.353
Portugal					<b>0.464</b>		
Chile	0.391					<b>0.539</b>	
Jordan							<b>0.856</b>
Variance Explained	24.2%	16.2%	11.1%	5.0%	4.3%	4.2%	2.6%
Cum. Var. Explained	24.2%	40.4%	51.5%	60.5%	64.8%	69.0%	71.6%

The analysis yielded seven statistically significant principal components. The factor loadings of the seven principal components are presented in Table 2. The factor loadings of the stock markets with the highest loading in each principal component are shown in dark font. If a stock market also has somewhat high factor loading in any of the other principle components, it is shown in light font.

The first principal component explains 24.2 percent of the total variation in the original returns data matrix. Mainly major European stock markets (such as the French, German, Dutch, Swiss, Italian, Belgium, Spanish, U.K., Swedish stock markets) and the U.S. stock market have their highest factor loadings in this principal component. These stock markets are highly correlated and investing in these stock markets would provide minimal global diversification benefit to investors. Investors who invest in these stock markets would maximize the benefit of global portfolio diversification by investing in the stock markets with high factor loadings in the other six principal components. Although they have their highest factor loadings in the first principal component, several stock markets (the U.S, Israeli, Mexican, South African, and Austrian stock markets) also have quite high factor loadings in some of the other principal components. The investors in these stock markets should avoid investing in the stock markets with high factor loadings in those other principal components.

The second principal component is dominated mainly by Asian stock markets. These stock markets are highly correlated and investing in these stock markets would provide minimal global diversification benefit to investors. Global investors who invest in these stock markets would maximize global portfolio diversification benefit by investing in the stock markets with high factor loadings in the other six principal components. The Egyptian stock market also has its highest factor loading in this stock market. It implies that the Egyptian stock market is highly correlated with the other stock markets with high factor loadings in the second principal component. The Egyptian stock market also has fairly high factor loadings in the third and seventh principal components.

Several European, South American and Asian stock markets have their highest factor loadings in the third principal component. It implies that these stock markets are highly correlated and they are not good prospects for global portfolio diversification. Global investors should find stock markets with high factor loadings in the other six principal components to maximize diversification benefit. The results indicate that the Turkish stock market also has a high factor loading in the second principal component and the Brazilian stock market also has high factor loadings in the first and sixth principal components. The investors in the Turkish and Brazilian stock markets should avoid investing in the stock markets with high factor loadings in these other principal components to maximize global portfolio diversification benefit.

The New Zealand, Australian, and Peruvian stock markets have their highest factor loadings in the fourth principal component. It indicates that these stock markets are highly correlated and that they are not good prospects for global portfolio diversification. The Australian stock market also has high factor loadings in the first and second principal components and the Peruvian stock market also has a high factor loading in the sixth principal component. It implies that the investors in the Australian and Peruvian stock markets

should avoid investing in the stock markets with high factor loadings in these other principal components to maximize global portfolio diversification benefit.

Because their return movements are significantly different from those of the other stock markets, the Chilean stock market has its highest factor loading in the sixth principal component and the Jordanian stock market has its highest factor loading in the seventh principal component. However, the results indicate that, although their highest factor loading is in another principal component, the U.S. and Mexican stock markets also have high factor loadings with the Chilean stock market in the sixth principal component and the Egyptian and Pakistani stock markets also have high factor loadings with the Jordanian stock market in the seventh principal component. It implies that investors in the Chilean stock market should avoid also investing in the U.S. and Mexican stock markets and the investors in the Jordanian stock market should also investing in the Egyptian and Pakistani stock markets to maximize global portfolio diversification benefit.

## 5. PRINCIPAL COMPONENTS ANALYSIS FOR THE 2009-2013 POST-CRASH PERIOD

The analysis yielded only five statistically significant principal components for the 2009-2013 post-crash period. The factor loadings of the five principal components are presented in Table 3. The factor loadings of the stock markets with the highest loading in each principal component are presented in dark font. If a stock market also has somewhat high loading in any of the other principle components, it is presented in light font.

**TABLE 3. PRINCIPAL COMPONENTS ANALYSIS: 2009-2013 POST-CRASH PERIOD**

Countries	P.C. #1	P.C. #2	P.C. #3	P.C. #4	P.C. #5
France	<b>0.907</b>				
Germany	<b>0.884</b>				
Netherlands	<b>0.882</b>				
Italy	<b>0.877</b>				
Spain	<b>0.870</b>				
Austria	<b>0.853</b>				
Belgium	<b>0.847</b>				
Switzerland	<b>0.818</b>				
U.K.	<b>0.815</b>	0.441			
Finland	<b>0.810</b>				
Portugal	<b>0.810</b>				
Sweden	<b>0.805</b>	0.402			
Norway	<b>0.783</b>	0.462			
Ireland	<b>0.755</b>				
U.S.	<b>0.750</b>	0.451			
Canada	<b>0.750</b>	0.532			
Denmark	<b>0.742</b>				
Hungary	<b>0.725</b>				
Poland	<b>0.706</b>				
Brazil	<b>0.674</b>	0.602			
South Africa	<b>0.673</b>	0.544			
Czech Republic	<b>0.669</b>				
Australia	<b>0.658</b>	0.573			
Mexico	<b>0.652</b>	0.569			
Russia	<b>0.629</b>	0.560			
Greece	<b>0.622</b>				
New Zealand	<b>0.596</b>	0.460			

Argentina	<b>0.470</b>	0.364			
Japan	<b>0.411</b>	0.316	0.380	0.319	
Indonesia		<b>0.759</b>			
China		<b>0.758</b>			
Thailand		<b>0.751</b>			
Hong Kong		<b>0.739</b>			
India		<b>0.718</b>			
Malaysia		<b>0.714</b>			
Singapore	0.525	<b>0.708</b>			
Philippines		<b>0.690</b>			
Chile	0.445	<b>0.670</b>			
Korea	0.452	<b>0.605</b>	0.339		
Taiwan		<b>0.579</b>	0.421		
Colombia	0.436	<b>0.554</b>			
Peru	0.516	<b>0.547</b>			
Turkey	0.485	<b>0.531</b>			
Israel	0.444	<b>0.496</b>			
Pakistan			<b>0.704</b>		
Morocco				<b>0.759</b>	
Jordan					<b>0.788</b>
Egypt		0.368		0.359	<b>0.473</b>
Variance Explained	39.0%	23.2%	3.5%	3.2%	2.9%
Cum. Var. Explained	39.0%	62.2%	65.7%	68.9%	71.8%

The returns of 29 major stock markets are highly correlated in the post-crash period and their highest factor loadings are in the first principal component. Investing in these stock markets would provide minimal global portfolio diversification benefit to investors. These include many stock markets from Europe, the Americas, Asia, and Africa. The U.K., Swedish, Norwegian, U.S., Canadian, and Brazilian stock markets also have high factor loadings in the second principal component (i.e., the investors in these stock markets would get limited portfolio diversification benefit if they invest in the stock markets with high factor loadings in the second principal component). Japan also has fairly high factor loadings in the third and fourth principal components.

Fifteen major stock markets have their highest factor loadings in the second principal component and investing in these stock markets could provide minimal global portfolio diversification benefit to investors. Several stock markets with high factor loadings in the second principal component also has high factor loadings in the first and third principal components, further limiting the prospects of global diversification benefit to investors in these stock markets.

Because their return movements are distinctly different from the rest of the world's stock markets, the Pakistani stock market has its highest factor loading in the third principal component, the Moroccan stock market has its highest factor loading in the fourth principal component, and the Jordanian and Egyptian stock markets have their highest factor loading in the fifth principal component. These results imply that the investors in the stock markets with high factor loadings in the first two principal components could obtain significant diversification benefits by investing in the Pakistani, Moroccan, and Jordanian (or Egyptian) stock markets. However, it should be noted that the Japanese stock market also has fairly high factor loadings with the Pakistani and Moroccan stock markets in the third and fourth principal components, respectively, and the Korean and Taiwanese stock markets also have high factor loadings with the Pakistani stock market in the third principal component.

## 6. SUMMARY AND CONCLUSIONS

Studying global portfolio diversification has been a popular research topic in finance. Low correlation between national stock markets is often presented as evidence for the benefit of global portfolio diversification. The 1987 and 2008 stock market crashes are the two most important stock market crashes in U.S. history since the Great Depression. Although there are many studies examining the effects of the 1987 stock market crash on global portfolio diversification, the effects of the 2008 stock market crash on global portfolio diversification has not been sufficiently studied. In this paper, we study this issue with the Principal Components Analysis (PCA) multivariate statistical technique.

To assess the effects of the 2008 stock market crash on global portfolio diversification, we compare the co-movements of 48 global stock markets during the 2003-2007 pre-crash period and the 2009-2013 post-crash period. The results show that the movements of the 48 stock markets are more closely correlated in the 2009-2013 post-crash period than in the 2003-2007 pre-crash period. This empirical finding implies that the benefits of global portfolio diversification decreased significantly from the pre-crash period to the post-crash period.

There are seven statistically significant principal components in the pre-crash period. However, there are only five statistically significant principal components in the post-crash period. The first principal component can explain only 24.2 percent of the total variation in the original data matrix in the pre-crash period. The first principal component can explain 39 percent of the total variation in the original data matrix in the post-crash period. The first two principal components can explain only 40.4 percent of the total variation in the original data matrix in the pre-crash period. The first two principal components can explain only 62.2 percent of the total variation in the original data matrix in the post-crash period.

## REFERENCES

- Arshanapalli, B., and Doukas, J. (1993). International Stock Market Linkages: Evidence from the Pre- and Post-October 1987 Period. *Journal of Banking and Finance* 17(1): 193-208.
- Bussiere, M., Imbs, J., Kollmann, R., and Ranciere, R. (2013). The Financial Crisis: Lessons for International Macroeconomics. *American Economic Journal: Macroeconomics* 5(3): 75-84.
- Jeasakul, P., Lim, C. H., and Lundback, E. J. (2014). Why Was Asia Resilient? Lessons from the Past and for the Future. *IMF Working Paper* (February), No. 38.
- Lau, S. T., and McNish, T. H. (1993). Co-Movements of International Equity Returns: A Comparison of the Pre- and Post-October 19, 1987, Periods. *Global Finance Journals* 4(1): 1-19.
- Lee, S. B., and Kim, K. J. (1993). Does the October-1987 Crash Strengthen the Co-Movements Among National Stock Markets? *Review of Financial Economics* 3(1): 89-102.
- Makridakis, S. G., and Wheelwright, S. C. (1974). An Analysis of the Interrelationships Among the Major World Equity Exchanges. *Journal of Business Finance and Accounting* 1(2): 195-215.
- Marascuilo, L. A., and Levin, J. R. (1983). *Multivariate Statistics in Social Sciences: A Researcher's Guide*. Monterey, CA: Brooks/Cole Publishing Company.
- Meric, I., and Meric, G. (1996). Potential Gains from International Portfolio Diversification and Inter-Temporal Stability and Seasonality in International Stock Market Relationships. *Journal of Banking and Finance* 13(4/5): 627-640.
- Meric, I., and Meric, G. (1996). Inter-Temporal Stability in the Long-Term Co-Movements of the World's Stock Markets. *Journal of Multinational Financial Management* (Fall): 73-83.
- Meric, I., and Meric, G. (1997). Co-Movements of European Equity Markets Before and After the Crash of 1987. *Multinational Finance Journal* (June): 137-152.
- Meric, I., and Meric, G. (1998). Correlation Between the World's Stock Markets Before and After the 1987 Crash. *Journal of Investing* (September): 67-70.
- Meric, I., and Meric, G. (2004). The Diminishing Benefit of Global Portfolio Diversification. *Global Business and Finance Review* (Fall): 43-51.
- Philippatos, G. C., Christofi, A., and Christofi, P. (1983). The Inter-Temporal Stability of International Stock Market Relationships: Another View. *Financial Management* 12(4): 63-69.



Stock, J. H., and Watson, M. W. (2012). Disentangling the Channels of the 2007–09 Recession/Comments and Discussion. *Brookings Papers on Economic Activity* (Spring): 81-156.

World Bank. (2014). *Global Economic Prospects* (January): 15-16 and 29-31.

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## POLITICS, COMPETITIVENESS AND LOGISTIC PERFORMANCE: AN INSTITUTIONAL PERSPECTIVE

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### ABSTRACT

*Extensive literature within Supply Chain Management exists concerning the endogenous factors that affect logistics performance. Understanding of exogenous factors, especially those related to the link between national institutions and logistic performance, remains underserved. A path analysis was employed to explore the impact of four institutional constructs (political freedom, institutional quality of governance, risk, competitiveness) on logistics performance. A panel of 116 countries was selected. The model was tested using summated variables. Findings reveal that all institutional constructs have direct or indirect influences on logistics performance. Future research may aggregate manifest variables to discover further relevant institutional variables.*

**Keywords:** Logistics performance, political freedom, institutional quality, risk, competitiveness

### 1. INTRODUCTION

Supply chains and logistics, as they stretch across a diverse array of international frontiers, become increasingly complex in a globalizing economy. Appreciating logistics from a country level of analysis is a critical consideration for all firms' engaged in outsourcing and offshoring decisions. However, the functions of the firm are all too often treated as separate silos and even as separate disciplines. A firm's locational options will not only take into account "factors of production", but also, the logistics performance of prospective host countries. From a firm perspective, logistics performance is the effective and efficient performance of logistics activities (Metzer & Konrad, 1991). Such activities include "hard" measures such as service, cost and return on investments (Brewer & Speh, 2000), and "soft" measures such as corporate strategy and managerial perceptions of customer satisfaction and loyalty (Holmberg, 2000). Langley and Holmcoln (1992) added the dimension of differentiation to our understanding of logistics performance. They maintain that the value customers receive from logistics activities also serve as an indicator of logistics performance. These added dimensions of differentiation, which cut across disciplines, will also expand a firm's appreciation for various measures of logistics performance including the interaction with institutions, and political and economic environments. In order to gain a more comprehensive understanding of the challenges encountered within logistics, an interdisciplinary approach is warranted.

Our study will argue that national institutions are important exogenous factors which influence Strategic Studies and International Business. The relevance of institutions for global logistics and SCM is still a developing area of study. From an International Business viewpoint, the internationalization of multinational enterprises (MNEs) has been prompted by the search for new markets and the motivation to find new locations to produce lower costs goods. Such actions have meant that MNEs dispersed their operations globally, which in turn, created new challenges in managing the flow of production inputs and finished goods through newly created global supply chains and logistics (Dunning and Lundan 2008; Czinkota and Ronkainen 1997; Junarsin 2012; Griffith et al. 2008). From a Strategic Management viewpoint, logistics is a key function of value creation as well as a vital element of a firm's competencies and the competitive advantage of nations (Porter 1985; Serhat and Harun 2011; Stock et al. 1998; Enderwick and Nagar 2011; Barney 1991; Van Wyk 2010). Globally dispersed value chains have resulted in the simultaneous development of global logistics innovations, e.g. containerization, IT, intermodal transport (Memodovic et al, 2008). The in-depth examination of logistics performance is a well recognized field of inquiry in Supply Chain Management (SCM), (Gundlach et al, 2006). Arvis et al. (2007) maintained that lack of development and/or provision of advanced logistics services would be detrimental to a firm's competitiveness in world markets. While it varies from country to country, most developing countries have relatively small services or lack logistics services all together. Therefore, the success of global logistics

performance will rely on the performance of private service providers in host countries as well as the quality of public institutions supported by governments to expedite the movement of goods (Arvis et al, 2012).

From the perspective of Strategic Management and International Business, national institutions are important entities that mold the diverse business environments in which MNEs operate. Institutions that facilitate free exchanges across international boundaries are regarded as advantageous to the location and strategic choices of MNEs. They may encompass national institutions based on political and economic freedoms (democratic government, free market capitalism), the quality of institutions (governance), competitiveness, and low levels of political, economic and financial risks (Chen 2010; Becker 1992; Henisz and Swaminathan 2008; Peng et al. 2008; Beyer and Fening 2012; Peng et al. 2009; Arslan 2012). Nevertheless, the impact of national institutions upon logistics performance has not received much attention. In a literature review of logistics performance metrics, Gunasekaran and Kobe (2007), noted that logistics is “—embedded with politics, emotions and several emotional issues” (p.2820). Despite this statement, their review revealed that logistics performance metrics focus wholly on endogenous factors, and excluded exogenous factors linked to SCM and logistics. Williams’ et al. (2009) framework of logistics included institutional influences on supply chain security, such as government coercive pressure and societal normative pressure, which provides impetus to test empirically institutional influences on logistics performance (Ye et al. 2013).

Our research is arranged into three tranches. The literature review and hypotheses development comprise section 1. Available evidence concerning the relationships among institutions and between institutions and logistics performance, respectively, is utilized to formulate various hypotheses. Section 2 lays out the methodology, the research model and data, and the interpretation of results which incorporates model fit and hypotheses testing. Part 3 entails managerial implications of our findings and ideas for potential future research.

## 2. LITERATURE REVIEW

Despite the fact that institutional theory is well recognized in International Business, Management Studies and the Social Sciences (Weerakkody et al. 2009), its application in SCM and logistics remains underdeveloped. Defee’s literature review of logistics theories surprisingly revealed only 6.3 percent of work utilized institutional theory (Defee et al. 2010). Institutional theory in logistics has been applied on the firm level of analysis (Williams et al. 2009). While country level analysis of institutions has been included in logistics’ theoretical frameworks, this perspective has been less often empirically tested (Hoffman 1999; Di Maggio and Powell 1983).

Our analysis regards institutions as typically situated within social, political, economic and legal milieus that determine the basis of production, exchange and distribution of goods and services (Davis and North 2008; North 1990). They are viewed as exogenous factors to logistics and SCM. According to Peng et al (2008), institutions may be either formal or informal. They guide societal activities in various foundational areas: society (ethical norms, attitudes to entrepreneurship); politics (corruption, freedom); law (economic liberalization, regulatory regime); and economics (competition). In order to conform, firms must adhere to institutional “rules of the game” to receive acceptance and legitimacy in industry and foreign markets (Scott 1995; Lawrence et al. 2002). When markets are smoothly working, those institutions which support the market are nearly invisible, especially in developed economies (Mcmillan 2007). However, when markets are poorly working, frail institutions are more plainly visible, which is the tendency in emerging economies (Kiggunda et al. 1983; Leung et al. 2005). Accordingly, logistic performance barriers may be fostered by the absence of viable institutions or weak institutions that are defined by institutional voids or institutional changes (Peng et al. 2008). Consequently, logistical performance strategies may be adjusted in emerging markets and developing countries due to different institutions and rules (Hoskisson et al. 2000; Wright et al. 2005). Strategies for successful global logistics necessitate operating within institutional frameworks of diverse countries. Country differences may include regulations, culture and values associated with institutions (Makino et al. 2004; Richey et al. 2005).

Political risk literature has explored extensively the institutions associated with a country’s political and economic environments. The stability of markets is affected by national differences in risk (Butler and Joaquin 1998; Kobrin 1982). Risks to logistics and SCM concentrate chiefly on endogenous or network

risks which include demand, supply and IT risks (Manuj and Mentzer 2008; Ritchie and Brindley 2007; Jüttner et al. 2003). Wagner and Bode (2008) found that institutional risks were insignificant, but found support for the notion that demand side and supply side risks affect logistics performance. Rao and Goldsby (2009) maintained that sources of risk also arose from factors exogenous to logistics including uncertainties related to politics, public policy, macro-economics and societal concerns. For example, risks to logistics and SCM included terrorism and political instability. (Kleindorfer and Saad 2009; Poole-Robb and Bailey 2003; Kleindorfer and Van Wassenhove 2004). In Howells 2008 study, the lack of political freedom, e.g. authoritarianism, non-democratic or military rule, was linked to high levels of political risk. Specifically, Bradley and O'Leary (2008) found that the level of political risk – that is, the cost of doing business for firms --- was elevated with the deterioration of democracy during the rule of Hugo Chavez in Venezuela.

### 3. HYPOTHESES DEVELOPMENT

The first order variables addressed in our path analysis deals with the political environment. Government institutions are of prime importance as the makers and enforcers of government policy (Dahl, 1971). The levels of political freedom and the quality of governance provide a good institutional snapshot of the political environment in host countries. The second order variables deal with institutions related to the business environment in host countries. These include competitiveness and country risk.

The level of political freedom may be assessed along a democracy-autocracy continuum. The conventional view is that democracies (high level of political freedom) may be more conducive to business due to openness and transparency. If that logic is sound, democracies will have less risky environments characterized by less risk and higher competitiveness. In contrast, countries with little political freedom may be more risky and less competitive. According to Kurrild-Klintgaard & Justesen (2006), the extent of democracy in a country is negatively related to the probability of the same country experiencing risks related to transnational terrorism. Abadie (2006) found that political freedom is negatively related to terrorism but not at a significant level. However, terrorism increases for countries in transition from authoritarianism to democracy. In a study of 30 African countries, increases in political freedom reduced aggregate country risk, including political risk. However, the effect of an increase in economic freedom on risk reduction exceeded the effect that an increase in political freedom had on risk (LeBel 2008).

The literature also indicates that financial risk will have an adversarial bearing on political freedom. According to Shields (2008), financial risk is strongly associated with political instability, and related fiscal and monetary crises. Akitoby and Stratmann (2008) found that financial markets reward democracy and electoral accountability, i.e. political freedom, by charging a lower interest rate spread. In contrast, authoritarian regimes were punished with premium interest rates. A contrarian view is that financial and economic risks may increase due to policies based on economic freedom such as credit market liberalization (Diaz-Alenjandro, 1985; Easterly et al, 2000)

The prevalence of economic risk may be more pronounced in countries with problems related to political freedom. Prominent forms of economic risks include inflation, low levels of economic growth, budget deficits and deficits on the current account (Shields 2008). A number of studies link inflation concerns with a lack of political and economic freedom. According to Luksetich (2001), countries with high degrees of freedom adopt structures that lead to low inflation, and vice versa. A panel data study covering 160 countries showed that higher degrees of political instability and less democracy were associated with more volatile inflation rates (Aisen and Veiga 2008). The results of a study of 108 countries indicated that countries which were freer economically also had lower inflation rates (Fahim 2006). In a case study of Bangladesh, high inflation rates were associated with weak institutions lacking political and economic freedom (Ahmed and Pulok 2013). In a study exploring the relationship between political regime and the stability of economic policy, Ali & Isse (2004) found overwhelming evidence that high levels of political freedom fostered high levels of stable fiscal, monetary and trade policies. In summary, the higher the level of political freedom, the lower the level of risk; or, the lower the level of political freedom, the higher the level of risk. Thus, based on the existing studies, the following hypothesis is presented.

**H1. Political freedom has a negative relationship with risk**

Does political freedom have an influence on competitiveness? Mentzer et al. (2004) argued that government, as a stakeholder, acts as a mediating factor between logistic capabilities and firm competitiveness. In a comparison of G7 and emerging market countries, Waheeduzzaman (2011) found that G7 countries maintained a competitive edge. G7 countries enjoyed higher levels of political and economic freedom, better governance and less corruption than their counterparts in emerging markets. The findings of a panel study of countries showed that economic freedom was positively related to national competitiveness (Verner 2015). A survey of business managers found that political and economic freedoms were regarded as important drivers of competitiveness in Hong Kong. The study also concluded that a decline in economic freedom, as mediated by a decline in political freedom, would lead to a decline in competitiveness in Hong Kong (Thompson 2004). Díaz-Casero et al. (2012) found that economic freedom was strongly linked to competitiveness drivers such as entrepreneurship and economic development. However, DiRienzo et al (2007) found that political and civil liberties, a proxy for democracy, were statistically insignificant for competitiveness. They found that different political regime types, both free and less free, may display national competitiveness. These findings illustrate the existing ambiguity in the literature regarding the relationship between political freedom and competitiveness. Accordingly, political freedom may be related to the competitiveness of a country and may be predicted by the following hypothesis.

