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# **AN INSTITUTIONAL RESPONSE TO FRAUD, SCANDAL AND EMBARRASSMENT – THE DALLAS INDEPENDENT SCHOOL DISTRICT PROCUREMENT CARD CASE**

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## ***ABSTRACT***

*Procurement cards (Pcards) are widely used in school districts and can be a valuable tool in reducing accounts payable transactions; however, if used inappropriately or not monitored properly they can lead to fraud and abuse. This paper is about a Pcard scandal at the Dallas Independent School District (DISD) in which DISD employees used Pcards to make millions of dollars of purchases which violated district purchasing policy and state procurement laws. Investigators, including the FBI, were called in to scrutinize the purchases. In response to the findings of fraud and abuse, the Pcard system was terminated and a new department, the Office of Professional Responsibility (OPR), was created. The OPR was charged with the responsibility to prevent and detect fraud, waste, and abuse in the DISD.*

## **INTRODUCTION**

The Dallas Independent School District (DISD) is the 12<sup>th</sup> largest in the nation, with an enrollment of more than 157,000 students and more than 20,000 employees. The district budget for the 2009-10 year is in excess of \$1.48 billion. In the last 25 years the district has had a number of scandals, both financial and non-financial in nature. However, the recent procurement credit card (Pcard) scandal proved to be so embarrassing for the district that it led to significant changes in the way the district upholds stewardship of public funds.

On July 2, 2006, the Dallas Morning News began a series of reports on the abuse of the Pcard system. Reporters examined a database containing 150,080 district credit card purchases made between January 2004 and March 2006. While most of the \$41.5 million in purchases appeared to be proper, it was obvious that there were significant problems in the operation of the credit card system. The newspaper reported that millions of dollars in purchases violated district purchasing policy and state procurement laws. Also, a large

number of purchases appeared to have no connection to the educational function of the school district – educating children. Amongst the transactions were 7,088 purchases totaling \$1,220,747 at restaurants; 1,581 purchases totaling \$600,391 at clothing, cosmetic and jewelry stores; 1,765 purchases totaling \$479,295 on trinkets and rewards; and 1,045 purchases totaling \$245,520 on amusements such as theme parks, movies and roller skating.

The district began the Pcard program in 1999 with a small pilot program to test its viability. After about six months the district felt the pilot program was successful and rolled it out into a district-wide program. The intention behind the program was valid. Its aim was to reduce the costs and time involved in processing small, frequent purchases of supplies for the district. The Quality Control Office (QCO) was responsible for managing and administering the program. This office was directed by Sherri Brokaw who had an accounting degree and 18 years experience prior to joining DISD. For the first three years there were only two people involved in managing and administering the Pcard program. Later, three people performed this function. One of these employees was initially a teacher with the district, but in 1999 was hired as a “Pcard specialist.” Another started as a temporary employee and later became a permanent employee in the Quality Control Office. A fourth employee, who was employed after the departure of one of the three above, was hired as a “Quality Control Specialist” but had no noted background in the field.

Pcard use became widespread, with almost 1,400 employees using over 3,100 cards. Pcards became the preferred way to make purchases. Five years after the program started, employees made 66,400 Pcard purchases a year, totaling nearly \$20 million. This was nearly five times the number using traditional purchase orders. Employees were instructed in the Procurement Card Manual that Pcards were “for district purchases only.” Card holders were required to sign Procurement Cardholder Agreement Forms which stated “I understand that under no circumstances will I use the procurement card to make personal purchases, either for others or myself.” Employees were required by law to keep their receipts for purchases. Supervisors were supposed to review each purchase and sign off on monthly summary reports.

The Quality Control Office had a number of responsibilities with regard to the Pcard program – to act as a liaison to the bank, performing the monthly accounting tasks necessary to reconcile Pcard purchases to the bank and the district’s general ledger, to provide customer service relating to the Pcard, to receive and process Pcard applications, to train employees on the proper use of the Pcard, and to process budget transfer requests whereby employees requested increases to their cards’ spending limits. The QCO received hundreds of these requests each month. Sherri Brokaw said they were overwhelmed by the work load and only looked for improper Pcard purchases after all their other duties were completed. While each employee received a monthly statement for their individual Pcard, they were not required to pay the bill. The district received a bill for all Pcard purchases and paid it with one check of approximately \$1.5 million monthly.

Early in the Pcard program the district’s auditors reported that program oversight was lax. In their opinion it was not feasible to monitor even a representative sample of Pcard

purchases with the current staffing level. The auditors suggested strengthening the district's controls over the program with oversight going to the purchasing department. They also suggested that receipts be examined using the same methodology used by auditors. However, few of the auditors' suggestions were implemented.

The operation of the Pcard program was controlled by a Procurement Card Manual. The 2003 version of this manual contained a number of rules and regulations, including:

1. A requirement for each Pcard holder to maintain an original receipt for each transaction and a procurement card log.
2. A requirement to maintain Pcard security with only the named card holder using the card.
3. A \$1,000 purchase limit for non-price agreement vendors. Such purchases were limited to a single card transaction of \$1,000 and the splitting of purchases to bypass the \$1,000 limit was prohibited. Purchases from price agreement vendors were allowed up to \$24,999.
4. Gift card purchases were allowed in nominal denominations but receipts were required for both the purchase of the card and the redemption of the card.
5. Notification that Pcard purchases should not be charged state sales tax and given a copy of DISD's tax exempt certificate.
6. A requirement to identify and register controllable assets. This applied to most equipment purchased at a cost of \$500 or more.
7. A requirement that each Pcard holder reconcile his/her Pcard statement to his/her Pcard log on a monthly basis and send his/her approval of the charges to the Quality Control Office.
8. A listing of categories of non-permissible purchases. Personal or fraudulent purchases were forbidden in addition to a number of specified categories. The forbidden categories included lodging, travel, training and registration fees, entertainment, all alcoholic beverages, pagers, and cellular phones.

In June 2005, a revised and updated Pcard manual was issued. It was very similar to the 2003 manual, but was a little more specific regarding some requirements. The noticeable difference was that it completely prohibited the purchase of gift cards for any reason.

DISD had appointed a new superintendent, Dr. Michael Hinojosa, on April 28, 2005. He had been in his position a little more than a year when the abuse of the Pcard system became public knowledge. On July 11, 2006, Dr. Hinojosa terminated the Pcard program. In response to the growing scandal, on July 18, 2006, the district appointed outside investigators to scrutinize and report on the operation of the system. The lead investigator, now a private lawyer, had in the past been responsible for prosecuting district employees on fraud charges. Faced with looking at over 250,000 transactions totaling more than \$71 million from a 42 month period, the investigators used five criteria to focus their investigation to find the worst abusers. They looked at:

1. The top 100 spenders
2. High volume of gift card purchases
3. High volume of department store purchases

4. Pcard holders who were subject to parallel investigation
5. Pcard holders who were identified by other employees.

The final report took 10 months to prepare and was presented to the trustees of DISD on May 10, 2007. The report noted that many Pcard users maintained good records and appeared to use the Pcard responsibly. However, the investigation found widespread and systemic problems in the Pcard system with regard to:

1. The structure/administration of the Pcard program and
2. The transactions of individual Pcard holders.

With regard to the first problem, the breakdowns in the structure/administration of the Pcard program, the investigation found that there were substantial failures at each level, namely:

1. Failure to monitor/reconcile one's own Pcard purchases.
2. Breakdown in Pcard monitoring by direct supervisors.
3. Lack of supervision of Pcard purchases by the Quality Control Office.
4. Failure to heed warning signs regarding the supervision of Pcard transactions.

With regard to the second problem, the systemic issues in the Pcard transactions of Pcard holders, the investigation found a number of serious failures, namely:

1. Failure to maintain original receipts for Pcard transactions.
2. Failure to maintain itemized receipts for Pcard transactions.
3. Failure to maintain gift card documentation.
4. Systemic issues with the payment of sales tax on Pcard transactions.
5. Systemic violations of the \$1,000 limit on Pcard purchases with a) single transactions in excess of \$1,000 and b) structured transactions in excess of \$1,000.
6. The breach of Pcard security with persons other than the card holder using the card.
7. Pcard expenditures which may violate federal funding guidelines with respect to a) food expenditures which may not meet Texas Education Agency (TEA) guidelines and b) the purchase of "incentives" for students, staff, parents, teachers, and volunteers.

The final report listed a number of internal controls which the DISD could implement to enhance its ability to efficiently track and utilize its funds. These were:

1. Sales tax audit and training.
2. Federal funds audit and training on TEA regulations for federal expenditures.
3. Implementation of district-wide training on bidding regulations.
4. Implementation of guidelines to control food expenditures.
5. Implementation of guidelines to regulate "incentive" expenditures.
6. A controllable asset audit.

The outside investigation cost \$1 million and only focused on 200 employees for reasons of cost and time. Following the investigation, 86 employees were disciplined. Fifteen termination letters were sent out, although two recipients were retained, but demoted. A total of 48 employees were put on probation, 10 demoted and 9 had their contracts shortened, with the possibility of nonrenewal. Two area superintendents and 38 principals were recommended for discipline along with school office managers, teachers, central office officials, and a counselor. Subsequently, the district reported about 15 current and former employees with the “most egregious” spending to the IRS for using their old district credit cards to gain “unauthorized income.”

Due to the illegal activity revealed regarding employee use of Pcards, the FBI became involved. Two secretaries were convicted and imprisoned due to their use of their Pcard for personal spending. Gloria Orapello pled guilty to felony theft. Because she helped in the investigation her sentence was reduced to one year in federal prison. She said she misused her Pcard when she realized that no one was watching her. She turned some property over to DISD and was ordered to pay \$100,000 in restitution. Marsha Ollison was convicted on three counts of theft from an organization receiving federal funds and sentenced to 18 months in federal prison and ordered to pay \$64,000 in restitution. Her explanation for her actions was that “it just got easy.” Sherri Brokaw was not retained by the DISD.

The Pcard scandal only strengthened public criticism of the DISD and how it managed its funds. In response to this, Dr. Hinojosa created a new department, the Office of Professional Responsibility (OPR), with a responsibility to prevent fraud, waste, and abuse in the DISD. This new department would have a public face with information about it prominently displayed on the DISD website. The intention was to make this new effort to prevent fraud very visible and accessible to all. The OPR states its mission as being:

Our mission is to promote integrity in the Dallas Independent School District by conducting ethics training, internal investigations, and districtwide operational reviews, in order to detect and prevent fraud, waste, and abuse plus identifying opportunities for improving efficiency and effectiveness throughout the district.

In forming the new department, the DISD sought to overcome what many had viewed as significant weaknesses in the monitoring of the Pcard system. One was the issue of competence. There was a clear intent to hire staff for the new department who had significant experience in the area of fraud prevention and ethics investigations. The second was the size of the workforce. Both internal and external auditors had stated that it was not possible to monitor the Pcard program at the previous staffing level. The creation of the new department and the hiring of a large enough staff to properly carry out its function was recognition by the DISD that it costs money to adequately enforce internal controls, but that this is still cheaper than bearing the cost of widespread fraud.

Currently the department has a staff of ten. Initially the objective was to have at least twelve. However, the department was a victim of cutbacks, like all other departments, in

the reduction in force cuts necessitated by the district's budget problems in 2008. Under the position guidelines, the Executive Director is required to have knowledge and experience in the areas of:

- Accounting and auditing
- Investigative techniques
- Criminal law, civil law, rules of evidence and expert witness matters
- Management of a professional staff.

The Executive Director, Donald R. Smith, Jr. has more than 25 years experience as a criminal investigator with the IRS's Criminal Investigation Division as well as relevant experience in the private sector. He is a CPA and a CFE. Other staff members have equally impressive backgrounds, including:

- The Director of Investigations with 27 years in law enforcement comprising 22 years as a federal agent investigating white collar crimes, financial fraud and money laundering, and 5 years as a police investigator. He is also a CFE.
- An employee with more than 30 years of federal investigative experience with 15 years as a special agent with the Air Force Office of Special Investigations and 16 years with the DOD Office of the Inspector General investigating public corruption and major procurement fraud.
- An employee with 26 years as an IRS special agent.
- An inspector who was an Air Intelligence Officer in the Navy then a FBI special agent and had IRS Criminal Investigation Division experience working cases involving tax evasion, bankruptcy fraud, bank fraud and money laundering followed by time as an enforcement advisor working overseas for the US Government. He is also a CFE.
- An inspector who worked 24 years with the IRS with 4 years as an auditor and 20 years as a Special Agent in the Criminal Investigation Division. He is also a CFE.
- An investigator who is an accountant with school district experience. He is also a CFE.

To reflect the increased focus on fraud prevention and the hiring of experienced professionals in this field, the district is paying market based salaries. The top salary is \$137,917 followed by \$122,004 and \$97,072 with four others above \$80,000.

The office is subdivided into three groups, namely:

- Office of Investigations
- Office of Compliance
- Office of Ethics and Integrity.

The Executive Director has wide-ranging authority in fulfilling the department's mission. This includes the right to investigate any employee of the district and to have full, free and unrestricted access to all district records. He is able to take testimony and compel the production of any material relevant to an investigation and temporarily assign, with the

Superintendent's approval, any district staff member with special skills to achieve the mission of the department. To back up and enforce the work of the department, he is authorized to share any information relating to possible criminal acts with all appropriate law enforcement agencies.

One of the complaints leveled at the new system is that the Executive Director reports directly to the Superintendent. While this guarantees the director access to the top administrator in the district, there has been concern expressed that this gives the superintendent too much power, and that a better system would be having the director report directly to the school board, just as the head of internal auditing in a corporation would report directly to the board of directors. Some of those who argue the new system gives the superintendent too much power use the following case as proof. The district has been sued for retaliation by a former middle school principal who claims that Dr. Hinojosa abused his power by using the OPR to try and protect himself against rumors relating to his personal life. The principal was accused of starting a rumor that the superintendent was having an inappropriate relationship with a teacher. The principal was investigated by the OPR which filed a 64 page report which concluded that the rumor was false and that she had lied when she said she had only told two people about the rumor. The OPR held that she had told four district employees and she was demoted to assistant principal of an elementary school.

The OPR main webpage contains details of how to contact them in a number of different ways. They display their physical address, their telephone number and their mailing address. They provide a web link to a page allowing for a "Confidential and Anonymous Report of Ethics Concerns Regarding the Dallas Independent School District." They also display the 800 number for the 24-hour Dallas ISD Fraud Hotline which is bilingual and confidential. There is a link for frequently asked questions, one for more information about the mission of the OPR, and another on the principles of public service. A further feature, and an important one, is a link detailing whistleblower protections for those contacting the office.

The publications link provides a copy of the DISD Handbook of Ethics and Integrity, a brochure entitled *Doing the Right Thing* and links to all OPR newsletters. The newsletter is sent out regularly and contains notes from the Executive Director, information on ethics generally, details of DISD policy, and statistics of the workload of the OPR.

The creation of the OPR was a forceful response to the Pcard scandal. The DISD has committed the resources and funding to effectively combat fraud within the district. As with any enforcement activity, there will always be criticism regarding particular techniques and investigations. However, there is no doubt that the response of the district is genuine and stands a much better chance of succeeding in its objective of responsibly controlling and spending the public monies with which it is entrusted.

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# **IDENTITY THEFT: A CHALLENGE (AND AN OPPORTUNITY) FOR THE ACCOUNTING PROFESSION**

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## ***ABSTRACT***

*Identity theft is the fastest growing crime in America. It affects the lives of countless Americans. CPAs are in a unique position of being able to help companies and individuals detect incidences of identity theft and to protect themselves against further losses.*

*The American Institute of Certified Public Accountants (AICPA) has developed a series of assurance and advisory services. These services are focused on building trust and confidence in businesses and are a natural extension of the CPA's auditing and information technology consulting functions. One of the services is focused on privacy of personal information. In addition, the AICPA, in conjunction with the Canadian Institute of Chartered Accounting, has developed Generally Accepted Privacy Principles (GAPP.) These principles give best practices for privacy and related services to help organizations manage their privacy risk issues.*

*This research defines identity theft and the associated risks and identity exposures. Next, it addresses how this crime presents a challenge and an opportunity to the accounting profession and how companies and individuals can safeguard, detect and defend against identity theft.*

# **JOB COSTING AND CLASSIFICATION SCHEMES IN THE SYSTEMS COURSE: ROLLING BEAR INC., A HIERARCHICAL DATA STRUCTURE CASE**

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## ***ABSTRACT***

*This paper presents a case and related materials which can be used to demonstrate specific manufacturing processes and managerial accounting topics in the accounting information systems course. The case requires students to code chart of accounts, create jobs and costing types, and maintain job costing tables for the conversion cycle of a hypothetical business Rolling Bear, Inc. (RBI). RBI repairs and manufactures custom-designed bearings for original equipment manufacturers (OEM) and after-market manufacturing entities. This paper includes commonly used input and bill-of-materials forms, brief transactions covering business processes of procurement and conversion cycles, and coding hierarchy to integrate costing of component parts, assembled or finished goods, and job order costing as well. The examples applied in this case and the costing reports generated help students experience the hierarchical and relational structure of accounting data sets and how costing information flows in the conversion cycle. In addition to providing the case and solution, the paper has sample forms and screen shots which can be used to illustrate data gathering, data flow during manufacturing phases, and other information processes described in the case.*

# **JUSTIFYING AN ERP SYSTEM IN A GRADUATE-LEVEL ACCOUNTING/MIS CURRICULUM**

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## ***ABSTRACT***

*Integrating ERP systems into the business curriculum exposes business students to up-to-date business tools and business process. Faculty members benefit from enrichment of teaching and increased opportunities for professional development and research. Universities benefit from increased demand for graduates and opportunities to collaborate with the business community.*

*Historically, the costs of obtaining and maintaining ERP systems have limited their use in university curricula. Recent developments in information-related industries including cloud computing and alliance programs allow universities to benefit from developmental work done by others at affordable costs.*

*This paper discusses the current status of ERP software, including alliance programs, and provides a framework for evaluating the costs and benefits of using ERP software within a university curriculum. It lays out a schedule of events to follow and a set of resources which must be provided. Data for this paper comes from a university which is trying to justify the acquisition and integration of ERP software into its curricula.*

## **INTRODUCTION AND BACKGROUND**

Enterprise Resource Planning systems streamline business processes of an organization across various functional areas such as product design, product development, marketing, sales, accounting, finance, human resources, and customer support. ERP systems not only integrate functional areas of an organization, but they also connect business partners with the organization. These systems are inherently complex. Implementing and managing ERP systems require both the knowledge of cross-functional business processes as well as computing technology.

While ERP systems have traditionally been found in the domain of manufacturing industries, many universities have adopted this technology to meet growing needs for integrated planning. Universities have found that they need to have an integrated view of the different departments and different academic and financial initiatives. ERP systems consolidate common data handling and reporting functions and offer the ability to add modules to get additional desired functionality.

As academic departments became more autonomous, synergies among the different departments became less clear and administrators could not see the effect of their decisions having impact on other units within the organizations. The same problems existed within the manufacturing sector, which was initially concerned with the planning and subsequent consumption of materials. Both of these situations persisted in different forms, but needed a common solution framework. Material Requirements Planning was the start in the direction of digitizing and consolidating the planning and executing the consumption of raw material with the aim to maintain optimum inventory levels. With some additional functionality, the extended version came to be known as Materials Resource Planning, which further emphasized the importance of advanced planning and transparency in business processes. Then in 1990, Gartner introduced the concept of enterprise wide integration of business processes in accordance to the established standards and gave birth to Enterprise Resource Planning.

During the 90s and the early 2000s, most of the ERP software systems were purchased by companies that had sales in excess of \$1 billion dollars worldwide. This was because the costs of implementation were staggering. Estimates of total implementation costs ranged from \$50 million to \$500 million. Even with these large expenditures, there was no guarantee that a company would get the system to work satisfactorily within its business. Eventually, as the sales of ERP software saturated the large company market, many software vendors began to see the huge market potential in the mid size and small company market (Hayes and McGilsky, 2007).

As enterprise systems began adopting the graphical user interfaces, a paradigm shift started taking place beginning with the hosting platform to the system administrator's interface. Many small companies and some universities were agile enough to spot the opportunity and adapt to the evolving trend. Companies like Great Plains, which was later acquired by Microsoft, enabled this transition by making the product run on Windows NT, the mid-tier platform of choice (Hayes and McGilsky, 2007).

Since ERP systems are being used by a variety of organizations, students need to be prepared to use these systems and business faculty must be responsible for assuring that information systems and the accounting students will be prepared to work with ERP systems. Students should know about how the business policies and procedures are converted into business logic to be implemented at the logic layer of ERP systems. Students should also know what information is then available from ERP systems and how to use that information to make decisions that are aligned with the organizational goals and foreseeable market conditions.

Businesses schools have a wide scope of applications and processes throughout their graduate-level curricula. Functional academic units, such as Accounting, Finance, Marketing and Management Information Systems have different needs for instructional support software. Many of these needs could be met by the functionality within ERP systems if the faculty teaching in these areas developed sufficient skill and experience in using an ERP system.

Arguments in favor of bringing ERP systems into the business curriculum point to the benefits of exposing business students to up-to-date business tools and a business process orientation, permitting learning about enterprise systems theory (i.e. management and benefits of enterprise-wide software systems), and the increased employability of students who have gained some familiarity with enterprise systems. Faculty members benefit from enrichment of teaching and increased opportunities for professional development and research. Universities benefit from increased demand for graduates and opportunities to collaborate with the business community (Hayes and McGilsky, 2007).

## **PROCESS TO BE USED**

In an attempt to bring the benefits of ERP systems to the School of Business in a small university, a project was started using the steps recommended in the book, Principles of Information Systems (Stair and Reynolds, 2009). The procedure that they recommend consists of six phases as shown in Figure 1. This procedure was expanded to include thirty specific tasks shown below.

### **Investigation Phase**

- 1 Initial Investigation
- 2 Conduct needs analysis
- 3 Determine Scope & Objectives

### **Analysis Phase**

- 4 Determine Budget Constraints
- 5 Determine Hardware Constraints
- 6 Determine Software Constraints
- 7 Determine Org. Constraints
- 8 Review specifications
- 9 Write Initial Requirements Doc.

### **Logical Design Phase**

- 10 Review Requirements Document
- 11 Define functional Alternatives
- 12 Screen Alternatives
- 13 Evaluate Final Alternatives

### **Detailed Design Phase**

- 14 Develop User Materials
- 15 Develop Hardware Environment
- 16 Develop Software Environment
- 17 Develop Data environment
- 18 Develop User Interfaces
- 19 Implement Software Package

### **Implementation and Testing Phase**

20. Implement All System Components
21. Unit Testing
22. Initial Documentation
23. Training
24. Secondary Documentation

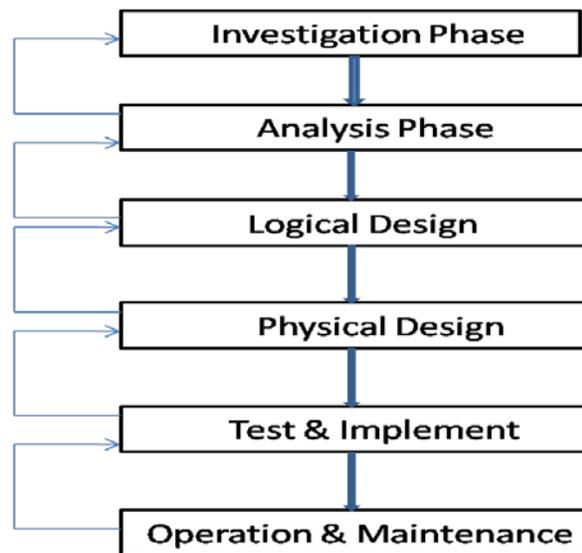


Figure 1. Logical approach to system design (Stair and Reynolds, 2009)

25. Integration Test
26. Full Installation
27. Test case Studies
28. Analyze Test Results
- Operations, Monitoring and Maintenance Phase**
29. Operate and Monitor
30. Maintain components and system

## **OBJECTIVES**

As a result of Phase 1, the initial investigation, the following objectives were set:

1. AN ERP SYSTEM SHOULD BE ACQUIRED TO PROVIDE PRE-GENERATED EXAMPLES FOR THE FOLLOWING COURSES:
  - Basic Principles of Information Systems (graduate level)
  - Accounting Information Systems (graduate level)
2. AN ERP SYSTEM SHOULD BE ACQUIRED TO PROVIDE SPECIFIC TEACHING MATERIALS FOR THE FOLLOWING COURSES:
  - Capstone course in Management (graduate level)
  - International Accounting (graduate level)
  - International Finance (graduate level)
  - Marketing Systems (graduate level)
  - System Analysis & Design (graduate level)
3. An ERP system should be used as the primary tool in a course dealing specifically with integrated systems and enterprise processes. This would be a graduate level course cross listed between Accounting and Management Information Systems.
4. Use of ERP systems at the undergraduate level will be determined based on experience gained using ERP systems at the graduate level.

## **CONSTRAINTS**

The following constraints were determined during the Systems Analysis phase of the project:

### Budget Constraints

1. The first year (developmental) budget for School of Business must be less than \$20,000
2. Continuing (annual) budgets for School of Business must be less than \$10,000

### Hardware Constraints

1. System must run on University servers under UHCL domain ... OR
2. System must run on School of Business servers under BUS domain ... OR
3. System must run on remote servers as Web Service or S.a.a.S.

### Software Constraints

1. Software must be compatible with server on which it runs
2. Additional software components to be run in BUS domain must be .NET compliant

### Organizational Constraints

1. Project must not require more than .25 FTE of additional School of Business staff
2. Project must not require more than .25 FTE of additional School of Business faculty

### **ALTERNATIVES**

The following alternatives were determined during the Systems Analysis phase of the project:

1. SAP ERP package online through SAP University Alliance and University Competency Centers program
2. Microsoft Dynamics GP installed through current licensing agreement with university
3. Microsoft Dynamics GP online through current licensing agreement with university
4. PeopleSoft ERP modules installed through current licensing agreement with university

### **EVALUATIONS**

The evaluation mechanism chosen for this project is a 1x100 weighted scoring system. In this scoring system, each scoring factor is evaluated for each alternative on a 0 to 100 scale. The weights which are assigned to each scoring factor are normalized such that the total of all weights is 1.00. In order to properly evaluate each alternative, factors must be chosen so that they contribute in a consistent way to the weighted score. User satisfaction is a variable which can be scored on a 0 to 100 scale, where a score of 0 means total dissatisfaction and a score of 100 means total (100%) satisfaction. Cost, however, is a variable which must be adjusted before it can be combined with other measures. If a maximum allowable cost can be determined, the percent savings for any alternative could be used as a positive factor which could be combined with other positive factors in a weighted scoring system. If there was a 10,000 upper bound on costs for a project, an alternative which cost \$8,000 would represent a 20% cost savings compared to the maximum allowable expenditure. Thus a score of 20 would be appropriate on a 0 to 100 scale. An alternative which cost only \$4,000 would save 60% and thus would have a score of 60 on a 0 to 100 scale.