**H2:** The political freedom in a country has a positive influence on competitiveness.

For students of business and politics, the quality of government institutions is an important indicator of societal well-being, business opportunity and economic growth (Agnafors, 2013; Kaufmann, Kraay & Mastruzzi, 2010). According to the literature, institutional quality will reduce risk and promote competitiveness. A study by Ozturk (2014) found that poor institutional quality was responsible for country risk, i.e. poor institutional qualities such as a lack of government effectiveness and regulatory burdens were related to low sovereign credit ratings. In a study 62 countries, Meon & Weill (2005) found that the six Worldwide Governance Indicators, used in this study, positively affect aggregate efficiency related to competitiveness. They found that government efficiency, in particular, robustly influenced competitiveness. Risk was strongly associated with financial losses. The findings of Chang & Lu (2013) showed that poor institutional governance qualities, specifically breach of contract and adverse regulatory changes, were strong indicators of financial losses associated with foreign direct investment. In a panel study of 82 countries for the period 2004-2011, Tellez-Valle & Martin-Garcia (2014) found that poor institutional quality, as measured by the Worldwide Governance Indicators, was strongly related to poor sovereign risk ratings by S&P, Fitch, and Moody's. Thus, the following hypothesis will be tested:

**H3:** Increases in institutional quality will lead to decreases in risk

According to Bhatnagar and Soheli (2005), the stability of government and the stability of regulations were drivers of supply chain competitiveness and performance. Serat and Harun (2011) found a strong positive correlation between democracy and democratic governance, respectively, and logistics performance. Democratic countries with high levels of stability and governance also had high levels of logistics performance. However, Wagner and Bode (2008) found no correlation between political risk (regulatory, legal and bureaucratic) and supply chain performance. In a study of 80 countries, institutional quality was a stronger indicator than entrepreneurship which underpinned aspects of competitiveness in e-commerce (Martinez & Williams, 2010). Thus the following hypothesis is proposed:

**H4:** Institutional quality will have a positive influence on competitiveness

According to Rutkauskas (2008), risks such as inadequate market information reduces competitiveness. The effective management of external supply chain risk, through continuity planning, is regarded as a major driver for firms' competitiveness (Blos et al, 2010). Chunren et al (2010) view control of strategic risk, through resource accumulation and strategic flexibility, as essential steps in achieving competitiveness. In a study of 850 information technology and software offshore projects in 55 host countries during the period 2000-2005, Hahn et al (2009) found that firms were increasingly exposed to high-risk in order to take advantage of a more competitive environment. They indicated that outsourcing failure was common particularly in the early stages of entering a host market. Mihaie and Opreana (2012) found that if countries in the EU were clustered, country clusters with high competitiveness had an inverse relationship with country risk. Thus the following hypothesis is proposed:

**H5:** Risk will have a negative influence on competitiveness

In the literature, a number of frameworks, typologies and research agendas have dealt with risks to supply chains and logistics performance. According to Richie & Brindley (2007), logistics performance is determined by industrial characteristics, strategic decisions and risk. Sources of risks are usually analyzed as part of risk management strategies. In such risk sources, a distinction is often made between exogenous or environmental risks, and endogenous risks. Our interest in this study is concerned with exogenous or environmental risks. A common approach is to regard environmental risk as related to uncertainties associated with political instability, inadequate government policies, macroeconomic concerns, and social issues such as terrorism and cultural differences (Rao & Goldsby, 2009; Spekman & Davis, 2004; Manuj & Mentzer, 2008; Jai & Rutherford, 2010). However, empirical studies involving the relationship of environmental risks and logistics performance are still underserved. A study of 26 OECD countries showed that political risk has a significant correlation with logistic performance (Guner & Coskun, 2012). In a survey of German logistics managers, Wagner and Bode (2008) found no statistically significant relationship between regulatory, legal and bureaucratic risks and logistics performance. The following hypothesis is proposed:

**H6:** Risk will have a negative influence on logistics performance

Is competitiveness a driver of logistics performance? In general, logistics performance may be regarded as a key component of a firm's competitiveness and effectiveness (Porter 1985). Strategically seen, high levels of logistics performance reduce costs and add value for a firm such as quality, speed and response time (Poon and Lau 2000; Dumond 1996). In a study of 155 countries, Serhat and Harun (2011) found a strong positive correlation between national competitiveness and logistics performance. The important links between logistics and national competitiveness have been supported by a number of other studies (Lakshmanan and Anderson 2002; World Trade Organization 2004; Ravn and Mazzenga 2004; Navickas et al. 2011). Results indicated that the logistics performance variables that were most effective in discriminating between high and low competitive countries were related to logistics infrastructure. In a similar vein, Torres et al (2014) found a strong relationship between transport competitiveness and logistics performance in Mexico. Thus, increased levels of competitiveness will be beneficial for logistics performance. The following hypothesis is put forth:

**H7:** The competitiveness of a country has a positive influence on logistics performance.

## 4. METHODOLOGY

### 4.1. Data and Research Model

Our study uses multiple datasets that are created and distributed in international research organizations' annual reports. The research model analyzed summated scales of multiple items as shown in Table 1. Freedom House was the source of annual political freedom data. Political freedom has two components: political rights and civil liberties. Each country is assigned two ratings, i.e. one for political rights and one for civil liberties. Each rating ranges from 1 through 7, with 1 representing the greatest degree of freedom and 7 the smallest degree of freedom. POLFRE (political freedom) in our research model is an average of the summated scale of political rights and civil liberties.

Institutional Quality data (Worldwide Governance Indicators) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered by The World Bank Group from a number of survey institutes, think tanks, non-governmental organizations, international organizations and private sector firms of 215 countries. INSQUA (institutional quality) in our research model is the summated figures of the six aggregate data also provided by the organization.

Composite Risk data, including political, economic and financial risks, were purchased from The PRS Group. Political risk consists of twelve political components; financial risk consists of five financial risk components; and economic risk consists of five economic risk components. Each component is assigned a maximum numerical value (risk points), with the highest number of points (political risk: 100, financial risk: 50, economic risk: 50 points) indicating the lowest potential risk for that component and the lowest number (0) indicating the highest potential risk. All three risk data were collected from 148 countries.

Competitiveness data were collected from the World Economic Forum. The WEF sponsors the global competitiveness index, which measures the microeconomic and macroeconomic foundations of national

competitiveness of 148 countries. It is composed of 12 categories of institutions, factors and policies, which determine the level of productivity of a country.

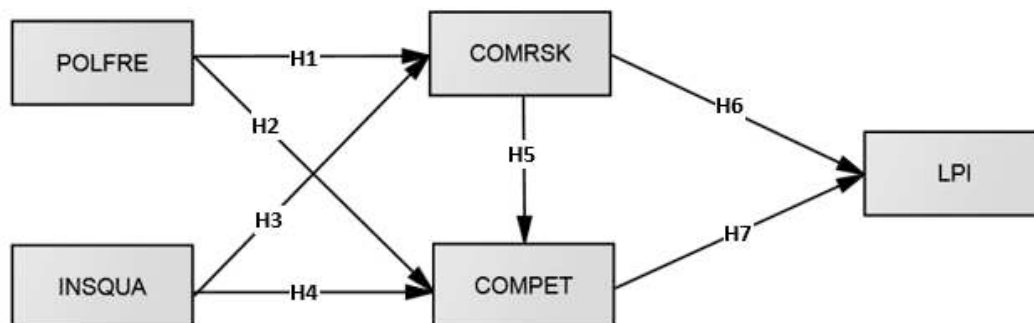
The World Bank provides a logistics performance index (LPI) for 155 countries. LPI is based on a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the logistics capability of the countries in which they operate. LPI in the research model is a summated scale of three dimensions: transportation, infrastructure and clearance procedure. Each dataset listed above includes various countries' statistics for different sets of measurement years. For consistent analyses, data of the year 2012 for 116 common subject countries were retrieved across the multiple datasets.

**TABLE 1. SUMMATED VARIABLES AND COMPONENTS OF THE MODEL**

Variable	Components	Organization
Political Freedom	Political Rights, Civil Liberties	Freedom House
Institutional Quality	Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption	The World Bank Group
Composite Risk	Political Risk, Economic Risk, Financial Risk	The PRS Group
Competitiveness	12 pillars of global competitiveness (Institutions, Infrastructure, Macroeconomic Environment, Health and Primary Education, Higher Education and Training, Goods Market Efficiency, Labor Market Efficiency, Financial Market Development, Technological Readiness, Market Size, Business Sophistication, Innovation)	World Economic Forum
Logistics Performance Index (LPI)	Transportation, Infrastructure, Clearance Procedure	The World Bank Group

A path analysis was utilized to test the theoretical relationships in the model. Path Analysis is employed to analyze causality from multiple independent variables on multiple dependent variables. However, path analysis is by no means restricted to cause and effect relations (Wright, 1954). When a path analysis does not yield certain causal relationships, it may be used to identify the logical consequences of hypotheses (Wright, 1921). For path analysis, a research model should include only manifest variables (Wright, 1918). The hypothesized research model is depicted in Figure 1. AMOS 22 using the maximum likelihood method to estimate the unknown parameters analyzed this recursive model.

**FIGURE 1. HYPOTHESIZED RESEARCH MODEL**



#### 4.2. Model Fit

In the saturated model (just-identified) there are 20 parameters. For our tested model (default), there are 18 parameters and, for the independence model, there are five parameters. Chi-square statistic compares the tested model and the independence model to the saturated model.  $\chi^2_{\text{GoF}}$  (CMIN) is 29.926

( $df=2$ ) and the  $p$  value is .0 that does not exceed the recommend value of .05 or larger. The normed  $\chi^2$  (CMIN/DF) is 14.963 that is larger than value of 2 or less. Therefore Chi-square does not return a good model fit. While there is some disagreement over which particular fit tests are preferred in usage, it is commonly agreed that researchers use more than one fit indices. The baseline comparisons, including NFI (Normed Fit Index), IFI (Incremental Fit Index), and CFI (Comparative Fit Index), have values greater than the recommended value of .9. Since the present study is using country level data, the number of common countries in all the data sets yields only 116, which is rather small. CFI is a reliable index because it is sample size independent. The parsimony-adjusted measures, including PNFI (Parsimonious Normal Fit Index) and PCFI (Parsimonious Comparative Fit Index), show very low values, .126 and .127, respectively. HOELTER (212) is larger than the recommended value of 200 at a the significance level of .01. Based on the rules of prior studies (Bentler and Bonett 1980; Bagozzi and Yi 1988; Byrne 2001), the fit indices for the present model are acceptable, and the values indicate that the path model fits the data reasonably well. Table 2 shows the model fit indices.

**TABLE 2. MODEL FIT INDICES**

$\chi^2_{GoF}$	$df$	$NFI$	$IFI$	$CFI$	$PNFI$	$PCFI$	$HOELTER$ .01
13.455 ( $P=.000$ )	2	.948	.951	.950	.126	.127	212

#### 4.3. Hypothesis Testing

Since the research model is recursive and the hypotheses are directional, the estimates were examined based on one-tailed tests, where  $\alpha$ -value is .01 to be considered statistically significant. The effect of political freedom (POLFRE) on composite risk (COMRSK) is significant ( $\beta=-.811$ ,  $p<.01$ ). Hence, H1 is supported. The effect of political freedom (POLFRE) on competitiveness (COMPET) is significant ( $\beta=.059$ ,  $p<.01$ ). Therefore, H2 is supported. Since the effect of institutional quality (INSQUA) on COMRSK is significant ( $\beta=.308$ ,  $p<.01$ ), H3 is supported. The effect of INSQUA on COMPET is significant ( $\beta=.021$ ,  $p<.01$ ). Hence, H4 is supported. Since the effect of COMRSK on COMPET is significant ( $\beta=.030$ ,  $p<.01$ ), H5 is supported. Since the effects of COMRSK on LPI is insignificant ( $\beta=-.005$ ,  $p>.01$ ), H6 is rejected. The effect of COMPET on LPI is significant ( $\beta=.793$ ,  $p<.01$ ). Hence, H7 is supported. Table 3 presents the properties of the causal paths, including unstandardized path coefficients ( $\beta$ ), standardized coefficients, standard error, and critical ratio. Figure 2 shows the result model with the unstandardized estimates.

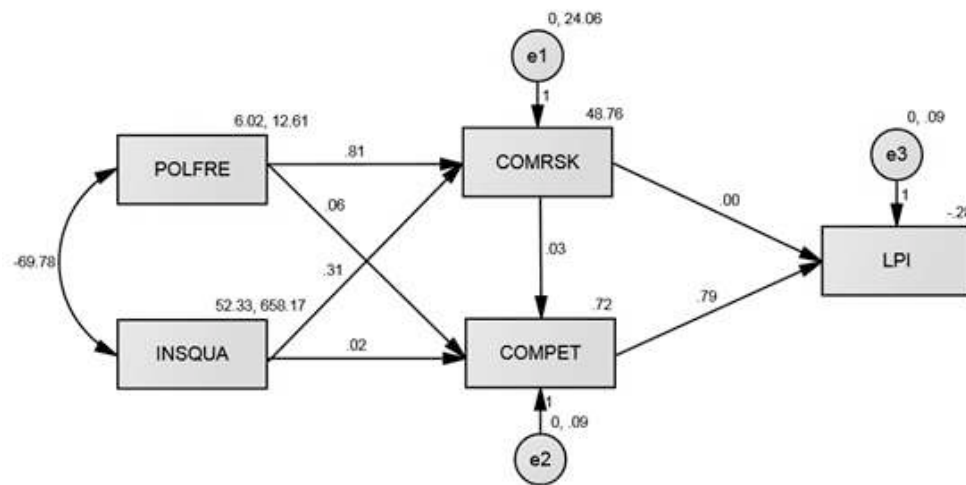
Our study found considerable evidence that national institutions are relevant for the understanding of logistics performance. The path analysis captured the nuanced relationships between institutions, respectively, and between institutions and logistics performance. The findings indicate that logistics are embedded in the political economies and business environments of countries through which global supply chains run. Our contention that logistics performance is influenced by exogenous factors is supported by the findings. It is a fruitful expansion of the conventional understanding that logistics performance is influenced by endogenous factors.

**TABLE 3. RESULTS OF PATH ANALYSIS**

Hypotheses	Path	Unstandardized	Standardized	S.E.	C.R.	P	Supported?
H1	COMRSK ← POLFRE	.811	.371	.198	4.098	***	Yes
H2	COMPET ← POLFRE	.059	.317	.013	4.681	***	Yes
H3	COMRSK ← INSQUA	.308	1.021	.027	11.238	***	Yes



H4	COMPET ← INSQUA	.021	.805	.002	8.833	***	Yes
H5	COMPET ← COMRSK	.030	.350	.005	5.455	***	Yes
H6	LPI ← COMRSK	-.005	-.065	.006	-.769	.442	No
H7	LPI ← COMPET	.793	.910	.074	10.743	***	Yes

**FIGURE 2. RESULT MODEL**

Note: one-tailed test,  $\alpha=.01$ ,  $|c.r.|>2.58$

## 5. MANAGERIAL IMPLICATIONS AND FUTURE STUDY

Logistics performance analysis is an abundant sphere of inquiry. A significant focus of research has been into endogenous factors, specifically firm-specific and network-specific issues, which have affected logistics performance. The relevance of selected exogenous determinants for logistics performance are examined for purposes of our study. Such a research method is beneficial since logistics for MNEs cut across international boundaries and are unavoidably intertwined with the political-economies or business environments of host countries. Our investigation uncovered that institutions, on the country level of analysis, have important influences on logistics performance, especially on the levels of political freedom, governance quality, risk exposure and competitiveness in host countries. Our research examines logistics performance from an interdisciplinary stand point rather than from the traditional, single discipline of Supply Chain Management. Our path analysis model, created for this empirical study, dynamically captures the multi-dimensional nature of the patterns or paths of institutional influences on logistic performance. Institutional theories from Strategic Management, International Business, and the Social Sciences offer empirical evidence and theoretical insights, and when tested in our model, furnish support for the influence of various exogenous institutional factors on logistics performance.

Logistics performance is one of the vital components of value creation for firms with global supply chains (UNCTAD 2013). Efficiency, effectiveness and differentiation --- that is, endogenous factors --- determine logistics performance (Fugate et al. 2010). Our study revealed that such factors as institutions, which include political regimes, quality of governance, risk and national competitiveness, have an important bearing on logistics performance. For multinational enterprises and logistics providers, a far-sighted approach may be to monitor or assess institutional behavior in host countries in which they engage in business or they plan to expand in the future. For instance, an analysis of six important global logistics

providers revealed that infrastructure, and government policy as well as regulations, an important institutional factor, were the key motivations for choosing Singapore as a location for business (Tongzon 2007).

Monitoring is critical for two reasons. Host countries' institutions will differ greatly in terms of policies supporting logistics, e.g. infrastructure development, business friendly regulations and transparency. Even in host countries that embrace supportive logistics policies, such policies may fall short of business expectations or may take time before benefits are realized. Secondly, the institutions of a country may decline due to failed economic policies or political instability, which in turn, may aggravate exogenous risks to global supply chains.

In the future, research should explore the dynamics between logistics performance and political, economic and financial risks. Since trade, investment, fiscal and monetary policies of governments frequently encroach on economics and finance, both economic and financial risks may be precursors of wider political risks. Analyzing the impact of other institutional factors on logistics performance may also be a fruitful, future endeavor. Institutional datasets available include globalization, cultural differences, economic freedom, and the cost of doing business in diverse countries. Country panel studies may also be utilized and are characterized by small samples due to the relatively small number of countries currently in the global political system. Our study included 116 countries and our model included eight summated variables. A factor analysis of the manifest variables of the four independent variable (See Table 1) may produce fewer variables to construct a more economical paradigm.

## REFERENCES

- Adabie, A. 2006. "Poverty, political freedom and the roots of terrorism", *The American Economic Review*, vol. 96, no. 2, pp. 50-56.
- Agnafors, M. 2013. "Quality of government: Toward a more complex definition", *American Political Science Review*, vol. 107, no. 3, pp. 433-445.
- Ahmed, M.U and Pulok, M. H. 2013. "The role of political stability on economic performance: the case of Bangladesh", *Journal of Economic Cooperation and Development*, vol. 34, no. 3, pp. 61-100.
- Aisen, A. and Veiga, F. J. 2008. "Political instability and inflation volatility", *Public Choice*, vol. 135, pp. 207-223.
- Akitoby, B. and Stratmann, T. 2008. "The value of institutions for financial markets: Evidence from emerging markets", Available at: <http://ssrn.com/abstract=1311875>
- Ali, A. M. and Isse, H. S. 2004. "Political freedom and the stability of economic policy", *Cato Journal*, vol. 24, no. 3, pp. 251-260.
- Arslan, A. 2012. "Impacts of institutional pressures and the strength of market supporting institutions in the host country on the ownership of multinational enterprises: Theoretical discussion and propositions", *Journal of Management & Governance*, vol. 16, no. 1. pp. 107-124.
- Arvis, J-F., Mustra, M. A., Ojala, L., Shepherd, B. and Saslavsky, D. 2012. "Connecting to compete 2012: Trade logistics in the global economy", The World Bank. Washington, D.C.
- Arvis, J-F., Roballand, G. and Marteau, J-F. 2007. The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability, The World Bank, World Bank Policy Research Working Paper S4258.
- Bagozzi, R., and Yi, Y. 1988. "On the evaluation of structural equation models", *Journal of the Academy of Marketing Science*, vol. 16, no. 1, pp. 74-94.
- Barney, J.B. 1991. "Firm resources and sustained competitive advantage", *Journal of Management*, vol. 17, no. 1, pp. 99-121.
- Becker, F. G. 1992. "International business and governments: Issues and institutions", *Management International Review*, vol. 32, no. 4, pp. 381.
- Bentler, P. and Bonett, D. 1980. "Significance tests and goodness of fit in the analysis of covariance structures", *Psychological Bulletin*, vol. 88, no. 3, pp. 588-606.
- Beyer, H. and Fening, F. 2012. "The impact of formal institutions on global strategy in developed vs. emerging economies", *International Journal of Business & Society*, vol. 3, no. 15, pp. 30-36.

- Bhatnagar, R. and Sohal, A. S. 2005. "Supply chain competitiveness: Measuring the impact of location factors, uncertainty and manufacturing practices", *Technovation*, vol. 25, pp. 443-456.
- Blos, M. F., Wee, H-M. and Yang, J. 2010. "Analyzing the external supply chain risk driver competitiveness: A risk mitigation framework and business continuity plan", *Journal of Business Continuity & Emergency Planning*, vol. 4, no. 4, pp. 368-374.
- Bradley, C. W. J. and O'Leary, M. K. 2008. "The application of classical risk assessment methodology to political risk assessment", in Howell, LD. (Eds) *Political risk assessment: concept, method, and management* (pp. 59-83) The PRS Group, Inc., East Syracuse, NY.
- Brewer, P. C. and Speh, T. W. 2000. "Using the balance scorecard to measure supply chain performance", *Journal of Business Logistics*, vol. 21, no. 1, pp. 75-93.
- Butler, K. C. and Joaquin, D. C. 1998. "A note on political risk and the required return on foreign direct investment", *Business Studies*, vol. 29, no. 3, pp. 599-608.
- Byrne, B. 2001. Structural equation modeling with AMOS: Basic concepts, applications, and programming, Lawrence Erlbaum Associates Publishers, Mahwah, NJ, USA.
- Chang, P-L. and Lu, C-H. 2013. "Political risk and institutional quality differences across countries: Impacts on FDI by multinational firms", *Research Collection, School of Economics*, Available at [http://ink.library.smu.edu.sg/soe\\_research/1582](http://ink.library.smu.edu.sg/soe_research/1582).
- Chen, S. S. 2010. "A general TCE model of international business institutions: Market failure and reciprocity", *Journal of International Business Studies*, vol. 41, no. 6, pp. 935-959.
- Chunren, Z., Yang, R., Cheng, M. and Chan, P. 2010. "Research on strategic risk based on resource-based view from the perspective of competitiveness", Paper presented at the International Conference on Management and Service Science, August 24-26, Wuhan, China.
- Czinkota, M. and Ronkainen, I. A. 1997. "International business and trade in the next decade: Report from the Delphi study", *Journal of International Business Studies*, vol. 28, no. 4, pp. 827-844.
- Dahl, R. A. 1971. *Polyarchy: Participation and opposition*, New Haven, Connecticut, Yale University Press.
- Davis, L. E. and North, D. C. 2008. *Institutional change and American economic growth*, Cambridge University Press, Cambridge, U. K.
- Defee, C. C., Williams B., and Randall, W. S. 2010. "An inventory of theory in logistics and SCM research", *The International Journal of Logistics Management*, vol. 21, no. 3, pp. 404-489.
- Di Maggio, P. J. and Powell, W. W. 1983. "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, vol. 48, pp. 147-160.
- Díaz-Alenjandro, C. 1985. "Good-bye financial repression, hello financial crash", *Journal of Development Economics*, no. 19, pp. 1-24.
- Díaz-Casero, J. C., Díaz-Aunión, D. A. M., Sánchez-Escobedo, M. C., Coduras, A. and Hernández-Mogollon, R. 2012. "Economic freedom and entrepreneurial activity", *Management Decision*, vol. 50, no. 9, pp. 1686-1711.
- DiRienzo, C. E., Das, J. and Burbridge, J. 2007. "Does diversity impact competitiveness? A cross country analysis", *Competitiveness Review*, vol. 17, no. 3, pp. 135-152.
- Dunning, J. H. and Lundan, S. M. 2008. *Multinational Enterprises and the global economy*, 2<sup>nd</sup> edition, Edward Elgar, Cheltenham, UK.
- Dumond, E. J. 1996. "Applying value-based management to procurement", *International Journal of Physical Distribution & Logistics*, vol. 26, pp. 5-24.
- Easterly, W., Islam, R. and Stiglitz, G. 2000. "Shaken and stirred: Explaining growth volatility", Discussion Paper, World Bank.
- Enderwick, P. and Nagar, S. 2011. "The competitive challenge of emerging markets: The case of medical tourism", *International Journal of Emerging Markets*, vol. 6, no. 4, pp. 329-350.
- Fahim, A. 2006. "Economic freedom and inflation performance: Cross country evidence", *The Business Review*, vol. 5, no. 6, pp. 168-173.
- Fugate, B. S. 2010. "Logistics performance: Efficiency, effectiveness and differentiation", *Journal of Business Logistics*, vol. 31, no. 1, pp. 43-61.