The specific factors used to evaluate alternatives in this project were:

<u>Factor</u>	<u>Weight</u>
Annual Cost (% saved)	.40
Development Costs (% saved)	.25
Market Position of Product	.15
Ease of use by students	.10
Ease of use by faculty & staff	.10

Using these factors, the weighted scores of the first two alternatives were:

Alternative 1 SAP: University Alliance - Online			
	weight	score	weighted score
Utilization Cost (**)	0.40	40	16
Development Cost (*)	0.25	35	8.75
market position of product	0.15	70	10.5
ease of use by students	0.10	60	6
ease of use by fac / staff	0.10	60	6
	1.00		<b>47.25</b>

Figure 2 Evaluation of Alternative 1

Alternative 2 Microsoft Dynamics GP -- Installed			
	weight	score	weighted score
Utilization Cost (**)	0.40	20	8
Development Cost (*)	0.25	20	5
market position of product	0.15	15	2.25
ease of use by students	0.10	80	8
ease of use by fac / staff	0.10	80	8
	1.00		<b>31.25</b>

Figure 3 Evaluation of Alternative 2

The weighted scores of alternative 3 and alternative 4 were:

Alternative 3 Microsoft Dynamics GP Online			
	weight	score	weighted score
Utilization Cost (**)	0.40	35	14
Development Cost (*)	0.25	20	5
market position of product	0.15	15	2.25
ease of use by students	0.10	70	7
ease of use by fac / staff	0.10	70	7
	1.00		<b>35.25</b>

Figure 4 Evaluation of Alternative 3

Alternative 4 PeopleSoft ERP Components -- Installed			
	weight	score	weighted score
Utilization Cost (**)	0.40	10	4
Development Cost (*)	0.25	10	2.5
market position of product	0.15	5	0.75
ease of use by students	0.10	40	4
ease of use by fac / staff	0.10	40	4
	1.00		<b>15.25</b>

Figure 5 Evaluation of Alternative 4

- \* score is based on % below maximum software acquisition and installation budget
- \*\* score is based on % below maximum annual operating budget (including license fees)

It is clear from examining the weighted scores above, that alternative 1, utilizing the SAP ERP package online through SAP University Alliance and University Competency Centers program, has the highest weighted score, causing alternative 1 to be selected for the completion of this project.

**PROJECT SCHEDULE**

Figure 6, shown below, shows a schedule of the tasks which comprise the project. The individual tasks are shown along the left vertical axis. The horizontal axis shows time elapsed from the beginning of the project in weeks. The solid horizontal bars show the expected duration of each of the tasks.

Solid red bars show tasks which are critical to the timely completion of the project. Any delay in any of these critical tasks would delay the completion of the project. Unfilled blue bars show tasks which are not critical to the timely completion of the project. These tasks could be delayed without delaying the completion of the project. It might be noted

that for this project, development of course materials, documentation and training are not expected to be critical tasks. Since this alternative anticipates utilizing the SAP University Alliance for course materials and training materials, other tasks become critical. For other alternatives, development of course materials, documentation and training are expected to be critical tasks.

The dashed vertical line which appears at about 23 weeks into the project designates the current state of the project. After alternatives were screened and evaluated, it was announced that university funds for new initiatives were frozen. This financial setback brought this project to a halt. It is hoped that better financial conditions will allow this project to resume in the near future.

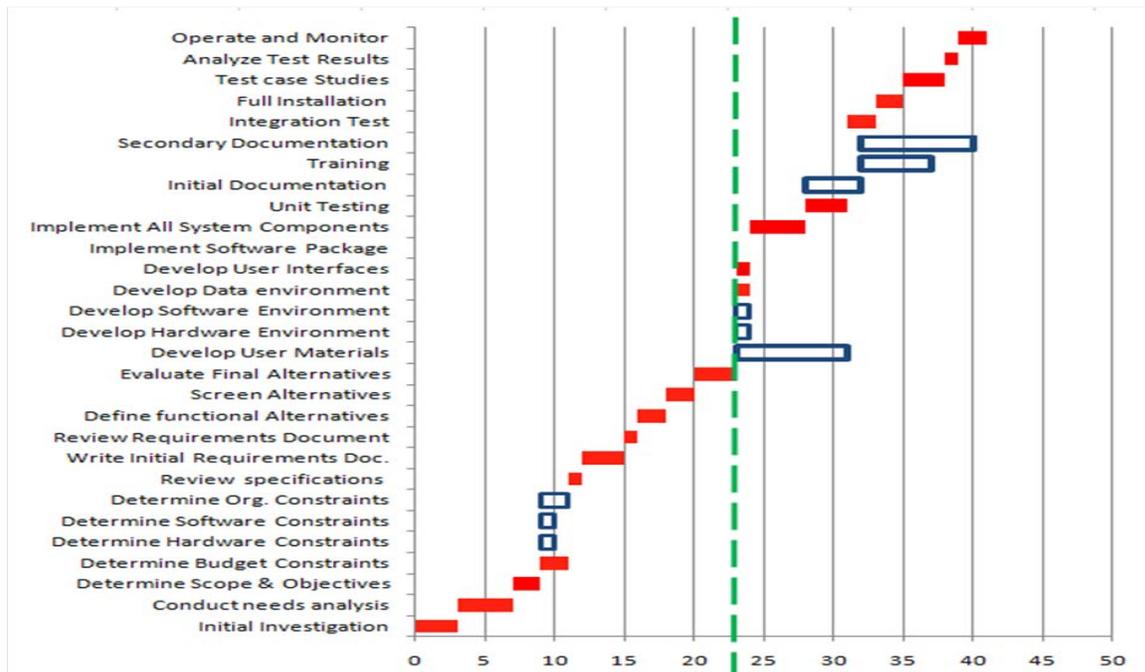


Figure 6 Schedule of tasks for this project

## CONCLUSIONS

This paper provides a framework for integrating ERP system technology into an Accounting/MIS curriculum. Included in that framework are methods for screening alternatives and a procedure for evaluating feasible alternatives to select a single preferred course of action. Unfortunately, this project was suspended due to financial restrictions, so progress was stopped before the detailed design phase could begin.

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# **THE IMPACT OF THE SPECIAL DIVIDEND ANNOUNCEMENT ON THE STOCK RETURN: THE CASE OF MALAYSIA**

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## ***ABSTRACT***

*The method of distributing excess cash among investors is determined by dividend policies taken by each company. Usually, there are three alternatives of the excess cash distribution; offering special dividend, initiating or increasing regular dividend and repurchase share. Special dividend that is a one-time payment rather than the permanent increase in cash payment conveys the good news that although the current financial situation of the firm might not be sustainable, but distribution of the special dividend reduces the free cash flow problems. Furthermore, distribution excess cash via a special dividend would suggest that managers believe that the current share price of company is not undervalued. This study investigates the impact of the special dividend announcement on the stock returns of the Malaysian stock market. Using the standard event study methodology, the findings indicate that, the special dividend announcement signals good news to investors in the overall market and when the analysis expanded to the sector level. That causes the stock returns to react positively and immediately when the news is announced. These findings are in line with the findings of previous studies carried out in US and Australia.*

## **INTRODUCTION**

The amount of dividend that a firm should pay to its stockholders is usually determined through dividend policy of the firm. There are three alternatives available to managers for distributing excess cash to shareholders. A firm could choose to initiate or increase dividends, repurchase shares, or pay a special dividend. The selection of the each of the above alternative will depend on expected future cash flows and the firm's prior share price performance. Jagannathan, et al. (2000) finds that dividends are initiated or increased following "permanent" increases in cash flows. If the current cash flow level does not appear sustainable, a firm is unlikely to initiate or increase dividend levels because of the negative consequences that would occur if it were subsequently forced to decrease or suspend the dividend. Stephens and Weisbach (1999) and Jagannathan et al. (2000) find that firms are more likely to repurchase stock following a period of poor stock performance. Therefore, a firm would be reluctant to use share repurchase as a means of distributing excess cash following a significant run-up in the share price. As

such, firms choose special dividends as a means of distributing cash in a setting characterized by temporary increases in cash flows and prior positive share price performance.

Special dividends have salient characteristics that make them a better choice in distributing the excess cash in comparison to the regular dividend and cash repurchase. The decision to issue a special dividend reduces the free cash flow problems by the potential managers who might squander excess cash either on executive perks or negative net present value projects (Jensen, 1986). Therefore, the use of a special dividend conveys the positive news and thus increases the stock price. Under the signaling theory (Miller and Rock, 1985), the choice to pay a special dividend rather than initiating regular dividends or announcing a permanent dividend increase, may indicate that although investors can earn superior returns, the current earnings performance level is unsustainable. In addition, announcement of the special dividend rather than increase in the regular dividend conveys positive implication to the investors that these companies would reinvest the excess cash of the company for future expansion rather than increasing the dividend payment. As a result announcement of the special dividend conveys good news in comparison of the bad news inherent in the regular dividend increase. Furthermore, the decision to distribute excess cash to shareholders via a special dividend rather than through share repurchase would suggest that managers believe the current share price is not undervalued.

The studies on the impact of the special dividend announcements generally investigate the relationship between the special dividend announcement and the stock return which is also supported by Dividend Irrelevance Theory, The Cash Flow Signaling Hypothesis, The Dividend Clientele Hypothesis and The Free Cash flow hypothesis (Lang and Litzenberger, 1989; Howe et al., 1992; Gombola and Liu, 1999). However, these studies are mostly limited to developed capital markets such as the US and Australia in which the relationship between the special dividend announcement and the stock return is investigated (Brickley, 1983; Jayaraman and Shastri, 1988; Ikenberry et al., 1995; Gombola and Liu, 1999; DeAngelo et al., 2000; and Crutchley et al., 2003 in the US and Balachandran and Nguyen, 2004; and Balachandran et al., 2006; in the Australia).

However, considering the fact that different countries have different business policies, which are also affected by different factors such as the culture and the investors' behavior of that country and the fact that Malaysia is a multicultural country, consequently, findings of the previous studies might not be applicable in Malaysia. In addition, previous studies in Malaysia did not evaluate the impact of the special dividend announcement on the stock return, this study is conducted to examine the impact of the special dividend announcement as one of the methods of dividend policy in cash distribution, on the overall stock market return and in different sectors in the market by observing the response of the investors in the market and from different sectors.

The studies related to dividends in Malaysia considered did not focus on the announcement effect of the specially designated dividends, but regular dividends. Annuar and Shamsher (1993) investigated the relationship between dividends and earnings

behavior of firms of listed in the KLSE for the period 1975 to 1989. They used simple model and Linter's model to establish the relationship between dividends and earnings. Their findings indicate that the dividend decisions of the firms partly depends on the current earnings and past dividends and firms have long-term target dividend that is based upon their earnings ability.

Mansor and Subramaniam (1992) examine the effect of the dividend and earnings announcements on share price in the KLSE for the period 1970 to 1984 using weekly data and the market model to determine the abnormal returns from the announcements. They find that when firms increase or decrease dividends; there is a significant increase or decrease in stock prices. They also find that Malaysian investors react independently to dividends and earnings.

Nur- Adiana et al. (2002) examine the effect of the dividend announcements on stock prices. Their sample constitutes 120 observations covering the period from 1996 to 2002. They use market adjusted return to estimate abnormal returns. The result is that dividend increases lead to positive abnormal returns; however, dividend decreases do not lead to decrease in stock prices. In addition, their evidence appears to support for cash flow signaling and free cash flow hypotheses. They find significant increase in stock prices after dividend increase announcement.

## **DATA AND METHODOLOGY**

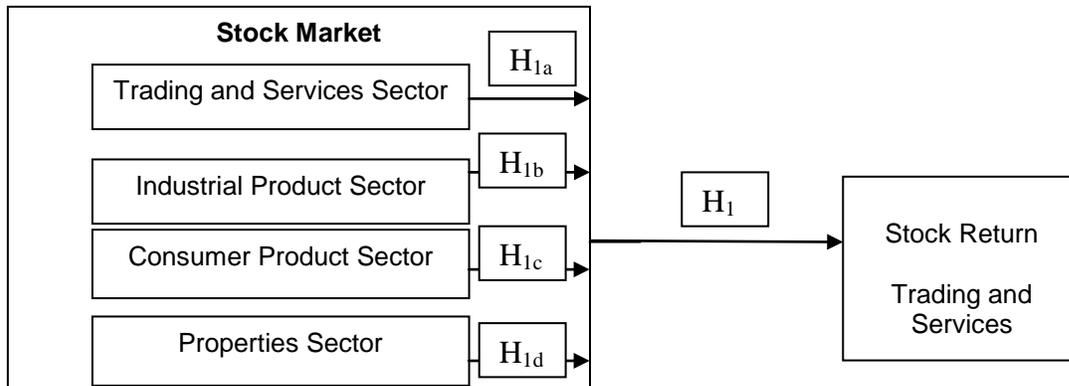
At first, our data include ninety-three companies that had announced the special dividend during 2003 to 2006. These companies were selected from the KLSE listed companies. The selected companies were arranged into ten sectors (mesdaq, trading and services, industrial products, consumer products, plantation, finance, properties, construction, technology and mining). To prevent the influence of other announcements of the special dividend during these four years, the companies that had more than one announcement of the special dividend either in one year or in different years, were excluded. Next, the sectors that had less than four companies were also excluded, for a better sampling result and preventing of being bias. Finally, because there was not enough information for some companies, overall, our sample narrowed to fifty-one companies in six sectors (trading and services, industrial products, consumer products, plantation, finance, properties).

The sampled data used in this study are gathered from two sources. First, all listed companies in the KLSE that have announced the special dividend during 2003 to 2006 were selected from the Star Online Business. The second source of the information Metastock Data used to collect the closing stock price of the companies employed in this study. The same data were collected for the Kuala Lumpur Composite Index (KLCI). Daily intervals have been adopted in this study, as a shorter measurement interval is better at detecting information effects during the event window period (Brown and Warner, 1980, 1985; Dyckman et al., 1984). Daily intervals will be able to capture any market reactions that may occur before and after the announcement date. The date of the announcement of the special dividend for each company was put as the era to gather the daily closing stock price for the period of two years before and one month after the announcement date by the company. The daily closing stock price of the KLCI index was

collected for each company for the same period that the daily closing stock prices gathered for that company.

The research is a historical review using the event study that analyzes the statistical significant reaction in financial markets to past occurrences of the special dividend announcement, which is hypothesized to affect the stock return. To examine this objective the following framework is developed.

Figure1.1: Research Model



At first, the event window for this study considered -30 to +30 days around the announcement date of the special dividend but after leveling the days for all the companies included in our sample -17 and +18 working days left. This period can capture the price effects of the announcement day by examining the pre-event and post-event returns. The estimation period for this study include two years (roughly 734 days) daily information until thirty days before (-30) the announcement date which resulted in 468 working days after the leveling done for all the companies.

The daily stock price and daily Composite Index prices were used to calculate the daily return for each company and for the index based on the following formula.

$$R_i = \frac{P_t - P_{t-1}}{P_{t-1}} \quad (1)$$

Where:

$R_i$  = Stock Return

$P_t$  = Stock Price at Time  $t$

$P_{t-1}$  = Stock Price at Time  $t - 1$

The same formula is used to calculate the market return as well.

Simple regression is used to calculate Alpha and Beta:

$$\alpha + \beta_i R_m + \varepsilon \quad (2)$$

Where

$R_i$  = Return on the Stock  $i$

$R_m$  = Return on the Market Portfolio

Abnormal return is calculated for each firm for all the days. The abnormal return for firm  $i$  is then determined by subtracting the expected return,  $E(R_i)$ , from the actual return,

$R_i$  (each company's daily return that is that had been calculated from each company's daily price).

$$AR = \varepsilon = R_i - E(R_i) \quad (3)$$

However, the prerequisite for  $\varepsilon$  to be considered as abnormal return is that  $R_i$  should be stationary overtime. This feature of all return should be tested, using Augmented Dickey Fuller, ADF, and Phillips-Perron, PP, test.

The return generating model was a market model to benchmark the abnormal return. Market model developed by Sharpe (1964) and have been used for event studies in developing countries (Annuar, 1991; Cheng, 2000; Huson, 2000). In addition, Klein and Rosenfeld (1987) in the examining of the influence of market conditions on event study residuals indicate that the market model is not affected by bull or bear market period.

The abnormal return for all the firms on each day of the event and estimation window is then aggregated and averaged. The result is the Average Abnormal Return (AAR).

Given N for the number of the companies, the AAR for one working day for stock i is:

$$AAR = 1/N \sum_{i=1}^N AR_i \quad (4)$$

The standard deviation of the AAR of the estimated window calculated as well to test and analyze the AAR of the event window using t-statistic based on the assumption that the Average Abnormal Returns are significantly different from zero:

$$t - \text{statistic} = AAR/\sigma \quad (5)$$

The average abnormal returns are then aggregated over the event window to give the Cumulative abnormal returns (CAR). For any interval in the event window:

$$CAR(t_1, t_2) = \sum_{t_1}^{t_2} AAR \quad (6)$$

The same as for AAR, the standard deviation of the CAR of the estimated window calculated as well to test and analyze the CAR of the event window using t-statistic based on the assumption that the Cumulative Average Abnormal Returns are significantly different from zero:

$$t - \text{statistic} = CAR/\sigma \quad (7)$$

For a better observation of the changing return, the holding period return also calculated from -10 to +1, for each day in comparison to day 1, based on the following formula:

$$\text{HoldingPeriodReturn}(\text{Day}x, 1) = \text{DayOneReturn} - \text{Day}x\text{return} \quad (8)$$

Besides, the same calculation of AAR, AAR t-statistics, CAR and CAR t-statistics are done separately, for the four sectors that include more companies (Trading Services, industrial products, consumer products and properties) to determine how the announcement of the special dividend in the companies belonging to these sectors in the industry contribute to the overall reaction of the stock return during the special dividend announcement. The results for AAR and CAR in the event window can be used to draw one over all graphs and each sector's graph to help the interpretation and analyzing of the findings. While AAR graphs present everyday average abnormal return for the event period, CAR provides explanation for behavior of the stock return in this period.

## RESULTS

### Index Average Abnormal Return, Cumulative Abnormal Return and the T-statistics

The results for ADF and PP tests supported that all company's returns are level stationary or all returns are I (0). Table 3.1 reports the overall market AAR and CAR and the t-statistics for the event period, from day -17 to the day +18 (Day zero is the announcement

day). The AAR for the announcement date is 0.001300 with the t-statistics of 0.501164 which is insignificant. The reason is that in the Malaysian market, the new information may release after five PM and this affects the stock prices the next morning consequently the t-statistics for day +1 increases to 10.874618 which are highly significant at 0.05 level. The positive and significant t-statistic indicates that investors perceive such news as good news.

The significant AARs t-statistics, before the special dividend announcement date might be due to the information leakage. Negative sign indicates the bad news for investors as it reports the negative abnormal return and positive sign indicates the good news representing positive abnormal return. Another reason for significant values of the AAR t-statistics for days before and days after the announcement date is due to daily information based in this study that can catch the noise of the market. The actual market behavior is more obvious in the significant values of the CAR t-statistics that start from day +1 and continue till day +11.

Table 3.1: Overall Average Abnormal Return, Cumulative Abnormal Return and the t-statistics for the event period

<b>Event Period</b>	<b>AAR</b>	<b>AAR t-statistics</b>	<b>CAR</b>	<b>CAR t-statistics</b>
<b>-17</b>	0.006671	2.572512*	0.006671	0.52195022
<b>-15</b>	-0.004305	-1.660289	0.002365	0.18508571
<b>-15</b>	0.006674	2.573702*	0.009039	0.707277373
<b>-14</b>	0.000219	0.084476	0.009258	0.724417161
<b>-13</b>	-0.002296	-0.885486	0.006962	0.54475628
<b>-12</b>	-0.002119	-0.817385	0.004843	0.378912754
<b>-11</b>	-0.001953	-0.753252	0.002889	0.226081566
<b>-10</b>	0.001266	0.488111	0.004155	0.325116949
<b>-9</b>	-0.007299	-2.815071*	-0.003144	-0.246047309
<b>-8</b>	0.001257	0.484659	-0.001888	-0.147712359
<b>-7</b>	0.005997	2.312577*	0.004109	0.321498354
<b>-6</b>	0.001264	0.487305	0.005372	0.420370234
<b>-5</b>	-0.000631	-0.243307	0.004741	0.371004365
<b>-4</b>	-0.000403	-0.155292	0.004339	0.339496362
<b>-3</b>	-0.000557	-0.214763	0.003782	0.295921944
<b>-2</b>	0.001528	0.589301	0.005310	0.415488309
<b>-1</b>	0.001332	0.513526	0.006642	0.519680245
<b>0</b>	0.001300	0.501164	0.007941	0.621363965
<b>1</b>	0.028198	10.874618*	0.036139	2.827771156*
<b>2</b>	-0.000166	-0.063891	0.035973	2.814807881*
<b>3</b>	-0.003472	-1.339092	0.032501	2.543112557*
<b>4</b>	-0.001136	-0.438268	0.031365	2.454190064*

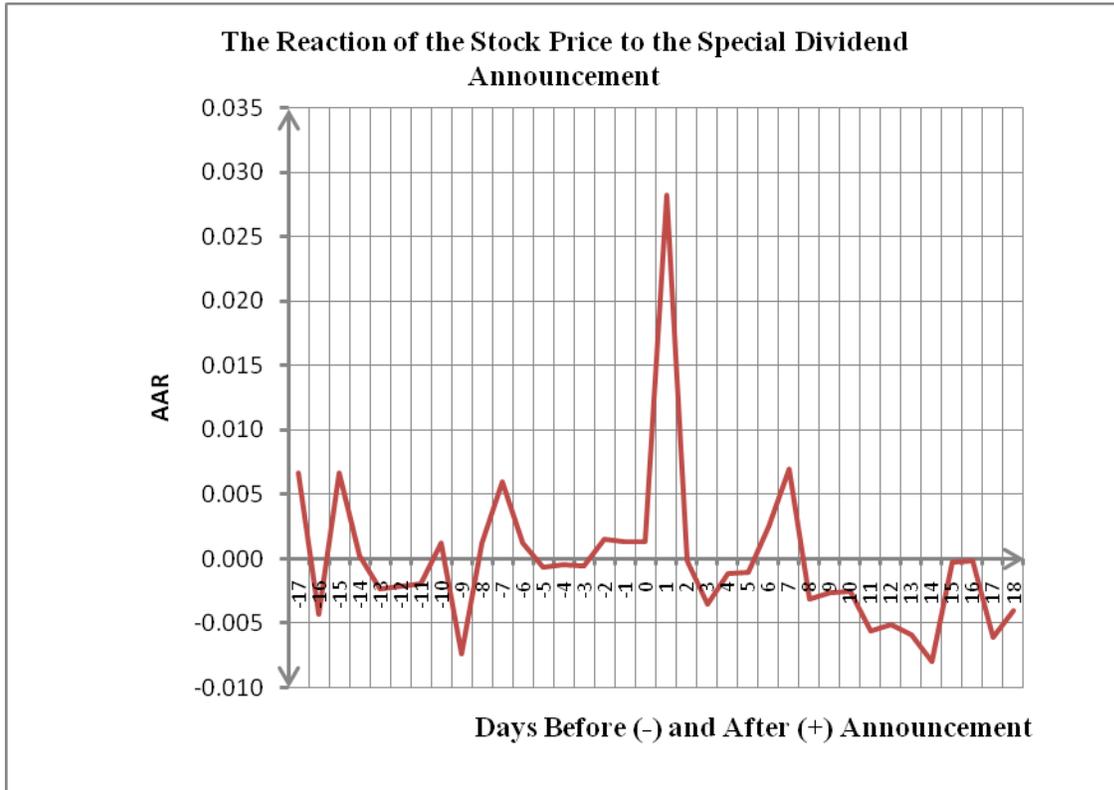
<b>5</b>	-0.000998	-0.384926	0.030366	2.376090421*
<b>6</b>	0.002491	0.960797	0.032858	2.571031383*
<b>7</b>	0.007004	2.701190*	0.039862	3.119089671*
<b>8</b>	-0.003070	-1.183805	0.036792	2.878901371*
<b>9</b>	-0.002648	-1.021127	0.034145	2.671719722*
<b>10</b>	-0.002461	-0.949158	0.031683	2.479140095*
<b>11</b>	-0.005583	-2.153156*	0.026100	2.0422752*
<b>12</b>	-0.005023	-1.937022*	0.021078	1.649262781
<b>13</b>	-0.005888	-2.270687*	0.015190	1.188551319
<b>14</b>	-0.007932	-3.058856*	0.007258	0.567924345
<b>15</b>	-0.000268	-0.103236	0.006990	0.546978192
<b>16</b>	-0.000110	-0.042506	0.006880	0.538353854
<b>17</b>	-0.006018	-2.320717*	0.000863	0.067491546
<b>18</b>	-0.004032	-1.554929	-0.003169	-0.247996034

\*Significant at 0.05 level

Critical value of t-statistics at 5% level of significant equals to 1.96.

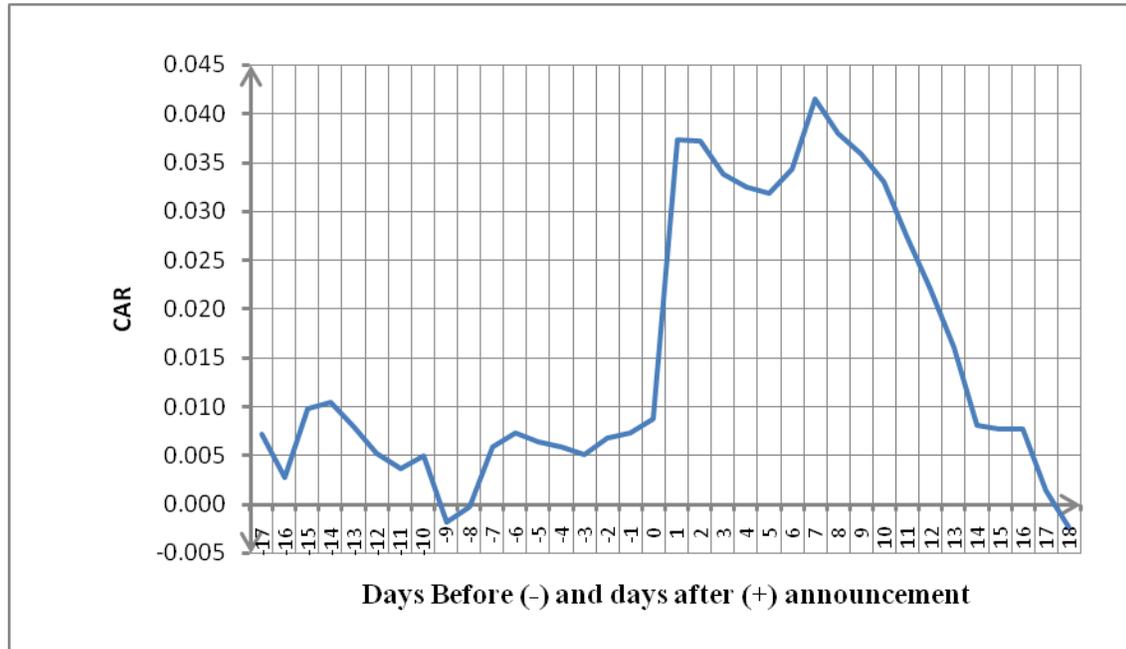
The impact of the special dividend announcement on the stock return is also observable in the AAR and CAR graph. Figure 3.1 provides daily information of the average abnormal return of the industry. One observation is that although there are fluctuations in everyday average abnormal returns, the AAR rises suddenly from 0.001300 to 0.028198, from day zero to day +1 meaning that the impact of the special dividend announcement on the stock return delayed to one day after announcement day. This is because in the Malaysian market, the new information may release after five PM, and this affects the stock prices the next morning. After day +1 the AAR declines sharply and even takes a negative amount in day +2 after the announcement. This is due to the Malaysian investors' behavior of selling-off the stock at the time of unexpected increase in the stock price regarding the announcement of the special dividend. Normally when many investors began to sell their stocks the price will fall rapidly. Afterwards fluctuations continue until day +18.