- Griffith, D. A., Cavusgil, S. T. and Xu, S. 2008. "Emerging themes in international business research", *Journal of International Business Studies*, vol. 39, no. 7, pp. 1220-1235.
- Gunasekaran, A. and Kubo, B. 2007. "Performance measures and metrics in logistics and supply chain management: A review of recent literature (1995-2004) for research application", *International Journal of Production Research*, vol. 45, no. 12, pp. 2819-2840.
- Gundlach, G. T., Bolumole, Y. A., Eltantawy, R. A. and Frankel, R. 2006. "The changing landscape of supply chain management, marketing channels of distribution, logistics and purchasing", *Journal of Business & Industrial Marketing*, vol. 21, no. 7, pp. 428-438.
- Guner, S. and Coskun, E. 2012. "Comparison of impacts of economic and social factors on countries' logistics performances: A study with 26 OECD countries", *Research in Logistics & Production*, vol. 2, no. 4, pp. 329-343.
- Hahn, E. D., Doh, J. P. and Bunyaratavej, K. 2009. "The evolution of risk in information systems offshoring: The impact of home country risk, firm learning, and competitive dynamics", *MIS Quarterly*, vol. 33, no. 3, pp. 597-616.
- Henisz, W. and Swaminathan, A. 2008. "Institutions and international business", *Journal of International Business Studies*, suppl. Part, special Issue: *Institutions and International Business*, vol. 39, no. 4, pp. 537-539.
- Hoffman, A. J. 1999. "Institutional evaluation and change: Environmentalism and the U.S. chemical industry. *Academy of Management Journal*, vol. 42, no. 4, pp. 351-371.
- Holmberg, S. 2000. "A systems perspective on supply chain measurements", *International Journal of Physical Distribution and Logistics Management*, vol. 30, no. 10, pp. 847-868.
- Hoskisson, R. E., Eden, L., Lau, C. M. and Wright, M. 2000. "Strategy in emerging economies", *Academy of Management Journal*, vol. 43, no. 3, pp. 249-267.
- Howell, L.D. (2008). "Governmental attributes in political risk" in Howell, L. D. (Eds) *Political risk assessment: concept, method, and management* The PRS Group, Inc., (pp 85-110) East Syracuse, NY.
- Jia, F. and Rutherford, C. 2010. "Mitigation of supply chain relational risk caused by cultural differences between China and the West", *The International Journal of Logistics Management*, vol. 21, no. 2, pp. 251-270.
- Junarsin, E. 2012. "Potential advantages and challenges in international business strategy: A case study", *Journal of Global Business Issues*, vol. 6, no. 1, pp. 21-26.
- Jüttner, U., Peck, H. and Christopher, M. 2003. "Supply chain risk management: Outlining an agenda for future research", *International Journal of Logistics: Research and Application*, vol. 6, no. 4, pp. 197-210.
- Kaufmann, D., Kraay, A. and Mastruzzi, M. 2010. "The Worldwide Governance Indicators: Methodology and Analytical Issues", World Bank Policy Research Working Paper No. 5430, Washington, DC, World Bank.
- Kiggundu, M. N., Jorgensen, J. J. and Hafsi, T. 1983. "Administrative theory and practice in developing countries: A synthesis", *Administrative Science Quarterly*, vol. 28, no. 1, pp. 66-84.
- Kleindorfer, P. R. and Saad, G. H. 2009. "Managing disruption risks in supply chains", *Production and Operations Management*, vol. 14, no. 1, pp. 53-68.
- Kleindorfer, P. R. and Van Wassenhove, L. 2004. "Risk management for global supply chains: An overview" in Gatignon, H. & Kimberly, J. (Eds), *The Alliance on Globalizing*, (Chapter 23) Cambridge University Press, Cambridge, Massachusetts.
- Kobrin, S. J. 1982. *Managing political risk assessment*, Berkeley, University of California Press.
- Kurrild-Klitgaard, P. and Justesen, M. K. 2006. "The political economy of freedom, democracy and transnational terrorism", *Public Choice*, vol. 128, pp. 289-315.
- Lakshmanan, T. R. and Anderson, W. P. 2002. "Transportation infrastructure, flight services and economic growth: A synopsis of a White Paper", *The US Department of Transportation*, Federal Highway Administration, Washington.
- Langley, C. J. and Holcolm, M. C. 1992. "Creating logistics customer value", *Journal of Business Logistics* vol. 13, no. 2, pp. 1-27.

- Lawrence, T. B., Hardy, C. and Phillips, N. 2002. "Institutional effects of interorganizational collaboration: The emergence of proto-institutions", *Academy of Management*, vol. 45, no. 1, pp. 281-290.
- LeBel, P. 2008. "Managing risk in Africa through instional reform", *Atlantic Economic Journal*, vol 36, no.2. pp. 165-181.
- Leung, K., Bhagat, R., Buchan, N., Erez, M. and Gibson, C. 2005. "Culture and international business: Recent advances and their implications for future research", *Journal of International Business Studies*, vol. 36, no. 4, pp. 357-378.
- Luksetich, W. A. 2001. "Central bank independence, economic freedom, and inflation rates", *Economic Inquiry*, vol. 39, no. 1, pp. 149-161.
- Makino, S., Isobe, T. and Chan, C. 2004. "Does country matter?", *Strategic Management Journal*, vol. 25, no. 10, pp. 1027-1043.
- Manuj, I. and Mentzer, J. T. 2008. "Global supply chain risk management strategies", *International Journal of Physical Distribution & Logistics Management*, vol. 38, no. 3, pp. 192-223.
- Martinez, C. A. and Williams, C. 2010. "National institutions, entrepreneurship and global ICT adoption: A cross-country test of competing theories", *Journal of Electronic Research*, vol. 11, no. 1, pp. 73-91.
- McMillan, J. 2007. "Market institutions" in Blume, L. and Durlauf, S. (Eds) *The New Palgrave Dictionary of Economics* (2<sup>nd</sup> ed.), London, Palgrave.
- Memedovic, O., Ojala, L., Rodriques, J-R. and Naula, T. 2008. "Fuelling the global value chains: What role for logistics capabilities?", *International Journal of Technological Learning, Innovation and Development*, vol. 1, no. 3, pp. 353-374.
- Mentzer, J. T. and Konrad, B. P. 1991. "An efficiency/effectiveness approach to logistics performance", *Journal of Business Logistics*, vol. 20, no. 1, pp. 33-62.
- Mentzer, J. T., Soonhong, M. and Bobbit, L. M. 2004. "Toward a unified theory of logistics", *International Journal of Physical Distribution & Logistics Management*, vol. 34, no. 8, pp. 606-627.
- Meon, P-G. and Weill, L. 2005. "Does better governance foster efficiency? An aggregate frontier analysis", *Economics of Governance*, vol. 6, no. 1, pp. 75-90.
- Mihaiu, D. and Opreana, A. 2012. "European Union's competitiveness in terms of country risk and fiscal discipline", *Studies in Business and Economics*, econpapers.repec.org, pp. 126-137.
- Navickas, V., Sujeta, L., and Vojtovich, S. 2011. "Logistics systems as a factor of country's competitiveness", *Economics and Management*, vol. 16, pp. 231-237.
- North, D. C. 1990. *Institutions, institutional change, and economic performance*, Cambridge MA, Harvard University Press.
- Ozturk, H. 2014. "The origin in bias in sovereign credit ratings: Reconciling agency views with institutional quality", *The Journal of Developing Areas*, vol. 48, no. 4, pp. 161-188.
- Peng, M. W., Li, S., Pinkham, B. and Chen, H. 2009. "The institution-based view as a third leg of a strategy tripod", *Academy of Management Perspectives*, vol. 23, no. 3, pp. 63-81.
- Peng, M. W., Wang, D. Y. L. and Jiang, Y. 2008. "An institutional-based view of international business strategy: a focus on emerging economies", *Journal of International Business Studies*, vol. 39, pp. 920-936.
- Porter, M. 1985. *Comparative Advantage*, The Free Press, New York, New York.
- Poole-Robb, S. P. and Bailey, A. 2003. *Risky Business: Corruption, fraud, terrorism and other threats to global business*, Revised edition. Kogan Page Ltd. London, United Kingdom.
- Poon, W. K. and Lau, K. H. 2000. "Value challenges in supply chain management", *Logistics Information Management*, vol. 13, pp. 150-155.
- Rao S. and Goldsby T. J. 2009. "Supply chain risks: A review and typology", *International Journal of Logistics Management*, vol. 20, no. 1, pp. 97-123.
- Ravn, M. O. and Mazzenga, E. 2004. "International business cycles: The quantitative role of transportation costs", *Journal of International Money and Finance* vol. 23, no. 4, pp. 645-671.
- Richey, R. G., Tokman, M., Wright, R. E. and Harvey, M. G. 2005. "Monitoring reverse logistics programs: A roadmap to sustainable development in emerging markets", *Multinational Business Review*, vol. 13, no. 3, pp. 41-65.

- Ritchie, B. and Brindley, C. 2007. "Supply chain risk management and performance: A guiding framework for future development", *International Journal of Operations and Production Management*, vol. 27, no. 3, pp. 303-322.
- Rutkauskas, A. V. 2008. "On the sustainability of regional competitiveness development considering risk", *Baltic Journal of Sustainability*, vol. 14, no. 1, pp. 89-99.
- Scott, W. R. 1995. *Institutions and organizations*, Thousand Oaks, CA, Sage.
- Serhat, B. and Harun, S. 2011. "Analyzing the dependency between national logistics performance and competitiveness: Which logistics competence is core to national strategy?", *Journal of Competitiveness*, vol. 3, no. 4, pp. 4-22.
- Shields, R. 2008. "Managing country risk in large financial institutions" in Howell, L. D. (Eds) *Political risk assessment: concept, method, and management* (pp. 111-132) The PRS Group, Inc., East Syracuse, NY.
- Spekman, R. E. and Davis, E. W. 2004. "Risky business: Expanding the discussion on risk and the extended enterprise", *International Journal of Physical Distribution and Logistics Management*, vol. 34, no. 5, pp. 414-433.
- Stock, G. N., Greis, N. P. and Kasarda, J. D. 1998. "Logistics, strategy and structure: A conceptual framework", *International Journal of Operations and Production Management*, vol. 18, no. 1, pp. 37-52.
- Tellez-Valle, C. and Martin-Garcia, M. 2014. "Evolution of sovereign rating models in the current crisis", *GCG*, vol. 8, no. 1, pp. 16-33.
- Thompson, E. R. 2004. "National competitive advantage and the roles of economic and political freedom: Evidence from Hong Kong", *Public Choice*, vol. 3, no. 4, pp. 402-437.
- Tongzon, J. 2007. "Determinants of competitiveness in logistics: Implications for the ASEAN region", *Maritime Economics & Logistics*, vol. 9, pp. 67-83. DOI:10.1057/palgrave.mel.9100172
- Torres, A. I. Z., Chavez, J. and Valencia, J. B. 2014. "Competitividad del transporte aereo y maritime de Mexico en el marco del comercio exterior", *Global conference on Business and Finance Proceedings*, vol. 9, no. 1, pp. 1660-1671.
- UNCTAD (United Nations Conference on Trade and Investment) 2013. "World Investment Report", United Nations, Geneva, Switzerland.
- Van Wyk, J. 2010. "Double diamonds, real diamonds: Botswana's national competitiveness", *Academy of Marketing Studies*, vol. 14, no. 2, pp. 55-76.
- Verner, T. 2015. "The effect of economic freedom on national competitiveness: Causality from a panel of countries" *Journal of Economics, Business and Management*, vol. 3, no. 1, pp. 150-155.
- Wagner, S. M. and Bode, C. 2008. "An empirical examination of supply chain performance along several dimensions of risk", *Journal of Business Logistics*, vol. 29, no. 1, pp. 307-325.
- Waheeduzzaman, A. N. M. 2011. "Competitiveness and convergence in G7 and emerging markets", *Competitiveness Review*, vol. 21, no. 2, pp. 110-128.
- Weerakkody, V., Dwivedi, Y. and Irani, Z. 2009. "The diffusion and use of institutional theory: A cross-disciplinary longitudinal literature survey", *Journal of Information Technology*, vol. 24, no. 4, pp. 354-368.
- Williams, Z., Lueng, J. E., Taylor, R. D. and Cook R. L. 2009. "Why all the changes? An institutional theory approach to exploring the drivers of supply chain security", *International Journal of Physical Distribution and Logistics*, vol. 39, no. 7, pp. 595-618.
- World Trade Organization 2004. "World trade report 2004: Coherence", Available at: [www.wto.org/english/res\\_e/publications\\_e/wtr04\\_e.htm](http://www.wto.org/english/res_e/publications_e/wtr04_e.htm)
- Wright, M., Filatotchev, I., Hoskisson, R. E. and Peng, M. W. 2005. "Strategy research in emerging economies: Challenging the conventional wisdom", *Journal of Management Studies*, vol. 42, no. 1, pp. 1-33.
- Wright, S. 1918. "On the nature of size factors", *Genetics*, vol. 3, no. 4, pp. 367-374.
- Wright, S. 1921. "Correlation and causation", *Journal of Agricultural Research*, vol. 20, no. 7, pp. 557-585.
- Wright, S. 1954. "The interpretation of multivariate systems", *Statistics and Mathematics in Biology*, pp. 11-33.

Ye, F., Zhao, X., Prahinski, C. and Li, Y. 2013. "The impact of institutional pressures, top managers' posture and reverse logistics on performance-Evidence from China", *International Journal of Production Economics*, vol. 143, no. 1, pp. 132-143.

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# THE TRAVAILS OF COMBATING INSURGENCY: WITH REFERENCE TO THE BOKO HARAM INSURGENCY IN NIGERIA

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## ABSTRACT

*In November 2013, the International Criminal Court declared that the conflict between the Nigerian Military and the Boko Haram militant group had reached the threshold of a non-international armed conflict. Birked in 2009 as mere clashes between members of a fledgling religious group and security agencies of government, the crisis had steadily graduated to sporadic acts of violence and eventually, into a burgeoning armed conflict involving the use of explosives and the wanton destruction of lives and properties amounting to an insurgency. It was, however, the abduction of 276 schoolgirls between the ages of 16-18 in April 2014, by the insurgents, which gave the conflict a sudden international outlook as the whole world joined Nigerians in a passionate campaign to “bring back our girls.” Like many before it, this insurgency has raised perplexing questions for decision and policy makers as well as law enforcement. Foremost of these dwells on the methods and strategies to confront an armed group that bears no allegiance to constituted authority, is not particularly under a moral obligation to obey the rules of armed conflict and generally targets civilians and civilian objects as its method of warfare. As witnessed in the Nigerian insurgency where counter-insurgency methods had neither stopped nor reduced the escalating trend of the conflict, combating or containing insurgencies is not as straightforward as regulating conventional inter-state wars involving state-actors with designated constituencies. To view armed conflict involving non-state actors in the same paradigm as state actors would certainly be counter-productive for effective solutions. Among other considerations the paper argues that the use of fire power against insurgents with an entrenched Jihadist ideology is not an effective strategy. It argues further, that in this context; ‘killing an ideology’ would be much more effective than ‘killing an aggressor.’*

**Keywords:** Insurgency, Armed Conflict, Boko Haram, Ideology, Jihadist, Non-state actors

## 1. INTRODUCTION

Jean Jacques Rousseau described the relationship of soldiers fighting for their states as ‘*a relation not between man and man, but between state and state, and individuals are enemies only accidentally, not as men, nor even as citizens, but as soldiers, not as members of their country, but as its defenders...*’ (Rousseau, 1762). As accidental enemies, soldiers trained in the laws of armed conflict merely do the bidding of their sovereign governments and are, indeed, required and expected to respect the laws and principles of armed conflict. In an armed conflict between sovereign states, there is a prize, usually unambiguous, negotiable and fought for by combatants on a symmetric footing. As a matter of fact, the greater part of the law of armed conflict is wrapped around the concept of regular combatants fighting on behalf of two or more sovereigns. Embodied in the Geneva Conventions of 1949, the laws of armed conflict evolved from customs of war between states. Customarily wars were fought largely between states and not within them for centuries preceding the development of the modern law of armed conflict. Grave violations, particularly of the rights of civilians in the major world wars prompted the development of treaty laws to regulate the conduct of combatants. (American Red Cross, 2011)

Since the end of the Cold War in 1991, the world has witnessed increased incidences of internal armed conflicts involving non-state actors. Enuke (2012) observed that one of the most affected areas is Africa which has been the home of the most brutal and intractable conflicts for many decades. He cited the spread of conflicts in Liberia, Sierra Leone, Mali, Niger, Guinea Bissau, Senegal and Cote D’Ivoire as examples.

The increased involvement of irregular fighters in armed conflict has assumed a phenomenon which prompted Mary Kaldor (2013) to label the cumulative diverse incidences of armed conflicts involving non-



state actors as 'new wars.' Kaldor derived the logic of the new wars from the differences between old and new wars in actors, goals, methods and forms of finance:

*Old wars were fought by regular armed forces of states. New wars are fought by varying combinations of networks of state and non-state actors – regular armed forces, private security contractors, mercenaries, jihadists, warlords, paramilitaries etc... Old wars were fought for geo-political interests or for ideology (democracy or socialism). New wars are fought in the name of identity (ethnic, religious or tribal...in old wars the method of waging war consisted of capturing territory through military means. In new wars, battles are rare and territory is captured through political means, through control of the population... (Kaldor, 2013)*

The diversity of factors influencing post-Cold War conflicts particularly in Africa and Asia has been well articulated by Arnaud Blin (2011) who identified different conflict types with different actors: armed groups ingrained in *Al-Qaeda Jihadist* ideology, armed criminal cartels, armed groups engaged in wars of passion like the Rwandan genocide, armed revolutionaries that triggered the whirlwind revolution in the Middle-East popularly known as the 'Arab Spring.' Those taking part in such wars have similar faces: political regimes that frequently abuse their power and non-state groups motivated by territorial and/or territory claims and seeking legitimacy and means of fighting (Blin, 2011).

Explaining the recent increase in minor armed conflicts, Cooper et al. (2011) cited as one of the driving factors, the rise of militant Islamism culminating in the attacks of September 11, 2001 and the US-led reaction that became known as the "Global War on Terror" or "GWOT." According to their analysis, evidence suggests that approximately half of the increase in conflict numbers may be directly or indirectly attributed to Islamist violence or the US-led campaign against it (Cooper, Merz and Shah, 2011). Certainly, the 21<sup>st</sup> century has witnessed a proliferation of armed conflicts advanced by non-state groups representing a violence-based ideology. Lately Nigeria has joined the list of conflict-ridden states.

In November 2013, the International Criminal Court determined that Nigeria was in the state of a non-international armed conflict (ThisDay Live, Nov.2013). This was preceded by a series of violent conflicts between a militant group based in Northern Nigeria, popularly called 'Boko Haram' and the Nigerian armed forces. The series of violent attacks and counter-attacks which graduated into a sustained and protracted armed conflict with a large number of civilian casualties had been going on for four years before the ICC's declaration. Adesina (2013) observed that Nigeria has enjoyed relative peace since the end of the Biafran civil war which occurred between 1967 and 1970. This relative peace, of course, could only mean absence of a major armed conflict because there had certainly been incidences of internal disturbances caused by ethnic rivalries and religious tensions in the years preceding the Boko Haram conflict. Omotosho (2003) cited several incidences of violence in Northern Nigeria, dividing them into inter and intra religious and political violence. Starting with the Maitatsine crisis which occurred between 1980 and 1984, he also cited the Kafanchan disturbance of March 1987 and the Zangon Kataf riot of 1992. The most recent major disturbance before the Boko Haram conflict was the Niger Delta crisis. As observed by Idowu (2012), the Niger Delta region has witnessed ethnic, communal and political unrest since 1990s.

Although the government of Nigeria had established a Joint Task Force of the Police, Army and other security agencies in June 2011 (Amnesty International, 2014) to combat the Boko Haram, insurgency, the conflict had only progressed, taking massive casualties along. The Boko Haram insurgency is not only a conflict involving armed groups fighting the government and people of Nigeria. It is a movement driven by an entrenched ideology of political domination and polarization. It is against this background that this paper examines the difficulties involved in combating insurgency.

## 2. OVERVIEW OF THE BOKO HARAM INSURGENCY

The phrase 'Boko Haram' is translated from the *Hausa* language predominant in Northern Nigeria to mean 'Western education is forbidden.' It became popularly used by the people of North-Eastern Nigeria to describe a movement which projects a belief system that rejects western education and advocates a system of government based on Islamic Law. The movement began in Borno state, North East Nigeria, which is composed of a predominantly Muslim population. The founder of the movement, a vibrant young man called Mohammed Yusuf led the movement he claimed was invested in realizing the rights of the

masses, between 2005 and 2009. Kyari (2014) described the activities of the group in this phase to include intensive proselitisation, recruitment, indoctrination and radicalization of its members. The phase involved extensive criticism of the extant secular system, debates with opposing *Ulama* (clerics) on the propriety or otherwise of western education, westernization, democracy and secularism.

The first manifestation of violence by the group was in 2009 when its members had violent clashes with the Nigerian police. Subsequent clashes with security agencies led to the arrest of some members of the group and eventually, to the arrest of their leader. Yusuf was arrested by the army and handed over to the police, who killed him within hours (Walker, 2012). Immediately after that, activities of the group became more aggressive as confrontations with security agencies intensified. However, the attacks assumed a humongous and consistent pattern in 2011 after the presidential election. Maiangwa and Uzodike (2012) linked the rise in violence to the dissatisfaction of the group with the re-elected leadership of the country and how badly the elections were conducted.

The violence that followed the presidential election of 2011 marked the beginning of a consistent series of bomb and fire power attacks on both security agencies and non-combatant civilians by Boko Haram members. In its Annual Report of 2012, Amnesty International reported that Nigeria's human rights situation had deteriorated since the April 2011 general elections. Violent attacks attributed to the religious sect, Boko Haram increased, killing more than 500 people. It reported, also, that the police were also responsible for hundreds of unlawful killings, most of which remained uninvestigated. (Amnesty Int. Annual Report, 2012)

Throughout 2011 and 2012 there were several attacks on civilian objects, including churches and media houses. In November 2012, Human Rights Watch, an organization that had been active in collating facts on the conflict reported that the Boko Haram sect could be guilty of crimes against humanity. It reported that the attacks centered in Northern Nigeria had primarily targeted police and other government security agents, Christians and Muslims working for, or accused of cooperating with the government. The group had also bombed newspaper offices and the United Nations building in the capital, Abuja. (Human Rights Watch, Oct 11, 2012).