Figure 3.1: Overall market reaction in the form of average abnormal return to the special dividend announcement



While the AAR graph shows the daily information of the market average abnormal return around the announcement date, the CAR graph (Graph 3.2) demonstrates the market behavior and trends regarding this announcement. The CAR has been falling and rising before until day -9. After this day, generally there is an increasing trend except for day -3 in which the AAR declines slightly in comparison to the previous day. The increasing trend in the CAR might be due to the leakage of the information before the announcement. There is a sudden increase from day 0 to day +1, indicating the significant announcement effect (CAR t-statistics 2.827771156). After day +1, there is a moderate fall in the CAR graph that might be due to profit taking based on the over reaction. The fall continues for four days and after a gradual rise from day +5 to day +7, the market gradually goes back to its normal trend. This might be due to the revaluation of the investors' after the announcement of the special dividend.

Figure 3.2: Overall market reaction in the form of cumulative abnormal return to the special dividend announcement



### Holding Period Return

Cumulative Abnormal Return for day zero is 0.007941 and for one day after the announcement day is 0.036139, which results in the one-day holding return of about 2.8 percent. Daily holding period return for the day -17 to day +1 are presented in table 3.2.

Table 3.2: Daily holding period return for the day -17 to day +1

	CAR		Holding Period Return
-17	0.006671	(-17,1)	0.029468
-16	0.002365	(-16,1)	0.033774
-15	0.009039	(-15,1)	0.027100
-14	0.009258	(-14,1)	0.026881
-13	0.006962	(-13,1)	0.029177
-12	0.004843	(-12,1)	0.031296
-11	0.002889	(-11,1)	0.033250
-10	0.004155	(-10,1)	0.031984
-9	-0.003144	(-9,1)	0.039283
-8	-0.001888	(-8,1)	0.038027
-7	0.004109	(-7,1)	0.032030
-6	0.005372	(-6,1)	0.030767
-5	0.004741	(-5,1)	0.031398
-4	0.004339	(-4,1)	0.031800
-3	0.003782	(-3,1)	0.032357

-2	0.005310	(-2,1)	0.030829
-1	0.006642	(-1,1)	0.029497
0	0.007941	(0,1)	0.028198
1	0.036139		

### **Average Abnormal Return, Cumulative Abnormal Return and the T-Statistics In The Sector Level**

The impact of the special dividend announcement is also investigated in four sectors. The same as for the whole market, for industrial products, consumer products and properties AAR t-statistics is not significant in the announcement day (day zero) but for day +1. The AAR for the three mentioned sectors for day +1 is 0.0197, 0.0921 and 0.0488 with highly significant t-statistics of 4.3650, 12.7985, and 6.8079 respectively. These results support  $H_{1b}$ ,  $H_{1c}$  and  $H_{1d}$ , in the other word, there is a positive and significant impact of the special dividend announcement on these three sectors. However, for trading and service sector the AAR is 0.0053 with the insignificant t-statistics of 1.1770. The overall results for this sector do not support the hypothesis  $H_{1a}$  and thus it is rejected indicating that there is no impact of the special dividend announcements on the stock return. Maybe the reason is that the trading sector and services sector are merged and analyzed together and the results of a new announcement on the stock return cannot be detected. The tables and figures for each sector is represented in the in appendix.

### **CONCLUSION**

This paper aims to investigate the impact of the special dividend announcement on the stock return in the overall market and in the sector level. Using the standard event study methodology, the findings indicate that, the special dividend announcement signals good news to investors in the overall market and sector level, that causes the stock returns to react positively and immediately when the news is announced. Considering the fact that different countries have different business policies, which are also affected by different factors such as the culture, stage of capital market efficiency and the investors' behavior of that country, thus findings of the previous studies might not be applicable in Malaysia as it is a multi cultural country, and also because the previous studies did not evaluate the impact of the special dividend announcement in Malaysia, the finding of this study would be helpful for investors for a better investment decision making.

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## APPENDICES

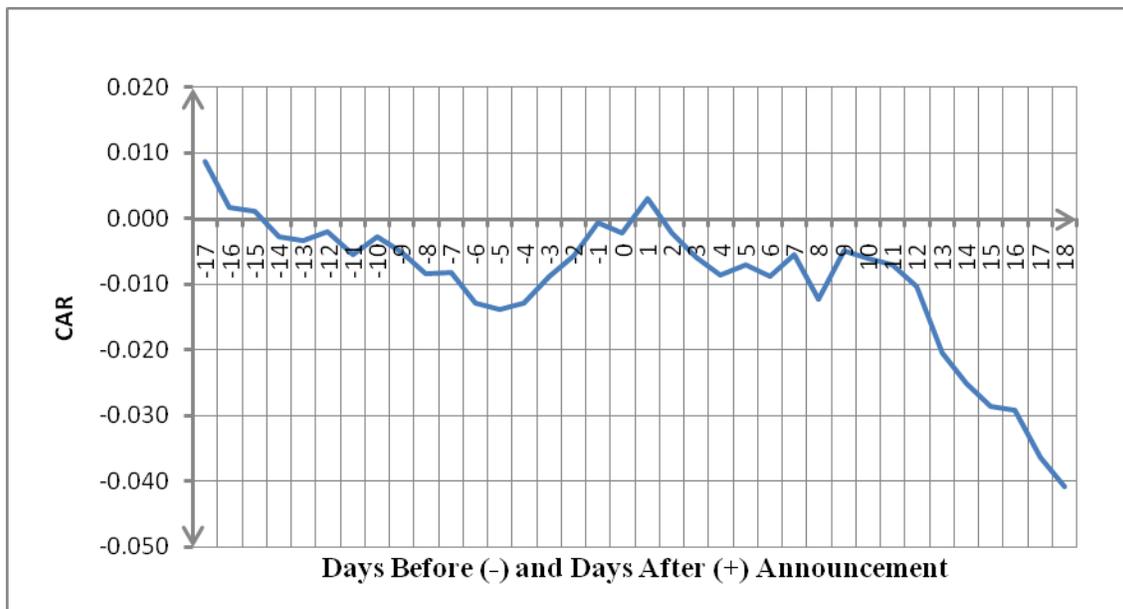
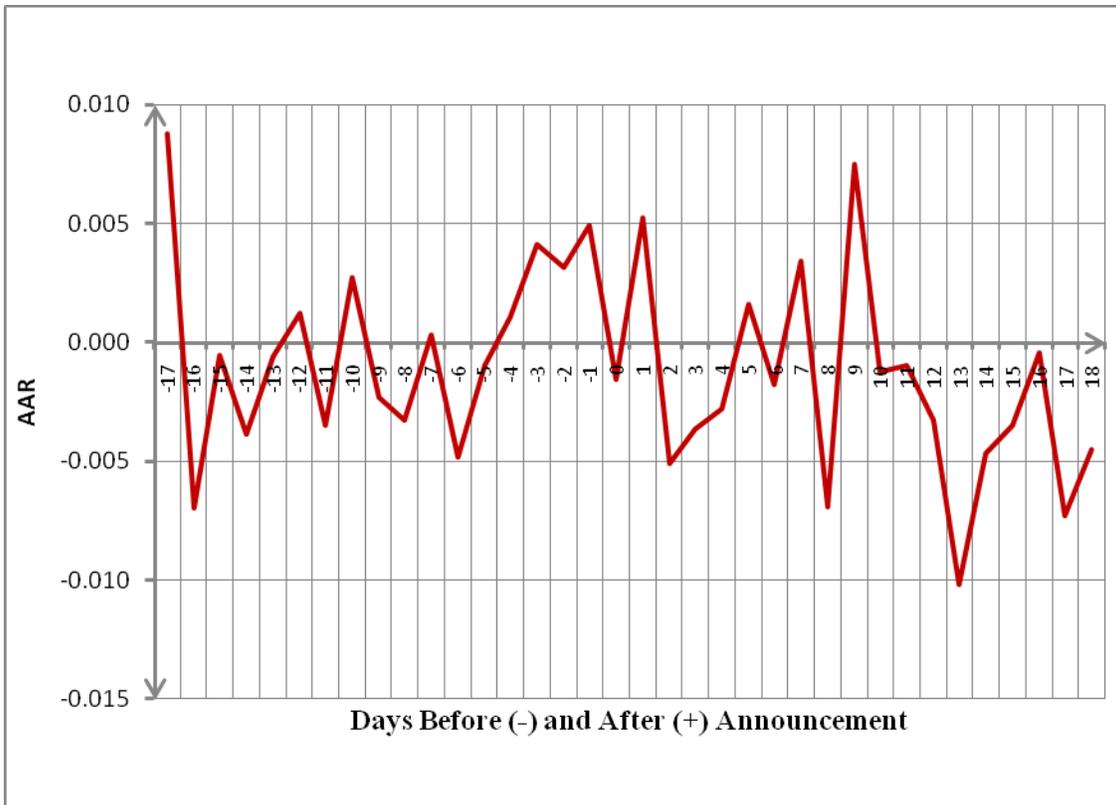
### Average Abnormal Return, Cumulative Abnormal Return and the t-statistics For

#### Trading and Services sector

Event Period	AAR	AAR t-statistics	CAR	CAR t-statistics
-17	0.0088	1.9624*	0.0088	0.5618
-16	-0.0070	-1.5627	0.0018	0.1144
-15	-0.0005	-0.1181	0.0013	0.0806
-14	-0.0039	-0.8671	-0.0026	-0.1676
-13	-0.0006	-0.1367	-0.0032	-0.2068
-12	0.0012	0.2716	-0.0020	-0.1290
-11	-0.0035	-0.7775	-0.0055	-0.3516
-10	0.0027	0.6060	-0.0028	-0.1781
-9	-0.0023	-0.5103	-0.0051	-0.3242
-8	-0.0033	-0.7371	-0.0084	-0.5352
-7	0.0003	0.0674	-0.0081	-0.5159
-6	-0.0048	-1.0797	-0.0129	-0.8250
-5	-0.0010	-0.2153	-0.0139	-0.8867
-4	0.0011	0.2346	-0.0128	-0.8195
-3	0.0041	0.9190	-0.0087	-0.5564
-2	0.0031	0.7001	-0.0056	-0.3560
-1	0.0049	1.0962	-0.0007	-0.0421
0	-0.0016	-0.3491	-0.0022	-0.1421
1	0.0053	1.1770	0.0030	0.1949
2	-0.0051	-1.1440	-0.0021	-0.1326
3	-0.0037	-0.8191	-0.0057	-0.3671
4	-0.0028	-0.6291	-0.0086	-0.5472
5	0.0016	0.3537	-0.0070	-0.4460
6	-0.0018	-0.4001	-0.0088	-0.5605
7	0.0034	0.7649	-0.0053	-0.3415
8	-0.0069	-1.5440	-0.0123	-0.7836
9	0.0075	1.6729	-0.0048	-0.3046
10	-0.0013	-0.2815	-0.0060	-0.3852
11	-0.0010	-0.2178	-0.0070	-0.4476
12	-0.0033	-0.7313	-0.0103	-0.6569
13	-0.0102	-2.2763*	-0.0205	-1.3086
14	-0.0047	-1.0472	-0.0252	-1.6084
15	-0.0035	-0.7834	-0.0287	-1.8327
16	-0.0005	-0.1017	-0.0291	-1.8618
17	-0.0073	-1.6265	-0.0364	-2.3274*
18	-0.0045	-1.0049	-0.0409	-2.6152*

\*Significant at 0.05 level

Critical value of t-statistics at 5% level of significant equals to 1.96.

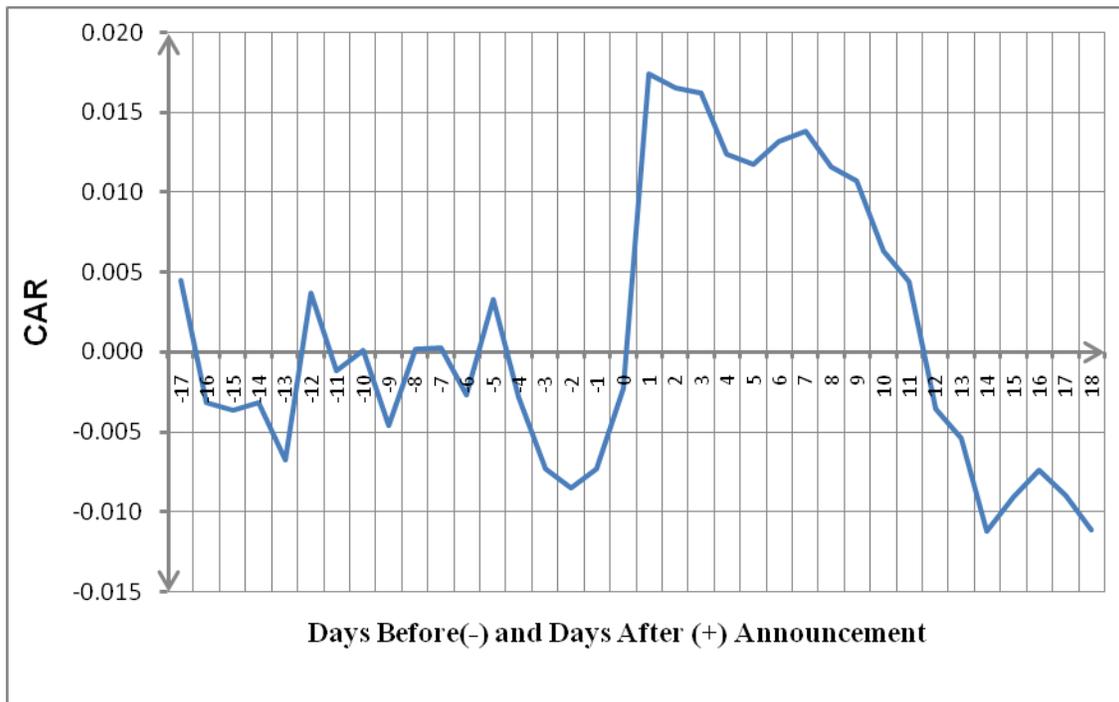
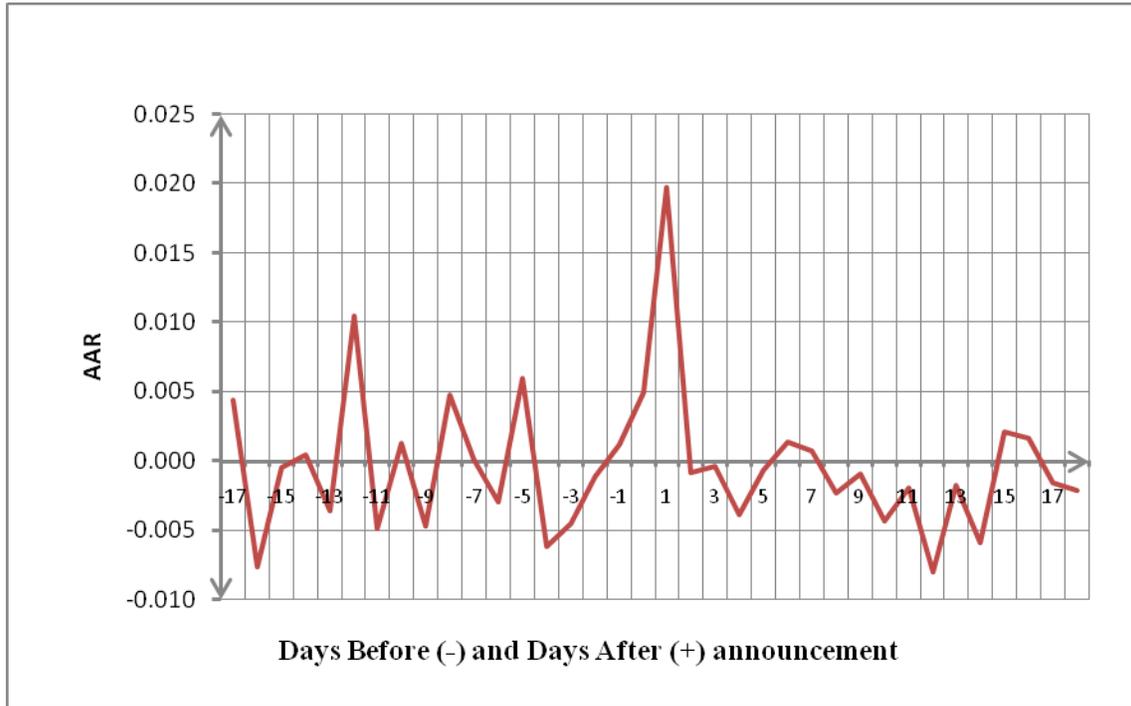


**Average Abnormal Return, Cumulative Abnormal Return and the  
t-statistics For Industrial Products sector**

Event Period	AAR		CAR	
	AAR	t-statistics	CAR	t-statistics
-17	0.0044	0.9824	0.0044	0.2841
-16	-0.0076	-1.6868	-0.0032	-0.2038
-15	-0.0005	-0.1087	-0.0037	-0.2352
-14	0.0005	0.1013	-0.0032	-0.2059
-13	-0.0036	-0.7902	-0.0068	-0.4345
-12	0.0105	2.3205*	0.0037	0.2367
-11	-0.0049	-1.0878	-0.0012	-0.0779
-10	0.0013	0.2910	0.0001	0.0063
-9	-0.0047	-1.0416	-0.0046	-0.2950
-8	0.0048	1.0557	0.0002	0.0103
-7	0.0001	0.0173	0.0002	0.0153
-6	-0.0029	-0.6503	-0.0027	-0.1728
-5	0.0060	1.3263	0.0033	0.2109
-4	-0.0062	-1.3633	-0.0029	-0.1835
-3	-0.0045	-0.9974	-0.0074	-0.4719
-2	-0.0012	-0.2547	-0.0085	-0.5456
-1	0.0012	0.2634	-0.0073	-0.4694
0	0.0050	1.1037	-0.0023	-0.1502
1	0.0197	4.3650*	0.0174	1.1123
2	-0.0008	-0.1866	0.0166	1.0583
3	-0.0004	-0.0839	0.0162	1.0341
4	-0.0038	-0.8460	0.0123	0.7894
5	-0.0006	-0.1346	0.0117	0.7505
6	0.0014	0.3095	0.0131	0.8400
7	0.0007	0.1510	0.0138	0.8837
8	-0.0023	-0.5004	0.0116	0.7389
9	-0.0009	-0.1968	0.0107	0.6820
10	-0.0043	-0.9576	0.0063	0.4050
11	-0.0020	-0.4347	0.0044	0.2793
12	-0.0080	-1.7695	-0.0036	-0.2325
13	-0.0018	-0.3901	-0.0054	-0.3453
14	-0.0059	-1.2954	-0.0113	-0.7200
15	0.0021	0.4750	-0.0091	-0.5826
16	0.0017	0.3686	-0.0074	-0.4760
17	-0.0016	-0.3515	-0.0090	-0.5776
18	-0.0021	-0.4681	-0.0112	-0.7130

\*Significant at 0.05 level

Critical value of t-statistics at 5% level of significant equals to 1.96.

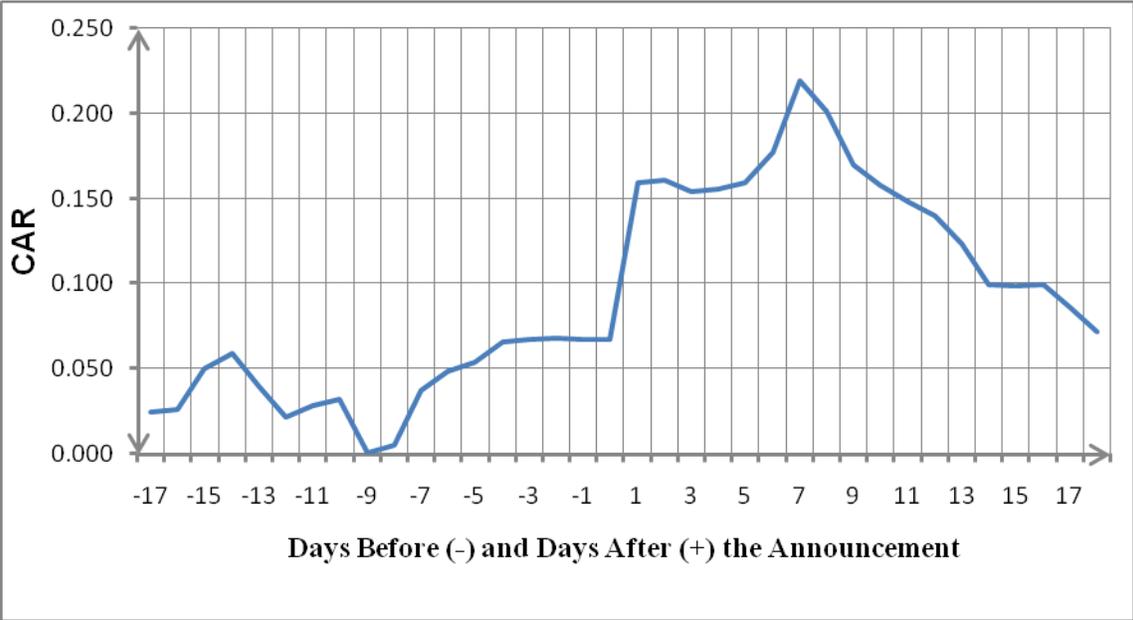
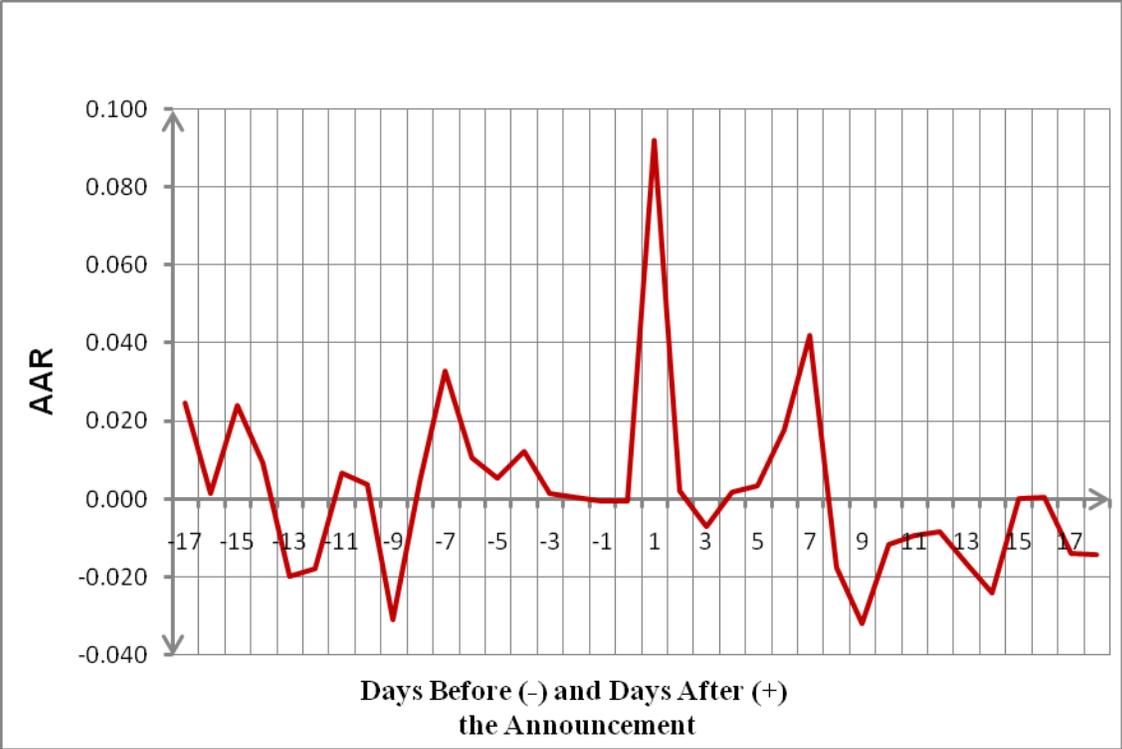


**Average Abnormal Return, Cumulative Abnormal Return and the t-statistics for Consumer Product Sector**

<b>Event Period</b>	<b>AAR</b>	<b>AAR t- statistics</b>	<b>CAR</b>	<b>CAR t-statistics</b>
-17	0.0247	3.4308*	0.0247	0.8487
-16	0.0015	0.2067	0.0262	0.8998
-15	0.0239	3.3197*	0.0501	1.7210
-14	0.0093	1.2901	0.0593	2.0401*
-13	-0.0199	-2.7707*	0.0394	1.3548
-12	-0.0179	-2.4905*	0.0215	0.7387
-11	0.0067	0.9245	0.0281	0.9674
-10	0.0038	0.5252	0.0319	1.0973
-9	-0.0311	-4.3232*	0.0008	0.0279
-8	0.0043	0.5943	0.0051	0.1749
-7	0.0327	4.5438*	0.0378	1.2989
-6	0.0107	1.4891	0.0485	1.6672
-5	0.0054	0.7491	0.0539	1.8525
-4	0.0123	1.7085	0.0662	2.2752*
-3	0.0015	0.2120	0.0677	2.3276*
-2	0.0004	0.0591	0.0681	2.3422*
-1	-0.0006	-0.0859	0.0675	2.3210*
0	-0.0004	-0.0610	0.0671	2.3059*
1	0.0921	12.7985*	0.1592	5.4719*
2	0.0019	0.2689	0.1611	5.5384*
3	-0.0071	-0.9861	0.1540	5.2945*
4	0.0018	0.2492	0.1558	5.3561*
5	0.0035	0.4879	0.1593	5.4768*
6	0.0178	2.4676*	0.1771	6.0872*
7	0.0421	5.8522*	0.2192	7.5349*
8	-0.0176	-2.4481*	0.2015	6.9293*
9	-0.0320	-4.4412*	0.1696	5.8307*
10	-0.0118	-1.6408	0.1578	5.4248*
11	-0.0094	-1.3097	0.1484	5.1008*
12	-0.0084	-1.1664	0.1400	4.8123*
13	-0.0167	-2.3207*	0.1233	4.2382*
14	-0.0241	-3.3529*	0.0991	3.4088*
15	0.0000	-0.0043	0.0991	3.4077*
16	0.0006	0.0771	0.0997	3.4268*
17	-0.0139	-1.9317	0.0858	2.9490*
18	-0.0143	-1.9846*	0.0715	2.4580*

\*Significant at 0.05 level

Critical value of t-statistics at 5% level of significant equals to 1.96.