Ajayi (2012) documented 31 major attacks of Boko Haram on both the military and civilians between July 2009 and April 2012. The attacks included police stations (Bauchi, 2009, Maiduguri, 2011, Kano 29 Jan. 2012), army barracks (Bauchi and Maiduguri, 2011), police headquarters (Abuja, June 16, 2011), churches (St Theresa, Madalla, Dec. 25, 2011, Rayfield Jos, March 11, 2012), army headquarters (Kaduna, Feb. 8, 2012), media houses (Abuja, April 26, 2012), Bayero University Kano (April 29, 2012), Koton Karfe Prison, Kogi (Feb. 15, 2012).

By November 2014, Boko Haram insurgents had captured and occupied over ten local governments in North East Nigeria, causing an outflux of residents to nearby non-affected areas and a general crisis of internal displacement, a breakdown of normal living for several, including the absolute stagnation of the educational system as schools remained closed or destroyed by the insurgency. The United Nations Refugee Agency claimed that an estimated 650,000 people were internally displaced in North Eastern Nigeria (Oluwarotimi, November 12, 2014). It was reported, also, that the cumulative land mass of Boko Haram's occupation was over 20,000 square kilometers wide and equivalent to three states of the country. (Idris, A., November 03, 2014)

## 2.1. Ideology of Boko Haram

Although identified by an expression which describes a core part of its ideology; 'aversion to western education', the real name of the insurgent group called Boko Haram is *Jama'atu Ahlis Sunna Lidda'awati Wal-Jihad*, which is translated from Arabic to mean, "people committed to the propagation of the Prophet's teachings and Jihad" (Mauro, 2014). The phrase Boko Haram is however, the widely accepted name of the group.

The founder of the movement which became Boko Haram, Mohammed Yusuf, was heavily influenced by the ideology and writings of Ibn Taymiyyah, a *Salafi* Scholar. Kyari (2014) explained some of Yusuf's beliefs thus, "...quoting copiously from Ibn Taymiyyah, Mohammed Yusuf describes as *taghut* (idolatry) any form of executive, legislative or judicial function derived from a secular constitution rather than from

Islamic Shariah Law. This is at the root of his opposition to secularism, democracy and partisan politics as practiced in Nigeria”

While in police custody, Mohammed Yusuf also revealed elements of his beliefs, the salient points summarized as follows:

A. An aversion to science as being inconsistent with the religion of Islam – he challenged the theories of scholars such as Aristotle, Plato, Sir Isaac Newton and Albert Einstein, on the grounds of their explanation of society and nature, declaring these null and void.

B. An aversion to any sort of knowledge outside the Qur'an - “All Muslims must believe that the universal and eternal truth embodied in the Qur'an comes directly from Allah (SWT). The ‘imperfect knowledge’ that comes from science is a temporary social and political narrative used to provide justification for European colonialism, capitalism, cultural imperialism, domination and subjugation.”

C. An aversion to the laws of nature - There can be no such thing as ‘The Laws of Nature’ because any such laws question the supremacy of Allah (SWT). According to the Qur'an, Allah is omnipotent and directly commands the universe to do his will. “Allah does not act through intermediary laws, and to believe in such laws is *shirk* since it proposes a power equal to the power of Allah (SWT).”

D. An aversion to enforcement of women's rights – Under Shariah Law, women must be given the right that Allah (SWT) and His Messenger (PBUH) have instructed, that is, the right to stay in their homes and to gain religious instruction in *Purdah*. Women must not be educated in anything other than religion beyond the age of eighteen or they may become disruptive to society. Etc. (Culled from Bintube, 2013)

When activities of the group involved dissemination of their beliefs, the members were generally non-violent and manifested the ability to articulate their views, however adverse, through discussion and debate. After the extra-judicial killing of their leader, the group became less visible in debate and discussion and manifested in violence. The post-Mohammed Yusuf Boko Haram has manifested a very violent agenda of political domination and establishment of a Shariah state. To achieve that, all elements of modern government reflective of western civilization must be destroyed. All people unsympathetic to the sect's ideology must also be exterminated. The *modus operandi* of the group is to use force to achieve its objectives. All these have manifested in the activities of the members and have also been communicated to the general public through the medium of social media; precisely through consistent Youtube videos of their spokesman and current leader, Abubakar Shekau. The most recent Youtube video, reiterating the sect's ideology was viewed in October, 2014 (Sahara TV via Youtube, Oct, 2014).

## 2.2. The Boko Haram Insurgency as a Non-International Armed Conflict

Insurgency is literally the act of revolting against an established government. One who takes part in such revolt is an insurgent. (American Heritage Dictionary, 4th Ed.). In a broader context, it is a revolt or rebellion which cannot be suppressed by domestic law enforcement. When a rebellion survives suppression, it duly changes in status to a situation of insurgency (Cullen, 2005). The United States Department of Defence defined insurgency as an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict (US Dept of Defence, 2007).

The insurgency has qualified as a non-international armed conflict because it has fulfilled the qualification criteria of International Humanitarian law (IHL). For there to be a non-international armed conflict, IHL requires that the armed groups involved must show a minimum degree of organization and secondly, the armed confrontations must reach a minimum level of intensity. Some of the indicators used to determine if the requirements have been met include duration and gravity of the conflict, degree of casualties and extent of damage, number of troops involved, types of weapon used, ability to plan and launch military operations and capacity to recruit, train and equip new fighters (ICRC, 2012)

The Boko Haram insurgents have carried on sustained attacks on security agencies and civilians for at least three years since 2011. They currently occupy ten local governments of the country and have coordinated their operations very successfully to suggest a high level of organization within their ranks. Furthermore, the number of deaths and injuries recorded from the activities of the group is cumulatively in thousands. Both the insurgents as well as governmental forces participating in the conflict are subject to

penal sanctions for the violation of the laws of armed conflict. Nigeria is a party to and has ratified the four Geneva Conventions of 1949, the Additional Protocols of 1977 and the Rome Statute of the International Criminal Court.

### **3. THE TRAVAILS OF COMBATING INSURGENCY**

Combating insurgency is a major security challenge for governments. By the very definition, insurgents are non-state actors fighting for a goal or goals contrary to the goals of their government. In other words, they are enemies from within, home-grown and usually disinterested in upholding the sovereignty of their country. They represent a different brand of participants of armed conflict compared to regular soldiers fighting a war on behalf of their country. Members of the armed forces of a sovereign state who are subordinates and accountable to that sovereign, are usually part of designated constituencies, they are well-known in their ranks and are usually on salaried employment. They are expectedly inclined to abide by their regulatory code of conduct, failing which they could be subjected to punishment.

Not only does obedience to the law of armed conflict mitigate the effects thereof but it also potentially aids in shortening conflict. Even as the rules of armed conflict exist because of the existence of armed conflict, they carry an underlying notion of conflict resolution. A conflict in which civilians are protected, where combatants do not engage in perfidious or disproportionate actions against each other and generally 'fight fairly' is unlikely to be lengthy and drawn out as a conflict in which the rate of casualties, including civilians and the extent of damage invoke reprisals and prolong engagement.

#### **3.1. Violation of the Civilian Population in the Boko Haram Insurgency**

One of the ways in which the law protects civilians from the effects of war is to oblige combatants to distinguish themselves from the civilian population. Article 44 (3) of Additional Protocol 1 to the Geneva Conventions provides that in order to promote the protection of the civilian population from the effects of hostilities, combatants are obliged to distinguish themselves from the civilian population while they are engaged in an attack or in a military operation preparatory to an attack. A combatant distinguishes himself by:

- A. Having a fixed distinctive sign recognizable at a distance
- B. Carrying arms openly (Article 4 (2) 3<sup>rd</sup> Geneva Convention, 1949)

The best known distinctive sign that armies use is the military uniform. Today, most armies have regulations on uniform policy and penal laws may punish a soldier for the unlawful wearing of a specific military uniform (Pfanner, 2004). The law has, therefore, acknowledged the need to shield the civilian population from armed conflict by distinguishing combatants from non-combatants.

Although some organized armed groups or insurgents wear uniforms for identification (Pfanner, 2004), many others do not. The ability of the Boko Haram insurgents to carry out their attacks covertly and escape identification is because as irregular fighters who are not answerable to a sovereign state, they do not have to adhere to the requirement of distinguishing themselves from the civilian population. The insurgents had indeed largely hidden within the civilian population and carried out their operations from that protected space, escaping easy detection. Furthermore, the leaders had recruited most of their members or foot soldiers from the civilian population. This had, in turn, caused a backlash from members of the Joint Task Force (JTF), on the non-combatant civilian population. Many reports from Maiduguri, the capital city of Borno State, inform of how members of the JTF, acting on security information of the presence of some of the insurgents in particular civilian settlements or wards, waged attacks on the civilian population in those areas. Reports of the JTF burning down whole areas and systematically killing adolescent men have been made. On October 9, 2012, it was reported that members of the Joint Task Force in Maiduguri carried out indiscriminate attacks on civilian residents of Lagos Street, killing people in their houses, setting cars on fire and even burning corpses. This was in retaliation to the killing of an army lieutenant by an Impoverished Explosive Device believed to have been planted in a strategic place by suspected member(s) of Boko Haram. Members of the JTF had reacted in anger to the incident and carried out their frustrations on the bulk of the civilians in the area. (The Punch, Oct. 9, 2012)

Ultimately, by hiding within the non-combatant civilian population, the insurgents had jeopardized the safety and security of the civilians by evoking also, unlawful and irregular conduct from members of

security agencies of government. This in turn made the raging insurgency more difficult to contain because it produced the negative consequence of perpetuating the conflict by creating splinter groups of aggrieved people whose families were unjustly killed by the JTF. A renowned Professor of History, Muhammad Nur Alkali, who had been involved in the Boko Haram conflict resolution, decried the acts of members of the JTF wherein they lumped innocent civilians and suspected Boko Haram members in reprisal attacks. In an interview about the conflict he lamented the JTF reprisals thus:

More splinter groups are emerging. Many of the killings taking place have no connection with the original group. The coalition of people with all sorts of grievances, those who have lost relations – all sorts of people carrying out revenge....the killings have led to more problems. This is because those who were aggrieved or affected by the conflict would form another splinter group and create their own sect. They may or may not be influenced by the ideology of the original sect. They would just create their own ideology and fight based on that. (Alkali, 2013)

### **3.1.1. Attacks on Civilians as a Method of Warfare**

Even though insurgents are irregular fighters, International Humanitarian Law expects them to obey the rules of armed conflict. However, and as will be expected, their loyalty usually lies with their local commanders who may actually require them to violate the rules of armed conflict in order to achieve their objectives. The Boko Haram insurgents have done just that in their 3-year protracted conflict as the civilian population has been worst hit by the conflict, far and above the armed forces. According to a 2014 report prepared by the National Consortium for the Study of Terrorism (START, 2014), Boko Haram most commonly targets private citizens and property (25% of attacks), police (22%), government targets (11%), religious figures and institutions (11%) and the military (9%).

In contravention of the fundamental guarantees accorded civilians and particularly the law against the taking of hostages (Article 4, AP II), the insurgents abducted 276 school girls between the ages of 16 – 18 on April 15, 2014 when they attacked an all girls' school in Chibok local government of Borno State. The current Boko Haram leader, Abubakar Shekau released a video on May 5, threatening to sell the girls as "wives" and citing ideological opposition to the education of young girls (START, 2014). The abduction caused a lot of media attention globally and in no time the whole world joined Nigerians in a desperate campaign to the government to explore all its resources to "bring back our girls." In October, 2014, Shekau released another video on Youtube and informed that all the girls had been "married out and were in the houses of their husbands" (Sahara TV via Youtube).

### **3.2. Difficulty in Negotiation**

To negotiate peacefully out of a vicious conflict is always a desirable option for the party at the receiving end of the viciousness. International armed conflicts are known to be resolved through arbitration or peace treaties. When it comes to dealing with irregular fighters like insurgents, however, negotiation is not always easy or realistic. For one, governments do not favor the recognition of insurgents as entities to be negotiated with. Secondly, the insurgents themselves may not be willing to strike a middle course with government to achieve a win-win solution or their demands may be too risky for the government to concede. And while negotiations with insurgent groups may succeed sometimes, it is logically unlikely to happen when the insurgency is thriving far and above the military forces of state. The difficult dynamics of government vs. insurgent negotiation was aptly presented thus:

Initiating talks with insurgents is difficult. Governments often hope to defeat insurgencies outright, and the decision to begin talks usually requires a government to admit that there is no immediate hope for that outcome, which is a politically and bureaucratically difficult step. Moreover, it is the unusual insurgent group that does not attack civilians and use terrorism as one of its tactics. Having spent years demonizing the insurgents for their bloody misdeeds and having tried hard to create popular support for fighting them makes it difficult for government leaders to suddenly embrace, even from a distance, those they are already trying to kill. (Byman, 2009)

The usual reluctance of government to negotiate with its insurgents manifested in the Boko Haram insurgency when the Nigerian government continuously emphasized that it would 'not negotiate with

terrorists.' (Premium Times, May, 2014). When it yielded to promptings by elder statesmen to negotiate with the insurgents, the demands of the latter through their spokes persons included the release of all their members and families who were in prison custody in exchange for release of the Chibok girls. Expectedly the negotiation hit a dead end and the insurgency progressed. (Ibid)

### **3.3. Socio-Economic Deprivations: Fuel for Insurgency**

Emphasizing that insurgencies are due to real grievances, Santa Cruz De Mercanedo expressed that 'a state rarely rises up without the fault of its governors,' (Heuser, 2010). When the founder of the movement which is today known as Boko Haram began his campaigns in 2005, the underlying rhetoric of his sermons was the social injustice against the masses. Mohammed Yusuf gained supporters by speaking out against police and political corruption (Bintube, 2013) Followers imbibed the belief that a system of rule strictly based on the Shariah Law would liberate the masses. At this stage, the movement evoked a lot of sympathy and a growing number of followership. Significantly, recruitment was facilitated by the extreme poverty prevalent in the northern region of the country. According to the statistics obtained by the International Crisis Group, over 70 per cent of the population in Nigeria is classified as poor and absolutely poor. Sokoto state in the North West has the highest poverty rate (86.4 per cent), Niger State in North Central has the lowest (43). The North East, Boko Haram's main operational field, has the worst poverty rate of the six official 'zones' (International Crisis Group, 2014).

Research has established that Boko Haram recruits were mainly from among the impoverished segment of the population who apparently needed a kind of social movement to uplift their status. The results of a Sociological Ph. D empirical research which was conducted in the birth place of the sect, Maiduguri, Borno State revealed that 21.5% of Boko Haram members were unemployed youth who had finished school but were without jobs and thus easy targets as Boko Haram recruits. (Bintube, 2013)

The poverty in the North has created a very intense social problem. A great number of children from impoverished backgrounds are left to earn their living by habitually begging for alms each day or they engage in street hawking. Without any formal education or learning beneficial skills, some of these children eventually grow into adolescence unprepared for the economic challenges in society. Without a formal education and a college degree, or any other sustainable means of livelihood, recruitment into a militant enterprise that promises security and liberation becomes easy and desirable.

### **3.4. Combating an Ideology**

The extremist ideology of political domination by all vicious means, including suicide killings is a thread that runs through many Muslim constituted rebel movements in some other parts of the world. Besides sudden full-scale attacks on communities by large numbers of the insurgents, the employment of suicide bombing to destroy their targets appears to be the most common strategy used by Boko Haram insurgents. Suicide bombing as a method of warfare has been used several times since the insurgency was ignited. On 28 November 2014, the insurgents carried out their worst attack on a religious centre when three suicide bombers killed 120 people and injured 270 at the central Mosque of Kano State while the people were performing the ritual Friday prayer (Channels TV, Nigeria, Nov. 28, 2014).

The Global Terrorism Index of 2014 revealed that the majority of claimed deaths from terrorist attacks, 66% in 2013, were claimed by only four terrorist organizations; ISIL, Boko Haram, the Taliban and al-Qaida. The index also listed the five countries at the receiving end of these attacks, namely, Iraq, Afghanistan, Pakistan, Nigeria and Syria (GTI, 2014). While each country experiencing a similar conflict has its peculiar history and circumstances, the ideology and methods of warfare, particularly the killing of civilians remain the same. Against this background, the question that would logically be on the minds of many, is, 'are the activities of the various insurgent Muslim groups with a radical ideology a manifestation of proper Islamic ideology? Are they fighting a 'holy war' sanctioned by Islam? If not, why has the ideology of holy war linked to eternal salvation become so pervasive among so many militant groups constituted by Muslims?"

In response to the proliferation of militant groups constituted by Muslims claiming to be fighting based on religious doctrine, more contemporary scholars are engaging intellectual discourse on the proper Islamic perspective on the use of force. They are also exploring the origins of the violent ideology driving violence among Muslims. Imam Rashid is of the view that in discerning the veracity of the assertion often made

that Islam has a unique propensity for violence, scholars need to analyze the question in reference to the ethical teachings of Islam presented in the Islamic sacred scripture, the Qur'an and the conduct of the Prophet Muhammad, as well as the current global geopolitical context. (Rashid, undated)

On his part, Safi (2001) traced the development of the notion of offensive war to the jurisprudence of classical jurists of the Abbasid Caliphate (8<sup>th</sup> – 13<sup>th</sup> centuries). Influenced by the circumstances of their time, when their world was in a state of conquest, they divided the world into the abode of peace, *Dar al Islam* and the abode of war, *Dar al Harb* and propounded the theory of a permanent state of war between the two abodes until the abode of war is converted into the abode of peace. The abode of peace belongs to Muslims and all falling out of the fold belong to the abode of war. In his view, this dichotomy has now become outdated because of the change in circumstances and dynamics of the world. In essence, the jurisprudence of the classical jurists was relevant to their time and political context. He observed thus, "The classical doctrine of war and peace has persisted over the centuries with few minor and sporadic alterations. The tenets of this doctrine have been handed down unchallenged, despite several grave flaws in its development and despite its violation of some essential Islamic principles" (Safi, 2001). It appears that there is an ideological war which is at the brink of commencing between the proponents of the proper Islamic Ideology and the proponents of offensive war.

### 3.4.1. Analysis

Soldiers are trained to defeat their opponents with the use of fire power to such extent as is necessary. Members of the Nigerian armed forces have largely done that in their combat against the insurgents. In early March, 2014, it was reported that the army killed 210 insurgents in a major operation at the Sambisa forest in Borno. (Idris, H., 2014) The insurgency, however, only intensified after that. Killing massive numbers of insurgents even if on a consistent basis may temporarily put an end to the current insurgency but would not be a guarantee that the same trend would not erupt in future. In the 80s, adherents of the Maitatsine sect with similar violent ideology were destroyed with the use of fire power. Barely three decades later, a much more dangerous and destructive group emerged and even became an insurgency. As Professor Alkali (2013) observed, during the Maitatsine crisis in the North, some scholars had emerged who made efforts to debunk the ideology of violence as un-Islamic and that also helped in quelling the crisis alongside the use of fire power against the militants. After that though, additional efforts were not made to ensure that the violent ideology was suppressed to extinction. He presented the argument thus:

Since the whole thing is ideological, you have to counter them (insurgents) with superior knowledge and provide an alternative. This was how the situation in Adamawa was tackled. There were people who came out to preach against what Maitatsine proclaimed. They came out to contradict Maitatsine by using the Qur'an, the Hadith...most of these sect members are misguided or misled...another factor is that Borno is the centre of Islamic Studies in the Central Sudan. People come from Damagram, Bilma, Ferzan, Darfur and various parts of Nigeria; thousands of people go there to study the Qur'an. They should not be allowed to fall into the hands of people who are not literate themselves. There should be an arrangement whereby these people go to recognized institutions and whose scholars are knowledgeable...if you do that, you close the gate of people falling into the hands of ignorant teachers in future... (Ibid)

## 4. RECOMMENDATIONS AND CONCLUSION

When ignited, insurgencies are very difficult to contain or combat. Insurgents are non-state actors, unregulated fighters and difficult negotiators. An insurgency that is driven by a violent ideology of political domination in the name of religion is even more difficult to overcome, particularly where poor economic and social conditions promote a large market of easy and willing recruits. Insurgencies driven by violent Jihadist ideology have thrived largely because people have believed in them. There is, however, an ideological war on the verge of commencement between proponents of a violent manifestation of Islam and the large percentage of learned Muslims the world over who believe that Islam is indeed a religion of peace, and not war. To effectively stunt the growth of all insurgencies driven by the Boko Haram type

ideology, and prevent new ones from coming into being, one would prompt the ideological war to commence with full force.

The war being proposed here is not a war of swords between proponents of two opposing ideologies. It is a war of the pen and the tongue, meant to be fought on the pages of books, in the class rooms, seminar halls, Mosques and other enlightenment fora. It is not enough to disseminate the knowledge of the correct Islamic ideology; scholars have been doing that for so long. The roots of the violent jihadist ideology in Islam must be unveiled and studied in-depth. The study of the movement that originally propagated dissidence by manipulating religious texts, the scholars who propagated and passed the ideology from generation to generation, their methods, strategies, motivations and very importantly, their jurisprudence should be studied. The author hereby recommends to all university professors in the field of Islamic studies, Islamic Law and history, political science etc. to pick up this challenge and join in this ideological warfare. Introduce this aspect to graduate curricula and initiate post-graduate theses on this subject. Let the academia be a competent resource for civil society and other organizations invested in the pursuit of lasting peace in society.

Finally, it is the author's submission that any government that is invested in preventing dissidence and insurgency must set as a priority the realization of the basic economic and social rights of its citizens. Accordingly, the Nigerian government must as a matter of priority concentrate on eradicating poverty especially in the Northern part of the country.