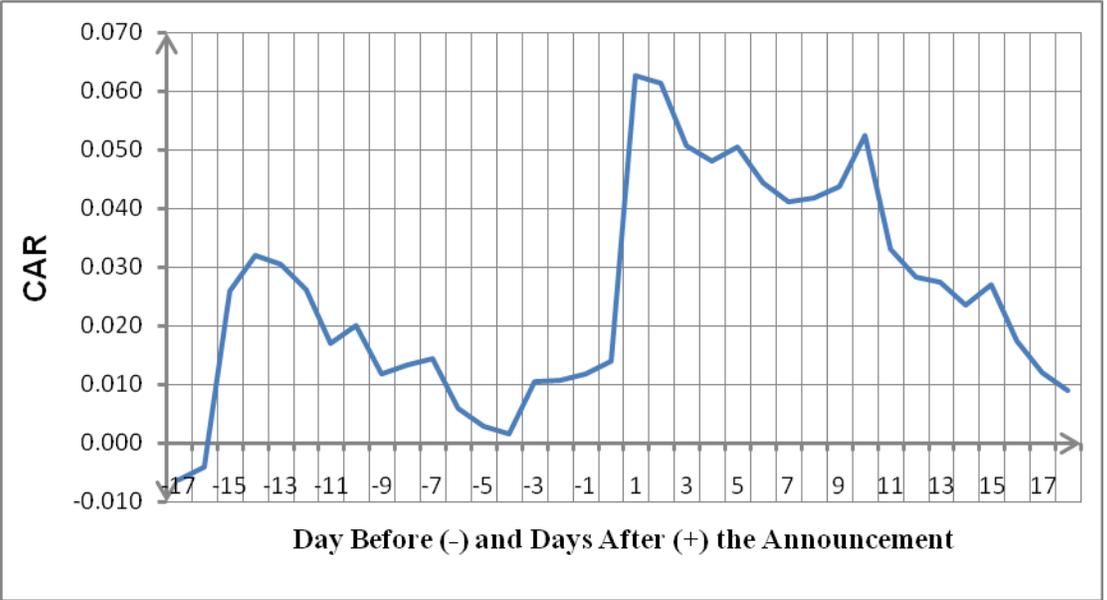
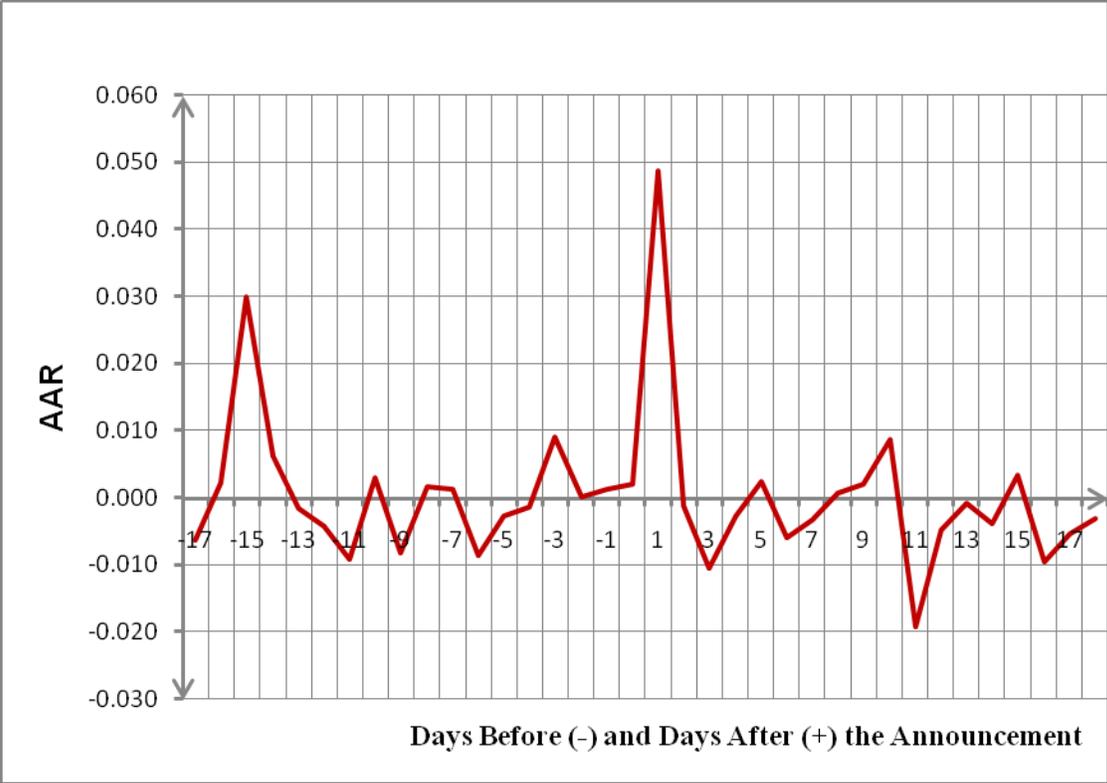


**Average Abnormal Return, Cumulative Abnormal Return and t-statistics for  
Properties Sector**

Event Period	AAR			
	AAR	t-statistics	CAR	CAR t-statistics
-17	-0.0063	-0.8860	-0.0064	-0.1773
-16	0.0021	0.2974	-0.0042	-0.1178
-15	0.0300	4.1920*	0.0258	0.7209
-14	0.0062	0.8637	0.0320	0.8937
-13	-0.0016	-0.2263	0.0304	0.8484
-12	-0.0043	-0.5982	0.0261	0.7287
-11	-0.0092	-1.2825	0.0169	0.4721
-10	0.0030	0.4187	0.0199	0.5559
-9	-0.0083	-1.1530	0.0117	0.3252
-8	0.0016	0.2212	0.0132	0.3695
-7	0.0012	0.1639	0.0144	0.4023
-6	-0.0087	-1.2111	0.0057	0.1600
-5	-0.0028	-0.3971	0.0029	0.0806
-4	-0.0015	-0.2095	0.0014	0.0386
-3	0.0091	1.2708	0.0105	0.2929
-2	0.0001	0.0167	0.0106	0.2962
-1	0.0012	0.1662	0.0118	0.3295
0	0.0020	0.2782	0.0138	0.3851
1	0.0488	6.8079*	0.0626	1.7472
2	-0.0013	-0.1806	0.0613	1.7110
3	-0.0106	-1.4812	0.0507	1.4147
4	-0.0027	-0.3775	0.0480	1.3392
5	0.0024	0.3418	0.0504	1.4076
6	-0.0061	-0.8451	0.0444	1.2385
7	-0.0033	-0.4546	0.0411	1.1475
8	0.0007	0.0961	0.0418	1.1668
9	0.0020	0.2762	0.0438	1.2220
10	0.0086	1.2058	0.0524	1.4632
11	-0.0193	-2.6967*	0.0331	0.9237
12	-0.0049	-0.6817	0.0282	0.7873
13	-0.0008	-0.1109	0.0274	0.7652
14	-0.0039	-0.5395	0.0235	0.6572
15	0.0033	0.4644	0.0269	0.7501
16	-0.0095	-1.3302	0.0173	0.4840
17	-0.0054	-0.7521	0.0119	0.3335
18	-0.0031	-0.4348	0.0088	0.2465

\*Significant at 0.05 level

Critical value of t-statistics at 5% level of significant equals to 1.96.



# CONCENTRATION AND COMPETITION IN THE BELARUSIAN BANKING INDUSTRY: AN EMPIRICAL ANALYSIS

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## **ABSTRACT**

*Economic theory and empirical research provide ambiguous predictions and findings on the effects of concentration on competition. While the structure-conduct-performance paradigm and the efficient structure hypothesis assert a negative trade-off between these two indicators, the growing body of more recent empirical literature (the so called non-structural approach) shows that competitive behavior can exist in very concentrated markets, and collusive behavior can occur in the markets with a large number of banks. So far much of the research on bank concentration and competitiveness has been done for developed countries. Research on this subject matter in the post-communist countries has been scarce, and to our knowledge there is no such research for Belarus, an ex-USSR republic. The paper is one of the first attempts to assess whether a high degree of concentration in the Belarusian banking sector impacted on its competitiveness over 2002-2008. To analyze this issue we calculate a variety of traditional concentration measures as well as a novel measure of competition – the Boone indicator – which assesses the elasticity of a firm’s profits with respect to its cost level, with a higher value of this profit elasticity signaling more intense competition. The results show a positive relationship between concentration and competition in the Belarusian banking industry.*

## **1. INTRODUCTION**

It has been proven, both theoretically and empirically, that competition is among the key driving factors of quality, efficiency, and innovation in the banking sector; it also facilitates access of firms and households to banking services and external financing, which ultimately affects economic growth in the country (see, for example, Vives, 2001). It is no surprise, then, that the recent waves of bank mergers in the EU and the US as well as around the world have spurred debates about the impact of bank concentration on competition. Historically, concentration in the banking sector seems to have been more tolerated than that in other industries and even considered beneficial due to a presumed ‘concentration-stability’ link.<sup>1</sup> For instance, out of 111 countries in the OECD (2008) survey, at the end of 2005 94 countries had three-bank concentration ratios above 50 percent, 62 above 70 percent, and 25 above 90 percent.

Economic theory and empirical research, however, provide ambiguous predictions and findings on the effects of concentration on competition. Almost two decades ago, Shaffer (1992) documented the lack of consensus on this subject matter among the financial economists and concluded that the degree to which banking market structure matters for competition and performance is a hotly debated topic. Many years later, this issue still

remains understudied even for developed countries. Bikker and Haaf (2002, p. 53) conclude that “in recent years, however, only a limited number of empirical studies have investigated competition and concentration in European banking markets.” Shaffer (2004, p. 288) stresses rapid consolidation among banks in the US and Europe and claims that “the degree of banking competition and its association with market concentration is thus a more relevant issue now than in earlier times.” Berger *et al.* (2004, p. 445) echo that “more research is clearly needed on the topic of bank concentration and competition” and continue that “one useful direction for future research is likely to be additional focus on developing nations and their problems of credit availability, economic growth, and financial stability.”

The paper’s major contributions to the field may be described as follows. First, we analyze a trend in the Belarusian banking sector concentration. Second, so far much of the research on bank concentration and competitiveness has been done for developed countries. Research on this subject matter in the post-communist countries has been scarce, and to our knowledge there is no such research for Belarus, an ex-USSR republic.<sup>2</sup> The paper is one of the first attempts to assess whether a high degree of concentration in the Belarusian banking sector impacted on its competitiveness over 2002-2008. Third, in the empirical literature different concentration measures (like the Herfindahl-Hirschman Index, 3-, 5-firm concentration ratios) and performance measures (such as price-cost margins, or Lerner Index) have been used as a measure of competition. However, it has been shown that those measures have severe drawbacks (Tirole, 1988) and do not necessarily indicate the *competitiveness* of the banking system (Baumol *et al.*, 1982). In this paper we apply a novel measure of competition – the Boone indicator – which assesses the elasticity of a firm’s profits with respect to its cost level, with a higher value of this profit elasticity signaling more intense competition (Boone 2000, 2008; Boone *et al.*, 2005, 2007).

The paper is organized as follows. Section 2 reviews the theoretical background, Section 3 describes the data set, Section 4 presents the methodology and main results, and Section 5 concludes.

## **2. THEORETICAL BACKGROUND**

During the last several decades, the structure-conduct-performance (SCP) paradigm (Bain, 1951) has been the predominant empirical approach in analyzing banking competition. The ‘conduct’ aspect of the SCP paradigm posits that a market structure (reflected in concentration measures) is a good indicator of the intensity of competition in this market. More specifically, the argument is that there is a negative relationship between the degree of market concentration and the degree of competition among banks: concentration encourages collusive behavior among banks and, hence, impedes competition in the sector. The ‘performance’ aspect of the SCP paradigm links higher concentration in the banking market to less competition, higher prices, and higher banks’ profits. Regulatory authorities in many countries still widely use the SCP approach in antitrust assessments: competition is typically measured by concentration ratios; and higher prices in more concentrated, less competitive markets are viewed as socially undesirable.

The SCP view was challenged by the efficient structure (ES) hypothesis which provided an alternative interpretation to the empirical evidence consistent with the SCP paradigm (see, for example, Demsetz, 1973; Peltzman, 1977; Berger, 1995). The ES hypothesis argues that a positive relationship between bank profits and market concentration/structure exists because more efficient (i.e., low cost, high productivity, *etc.*) banks are able to increase profits by reducing prices. Lower prices also help those banks to expand their market shares, thus leading to increased market concentration.

To sum up, both the SCP paradigm and ES hypothesis stem from traditional industrial organization theory and belong to the structural approach direction in the literature on the measurement of bank competition. The SCP paradigm asserts that structure causes performance, while according to the ES view performance causes structure.

The non-structural approach was developed in the context of the new empirical industrial organization literature. This approach posits that concentration/structure alone does not provide a particularly good indicator of competitive behavior and that other factors may affect firms' conduct and performance (Baumol *et al.*, 1982; a review in Claessens and Laeven, 2004 and in Northcott, 2004). Barriers to entry, costs of exit, general contestability, risk profiles, branch networks, technology, competition from non-bank financial institutions, the presence of foreign banks, insurance companies and active capital markets all can influence the level of competition in the banking sector. For example, the contestability theory argues that the threat of new entrants alone can induce a bank to behave more competitively. Hence, contrary to the SCP paradigm, the non-structural approach does not *a priori* assume that concentrated markets are not competitive. The non-structural approach asserts that competitive behavior can exist in very concentrated markets, and collusive behavior can occur in the markets with a large number of banks. One of the most important advances of non-structural techniques is that they attempt to directly measure bank competitiveness without knowing the type of market structure. The rationale is that the degree of competition in the banking sector can be determined by the observed price-setting behavior of banks and its deviation from competitive pricing.

Conflicting theoretical predictions along with inconclusive and contradictory empirical evidence<sup>3</sup> highlight the complexity of the linkages between bank concentration and competition. A growing body of research, however, suggests that concentration and competition measure different characteristics of the banking system (Claessens and Laeven, 2004). It is in this setting that this paper analyzes issues of concentration and competition in the Belarusian banking industry. To get a general idea about the banking market in Belarus, we present various traditional measures of concentration which are considered to be part of the structural approach. We further present and discuss results based upon the estimation of the Boone indicator, a non-structural measure of market competitiveness.