## REFERENCES

- Adesina, O.J. (2013) "Predicting the Effect of Counselling on the Psychological Adjustment of Boko Haram Victims in Nigeria." *AFREV IJAH. An International Journal of Arts and Humanities*, Bahir Dar, Ethiopia, Vol. 2 (4), pp.205-216
- Additional Protocols to the Geneva Convention, 1977. ICRC Publications. [www.icrc.org](http://www.icrc.org).
- Agency Reporter (2012) "Soldiers go haywire...kill 30, burn 50 houses in Maiduguri to avenge army officer's death." *Punch*, 09 October, 2012. Available at [www.punchng.com/news/soldiers-go-haywire-kill-30-burn-50-houses-in-maiduguri-to-avenge-army-officer-s-death](http://www.punchng.com/news/soldiers-go-haywire-kill-30-burn-50-houses-in-maiduguri-to-avenge-army-officer-s-death). (Accessed 05 November, 2014)
- Ajayi, A.I (2012) "Boko Haram and Terrorism in Nigeria: Exploratory and Explanatory Notes." *Global Advanced Journal of History, Political Science and International Relations*, Vol. 1 (5) pp.103-107
- Alkali, M.N. (2013) "What Government Needs to do After Amnesty for Boko Haram" Interview by Sunday Trust (07 April, 2013) Available at [dailytrust.com.ng/Sunday/index.php/top-stories/12603-what-govt-needs-to-do-after-amnesty-for-boko-haram-prof-alkali](http://dailytrust.com.ng/Sunday/index.php/top-stories/12603-what-govt-needs-to-do-after-amnesty-for-boko-haram-prof-alkali) (Accessed 08 April, 2013)
- American Red Cross (2011) Development of International Humanitarian Law. Available at: [www.redcross.org/images/MEDIA\\_CustomProductCatalog/m3640105\\_IHL\\_Development.pdf](http://www.redcross.org/images/MEDIA_CustomProductCatalog/m3640105_IHL_Development.pdf) (Accessed 11 November, 2014)
- Amnesty International (2012). Amnesty International Annual Report, 2012. Available at: [www.amnesty.org/en/region/nigeria/report-2012](http://www.amnesty.org/en/region/nigeria/report-2012) (Accessed 12 November, 2014)
- Amnesty International (2014) *Nigeria: More Than 1,500 Killed in Armed Conflict in North Eastern Nigeria in Early 2014*. Amnesty International Publications. Available at: [www.amnesty.org](http://www.amnesty.org) (Accessed 12 November, 2014)
- Bintube, M. (2013) Sociological Analysis of Boko Haram Insurgence in Nigeria – Being a Ph. D Thesis submitted to the Post Graduate School of University of Abuja in fulfillment of the award of the Doctor of Philosophy Degree in Criminology. Department of Sociology.
- Blin, A (2011) 'Armed Groups and Intra-State Conflicts: the dawn of a new era.' *International Review of the Red Cross*, Vol. 93, Number 882, pp.287-310
- Byman, D. (2009) "Talking With Insurgents: A Guide for the Perplexed." *The Washington Quarterly*, 32:2, pp.125-137
- Channels Television, Nigeria, (November 28, 2014)
- Cooper, T, Merz, S and Shah, M. (2011) "A More Violent World? Global Trends in Organised Violence. In: B. Austin, M. Fisher, H.J Glessman (eds) 2011. Advancing Conflict Transformation - The Berghof



- Handbook II. Opladen/Framington Hills: Barbara Budrich Publishers. Available Online at [www.ajol.info/index.php/ajcr/article/viewfile/108895/98685](http://www.ajol.info/index.php/ajcr/article/viewfile/108895/98685). (Accessed on 11 November, 2014)
- Cullen, A. (2005) 'Key Developments Affecting the Scope of Internal Armed Conflict in International Humanitarian Law.' *Military Law Review*, Vol. 183, p.65
- Enuka, C (2012) 'Small Arms Proliferation and Armed Conflicts in Africa: The Case of the Rwandan Conflict.' *Khazar Journal of Humanities and Social Sciences*. p.21 (2012) Available at: [jhss-khazar.org/wp-content/uploads/2012/12/2ci-megale-dezchuka.pdf](http://jhss-khazar.org/wp-content/uploads/2012/12/2ci-megale-dezchuka.pdf) (Accessed 12, November, 2014)
- Excerpts from Santa Cruz's Writings, translated into English by Beatrice Heuser. *The Strategy Makers: Thoughts on War and Society from Machiavelli to Clausewitz* (Santa Monica, CA: Greenwood/Praeger) ISBN 978-0-275-99826-4. pp. 124 - 146
- Geneva Conventions of August, 1949. ICRC Publications. [www.icrc.org](http://www.icrc.org).
- Human Rights Watch (October 11, 2012) Nigeria: Boko Haram Attacks Likely Crimes Against Humanity. Available at: [www.hrw.org/news/2012/10/11/nigeria-boko-haram-attacks-likely-crimes-against-humanity](http://www.hrw.org/news/2012/10/11/nigeria-boko-haram-attacks-likely-crimes-against-humanity) (Accessed 01 October, 2014)
- CRC Resource Centre (2012) Internal Conflicts or Other Situations of Violence – What is the Difference for Victims. [www.icrc.org](http://www.icrc.org). (Accessed on 05, November, 2014)
- Idowu, O.F (2012) "Niger Delta Crisis: Implication for Society and Organizational Effectiveness." *British Journal of Arts and Social Sciences*, Vol. 7, No 11, pp. 100 - 112
- Idris, A. (2014) "Investigation: Boko Haram territory larger than 3 states." *Daily Trust*, 3 November, 2014. Available at [dailytrust.com.ng/daily/top-stories/38456-investigation-boko-haram-territory-larger-than-3-states](http://dailytrust.com.ng/daily/top-stories/38456-investigation-boko-haram-territory-larger-than-3-states) (Accessed 10 November, 2014)
- Idris, H (2014) "Boko Haram: Army Kills 210 in Sambisa Forest." *Sunday Trust*, 09 March, 2014. Available at [www.dailytrust.com.ng/sunday/index.php/top-stories/16250-boko-haram-army-kills-210-in-sambisa-forest](http://www.dailytrust.com.ng/sunday/index.php/top-stories/16250-boko-haram-army-kills-210-in-sambisa-forest). (Accessed 10, November, 2014)
- Institute for Economics and Peace (2014) Global Terrorism Index, 2014. Available at [www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20index%20Report%202014.pdf](http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20index%20Report%202014.pdf) (Accessed on 02 December, 2014)
- Kaldor, M (2013) "In Defence of New Wars." *Stability*, 2 (1): 4, pp.1-16
- Maiangwa B. & Uzodike, U. (Tuesday 31 July, 2012) "The changing dynamics of Boko Haram Terrorism" Aljazeera Center for Studies. Studies. [studies.aljazeera.net/en/reports/07/20127316859987337.htm](http://studies.aljazeera.net/en/reports/07/20127316859987337.htm) (Accessed 01/11/2014)
- Mauro, R. (2014) FACTSHEET – "Boko Haram: Nigerian Islamist Group." Prepared by ClarionProject. [www.clarionproject.org](http://www.clarionproject.org). (Accessed on 02 November, 2014)
- Kyari, M ((2014)) "The Message and Methods of Boko Haram" In: Montclos, M. (eds.). *Boko Haram: Islamism, Politics, Security and the State in Nigeria*. West African Politics and Society Series, Vol.2. Published by Institut Francais de Recherche en Afrique (IFRA)
- Omotosho, A.O (2003) "Religious Violence in Nigeria – the causes and solutions: An Islamic Perspective." *Swedish Missiological Theme*. pp. 15-31. Available at <https://unilorin.edu.ng/publications/omotoshoao/Religious%20violence%20in%20Nigeria.pdf>. (Accessed on 05 October, 2014)
- Pfanner, T (2004) 'Military Uniforms and the Law of War'. *RICR MARS IRRRC*, Vol. 86, No.853, pp. 93-124
- Premium Times (May 13, 2014) "Chibok Girls: Nigeria will not negotiate with terrorists – David mark." Available at [www.premiumtimesng.com/news/160662-chibok-schoolgirls-nigeria-will-not-negotiate-with-terrorists-david-mark.html](http://www.premiumtimesng.com/news/160662-chibok-schoolgirls-nigeria-will-not-negotiate-with-terrorists-david-mark.html). (Accessed on 28 November, 2014)
- Rashid, O. "Islam and Violence" World Council of Churches. Available at [wcc.coe.org/wcc/what/interreligious/cd39-06.html](http://wcc.coe.org/wcc/what/interreligious/cd39-06.html) (Accessed on 01 December, 2014)
- Rousseau, J. (1762) *The Social Contract*. eBooks@Adelaide. The University of Adelaide Library, University of Adelaide. South Australia, 5005. Available at [http://ebooks.adelaide.edu.au/r/rousseau/Jean\\_jacques/r8645](http://ebooks.adelaide.edu.au/r/rousseau/Jean_jacques/r8645) (Accessed on 28 October, 2014)
- Safi, L. (Oct. 02, 2001) *Peace and the Limits of War*. Transcending Classical Conception of Jihad. International Institute of Islamic Thought, Herndon, USA.
- Sahara TV Via Youtube (October, 2014)

Sahara TV Via Youtube (November, 2014) –  
START (2014) Boko Haram Recent Attacks.

[www.start.umd.edu/pubs/STARTBackgroundReport\\_BokoHaramRecentAttacks\\_may2014\\_0.pdf](http://www.start.umd.edu/pubs/STARTBackgroundReport_BokoHaramRecentAttacks_may2014_0.pdf).  
(Accessed 29 November, 2014)

The New American Webster Dictionary (3<sup>rd</sup> Ed.) (1995) Albert and Loy Morehead, New York, U.S.A.

This Day, Live (2013) ICC Declares Conflict in N'Eastern Nigeria Civil War. Available at:  
[www.thisdaylive.com/articles/icc-declares-conflict-in-n-eastern-nigeria-civil-war/165171](http://www.thisdaylive.com/articles/icc-declares-conflict-in-n-eastern-nigeria-civil-war/165171) (Accessed 16  
November, 2014)

United States Department of Defence (12 July, 2007) Joint Publication 1 – 02 Department of Defence  
Dictionary of Military and Associated Terms (PDF) JP 1 – 02

Walker, A. (2012) Special Report: United States Institute of Peace, “What is Boko Haram?” Available at  
[www.usip.org](http://www.usip.org) (Accessed 01 October, 2014).

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## INVESTIGATION OF THE FACTORS RELATED TO THE RELATIVE IMPORTANCE OF PROMOTIONAL TOOLS OF NIGERIAN INSURANCE COMPANIES

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### ABSTRACT

*A major concern of managers in contemporary complex and competitive marketing environment is to improve decision making. In the insurance industry, promotion strategies have been widely used to create awareness and to increase customer patronage but there are seven major promotional tools (advertising, personal selling, sales promotion, publicity, public relations, sponsorship and direct marketing) that the companies can use in developing their promotional mixes. This study sought to further study how the relative importance of the seven main promotional tools that marketing managers can use in developing their promotional mixes found in previous research was affected by differing budget allocations and/or the existence of promotion departments. The study revealed that organizations in the Nigerian insurance industry use all the promotional tools. However, the main promotional tools they use are advertising, direct marketing, personal selling and publicity while they minimally use public relations, sales promotion and sponsorship. Significant differences by budgetary allocation and the existence of promotion departments were found.*

**Keywords:** Promotional tools, Relative Importance, Nigerian insurance companies, Promotional mixes, Lagos metropolis.

### 1. INTRODUCTION

Promotion is the approach through which organizations communicate their goods or services to target markets (Brassington and Pettit, 2000). This is done by effectively using promotional tools such as personnel selling, public relations, and direct marketing to market organization's goods and services (Czinkota and Ronkainen, 2004). Jobber (2007) viewed promotion as the medium through which companies communicate with their target audiences with the aid of mass communication). It is the only element of marketing that communicates with the target market. According to Belch and Belch (2004), promotion is the coordination of seller initiated effort to set up channel of information and persuasion in order to sell products. While, Stanton (1998) opined that promotion is one of the elements of the marketing mix that is undertaken to increase the likelihood that consumers will buy and be committed to organization's goods and or services. Organizations adopt different tools to promote their products and themselves. For instance, Idris, Asokere, Ajemunigbohun, Oreshile and Olutade (2012) opined that a major market for the advertising industry is the insurance industry. Insurance is one of the major businesses in the financial service industry (Ahmed, Raies, Munaf and Shabir, nd) that collect savings from the public and provide them with risk coverage. Dorfman (1994) viewed insurance as a contractual agreement whereby one party agrees to compensate another party against losses. Ajaja (1995) describes insurance as a mechanism by which risk is spread or transferred by a person, business or organization to an insurance company which reimburses the insured for sharing in the costs. And Oyetayo, (2001) considered insurance as a process or system of compensation for loss, damage, sickness, death and other unforeseeable circumstances in return for a predetermined premium. Insurance products, like other financial products need to be marketed. However, when marketing insurance products, due care should be taken, because of its intangible nature (Krishnamurthy, 2005). Thus, formulation of ideal promotion mix is therefore very important for insurance organizations to survive and thrive (Ahmed, et al., nd). Based on the call on insurance companies to embrace promotional strategies (Krishnamurthy, 2005; Singh, 2009; Saaty and Ansari, 2011; Idris et al., 2012) it is pertinent to consider how the promotional tools will be

affected by other factors such as budget allocations and department composition to achieve the desired goals.

### 1.1. Statement of Problem

In the insurance industry, promotion strategies have been widely used to create awareness and to increase customer patronage (Saaty and Ansari, 2011). Scholars such as Kotler (2000), Idris et al. (2012) identified seven main promotional tools (advertising, personal selling, sales promotion, publicity, public relations, direct marketing, and sponsorship) that the companies can use. According to Okyere, Agypong and Nyarku (2011) due to its visibility and pervasiveness, advertising is considered the most prominent of the promotional mix elements. Yet, some scholars contended that personal selling is the most important promotional tool (Kotler and Armstrong, 2010; Olumoko, Abass and Dansu, 2012). While findings from the study of Idris et al. (2012), suggest that the promotional tools that are of highest priority in the minds of the Nigerian marketers of insurance products are advertising, personal selling, and public relations. Given this controversy there is a need to investigate the factors affecting the relative importance of the promotional mix elements so as to enable marketing managers take appropriate decisions

### 1.2. Purpose of Study

Given the importance of promotion to organizations, it is therefore the objective of this paper to use the promotional tools that were prioritized via AHP in prior research (Dixon-Ogbechi, Jagun, Ighomereho, Rahim & Haran, 2014) to determine if the use of these tools was affected by the presence of:

- a. dedicated promotional departments or
- b. the level of budgetary allocations.

### 1.3 Research Hypotheses

- H<sub>1</sub>: There will be differences in the relative rankings of the promotional tools based on specialized promotion departments.
- H<sub>2</sub>: There will be differences in the relative rankings of the promotional tools based on budget allocations.

## 2. LITERATURE REVIEW

### 2.1. Overview of Insurance Business in Nigeria

The historical origin of insurance business in Nigerian can be traced to the activities of European merchants across West African coast (Augustine and Nwanneka, 2011). Their interest in the Nigerian insurance business, according to Augustine and Nwanneka (2011), was triggered by two factors namely the boom in economic activities in the 1890s as a result of large scale production of cash crop for exports; and the need to protect the business interest and properties of the British within the protectorate of West Coast Africa. However, the precursor of modern insurance business in Nigeria were the social and mutual schemes that originated from the African communal settings comprising the extended family system, age grades, and clan unions and other African cultures (Obasi, 2010). The modus operandi of this form of traditional social insurance was by means of cash donations and social support through, organized group effort of assisting one another and the entire community (Usman, 2009). Foreign interest in the Nigerian insurance industry originated because of the growing interest and boom in trade and commercial activities in Nigeria, for instance shipping and banking necessitate the foreign firms to obtain insurance policy to handle some of their risks locally (Uche and Chikeleze, 2001).

The Nigerian insurance industry experienced significant growth in the year 1921, with the establishment of the Nigerian branch office of the Royal Exchange Assurance (REA) of London. This Nigerian branch office of the REA metamorphosed into the present Royal Exchange Assurance of Nigeria (REAN), which is the oldest insurance company in Nigeria. The REAN operated as a monopolist in the Nigerian insurance industry for about twenty (20) years before other companies, mainly foreign insurance companies, entered the Nigerian insurance industry (Henderson and Milhouse, 1987; Osuagwu, 2001). The Insurance Companies Act of 1961 was established based on the Obadan Commission report in 1961. Thereafter, there were changes in the ownership and structure of insurance business in Nigeria (Augustine and Nwanneka, 2011). For instance in 1976, the number of operators in the Nigerian insurance industry increased to 70, out of which fourteen were foreign owned while forty six were

indigenously owned (Augustine and Nwanneka, 2011). Since then, the number of insurance companies continued to increase and by the year 2007 there were a total of 108 operators in the Nigerian insurance industry. According to Research and Market (2009) out of the 104 insurance companies and four reinsurance companies that existed before the reforms in November 2007, only 49 underwriters and 2 reinsurers survived the recapitalization exercise and were certified by the government. As at 2013, the number of licensed insurance companies in Nigeria have increased to 59 (NAICOM, 2013).

## **2.2. Overview of Promotional Strategies in Nigerian Insurance Companies**

Despite the relevance of insurance business to economic growth (Arena, 2008), Saaty and Ansari (2011) found that most people are unaware of the benefits of insurance and various types of insurance products hence they suggested that insurance companies should focus on promotional marketing strategies. Idris et al. (2012) investigated the ranked importance of Advertising, sales promotion, personal selling, public relations and publicity, sponsorship and direct marketing with respect to premium income generation and volume of businesses and discovered that Nigerian marketers of insurance products placed advertising, personal selling, and public relations in the highest priority of promotional tools applicable in the insurance industry followed by direct marketing and sponsorship while sales promotions was found not acceptable.

Though studies have shown the importance of advertising as a promotional tool needed by insurance companies in view of the intangibility of their service offerings (Osoka, 1992) most insurance companies in Nigeria do not have advertising programmes and in the few cases where such exist such programs emanate from outside agencies (Idris et al., 2012). Nevertheless, quite a number of insurance companies in Nigeria use radio and newspaper advertising in promoting their products (Ajemunigbohun, 2009). On the other hand, the usage of direct marketing as a promotional tool in the Nigerian insurance industry has not been encouraging and has been on the decline because direct marketing relies heavily on the use of the internet as a means of reaching the target market but, internet facilities are not accessible to a very large number of the target market (Ajemunigbohun, 2009, Idris et al., 2012). However, findings have revealed that personal selling is the most beneficial marketing communication tool that should be embraced by Nigerian insurance firms as it may also be used to improve the image of the industry (Olumoko, Abass and Dansu, 2012). Publicity as a promotool is relevant in the Nigerian insurance industry but it is embarked upon by the regulator of the insurance industry, practitioners, government and the populace (Idris et al., 2012). Osuagwu, (2001) also opined that high-level public relations is vital in the industry. While personal selling has been successfully used to promote insurance products by companies in the Nigerian insurance industry, they seldom use sales promotions because the intangible nature of their product offerings and the complexity and peculiarities of the Nigerian marketing environment hindered this technique from achieving its intended objectives (Idris et al., 2012). And with regards to sponsorship, a limited number of companies in the Nigerian insurance industry use sponsorship as a promotional tool; those that do mainly engage in the beautification of flower gardens, donations to charities, sponsorship of sports and traditional festivals (Idris et al., 2012).

## **3. METHODOLOGY**

### **3.1. Study Population and Sampling**

This comprises the 59 licensed insurance companies that are listed with the National Insurance Commission of Nigeria (NAICOM, 2013). This study adopted the multi-stage sampling technique. It used the judgmental sampling technique to select a sample of the sixteen (16) most active and popular insurance companies in Nigeria namely: Aiico Insurance Plc, Niger Insurance Plc, Industrial and General Insurance (IGI), Leadway Assurance, NICON, LASACO, Oasis, Mutual Benefits Assurance Plc, Royal Exchange, Crusader, Savana Insurance, Gateway insurance, Quality Insurance, Liberty Insurance, CBN Agric Insurance Limited and Access Insurance (Onuoha, 2012). Subsequently, a census of the managers in the selected insurance companies was studied after which the stratified sampling technique was used to divide the managers into strata based on managerial levels. Overall a sample of 208 managers across all levels was drawn from the 16 selected companies. Responses were received from 111 managers from 13 companies.

### 3.2. Research Instrument

This study used a self-explanatory questionnaire that was divided into three sections. Section A was designed based on Saaty's (2001) 9-point scale, ranging from "Equally important 1", "Fairly moderately more important 2", "Moderately more important 3", "Fairly strongly more important 4", "Strongly more important 5", "Fairly very strongly more important 6", "Very strongly more important 7", "Fairly extremely (absolutely) more important 8", and "Extremely (absolutely) more important 9". Section B was designed using mainly multiple choice questions that sought for information on the adoption and practices of promotional tools by the companies while Section C sought for respondents' socio-demographics. The questionnaire was subjected to expert opinion for content validity while the Cronbach Alpha was used to test reliability. This research focuses on data from section B.

## 4. DATA ANALYSIS AND DISCUSSION

### 4.1. Analysis Of Descriptive Data

Most of the respondents (62.4%) were male, 60.8% of them were between 31-50 years of age, none of the respondents were over 60 and only 13% were younger than 30. The religious breakdown was fairly even with 52.4% Christians and 47.6% Muslims. With regards to highest educational qualifications, 43.4% had Bachelor's degrees, 53.8% had a Master's degree and only 2.8% had HND/NCE. Most of them (43.4%) were in middle management, followed by lower management (35.8%), while 20.8% were in top management cadre and most of them had 4-7 years working experience and 22.8% had more than 8 years working experience. Furthermore, out of the thirteen companies that responded, seven companies' respondents reported that they did not have a specialized company in charge of promotion one company's respondents were mixed in their responses to that question while six companies' respondents said they did. However, two companies appeared to not have budgetary allocations for promotion and of the respondents who said their companies did have allocations (85%); most rated them high (42%) or medium (37%). Of the tools that were identified and prioritized the top three were advertising, direct marketing and personal selling. Following those in ranking were publicity, public relations, sales promotions and sponsorship.

### 4.2. Hypotheses Tests

The hypotheses dealt with the relative rankings of promotional strategies and whether they differed by having specialized promotion departments or budget allocation categories. There was a significant difference found between the companies that had a promotional department and those that did not ( $p < .01$ ) and the area of biggest difference, making the largest impact on the Chi Square statistic, was whether they used direct marketing or not. Almost all the use of direct marketing came from companies that had a specialized department in charge of promotion. There was also a significant difference between those that had a budgetary allocation and those that did not, in terms of their use of promotional strategies ( $p < .00$ ). The major difference was in the use of sponsorship which only those companies that did not have a budget allocation used. (Note there was a very small number of respondents who did not have a budgetary allocation). When the distributions of promotional tools were compared among the groups that rated their budgetary allocations low, medium, or high there were significant differences found ( $p < .01$ ). Those that rated their budgetary allocations low were less likely to use advertising and those that rated their budgetary allocations high were less likely to use direct marketing. The research hypotheses of differences in promotional tools based on budget allocations and specialized departments were supported.

## 5. CONCLUSIONS

Our study revealed that organizations in the Nigerian insurance industry use all the promotional tools. However, the main promotional tools they use are advertising direct marketing, personal selling and publicity while they minimally use public relations, sales promotion and sponsorship. This is partially in support of the views of Idris et al. (2012) that Nigerian marketers of insurance products placed advertising, personal selling, and public relations in the highest priority of promotional tools applicable in the insurance industry followed by direct marketing and sponsorship while sales promotions was found not acceptable. However, the fact that direct marketing is one of the top three promotional tools is contrary to the positions of scholars such as Ajemunigbohun (2009) and Idris et al. (2012)'s that the

usage of direct marketing as a promotional tool in the Nigerian insurance industry has not been encouraging and has been on the decline.

With regards to the hypotheses, our findings reveal that both the research hypotheses of differences in promotional tools based on budget allocations and specialized departments were supported. Thus, there are differences in the relative rankings of the promotional tools based on budget allocations, ratings of budgetary allocations or specialized promotion departments. Direct marketing is not used when specialized promotion departments are not in place; however it is less likely to be used when budget allocations are high. In high allocation companies advertising is more likely to be used. All companies use advertising but it appears it is the "go to" tool for those with larger allocations.

## 6. RECOMMENDATIONS AND FURTHER STUDIES

While there are clear prioritization of promotion tools in the Nigerian insurance market, differences exist based on the organizational structure of the companies and the budgetary resources that are given to promotion. Further study of other organizational descriptors may give additional perspective on the use of these promotional tools. The payback for using these tools would also bring more enlightenment on the subject. For instance would direct marketing be just as rewarding as advertising and thus something that those with high allocations should consider rather than advertising? Do low budget allocations and use of sponsorship and relatively lower advertisement provide a relatively equal reward? Does the high use of advertising, direct marketing and personal selling bring in a comparable ranking of reward? Also, this study focused on an arm of the financial service industry, we suggest that the study can be extended to cover other service sectors. Comparative studies can also be done to see how companies in other service sectors prioritize the promotional tools; similar studies can also be done for organizations in the physical products industries.

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## REFERENCES

- Ajaja, M.O. 1995. "Insurance and the Nigerian economy", *Journal of the Nigeria Insurers Association*, 3, 9-16.
- Ahmad, A.D., Raies, A.M. Munaaf, M.. & Shabir A.B. (nd). "A Comparative study of Promotional strategies adopted by Public and Private sector Insurance companies in India", *International Journal in Multidisciplinary and Academic Research (SSIJMAR)*, Vol. 1, No. 4, November-December (ISSN 2278 – 5973)
- Ajemunigbohun, S.S. 2009. "Effects of marketing communication mix elements on the demand for insurance products". *Dissertation submitted for the award of M.Sc Business Administration (Marketing)*, Faculty of Business Administration, University of Lagos, Akoka.
- Arena, M. 2008. "Does Insurance Market Activity Promote Economic Growth? A Cross- Country Study for Industrialized and Developing Countries", *The Journal of Risk and Insurance*, 75(4), 921-946. <http://dx.doi.org/10.1111/j.1539-6975.2008.00291.x>
- Augustine, U., and Nwanneka, J.M. 2011. "Repositioning Insurance Industry for Operational Efficiency: The Nigerian Case", *Journal of Applied Finance & Banking*, Vol.1, No.3, 15-32
- Bearden, W.O., Ingram, T. N. and LaForge, R. W. 2007. *Marketing: Principles and Perspective*. New York: McGraw- Hill Inc.
- Belch, G. and Belch, M. 2004. *Advertising and Promotion: An Integrated Marketing Communication*, 6<sup>th</sup> Edition, Tata: Mc Graw-Hill.
- Brassington, F and Pettit, S. 2000. *Principles of Marketing* (2<sup>nd</sup> eds.) Harlow: Pearson Education Ltd.

- Czinkota, M.R. and Ronkainen, I.A. 2004. *International Marketing*, (7<sup>th</sup> eds.) Ohio: Harcourt Inc.
- Dixon-Ogbechi, Bolajoko Nkemdinim, Jagun Sikuade Oladimeji, Ighomereho Salome Oghenechuko, Rahim Ganiyu Ajao and Haran Elizabeth Marie 2014. "Determination of Promotional Strategy for Organizations in the Nigerian Insurance Industry Using the AHP Model". *International Symposium on The Analytic Hierarchy Process (ISAHP 2014) For Complex Decision Making, Washington DC, USA – Proceedings*.
- Dorfman, M. 1994. *Introduction to Risk Management and Insurance* (5th ed.). New Jersey: Prentice-Hill.
- Henderson, G and Milhouse, V.H. 198). *International Business and Cultures: A Human Relations Perspectives*, Cummings and Hathaway, New York.
- Idris, A. A., Asokere, A. S., Ajemunigbohun, S. S., Oreshile, A. S. & Olutade, E. O. 2012. "An Empirical Study of the Efficacy of Marketing Communication Mix Elements in Selected Insurance Companies in Nigeria", *Australian Journal of Business and Management Research*, Vol.2, No.05, 8-18.
- Jobber, D. 2007. *Principles and Practice of Marketing*. (5th eds.) McGraw-Hill.
- Kotler, P. (2000). Marketing management: The millennium edition. *International Edition*, New York: Prentice Hill.
- Kotler, P and Armstrong, G. 2010. *Principles of Marketing*, 13<sup>th</sup> Edition, Pearson Educational, Incorporation.
- Krishnamurthy, S. 2005. "Insurance Sector: Challenges of Competition and Future Scenario", *Vikalpa*, Vol. 30, No. 3, 96-101.
- NAICOM 2013. National Insurance Commission of Nigeria -Insurance and Reinsurance Companies in Nigeria, Retrieved October 20, 2013, from: <http://naicom.gov.ng/companies>.
- Okyere, N.Y., Agypong, G.K., & Nyarku, K.M. 2011."The Effect of Marketing Communications on the Sales Performance of Ghana Telecom (Vodafone, Ghana)", *International Journal of Marketing Studies*, 3(4), 50-62. <http://dx.doi.org/10.5539/ijms.v3n4p.50>.
- Onuoha, R. 2012. 16 Insurance Companies known to Nigerians, Retrieved October 20, 2013, from: <http://www.vanguardngr.com/2012/10/16-insurance-companies-known-to-nigerians-report/>
- Obasi, N. 2010. Policies, Challenges, Reforms and Nigerian Disposition to Insurance Contracts, *The Fronteira Post*, 1-6.
- Olumoko, T. A., Abass, O.A. and Dansu, S. F. 2012. "The Role of Personal Selling In Enhancing Client Satisfaction in Nigerian Insurance Market", *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 3 (2): 147-152
- Osoka, O. 1992. *Insurance and the Nigerian economy*. Lagos: Panache Publications Limited.
- Osuagwu, L. 2001. "An Evaluation of the Marketing Strategies of Nigerian Insurance Companies", *Academy of Marketing Studies*, Vol 5, Issue 2, Retrieved from: <http://www.freepatentsonline.com/Article/Academy-Marketing-Studies-Journal/208890531>.
- Oyetayo, Y. 2001. *Introduction to insurance*. Lagos: Walex Printing Press.
- Research and Market 2009. Nigerian Insurance Report, Retrieved October 20, 2013, from: <http://www.reportlink.com>.
- Saaty, A.S. and Ansari, A.Z. 2011. "Factors Critical in Marketing Strategies of Insurance Companies in Saudi Arabia", *International Journal of Marketing Studies*, Vol 3, No. 3, 104-121. <http://dx.doi.org/10.5539/ijms.v3n3p104>.
- Shanteau, J. 2001. *Encyclopedia of Psychology and Behavioral Science* (3rd ed). Craighead, W. E., & Nemeroff, C. B. (Eds). NY: Wiley. (pp. 913-915).
- Singh, B. K. 2009. An Empirical Study on Perception of Consumer in Insurance Sector, *E-Journal of Business and Economic Issues*, Vol. 4 No. 3, 1-17.
- Stanton, J 1998. *Fundamental of Marketing*, 7<sup>th</sup> Ed.", New York: McGraw Hill Book Company.
- Uche, C.U. and Chikeleze, B.E. 2001. Reinsurance in Nigeria: The Issue of Compulsory Legal Cession, *The Geneva Papers on Risk and Insurance*, 26(3), 490-504. <http://dx.doi.org/10.1111/1468-0440.00134>.



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## DEFENSE ECONOMICS AND INSTITUTIONAL ECONOMICS: CLOSE RELATIONS FOR THE BENEFIT OF DEVELOPMENT AND REPUTATION

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### ABSTRACT

*Institutional economics studies indicate a series of principles that are in accordance with the study of defense policies and, consequently, defense economics. This is because the institutional arrangement of the States is a crucial imperative for the understanding of a sector in which it isn't just market rules that prevail, given that the expansions and contractions are largely dependent on the States which are conditioned by diverse factors, amongst them the demands for security, foreign policy, insertion into the international system and participation in global governance. The healthy performance of the defense economy of a certain country is therefore linked, according to our hypothesis, to the understanding of economic behavior through institutions, for being subject to changes not foreseen by the rules of the orthodoxy. Our model comes from the highlighting of three elements that can be observed in the light of institutional economics and defense economics: monopsony; "path dependence" and "bounded rationality". In these conditions, the development and innovation project that a state actor has, in terms of the potential transfer of earnings from the defense sector to the civil sector, can be a determining factor in its economic relations becoming more efficient and stable. This has a direct implication in the reputational factor and the leadership of an actor, in which its relations of cooperation in the international system are also considered. In this way, this article concentrates on the literature of institutional economics which is applied to defense economics and the study of development and innovation as driving factors of this type of economy for the benefit of the economic health of the State itself.*

**Keywords:** defense economics, institutional economics, reputation, defense innovation.

### 1. INTRODUCTION

When Adam Smith wrote the work the Wealth of Nations, originally, "*An Inquiry into the Nature and Causes of the Wealth of Nations*", he dedicated himself in his fifth part to the role of the State in a wide interpretation of economics, which guaranteed its classification as an inaugural work of liberalism. In this work, Adam Smith dedicates himself to the non-dispensable part about the role of the governments, where he aligns himself with some precepts practiced years after by internationalists, defenders of the presence of the interests of the State as being always prevalent. In this orbit, it concerns the effect of liberalism over national interests, where the States look to guarantee their needs through the expansion of their resources or potential resources.

In this an apparently contrasting vision to Smith's argument is inserted with respect to the circularity of capital and the need for the elimination of the limits to the economic flows which are eventually challenged by the State: the maintenance of the State's interests will depend upon the capacity that this will guarantee the defending of its interests in the long term, including the territory. In this case, the constitution of a defense project would guarantee less vulnerability to the State that is willing to make some limited investments, one of them, with regard to the national defense of its territory and population.

Some arguments, therefore, from Smith, appear to be detailed in that which we qualify as the field of the defense economics. We can highlight two elements in Smith: his understanding about the relations of international cooperation and of the role of defense in the national budget (Hartley, 2010; Franco, 2000). Based on this, we move towards the definition of the field of defense economics, which concerns the allocation of resources with regard to defense and security, as being constituted by the topics of research and development, military capacities, management and budget, defense industrial complexes, trade agreements and technical cooperation. However, in this scenario, for not being a very notable field of defense economics and of such specificities, institutional economics today seems to offer more elements

for the field to be understood through its idiosyncrasies. These capacities are related to the reputation of the States, in which the dynamics of competition and international cooperation is pertinent.

Intuitively, it was more probable to state that, for an originally liberal argument, foreign relations would tend to be consolidated through absolute gains, showing losses and gains from one side to the other, since they wouldn't bring interests other than those themselves. In this point, Smith could be closer to the realist or neorealist argument, in which the existence of an always preponderant individualism is considered. However, Smith says:

“In any event, we cannot prosper by trying to impoverish our neighbours. A nation is more likely to grow rich from trade if its neighbours are also rich, industrious, commercial nations, than if they are poor”. (Smith, A. (1904) *The Wealth of Nations*, Book IV, Chapter III, Part II, p. 493).

With this, the first argument that cooperation is made from sequential gains and losses can be devoid from Smith when he ponders that two or more equally prosperous nations can benefit from the cooperation. Therefore, it isn't the qualification of a place of victory against a place of defeat that guarantees the fulfilment of the national interests. In another way, from the second intuitively inverse argument, we find in Smith the defense that the provision of sufficient conditions for maintaining the risks of violation of the territory to a minimum level would be left to the State - and therefore, the national interests of progress. In this way, the defense of the reduction of all of the spheres of interference of the State wasn't left to Smith, but the guarantee of minimum spheres where it would be found, including, the defense.

However, although we use Smith with the purpose of contrasting two of his arguments with some principles of the international relations that appear relevant to us, but it is important to note that the defense economy constitutes border countries not just because it concerns investments from the State and its cooperative axes at the same time, but also because the system over which it is based has an operationalization that distinguishes it from the majority of the market environments, rules and determinants.

Therefore, from Smith some references touch upon defense, not just under the aspect of detaining the control of defense by the State, but with regard to the possibility that the economic liberalization could emphasize the disarmament and the peace as a consequence of the greater level of flows between markets and progressive approximation (trust, despite not using the term), between state actors (Coulomb, 1998). In this way, contrasting with mercantilist thinking, free trade met colonialism and slavery, and they were considered models that impede the development of nations, where defense would continue to be a decisive ingredient for the maintenance of the status quo of the State.

## 2. MONOPSONY AND DEFENSE

If the first duty of the sovereign state is to protect the society, the defense of the Nation and therefore the State prevails as a primary aspect, even in the liberalism of Smith. However, because the control of the State embodies two of his economic principles – regular investments and in innovation – this market has specificities that can be concentrated into quite an unused economic definition: monopsony.

Monopsony is the concept whose definition is contrary to monopoly – a concept widely used in academic and non-academic literature - and, therefore its bases are not in the existence of one supplier or service provider alone, but in the existence of one buyer alone (Ashenfelter, Farber and Ramson, 2010). The State, which is concentrated on the responsibility of defense, is qualified as the single significant buyer of a market that it depends on as an applicant and promoter. Demand, therefore, will not depend on the natural laws of the market, but on the strategic expression of each State upon conducting its defense necessities.

In the capacity of buyer, the State needs to guarantee that its market meets its defense expectations, notably in relation to that which will be provided in the short, medium and long terms, in the case of war or peace (the investments in defense are variable between periods of conflict and non-conflict - see Moreira,

2013). For this, investments must be so much those that sustain the viability of the businesses as well as those that sustain their development, since the autonomy that the State will guarantee in relation to its defense is proportional to the results of the investments.

In this way, there are various implications with regard to the resources available for the State. This doesn't mean to say that investments will be limited to the State or that development and innovation will depend on it alone (Moreira, 2013). The economic viability encompasses an inexact series of commitments that vary between the availability of public and private finances, the constitution of international cooperation agreements, the existence of the transfer of technology, the bureaucratic efficiency and with regard to the fiscal commitments of the sector, the maintenance of a reasonable orbit of human resources and materials. All of these elements are constituted as strategic and concentrated in the State, which in its capacity as a preponderant and controlling actor of this market - which characterizes monopsony-, redefines the perspective of its business in defense.

Therefore, the topics that can be comprised by defense economics are in consonance with monopsony as being the main characteristic of this sector. If for the aspect of war, monopsony guarantees the State the administering of the start and end of war, it also guarantees the formation of strategic alliances and a control over arms; it furthermore guarantees the mobilization in post-war periods and the reconstitution of the affected territories and the Forces. All of these functions are related to the economy once the efficient allocation of resources is necessary and the availability of these according to necessary mobilizations to the commitments brought by the war.

However, it is not only in war that this occurs. Economic sanctions can influence the management of the defense economics of a State greatly, since there is a series of dependence mechanisms that bind the States together, characterizing more or less determining places amongst each other in scenarios of competition or cooperation. Here resides another characteristic of monopsony in defense and is distinct from the others: the control of imports and exports, the existence of materials and sensitive knowledge guarantees the State not just autonomy, when it is relevant, but low capacity for manoeuvre – in other words, not much autonomy – when depending on others.

Therefore, with regard to defense economics not just concerning the domain of the State as a single buyer but, even in the possible permission that private agents negotiate with other States, this will not take place outside of the context of the wills of the State first, where the private agent is derives from this business that, in turn, is dependent on this State and its cooperative commitments for it to expand or restrict its potential and survival.

Defense policies imply, therefore, the health of the defense economics of a State, which is the capacity of a State to manage resources to the benefit of its strategic planning in defense. Defense policies are linked to military training, the preservation of strategic materials, the defense industrial policy, the acquisition and analysis of defense contracts, recruitment and work relations, and to the optimization and efficiency of the forces.

If one of the problems of the economy is the lack of resources, the allocation of these resources in defense concerns a strategic economic value of the State which isn't transferable to other agents, precisely due to being challenged by the condition of survival of the nations, as occurs in the relations between individuals. Therefore, the demands for autonomy in the defense field coming from the dominance of essential resources for the survival of a State are proportional, such as water and energy.

### **3. INSTITUTIONAL ECONOMICS AS AN ADHERENT TO DEFENSE ECONOMICS**

One of the principles that concerns the economy is the capacity of a certain sector to guarantee growth. Although there are few studies about the impact of the investments in defense on the growth, it is possible to say, based on the aforementioned arguments, that for defense economics, the political spheres of the decision of the State which imply a more or less robust sector are more important than the economic attributes.

Although we have started with Smith under the focus of his liberal arguments for the purpose of defense – distinguishing itself from the other fields where free agents prevail and potentially from the market -, with

regard to the principles of the management and planning in defense, the variable determinants for the sector, once constituted of non-characterized wills by the market laws, escape from the classical studies of economics. For this purpose, by binding defense economics to the potential growth of a State, we must not take into account variables of the market, therefore, purely economic, but instead those that are institutional. Therefore, institutional economics can provide keys of understanding for an extremely specific sector, where some of its main fundamentals prevail.

Therefore, there is no discussion here about the economic products of the investments in defense, especially, the economic growth of a State, which is a specific sector of defense economics that is still in development. Our focus resides in the institutional mechanisms and processes that prevail in the sector of defense economics, whose agents and circumstances possess specificity. We highlight, therefore, elements of institutional economics that are better applied to the sector than the orthodox economy, whose bases are those driven by the market laws.

This is to say, besides possessing elements attributed to monopsony, defense economics furthermore is constituted, according to our hypothesis, of some essential elements of institutional economics, which is the path dependence and bounded rationality concept. Together, the monopsony triad, path dependence and bounded rationality can contribute to an understanding of the sector that has experienced little applicability on behalf of the studies of heterodoxy until today.

If, on one hand, monopsony is characterized by the absence of competition in a scenario of single buyers, the decision-making processes associated with these purchases in defense are also based on some assumptions that are better applied by taking into account attributes that entail the low capacity of the State in making decisions based on pure rational principles. Therefore, States whose management depend on political decisions that are not just economically-founded, will always have defense and defense economics policies linked to their strategic objectives and the level of priority of this policy within the general scope of management of the interests of the State.

In this way, in being the preponderant institutions, it is worth saying that the decision-making process that involves defense policies in terms of investment, purchasing and national capacities is a determining factor. Also, as such, all of the consequences of the choices possibly made with regard to the investments in defense are extremely important for the constitution of the sector.

In this scope two general principles prevail; the first that the States make choices which are associated with opportunity costs, or, related to that which they intend to gain and that which they fail to gain from making a choice; the second, the lack of a diversity of choices in reality, based on the principle of limited rationality or bounded rationality that a State - although its political options and interests are variable - is also driven by the degree of the historical commitment of its decisions, or, the imperative path dependence as a guide for its political traditions and previously made choices, which entail little room for maneuver for future decisions.

Therefore, our hypothetical model is configured through three principal elements as determining factors for defense economics:

- 1) Monopsony as being the characteristic of defense economics once the State is the manager and buyer of the investments in defense, its domain creates artificialities not originating from a spectrum of constant rationality. Furthermore, monopsony causes a producing economy whose scale and characteristics are presented through a direct demand, subject to treaties, and not to the competition of the free market;
- 2) Path Dependence as the dependence that an actor has in relation to its previous commitments and decisions, which is absolutely pertinent to foreign policy and defense policy, since they are long term. With the production and stimulation through defense economics of the duration of many political mandates, the decisions are prolonged in the maintenance of contracts and partnerships that are modified very slowly, principally, in imagining non-litigating relations, in which the imperative of the repeated games creates conditions of trust that furthermore generate more stability. Also, in this way, it isn't possible to disconnect easily from these previous decisions by proposing a renewed model of investments and defense economics.

- 3) The “limited” rationality or bounded rationality, which establishes limitations for the use of the rationality, once institutions and actors are motivated by a series of conditions that are not of pure logic, but absorbed by perceptions and prejudice.

In this context, it is necessary to recognize the existence of opportunity costs in the defense sector, which can be even greater when they have long term policies. Even so, the choices in defense entail a chain of other choices because it is a sector so very dependent on the State that, exactly because of this, it can exponentially establish links with other sectors. Therefore, a choice in investment in defense entails the activation of various subsidiary groups of the economy which will be directly or indirectly affected by the first group of choices. More than a private and sectorial investment, the defense policy as a State policy entails a series of other commitments from the State and private parties, in the national and local context, generating implications for the employment sector, professionalization, tertiary services, education, science, technology, technical cooperation, amongst others.

The literature of institutional economics, oriented contemporaneously by the New Institutional Economics, foresees a set of precepts that constitute the studies on choices and preferences (Hodgson, 1998). In truth, the studies in this field look to understand which are the present elements in the changes, relations and choices driven by processes and institutions (Maitland, Nicholas and Boyce, 2010; Coase and Williamson, 1979). Above all under the point of view of the efficient allocation of resources, by way of allocating the resources whilst taking into view that, in an environment of limited resources, there is always a loss in another sector, Pareto (1971) had already demonstrated that the strategy of the allocation of resources must always take into account intrinsic gains and losses.

It is interesting that opportunity costs are observed not just through rational actions, but through the recognition that, choices entail losses, which must be less than the relatively administered gains. Also, in this sense, for this understanding a rational vision of the agents that execute the choices isn't required, but a complex set of factors that possess conjectural and specific rationality, perception and interests. As Douglas North (1993) highlights:

“Economic change is a ubiquitous, ongoing, incremental process that is a consequence of the choices individual actors and entrepreneurs of organizations are making every day.” (North, 1993, p. 6).

Although the question of the routines can interfere in the capacity of change with regard to the already assumed commitments, such as appears in the concept of path dependence, the decision-making process has a continuous rearrangement on behalf of the individuals and, therefore, the institutions. Therefore, the liberal-institutionalist vision of international relations is applied here (Keohane and Nye JR., 1998), which recognizes the presence of interests in the actors, including, the institutional actors, within a space of interdependence in which the movements of each actor generate consequences for the others, for their historical relations of trust and distrust and for the stability of the system.

The principal of rational choices doesn't prevail in this case because, in an environment of uncertainties, the more reasonable options are those in which rational criteria are added to those others with a historical and moral imprint of the prejudices that reside in those which are responsible for the decision-making. Therefore, upon considering the limited rationality, we highlight that choices that are expressed over time are characterized by the rational factors and other externalities which are based on the perception of the actors of the environment to which the process pertains. Institutional agents therefore possess behaviors that, in a defense environment, are preponderantly economic, but not this alone.

Defense economics, therefore, once entangled with original prejudices of the institutional behavior over time, of the State and its instances, has its management attributed not just by the desired results by that are controlled by market forces, but those whose principles are not so environmental, behavioral and unstable (Arrow, 1970). In this case, the cost of change of a paradigm can be greater than any other ingredient that can have an economic defense policy, based on the principle of path dependence throughout its history.

In another way, in light of the opportunities of changes and, even with little room for maneuver, it is possible for an actor to modify preferences, calculating the opportunity costs so that the choices are not

more beneficial than the non-chosen options. This capacity is pertinent to the field of economic defense management, because it doesn't depend on the laws that prevail in the market, but heavily on the preferences of the State, its agreements and partnerships, which entails different opportunity costs, governed by strategic, political and private preferences.

Therefore, because the State is the single significant buyer of defense goods (monopsony), because this market is governed by legal and procedural restrictions that imply a non-free trade (Arrow, 1970) and, because, there are motivations external to the rationality of the actors, qualified by another regime of opportunity costs and, determined by the path dependence, this field is different from mainstream economics. In this case, for an interpretation of the opportunity costs through an inter-institutional vision, the interpretation of Coase indicates to us that these costs are real and they challenge representative actors (Coase, 1960, 1984). Therefore, it is for this reason that Douglas North qualifies the exercise of observing the changes in the economy throughout history as a great puzzle (North, 1993).

#### **4. DEFENSE ECONOMICS AND REPUTATION**

The economic foundation of defense could be expressed by the capacity of defense generating growth, which concerns a study that is still controversial and without expressive conclusions observed strictly under macroeconomic indexes such as the GDP. However, of being specific institutionalities, such as presented by three of the principles of institutional economics – monopsony, path dependence and bounded rationality – defense is a strategic sector and whose principles are those founded in the interests of the State.

Therefore, defense is the objective not just of dissuasion and the guarantee of territorial integrity but, above all, of the orientation of foreign policy such as the preferences of the State are presented. This is our second hypothesis, followed by the first, which links concepts of institutional economics to defense economics. In other words, understanding defense economics through the specificity of its links with the State and possessing precedents, we can state that the situation in which the defense decision-making process occurs is influenced so much by external factors as by internal factors. In this way, internal factors are preponderantly those of political preferences; external factors, those whose interdependence prevails the principal that a State will not direct preferences that go against the interests of its main partners.

Strategic planning, therefore, looks to establish a compromise between these political preferences and the State and the results for this same State, before the others. A reputational principle applies which is allied with the desire to make the interests constituted in the international environment prevail. The defense of this spectrum is connected because it is so much originating of public interests as decisive for international competition, in which not just the capacity to dissuade and enforce their respective interests is concerned, but also guaranteeing value to the State in this environment.

Therefore, the reputational value of a State, with regard to defense, is expressed so much by the reputation that guarantees trust together with the international system, as by the reputation which looks to guarantee leadership (Medeiros, 2011). A State might not benefit only from one of these types of reputation with regard to defense, once more permanent and historical values (path dependence) are in play, old partnerships or partnerships in progress are in question, at the same time in which variable principles amongst market minimums or maximums place the actors in a state of competition, principally with regard to the capacity of development and innovation in comparison with the others.

In other words, even in States with little expression in terms of military capacity, their distinction from the others and the scenario of competition co-exist with the pertinent cooperative arrangements with regard to defense. It is precisely the defense policy, in its element of cohesion, where cooperative principles and reputation prevail based on trust over time (tit for tat, repeated games according to the games theory), as well as competitive principles, not just those of dissuasion (there are many apparent and recognised), but those linked to the defense capacity in generating economic benefits. Therefore, here we align the following elements: defense economics as a field where preferences of the State prevail as a principal determining factor (Arrow, 1970); where opportunity costs are managed by actors with limited rationality and surrounded by other variables; where the historical conditions of their partnerships and behaviors in the international environment are determining factors.

In addition to these elements is the economic increase and not necessarily growth – as some studies have focused on – the fundamental component to qualify defense economics based on known macroeconomic principles. From this point of view, the increase, or, the defense capacity in increasing the importance of this sector, can be the landmark for defense to be able to contribute to the State, in general, including the international scenario.

## **5. DEFENSE ECONOMICS, INCREASE AND INNOVATION IN A SYSTEMIC PERSPECTIVE**

Pareto's principle of efficiency is based on the increase that can be made to the economy when the increase in the interest or production of a good implies the reduction of the interest in another good (Pareto, 1971). From this principle of increase, where there is a rise in the value of a variable, defense as an economic policy is also subject to the variations experienced through market fluctuations, fundamentally when the aspect of the technology comes into question. With this, there is an important space for these fluctuations in the sector.

The principal element of this scenario is the presence or not of conflicts, a principal variable of the arms market (Moreira, 2013). Even dependent from the preferences of the State, of the influence of external and internal factors, the defense policy furthermore has an effect over the market and generates variations that are extremely linked to technology and to innovation, such as indicators of the success of the private, public or in partnership investments.

The capacity to generate economic benefits is one of the keys for the socio-political viability of the large defense projects, principally in emerging countries, where the legitimate prioritization of combatting inequality considerably limits the investment possibilities. In these cases, the association and the correlation between development and defense, as a bionomic fosterer of growth, can be the path for a socially inclusive national defense project. In the end, there are many externalities of technologically advanced defense projects, such as the generation of jobs, the effects of technological drag for dynamic sectors of the economy and, also, the possibility of insertion into the international market, potentially a generator of foreign exchange.

In any of the cases, the mentioned theoretical aspects gain concreteness in the existence of a productive sector, conformed to the characteristics of the aforementioned three principles of institutional economics, geared towards attending to material demands derived from systematic strategic defense planning. It concerns a highly complex and challenging process, which must convert strategic thinking into a viable configuration of means of the forces, which is to say, to qualitatively and quantitatively define combat platforms and systems; it must also subsequently transform these demands into concrete means, delivered on time and in place to the defense operators, principally the Armed Forces.

This last transformation requires a highly specialized system of defense acquisitions, which is capable of using the purchasing power of the State to leverage the native training, or, to formulate coherent and consistent technological orders, by way of making operational requirements compatible, as much as possible, with possibilities of the production sector that will attend to them, principally the industrial defense base. Such system must be capable of dealing with highly demanding projects of capital, technology and highly professionally qualified personnel. It must also deal with political and corporative postures that permeate the interactions between the principal actors of this system: politicians, soldiers, leaders, economists, public managers, engineers, businessmen, industry workers, scientists and researchers, academics, media professionals, amongst others (Sorenson, 2009).

The fact is that investments in combat systems are high in value and sometimes, in the very long term, is what gives a generational dimension to the defense venture. The spatial and nuclear propulsion submarines programmes in emerging countries serve as examples. It therefore becomes an inalienable duty of each generation to decide with which resources the coming generation will have to defend itself from contingencies that perchance survive (Moreira, 2011).

A production sector geared towards defense, to become viable, in addition to attending to the monopsony demands, it needs to be capable of generating innovations that enable the competitive insertion into a strongly protected and regulated international market led by the powers that control the production flows and the transfer of scientific-technological knowledge in a large part of the planet.



In this point it is necessary to remember the contribution from Joseph Schumpeter about dynamic innovation. The author of "Capitalism, Socialism and Democracy" (1942) highlighted that the generating processes of innovation are complex and are concerned with entrepreneurship, characteristic of the capitalist spirit, which encourages the supply of new consumption goods, new production methods, new markets and new forms of industrial organization. Based on the observation of the historical process of the qualitative transformations of the production processes, so much in the fields (agriculture) as in the commodities sectors (iron and coal) and of transport, the economist perceived that the opening of new markets and the organizational and industrial development generates a "revolutionary process from within", with the replacement of existing products and services for other new and better ones. The companies that are not capable of operating in this dynamic tend to concede space in the market to the newest and the most trained in the generation of innovations. Therefore, this silent and slow process of "creative destruction", as the author would say, is shown within the capitalist system (Schumpeter, 2012).

Producing new goods is already a challenge in a world in which approximately 80% of the innovations are generated in a little more than a dozen countries (Sachs, 2000). Generating them in the defense sector is even more challenging as the strategic products are characterized for being intensive in state-of-the-art technologies, subject to protection and to the strict control on behalf of its producers. Furthermore, they require heavy investments in the infrastructure of research and development (R&D) and in the training of personnel. However it isn't just this.

The sectorial studies of innovation developed since the 1980s help to understand the conditions for a sector of the economy to be capable of operating dynamically and with the capacity to generate innovations. These are the result of a process that involves science, technology, research, experimental development, basic industrial technology (industrial design, standards, metrology, certification, quality), engineering and other activities that occur within, outside of and between companies. Such process depends on crossed interactions between the operators of these areas of knowledge and activity and, also, on the combination of factors such as public policies, formal regulatory framework and usual practices of the local society, human resources, organization, management, financing, marketing, logistics, strategic alliances and cooperation networks, access to varied sources of information, market, suppliers etc. (Malerba, 2003, 2004; Longo and Moreira, 2013).

A sectorial system of innovation encompasses "a set of new and already established products for specific uses and the set of agents that carry out the marketing and non-marketing interactions for the creation, production and sale of these products", states Franco Malerba. Such system "has a base of knowledge, technologies, supplies and an existing demand, emerging or potential", and therefore constituted basically of three essential components: "*knowledge and technological mastery*", "*actors and networks*" and "*institutions*" (Malerba, 2003, 2004). According to the author in question, *knowledge and technological mastery* refer to the specific base of knowledge, technology and supplies within the frontiers of the sector. Dynamic complementarities take into consideration interdependencies and feedback amongst products and activities. *Actors and networks* concern the individuals (consumers, businessmen, scientists) companies (users, producers and suppliers of supplies), non-business organizations (universities, research institutes, financial agents, syndicates and technical associations); departments of large organizations (such as R&D or production), groups of organizations (industrial associations). [Finally] "*Institutions*" refer to the set of standards, rules, routines common habits, established practices, laws, standards etc., which mould the cognition and the activity of the agents. (MALERBA, 2004, Part I; Longo and Moreira 2013, p. 286-288).

The systemic perspective reveals the complexity associated with the training of a dynamic and innovative production sector. Therefore, the application of this model can be imagined to the sector of the Economy geared towards attending to the technological orders and materials of Defense, in which the State has a determining role. The allocation and application of financial resources or the publication of a new law of incentives is not enough, it is necessary to develop the conditions that stimulate the dynamic and crossed interactions between the wide range of mentioned actors.

## 6. FINAL CONSIDERATIONS

By way of conclusion, we can say that institutional economics offers us a set of concepts that appear most relevant to us for the understanding of a sector possessing specificities, however, where objectives

linked to growth and the competitiveness between actors and markets do not fail to prevail. For this reason, the role of the State in the management and regulation of this sector isn't just relevant for the health of defense *per se*, but also for the health of the economy and of the production system of that State. With the maintenance of the conditions of competitiveness in the defense sector being fulfilled for the purpose of the security of the State such as Smith pointed out, the bond that links the State to the need for investments such as those of defense cannot be disconnected from its independence and autonomy in the international system. In this sense, with the sector being characterized by a sphere of production in which the innovation is one of the principal determining factors, the results of this for greater effect of which the security are inevitable, resulting from the overflowing factor of investments in innovation beyond the own niches of the defense sector.

The theoretical approach is expressed in the empirical plan through the existence of a production sector, conformed to the characteristics of the three aforementioned principles of institutional economics, geared to attend to the material demands derived from a strategic defense planning system. The systemic perspective for the approach of the production section linked to defense provides a consistent analytical referential for the understanding of the complexities involved in the optimization of the attending to the defense needs in an environment of limited resources, or, for the transformation of the material needs in defense products delivered on time.

## REFERENCES

- Arrow, K. J. (1970) Organization Of Economic Activity: Issues Pertinent To The Choice Of Market Versus Nonmarket Allocation. *Public Expenditure And Policy Analysis*, Edited By R. H. Haveman And J. Margolis. Markham, Chicago, Usa.
- Ashenfelter, Orley C., Ransom, Michael R. And Farber, Henry. (2010) *Modern Models Of Monopsony In Labor Markets: A Brief Survey*. April. Available From: <[Http://Harris. Princeton. Edu/Pubs/Pdfs/554.Pdf](http://Harris.Princeton.Edu/Pubs/Pdfs/554.Pdf)>.
- Barro, Robert And De Rugy, Veronique. (2013) *Defense Spending And The Economy*. George Mason University. Mercatus Center, May. Available From: < [Http://Mercatus.Org/Sites/ Default/Files/ Barro\\_Defensespending\\_V2.Pdf](http://Mercatus.Org/Sites/Default/Files/Barro_Defensespending_V2.Pdf)>.
- Buchanan, J. M. Opportunity Cost. (1987) *The New Palgrave: A Dictionary Of Economics*, John Eatwell, Murray Milgate, And Peter Newman, Eds, London: Macmillan Press, Volume 3, Pp. 718-721.
- Coase, R. H. (1960) The Problem Of Social Costs. *Journal Of Law And Economics*, 3, P. 1-44.
- Coase, R. H. (1984) The New Institutional Economics. *Journal Of Institutional And Theoretical Economics*, 140, Pp. 229-231.
- Coase, R. H. (1937) The Nature Of The Firm. *Economica*, New Series, 4(16), P. 386-405.
- Coulomb, Lanny. (1998) Adam Smith: A Defense Economist. *Defense And Peace Economics*. Volume 9, Issue 3.
- Dagnino, R. 2008. Em Que A Economia De Defesa Pode Ajudar Nas Decisões Sobre A Revitalizacao Da Indústria De Defesa Brasileira? *Oikos. Revista De Economia Heterodoxa*. N.9, Ano Vi, 2008. Available From: < [Http://Www.Revistaoikos.Org/Seer/Index.Php/Oikos/Article/View/ 85/55](http://Www.Revistaoikos.Org/Seer/Index.Php/Oikos/Article/View/85/55)>.
- David, Paul. A. (1995) Clio And Economics Of Qwerty, *American Economic Review* 75 (2): Pp. 332-337, P. 332. Available From: <[Http://Links.Jstor.Org/Sici?Sici=0002-8282%28198505%2975%3a2%3c332%3acateoq%3e2.0.Co%3b2-l](http://Links.Jstor.Org/Sici?Sici=0002-8282%28198505%2975%3a2%3c332%3acateoq%3e2.0.Co%3b2-l)>.
- Franco, P. (2000) *La Economía De Defensa: Introduccion*. Manuel. Waterville, Colby College.
- Hartley, Keith. (2010) *Economics Of Defense Policy: A New Perspective*. London: Routledge.
- Hodgson, Geoffrey M. (1988) Economics And Institutions. *Journal Of Economic Issues*. Citeseer, Jan.
- Hodgson, Geoffrey. (1998) The Approach Of Institutional Economics. *Journal Of Economic Literature*. Jstor. Available From: <[Http://Www.Econ.Uchile.Cl/Uploads/Documento/2f31e37 B95de09feb3bc22d401535f237e5aa31a.Pdf](http://Www.Econ.Uchile.Cl/Uploads/Documento/2f31e37B95de09feb3bc22d401535f237e5aa31a.Pdf)>.
- Kahneman, D. (2003) A Perspective On Judgment And Choice. Mapping Bounded Rationality. *American Psychology*, Sep. Available From: <[Http://Choo.Fis.Utoronto.Ca/Fis/ Courses/L Is2149/ Kahneman.Nobelprize.Pdf](http://Choo.Fis.Utoronto.Ca/Fis/Courses/LIs2149/Kahneman.Nobelprize.Pdf)>.

- Keohane, R. O. And Nye Jr., J. (1998) Power And Interdependence In The Information Age. *Foreign Affairs*, V. 77, Nº 5, Set/Out, Council Of Foreign Relations.
- Longo, W. P. And Moreira, William S. (2013) Tecnologia E Inovacao No Setor De Defesa: Uma Perspectiva Sistêmica. *Revista Da Escola De Guerra Naval*, Rio De Janeiro, V.19, N.2, Pp. 277-304, Jul./Dez.
- Maitland; Nicholas, S.; N.; Boyce, G. The Economics Of Governance: Transaction Cost Economics And New Institutional Economics. *Business And Law Symposium*. New Castle, 2006. Available From: <[Http://Www.Newcastle.Edu.Au/Resources/Faculties/Faculty%20of%20business%20and%20law/Events/Symposium/Maitland-Nicholas-Boyce-Paper.Pdf](http://www.newcastle.edu.au/resources/faculties/faculty%20of%20business%20and%20law/events/symposium/maitland-nicholas-boyce-paper.pdf)>.
- Malerba, F. (2003) Sectoral Systems And Innovation And Technology Policy. *Revista Brasileira De Inovacao*, Rio De Janeiro, Rj, V. 2, N. 2, Pp. 329.
- Malerba, F. (2004) Sectoral Systems And Innovation: Concepts, Issues And Analyses Of Six Majors Sectors In Europe. Cambridge: Cambridge University Press.
- Malerba, F. (2006) Sectoral Systems: How And Why Innovation Differs Across Sectors. In: Fagerberg, J., Mowery, David C. And Nelson, Richard R. *The Oxford Handbook Of Innovation*. New York: Oxford University Press. P. 380-406.
- Malerba, F. (2005) Sectoral Systems Of Innovation: A Framework For Linking Innovation To The Knowledge Base, Structure And Dynamics Of Sectors. *Econ. Innov. New Techn.*, V. 14, N. 1-2, Jan./Mar., P. 63–82,.
- Medeiros, Sabrina E. (2011) Modelos De Reputacao Internacional E Paradigmas De Política Externa. *Contexto Internacional*, V.33, N.2, Jul./Dec.
- Mesa, Antonio. (2012) *Sobre La Naturaleza Y Alcance De La Economía De La Defensa*. Documento De Opinion. Instituto Español De Estudios EstratEgicos, 2012. [Http://Www.lee.es/Galerias/Fichero/Docs\\_Opinion/2012/Dieeee79-2012\\_Naturaleza\\_Economia\\_Defensa\\_Afonfria.Pdf](http://www.lee.es/galerias/fichero/docs_opinion/2012/Dieeee79-2012_Naturaleza_Economia_Defensa_Afonfria.pdf)
- Moreira, William S. (2011) Obtencao Dos Produtos De Defesa No Brasil. *Revista Da Escola De Guerra Naval*, Rio De Janeiro, V.17 N. 1 Pp. 127-149, Jan/June.
- Moreira, William S. (2013) Organizational Structure And Procedural Framework For Defense Acquisition In Brazil: The Challenge Of Technology Transfer. In: Behera, L.; Kaushal, V. *Defense Acquisition: International Best Practices*. Institute Of Defense Studies & Analysis, Pentagon Press.
- North, Douglas. (1993) Economic Performance Through Time, Nobel Prize Lecture, Dec. 19. *The American Economic Review*, 84 (3): Pp. 359-368. Available From: <[Http://Www2.Econ.Iastate.Edu/Tesfatsi/Newinste.North.Pdf](http://www2.econ.iastate.edu/Tesfatsi/Newinste.North.Pdf)>.
- Page, Scott. Essay - Path Dependence. *Quarterly Journal Of Political Science*. 1: 87–115, 2006. Available From: <[Http://Dev.Wcfia.Harvard.Edu/Sites/Default/Files/Page2006.Pdf](http://dev.wcfia.harvard.edu/sites/default/files/page2006.pdf)>.
- Paretto, Vilfredo. (1971) Manual D'economia Política. *Manual Of Political Economy*. New York: The Macmillan Press Ltd.
- Robinson, J. A. (1933) The Economics Of Imperfect Competition. 2nd Ed. 1969. London: Macmillan.
- Sachs, Jeffrey. (2000) A New Map Of The World. *The Economist*, 24 Apr. Available From: <[Http://Www.Cid.Harvard.Edu/Cidinthenews/Articles/Sachs\\_On\\_Globalisation.Htm](http://www.cid.harvard.edu/cidinthenews/articles/sachs_on_globalisation.htm)>. [Access: 20 May 2009].
- Schumpeter, J. A. (2012) *Capitalism, Socialism, And Democracy*. Usa: Start Publishing Llc.
- Smith, Adam. (1904) *An Inquiry Into The Nature And Causes Of The Wealth Of Nations*. 5th. Ed. London: Methuen And Co., Ltd., Ed. Edwin Cannan.
- Sorenson, David S. (2009) *The Process And Politics Of Defense Acquisition: A Reference Handbook*. Westport, Ct: Praeger Security International.
- Williamson, Oliver. (1997) The Economics Of Defense Contracting: Incentives And Performance. In: Roland N. McKean (Ed.) *Issues In Defense Economics*. P. 217-278. Available From: <[Http://Www.Nber.Org/Chapters/C5165](http://www.nber.org/chapters/C5165)>.

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## DETERMINANT FACTORS TO ENHANCE THE ADOPTING OF ALTERNATIVE MEDICINE

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### ABSTRACT

*This paper investigates the effects of promoting alternative medicine by using empirical data gathered from group of 450 consumers who used the service of alternative medicine from two public hospitals in Thailand. The structure of the equation comprises the cause variables which are the acceptance of benefits, the access to the treatment system, research support, and advising people of all the alternative of medicine service. The transmission variables comprise: attitude, belief, and trust in treatment with alternative medicine. The research finds that factors affecting the determination of alternative medicine are: belief affects intention, belief affects trust, and belief affects attitude, while trust affects intention, and trust affects attitude, whereas suggestions from surrounded community and referenced people affect belief, attitude affects trust, and research support affects belief. All of these shows results at significant .*

**Keywords:** Acceptance of benefits, Access ease of use, Attitude toward using, Subjective norm, Beliefs, Trust, Intention and Research support.

### 1. INTRODUCTION

Human resource is an important asset to the sustainability of organization. The performance of organization is based on the employees' subjective and objective wellbeing. Objective wellbeing in the context of good health because human capital and human resources are the most important in all undertakings organizations, and should be well maintained. Human has the ability to gain knowledge, skills and experience. The ability to bring these factors together to create potential in the organization, which is an important asset and value.

Health issues are the main concern in losing an asset and value because it requires high capital commitment. Organization should support health awareness and maintain good health of human resources to prevent sickness. Tian (2011). Financial availability, the organization's human resources, the reimbursement of services, the lack of medical support, the lack of nationally recognized standards and performance criteria, quality control, the lack of resources and qualified practitioners in the geographic area, all of these are factors influencing the decision to use alternative medicine Curreli (2013). Patients who use alternative medicine can make decisions by using their own judgment based on given medical advice, rather than needing authorization from formal expertise in the field. This is a common practice in treatment and solving pain problem by reducing severity of pain conditions in certain health issues. The change in society, culture, education in medical field, management system development, the development of herbal medicine plays an important role in the direction of the Thai tradition and alternative medicine (Thai Tradition and Alternative medicine Health Profile, 2011-2013), the development and educational institutions play an important role in health care by using no pain medication in the treatment. Patients who use alternative medicine have the option to make decision independently as to the type of treatment preferred. The issue that may affect the decision is the human lack of knowledge from medical expert from alternative method, lack of trust in behavior of using the service including: lack of funds to support the research to raise trust level so that alternative method has quality for curing certain health issues and cost of current treatment; Lack of experience from treatment in exchange for knowledge and creating culture in educating alternative medicine; Lack of training for the work force and lack of medical experience in alternative medicine including unpreparedness of treatment quality. There is no set standard. Lack of support from main health insurance which does not cover the cost of medical care. The support from public and private in research and institutions are very limited. Health issues are main concerns therefore patients with health issues in several countries are always searching for new

alternatives for health treatment to help resolve health issues. This includes healing social and spirit psychologically concurrently. This in turn creates a way of focusing the attention to research which would promote alternative medicine. Focusing in the most common alternative medicine technology and blends with conventional medicine, possibility exist in spreading the service to the majoring of people in the country. This is of course assuming that good management is in practice. Alternative medicine is a science for treatment and preventing health issue which is different than the science of conventional medicine. This type of medicine does not require taking any medication, surgery or treatment as in conventional medicine. This allows for combination of treatment in both alternative and conventional medicine. For example Andrew Weil M.D.(2000)'s "Spontaneous Healing" of U.S, is one of many who expressed interest in pursuing alternative medicine as treatment. Dr. Weil completed his research and became the founder and director of The Arizona Center of Integrative Medicine which included the combination of integrated medicine and alternative medicine, which is well known today. Tom Wu (2009)'s "Principle of Natural Cures" found that cancer, diabetes and heart disease can be overcome through diet. Kiew (2013) confirmed that in his famous study on herbal substances and traditional healing treatment. Daeng (2009) said that the best doctor is yourself. Currently, the Thai people and population around the World turned their interest to traditional treatment or alternative medicine, because human nature wants the health treatment to be natural. It will be the best alternative if treatment does not require taking medicine or injections. The treatment of alternative medicine includes acupuncture, yoga, tai chi, meditation, herbal and mental and many more in relating to natural therapy.

## 2. LITERATURE REVIEW

Alternative medicine is a choice, or becomes a new option. If it is accepted and is commonly used, alternative medicine will finally become the main treatment medication, Pettigrew (2010). There is increase in study of alternative medicines in regards to mental conditions, fear, abnormality and depression. In studies of treatment, Kutch (2010) found that the population may help in treating themselves in abnormality of mental issues, which in turn saves the cost of treatment. The followings are variables that create the intention to use the alternative medicine:

a) Acceptance of benefits of alternative medicine As seen in study from Tom(2012), educating and acceptance are necessary to create a better understanding and can be easily used to create maximum benefit. In Bloom (1981)'s theory of knowledge and acceptance states that learning and accepting are critical and have benefits. Bloom (1959) said learning is a procedure which allows individual to change their behavior sometimes permanently, due to experiences or training and not from natural response.

b) Access Ease of Use in Alternative Medicine-Pineda Castilleja (2012) - educating, acceptance and evaluation helps development of simple learning process. This in turn helps acceptance of its reliability in development of human capability. This is consistent with the principles of learning theory of (Bloom, Madaus, & Hastings, 1981). Bloom(1959)'s said that educating causes changes in knowledge, understanding and thoughts (Cognitive Domain), causes changes in emotion, feelings, attitudes and values (Affective Domain), causes changes to expertise (Psychomotor Domain). Understanding will follow the education and thereafter will be practiced to its expertise.

c) Likewise in research of alternative medicine, we need to apply the concepts in Bloom's theory so we can understand that educating is beneficial and we can access with confidence to the service of alternative medicine. This is also valid for the concept of a model of technology adoption (Technological Acceptance Model : TAM), which is the theory enriched from TRA of Ajzen and Fishbein (1975), by Davis (1989). TAM is reliable prototype for predicting intentions to use technology to consumers (Argwal and Prasad, 1997). TAM used TRA as the basic concept for explaining the link between the variables in two structures which are Perceived Usefulness and Perceived Ease of Use, User's attitude, and Behavioral Intentions. Lopez-Sisniega (2009), studied the perception and usefulness of the state electronic service and its corporation, found that people are willing to use the service. Therefore, government leaders should increase accessibility to communication technology in order for the public to make researches and easily access to service of alternative medicine, rendering trust and perception to the public, in order to decide to use alternative medicine.

d) Attitudes Toward Using Alternative Medicine Weekes(2014) found that health care and self care are the most important treatments to reduce the symptom of fatigue. It helps promote health, quality of life and

also cost saving to organization Tait (2010). Pray for health of the elderly helps reduce chronic symptoms such as depression, and helps reduce cost of medication to the elderly. This is consistent with the Theory of Reasoned Action: TRA, which is created to predict a person's action based on his beliefs, attitudes, and intention Fishbein and Ajzen (1975, 1977). This theory believes that man is reasonable by nature, and uses information to benefit the individual in a systematic way, to achieve his decision in his option to use alternative medicine. If a person believes that which action brings positive result, he tends to have good attitude to such action. A positive attitude creates intention to perform such action.

e) Subjective Norm in Alternative Medicine Hitosugi (2009) did a research on the effect of trust on the emerging digital culture. The survey found knowledge and perception is influenced by digital culture, perception creates trust and subjective norm. This is consistent with the theory of action by reason (Fishbein & Ajzen, 1975) which states that subjective norm is the most important variable that builds trust and intention in adopting alternative medicine. The society around who use alternative medicine and past experience, is also essential to confirm the results of treatment in order to build confidence and open mind for the treatment. Therefore, the society around and subjective norm is influential to the intention to use alternative medicine, according to referenced group and past experience.

f) Beliefs in Alternative Medicine The study by Nguyen (2012) regarding consumer behavior towards foreign countries comparing to countries with branded products, shows that consumers believe and accept that cosmetic products with foreign brands are suitable for gifts and their intention to buy is based on perceived quality and cost of the branded cosmetic products. Blum (2012) studied trust on alternative medicine in a group of patients suffering from asthma. The study found that out of the patient group who has belief in 1. Religion, 2. personal characteristics 3. Subjective norm especially from family members, all influence the adoption of alternative medicine. The belief in better communication, the trust between physicians and patients, also stimulate trust and intention to adopt alternative medicine. This is consistent with the Theory of Planned Behavior: TPB of (Ajzen, 1991) a behavioral science theory, developed to enrich the Theory of Reasoned Action, to study human behavior. The Theory of Planned Behavior is similar to TRA on issue that belief about behavior and belief about reference group determines the intended action. However, the basic structure of the TPB states that a human action is guided by three beliefs; i.e., Behavioral Beliefs, Normative Beliefs and Control Beliefs. Each kind of belief affects various variables. Beliefs have different positive effect on consumers' intention to use alternative medicine Marshall (2012). Beliefs influence ethic of leadership, prototype, honesty, trustworthiness of leaders. Brown, Trevino and Harrison (2005) introduced the theory of leadership, ethical standards in consistent with this aspect of ethics, and demonstrate ethical leadership are associated with effective leadership. Kalshoven and Den Hartog (2009) - beliefs influence attitude in the choice of alternative medicine. Stewart (2012) studied the effect of e-commerce by "website name", logo, color, size and name, influencing "the intention to buy on line." E-Commerce creates more influence on "trust on perception" and "risk on perception." Murphy (2012) studied behaviors of a group of students on their exercise, fruit and vegetable consumption, smoking and non -smoking, by using Theory of Planned Behavior, and found that attitude can be changed a students are interested in the perceived benefit and obstacle perception on their belief in good health.

g) Trust in Alternative Medicine Boitor (2013) who studied the impact of a relationship of trust in the intention and behavior in adolescents, found that the care for understanding plays direct important role for parents to develop strong relationship and support to their children. Abdul Jabbar (2013) said leadership and trust determines behavior of efficient leaders. Reliability is important to promote the level of preparedness of staff rather than instill trust haphazardly. Fraser (2010) studied trust and breach of trust from members' point of view that it can be very destructive to relationships and systems. The solution is to develop trust in staff members, encourage participation, proper treatment which truly maintains an appropriate response to the real nature, willing to take part, apology, recognition and good leadership. All of these aspects are consistent to the Trust Theory. Lewicki and Bunker (1996) suggested that, in study of trust, we probably should separate trust in our concept, for example: trust between individuals or organizations. Luhman (1979) mentioned trust in various aspects and consists of two main components, i.e. interpersonal trust and system trust. Rotter (1971) provided the meaning of trust, that trust is an expectation for a person or a group of people who has reliability of words, action, in writing or wordings Golembiewski and McConkie (1975) defined trust as dependence, confidence in some situations. Trust reflects the expected positive results, however, trust implies some risks to the expected result. Trust also

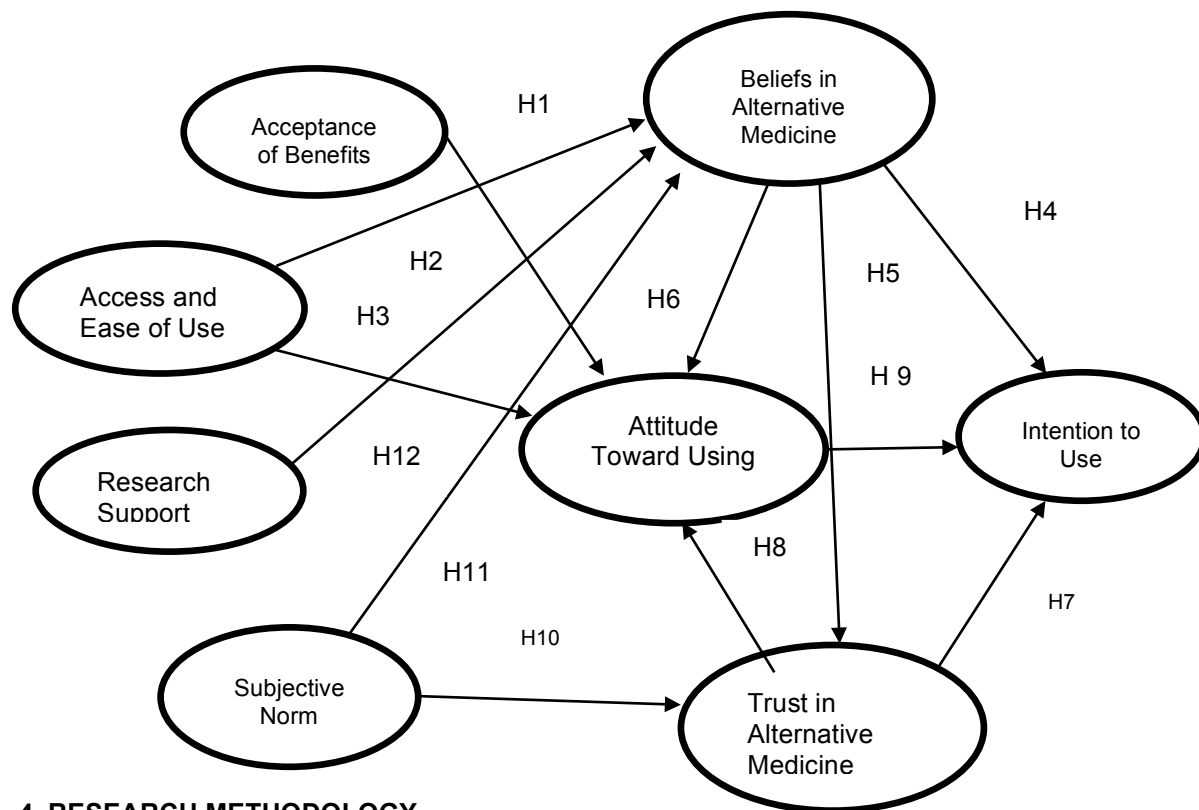
implies some degree of uncertainty about the outcome. Cook and Wall (1980) stated that trust adheres to the intent and capability of colleagues and administrators. Jones and George (1998) introduced concept and condition of trust and distrust. Trust and distrust is a single structural element of trust. They said that trust and distrust is the result of the interaction of the trustee's values, attitudes and emotion. Trust in an organization refers to the sense of confidence and support that a person has towards his organization. It is the belief that an organization must make a commitment and loyalty (Gilbert & Tang, 1998). Therefore, beliefs of different consumers influence the perception of the trust differently. Trust thus affects the intention to use alternative medicine.

h) Research Support of Alternative Medicine Research has impact on consumers' beliefs. Research, testing, and evaluation is done due for a variety of reasons until it can be accepted in society and public research process are made. Jones (2005) found confidence level among prostate cancer survivors who used alternative medicine. Prayer is very important in dealing with the stress associated with prostate cancer. The study of Sanchez (2010) reveals the impact of consumers' knowledge - whether consumers are willing to pay for food and genetically modified crops. According to TPB, which evaluated to determine the relative importance of the factors that influence purchasing behavior in TPB model of Ajzen, that was confirmed. The study indicates that more knowledge on food and food control reflects choices of food, willingness to pay more so as to avoid genetically modified food. Education and perception affects beliefs in the choice of food based on necessity and health, because nowadays people pay more attention to their consumption. Kang (2009) found that the exchange of knowledge and the relationship of the group bring better understanding, attitude and intention to take and give knowledge as well as strengthen relationship in the context of knowledge exchange. Khorkher (2008) reiterated that the treatment of alternative medicine is a part of lifestyle. This finding still lacks knowledge even though we see more research on the use of alternative medicine, but not sufficient to replace trust in conventional medicine. Trait (2010) studied reasons to adopt alternative medicine by praying by the elderly, especially in the treatment of chronic depression. The study reveals an increase in using alternative medicine and practice not only saving treatment cost but beneficial to physical and mental health. This brings good attitude and intention to use alternative medicine, consistent with the Theory of Reasoned Action by (Fishbein & Ajzen 1975) used in the study of factors that contribute to the promotion of alternative medicine to be prototype of future alternative medicine study. Therefore research support essentially influences belief in the choice of alternative medicine treatment.



### 3. CONCEPTUAL FRAMEWORK

FIGURE 1.



### 4. RESEARCH METHODOLOGY

This paper investigates the study to promote alternative medicine by using a sample group and questionnaire from 450 people. The group consists of those who have used alternative medicine service from two public hospitals in Thailand. It was used to test confirmatory analysis. The first set of questionnaire was designed for consumers of alternative medicine by using Likert scale level 5 to analyze the sample by SEM structure table 1 and table 2. Analysis of the antecedent of external endogenous variable and internal endogenous variable. This research is to promote alternative medicine.

#### 4.1. Sample

This study was conducted in two alternative medicine service under the public hospitals in Thailand. For the analysis of research work, the data has been collected using simple random sampling design from 450 patients of the above mentioned hospitals through a specifically designed questionnaire covering various attributes in our conceptual framework. Data collection took between 20<sup>th</sup> September and 20<sup>th</sup> November 2014. Factor Analysis and Multiple Regression were integrated analysis for determining the crucial factors.

#### 4.2. Measures and Survey Instrument

Survey instrument was designed regarding the study of Westland (2010) lower bounds on sample size in structural instruction modeling and resulting survey instrument consisted of questionnaire survey of the general public who use the services of alternative medicine in two government hospitals. These items were to provide the perception of level of Acceptance of Benefits, Access ease of use, Beliefs, Subjective norm, Trust, Intention, Attitude toward using and Research support in alternative medicine. Five point Likert scale is used as for strongly disagree and 5 for strongly agree. The questionnaire was pilot tested

on 40 patients. Since the reliability value (Cronbach's) of each item is greater than 0.7, the questionnaire was acceptable.

#### 4.3. Conceptual Model

Conceptual model of the study is proposed considering the previously developed model of Bloom Theory, Theory of Reasoned Action: TRA, Technological Acceptance Model: TAM, Theory of Planned Behavior : TpB) ,Trust Theory and Exchange Theory.

#### 5. RESULTS

Table 1: Analysis of the antecedent of external endogenous variable and internal endogenous variable. This research is to promote alternative medicine:

**TABLE1. ANTECEDENTS**

Variable	Variation		Antecedents						
Dependent variable	(R <sup>2</sup> )	(Effect)	ABA	AEA	BEL	TRU	ATT	NOR	RES
BEL	0.601	DE	N/A	0.006	N/A	N/A	N/A	0.510**	0.364**
		IE	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		TE	N/A	0.006	N/A	N/A	N/A	0.510	0.364
INT	0.705	DE	N/A	N/A	0.572**	0.616**	0.188	N/A	N/A
		IE	0.015	0.0189	N/A	N/A	N/A	0.441	0.028
		TE	0,015	0.0189	0.572	0.616	0.188	0.441	0.028
TRU	0.501	DE	N/A	N/A	0.542**	N/A	N/A	0.505**	N/A
		IE	N/A	0.000	N/A	N/A	N/A	N/A	0.187
		TE	N/A	0.000	0.542	N/A	N/A	0.505	0.187
ATT	0.645	DE	0.079	0.099	N/A	0.438**	N/A	N/A	N/A
		IE	N/A	N/A	N/A	N/A	N/A	0.383	0.197
		TE	0.079	0.099	N/A	0.438	N/A	0.383	0.197

Remark :DE=Direct effect, IE=Indirect effect, TE=Total effect, N/A=not applicable, Significant BEL=Beliefs, TRU=Trust, ATT=Attitude, INT=Intention, NOR=Norm, ABA= Acceptance of benefit, AEA= Access ease of use and Res=Research support :level, \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$

**TABLE 2. TEST OF HYPOTHESIS**

Hypothesis		Coefficients	t-stat.	Result
H1	Acceptance of benefit in affect attitudes towards alternative medicine services.	0.080	0.920	Un support
H2	Access ease of use to affect the belief in alternative medicine: services.	0.001	0.005	Un support
H3	Access ease of use to influence the attitude in alternative medicine: services.	0.098	0.981	Un support
H4	The beliefs affect intention to use of alternative medicine services	0.195	2.062*	Support
H5	The beliefs affect trust to use of alternative medicine services	0.514	3.713**	Support
H6	The beliefs affect attitudes to make use of alternative medicine.	0.317	3.106**	Support

H7	The trust affect intention to make use of alternative medicine	0.534	4.935**	Support
H8	The trust affect attitudes to make use of alternative medicine.	0.437	3.22**	Support
H9	The attitudes affect the intention to make use of alternative medicine	0.188	1.950	Un support
H10	Reference group and the circumstances around a positive effect on trust in the use of alternative medicine.	0.242	1.072	Un support
H11	Reference group and the surrounding communities as a result of the positive belief in alternative medicine services.	0.510	6.110**	Support
H12	The research Support of research affect the belief in alternative medicine services.	0.384	2.75**	Support

Significant level, \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$

## 6. DISCUSSION

The exhibits above show the following results in statistically significant level that beliefs affect intention. Beliefs affect trust, beliefs affect attitude, trust affects intention, and trust affects attitudes of reference group. Surrounding environment affects beliefs, and support of research affects belief. The following result shows statistically insignificant level the perceived benefits affect attitudes, easy accessibility affects beliefs, easy accessibility affects attitudes, attitude affects reference group intention and surrounding environment affects trust.

The hurdle that is not supported, effect the analysis that lead to promoting alternative medicine. The cause is due to not having enough knowledge as expected, barely benefiting the society publicly. Promotion of knowledge still lacks in topic of benefits, lack of research and support and documents in the treatment and lack of experience in exchange for knowledge including lack of accessibility in their service as it should. Furthermore, lack of good advertising, communication and public relations exist in regards to treatment. There is also lack of true knowledge in the service operation itself. Therefore creating attitudes in using the service of alternative medicine deserves further attention. Lastly, lack of confidence in using the service of alternative medicine and space to provide the service should be further investigated.

The state and public needs to support the budge to fund education to promote the significance of its benefits, accessibility, training of work force, health insurance to closely mirror benefits of conventional medicine. This would create a selection of treatment for people to choose from in exchange with knowledge from reference group and population. More importantly because first and experience can be use to promote and improve combination of alternative and conventional medicine today

In Thai society today, it is important to promote and support the rural population. This is to develop, learn and strengthen the society as a whole in the future. Most of Thailand consists of agricultural regions which fit into using those products to be beneficial and can promote the group to have the ability to prevent and treat themselves. At minimum, at the first aid level before health issues occurs and can use the knowledge to increase income for their family in the future.

## 7. FUTURE RESEARCH

1. Study should be done to construct awareness and promote the organization's ability to create new ideas to add to conventional medicine. This include ability to create a strong work force to promote self-treatment and care in basic first aid level because alternative medicine can heal certain health issues such as mental issue. Individuals in conventional medicine use more funds and take longer time than alternative medicine. In compensation, time can be sue to cure certain health issues without traditional medicine as in conventional medicine.

2 Study of accessibility by increasing mobility of services and up to date computer system to help management, public relations of new topics in regards to alternative medicine. Research and summary should be released publicly to increase awareness of media and mobility of unit for alternative medicine. In order to help consumer understands alternative medicine, information regarding the service should be available at different hospitals. This in turn will open up the mindset of society to be included with the decision of choosing the method of treatment.

3. Study should be done to research consumers who do not use the services provided by alternative medicine. This is to gain their perspective in regards to alternative medicine in order to help future studies in comparison to those who use the service.

## REFERENCE

- Abdul-Jabbar, M. 2013. "Distributed leadership and relational trust Bridging two frameworks to identify effective leadership behaviors and practices", University of Pennsylvania.
- Andrew Weil, M.D. 2000. "Spontaneous Healing", Amarinprintingpublic ltd, Bangkok, Thailand.
- Blum, J.R. 2012. "Use of complementary and alternative medicine for the treatment of asthma among allopathic patients", Rutgers The State University of New Jersey - New Brunswick and University of Medicine and Dentistry of New Jersey.
- Boitor, C. C. 2013. "The effects of relationship trust on prosocial intentions and behavior in adolescents Exploring the role of empathy and exploration behavior", Fuller Theological Seminary, School of Psychology.
- Cook, J., & Wall, T. 1980. "New work attitude measures of trust, organizational commitment and need non-fulfillment", *Journal of Occupational Psychology*, Vol. 53, pp. 39-52.
- Curreli, M. A. 2013. "Don't mask it, fix it". Distinguishing characteristics of complementary and alternative medicine patients with chronic pain and their pathways toward pain resolution", State University of New York at Stony Brook.
- Daeng, 2009. "The best doctor is yourself". International Andrewtainment public ltd. Bangkok, Thailand.
- Jones, R. A. 2005. "Use of complementary and alternative practices and products among africanamerican prostate cancer survivors", University of Virginia.
- Kang, K. W. 2009. "To obtain or to provide? antecedents of knowledge intentions in virtual knowledge communities": Self-efficacy, individual motivations, and social capital., University of Rhode Island.
- Khokher, P. A. 2008. "The meanings and management of complementary and alternative medicine (CAM) use in later life". McMaster University (Canada)
- Kiew, 2013. "Thai is famous of herbal and traditional healing". Sonsukhapabsuanpha, Bangkok, Thailand.
- Kutch, M. D. 2010. "Cost-effectiveness analysis of complementary and alternative medicine in treating mental health disorders", North Carolina State University.
- Fraser, W. L. 2010. "Trust violation and repair: An exploration of the views of work group members", Fielding Graduate University.
- Gilbert, J. A., & Tang, T. L. 1998. "An examination of organizational trust antecedents", *Public Personnel Management*, Vol, 27, no.3, pp. 321-338.
- Golembiewski, R. T., & McConkie, M. 1975. "The centrality of interpersonal trust in group processes. In C. L. Cooper (Ed.), *Theories of group processes* (2nd ed., pp. 131-170). New York: John Wiley & Sons.
- Hitosugi, C. I. 2009. "Effects of culture on online initial trust: Individual level analysis", University of Hawai'i at Manoa.
- Jones, G. R., & George, J. M. 1998. "The experience and evolution of trust: Implications for cooperation and teamwork", *The Academy of Management Review*, Vol. 23, no. 3, pp. 531-546.
- Lewicki, R. J., & Bunker, B. B. 1996. "Developing and maintaining trust in work relationships. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 114-139). Thousand Oaks, CA: Sage.

- Lopez-Sisniega, C. 2009. "Barriers to electronic government use as perceived by citizens at the municipal level in Mexico", University of Phoenix.
- Luhman, N. 1979. "Trust and power": Two works by Niklas Luhman. New York: John Wiley & Sons.
- Marshall, J. A. 2012. "Ethical leadership, prototypicality, integrity, trust, and leader effectiveness", Regent University.
- Murphy, T. C. 2012. "Physical activity and fruit and vegetable consumption habits in college student smokers, social smokers, and nonsmokers", Mississippi State University.
- Nguyen, A. N. 2012. "Consumer behavior toward foreign versus domestic branded cosmetics": A case study in Shenzhen, China., University of Phoenix.
- Pettigrew, S. C. 2010. "The association between self-reported mental health symptomology and complementary and alternative medicine use among U.S. women", Texas Woman's University.
- Pineda Castilleja, M. F. 2012. "Developing a process to create and validate an instrument assessing student attainment of competencies at an intercultural university in Mexico", Florida International University.
- Rotter, J. B. 1971. "Generalized expectancies for interpersonal trust". *American Psychologist*, Vol.26, no. 5, pp. 443-452.
- Sanchez, W. C. 2010. "The influence of consumer knowledge on willingness to pay for non-genetically modified foods in Taiwan": A structural equation model. Maharishi University of Management.
- Stewart, R. 2012. "The effect of a web seal's placement, color, and size, and the e-retailer's name on intention to purchase online as mediated by perceived trust and perceived risk", TUI University.
- Somchai, 2013. "Thai Tradition and Alternative medicine Health Profile, 2011-2013", Department for development of Thai Traditional Alternative Medicine., Bangkok Thailand.
- Tait, E. M. 2010. "Reasons for use of complementary and alternative medicine and prayer for health by older adults in the United States", The University of North Carolina at Charlotte.
- Weekes, J. D. 2014. "The relationship of self-care to burnout among social workers in health care settings", Walden University.
- Tian, X. (2011). "Factors influencing decision-making of acute care hospitals on adopting complementary and alternative medicine"., Oregon State University.
- Tom Wu, 2009. "Principle of Natural Cures". Namneebooks publication CO LTD., Bangkok Thailand.

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