### 3. DATA

The data were obtained from the National Bank of the Republic of Belarus. Those are annual data showing bank assets, liabilities, profits and losses as of January 1 of 2002 through 2009. The total number of banks in each year varies from 24 to 31. The sample includes 21 banks that operated throughout the entire period, 10 banks were established and 6 banks were shut down within this period.

### 4. METHODOLOGY AND RESULTS

**Measuring concentration.** To assess the degree of concentration in the Belarusian banking industry, we calculate a variety of traditional concentration measures, such as the  $k$ -bank Concentration Ratios, the Herfindahl-Hirshman Index, the Comprehensive Industrial Concentration Index, the Hannah-Kay Index, the House Index, the Hall-Tideman Index, and the Theil Entropy Measure [see Bikker and Haaf (2002) for a comprehensive review]. The indices are shown in Table 1.

We start our empirical analysis with looking at the  $k$ -bank concentration ratios. These are the most frequently used measures of concentration due to their simplicity and limited data requirements. The indices take the form:

$$CR_k = \sum_{i=1}^k s_i \quad (1)$$

where  $k$  is the number of the largest banks in the market, and  $s_i$  is the market share of bank  $i$ . The share of the largest bank (Belarusbank) in total assets slightly decreased from about 0.4299 to 0.4044 over 2002-2008. However, the shares of the three, four and five largest banks all increased – from 0.6406 to 0.7162, from 0.7167 to 0.7839, and from 0.7923 to 0.8512, respectively – despite the fact that the total number of banks rose from 24 to 31 from January 2002 to January 2009. The international comparison (OECD, 2008) shows that the Belarusian banking industry was highly concentrated as compared to other transition (post-soviet) and developed countries. For example, among the ex-USSR countries, only Estonia had a higher CR5 ratio of 0.98, while Russia – the closest political and economic ally of Belarus – had the CR5 of 0.438. The other post-communist countries neighboring Belarus had CR5 of 0.8129 (Lithuania), 0.673 (Latvia), 0.486 (Poland). Considering developed countries, Belarus was quite similar to Canada whose CR5 was 0.874 and the total number of banks was 20 domestic and 27 foreign.

In contrast to the  $k$ -bank concentration ratios, the Herfindahl-Hirshman Index (HHI) takes into account the entire distribution of bank sizes, incorporates each bank individually, and is calculated as:

$$HHI = \sum_{i=1}^n s_i^2 . \quad (2)$$

In the HHI, banks' shares are used as their own weights. Consequently, the HHI assigns a greater weight to larger banks and, hence, stresses their importance in calculating the concentration index. The HHI ranges between  $1/n$  (when all banks are of equal size) and 1 (for a monopoly). Over 2002-2008 the HHI exhibited both increasing and decreasing patterns, but overall the HHI increased from 0.2257 to 0.2361. According to the US

Department of Justice, the Belarusian banking sector would be classified as concentrated, and an increase in the HHI by 0.0104 would raise antitrust concerns.<sup>4</sup>

Table 1. Various concentration measures based on total assets

	1.1.2002	1.1.2003	1.1.2004	1.1.2005
Number of banks, N	24	28	30	31
CR1 (Belarusbank)	0.4299	0.4407	0.4246	0.4137
CR3	0.6406	0.6372	0.6583	0.6688
CR4	0.7167	0.7119	0.7332	0.7504
CR5	0.7923	0.7838	0.8032	0.8209
HHI	0.2257	0.2313	0.2228	0.2190
CCI	0.5081	0.5119	0.5055	0.5042
HKI, alpha = 0.005	23.8296	27.7797	29.7514	30.7328
HKI, alpha = 0.25	17.0340	19.0843	20.0291	20.3258
HKI, alpha = 5	2.8713	2.7840	2.9150	3.0093
HKI, alpha = 10	2.5552	2.4855	2.5903	2.6664
H, alpha = 0.25	0.3520	0.3533	0.3497	0.3514
H, alpha = 1	0.2304	0.2357	0.2277	0.2244
H, alpha = 2	0.2258	0.2314	0.2229	0.2191
H, alpha = 3	0.2257	0.2313	0.2228	0.2190
HTI	0.1605	0.1547	0.1545	0.1575
Entropy	2.9334	2.9596	2.9854	2.9737
Coef. of variation	2.1018	2.3405	2.3843	2.4062
	1.1.2006	1.1.2007	1.1.2008	1.1.2009
Number of banks, N	30	27	27	31
CR1 (Belarusbank)	0.4316	0.4378	0.4049	0.4044
CR3	0.6841	0.7152	0.6972	0.7162
CR4	0.7649	0.7963	0.7822	0.7839
CR5	0.8378	0.8699	0.8590	0.8512
HHI	0.2353	0.2501	0.2261	0.2361
CCI	0.5237	0.5458	0.5200	0.5355
HKI, alpha = 0.005	29.7338	26.7480	26.7677	30.7001
HKI, alpha = 0.25	19.4061	17.1908	17.6368	19.1840
HKI, alpha = 5	2.8530	2.7955	3.0767	3.0506
HKI, alpha = 10	2.5438	2.5036	2.7308	2.7328
H, alpha = 0.25	0.3721	0.3993	0.3736	0.3896
H, alpha = 1	0.2413	0.2579	0.2333	0.2448
H, alpha = 2	0.2354	0.2504	0.2263	0.2364
H, alpha = 3	0.2353	0.2501	0.2261	0.2361
HTI	0.1690	0.1904	0.1806	0.1802
Entropy	2.8678	2.7145	2.8220	2.7903
Coef. of variation	2.4614	2.3986	2.2595	2.5141

Both the  $k$ -bank concentration ratios and the HHI suggest that the Belarusian banking industry became more concentrated. To visualize the process, the two concentration

curves for the Belarusian banking industry as of January 1, 2002 and January 1, 2009 were drawn (not shown in this paper). Each curve plotted the cumulative market share in total assets against the number of banks. As expected, the figure confirmed an increased degree of concentration in the banking industry.

As noted in Bikker and Haaf (2002, p. 63), “despite the widely recognized convention that the dominance of the largest few banks determines market behavior, discrete concentration measures have been criticized on the grounds that they ignore changes in market structure occurring elsewhere than among the largest banks.” Horvarth (1970) presented the Comprehensive Industrial Concentration Index (CCI), which was designed to reflect both absolute magnitude and relative dispersion:

$$CCI = s_1 + \sum_{i=2}^n s_i^2 (1 + (1 - s_i)) \quad (3)$$

where  $s_1$  is the share of the biggest bank, and  $(1 + (1 - s_i))$  is the weight for bank  $i$ , reflecting the share of the rest of the industry. The CCI approaches zero for an infinite number of equally sized banks and unity for a monopoly. Our calculations show that the CCI increased from 0.5081 to 0.5355 over 2002-2008.

Hannah and Kay (1977) proposed to use a deliberately chosen elasticity parameter  $\alpha$  ( $\alpha > 0, \alpha \neq 1$ ) to define the appropriate weighting scheme which would emphasize either the lower or upper portion of the bank distribution:

$$HKI = \left( \sum_{i=1}^n s_i^\alpha \right)^{\frac{1}{1-\alpha}}. \quad (4)$$

As Table 1 shows, for  $\alpha \rightarrow 0$  (0.005 in our calculations), the HKI approaches the number of banks in the industry. For  $\alpha \rightarrow \infty$  (10 in our calculations), the HKI approaches 1/the share of the largest bank. Despite that fact that the number of banks increased from 24 on January 1, 2002 to 31 on January 1, 2009, the two HKI indices (for  $\alpha = 0.25$  and 5) increased from 17.0340 to 19.1840 and from 2.8713 to 3.0506, respectively. Higher concentration implies that the size effect outweighed the number effect.

House (1977) introduced a parameter  $\alpha$  reflecting the degree of collusion, with low values of  $\alpha$  implying a high degree of collusion:

$$H = \sum_{i=1}^n s_i^{2-(s_i(HHI-s_i^2))^\alpha}. \quad (5)$$

The index approaches zero for an infinite number of equally sized banks and unity for a monopoly. When  $\alpha = 0.25$  (that is, assuming a highly collusive market), the House index for the Belarusian banking sector grew from 0.3520 to 0.3896 from January 2002 to January 2009. With  $\alpha = 2$  and 3 (that is, assuming a non-collusive market), the House index grew from 0.2258 to 0.2364 and from 0.2257 to 0.2361, respectively. In the latter case, the House index converged to the Herfindahl-Hirshman result.

Hall and Tideman (1967) believed that the number of banks should be included in the calculation of the concentration index in order to reflect the conditions of entry into the industry. Their index takes the form:

$$HTI = \frac{1}{2 \sum_{i=1}^n i s_i - 1} \quad (6)$$

where  $i$  is the bank's rank, with the largest bank receiving  $i=1$ . The HTI approaches zero for a big number of equally sized banks and unity for a monopoly. In our case, the HTI ranges between 0.15 and 0.19. Over the 2002-2008 period, the HTI increased from 0.1605 to 0.1802, indicating an increase in concentration.

The next measure of concentration used in this paper is that introduced by Theil (1967). The Entropy measure was adopted from thermodynamics into information theory and then into economics. It measures the expected information content of a distribution:

$$E = - \left( \frac{1}{\ln 2} \right) \sum_{i=1}^n s_i \ln s_i . \quad (7)$$

Unlike all other concentration measures discussed above, the Entropy index varies inversely with the degree of concentration, and ranges between 0 (for a monopoly) and  $\log_2 n$  (for equally sized banks). The Entropy indices decreased from 2.9334 to 2.7903 over 2002-2008, implying an increase in concentration.

To assess the dispersion of total assets in the banking sector, we augment our brief assessment of concentration with the coefficient of variation:

$$CV = \frac{\sqrt{\text{Var}(x)}}{\bar{x}} \quad (8)$$

where  $\bar{x}$  is the mean bank size. If the sizes of all banks increase proportionally, the coefficient of variation will remain unchanged. The calculated coefficient of variation exhibits an increasing trend, with the values of 2.1018 on January 1, 2002 and 2.5141 on January 1, 2009. It indicates that the dispersion of the bank sizes around the mean increased, which together with all other concentration indices in Table 1 suggest that there had been an increased in the concentration of total financial assets under the control of Belarus' largest banks in 2002-2008. Our next step is to investigate whether this development in the market structure led to a less (more) competitive behavior of the banks.

**Measuring competition.** To measure the level of competition in the banking sector we use the Boone indicator (Boone 2000, 2008; Boone *et al.*, 2005, 2007). The Boone indicator assesses the relationship between performance, in terms of profits, and efficiency, measured as marginal costs. Typically, in any market, efficient firms have higher profits than inefficient firms. However, in a more competitive market, efficient firms are rewarded more and inefficient firms punished more harshly (in terms of profits) than they are in uncompetitive markets. Hence, Boone suggests measuring the competitiveness of a market by estimating the elasticity of a firm's profits with respect to its cost level. The expected sign of the  $\beta$  coefficient is negative, and a more negative  $\beta$  indicates more intense competition.<sup>5</sup> Roughly speaking, the following specification is estimated:

$$\ln \pi = \alpha + \beta \ln mc + \varepsilon_{\pi} \quad (9)$$

where  $\pi$  is profits;  $mc$  is marginal cost; and the slope  $\beta$  is interpreted as the profit elasticity. Since it is impossible to directly observe marginal costs, some researchers approximate marginal costs using average variable costs (Boone *et al.*, 2005, 2007) and some researchers calculate marginal costs using a cost function (Leuvensteijn *et al.*, 2007). In this paper, we follow the latter approach and first estimate a translog cost function for the Belarusian banking sector using individual bank observations. Due to its flexibility of specification, a translog cost function has been extensively employed in many studies of depository institutions.

In specifying the cost function, we rely on the intermediation model of a bank, as developed by Klein (1971) and Sealey and Lindley (1977).<sup>6</sup> This approach views the bank as a firm collecting deposits and other funds in order to transform them into loans and other assets. For this transformation, physical capital and labor are employed. Hence, the major inputs in the bank production process are deposits and other funds, labor, and physical capital; and the output is typically measured by loans and other income generating activities (banking services). As actual factor price data are not available, we proxy them by ratios of expenses to respective volume following the literature. We estimate a translog cost function with one output (loans)<sup>7</sup>, three inputs (funds, labor, and physical capital), one control variable, and annual dummies:

$$\begin{aligned} \ln C = & \alpha + \beta_1 \ln p_1 + \beta_2 \ln p_2 + \beta_3 \ln p_3 + \beta_y \ln Y \\ & + \delta_{11} \frac{1}{2} \ln^2 p_1 + \delta_{22} \frac{1}{2} \ln^2 p_2 + \delta_{33} \frac{1}{2} \ln^2 p_3 + \beta_{yy} \frac{1}{2} \ln^2 Y \\ & + \delta_{12} \ln p_1 \ln p_2 + \delta_{13} \ln p_1 \ln p_3 + \delta_{23} \ln p_2 \ln p_3 \\ & + \gamma_{y1} \ln Y \ln p_1 + \gamma_{y2} \ln Y \ln p_2 + \gamma_{y3} \ln Y \ln p_3 \\ & + \theta_e \ln \frac{E}{A} + \theta_{ee} \frac{1}{2} \ln^2 \frac{E}{A} + \sum_{t=1}^{T-1} \phi_t d_t + \varepsilon_c \end{aligned} \quad (10)$$

where

$C$  is total bank expenses;

$Y$  is loans to clients and other banks;

$p_1$  is price of labor, proxied by administrative expenses (the predominant portion of which is personnel expenses) to total assets;

$p_2$  is price of funding, proxied by interest expenses divided by total funds;

$p_3$  is price of fixed capital, proxied by depreciation expenses divided by fixed assets;

$\frac{E}{A}$  is the equity to assets ratio used as a control variable to correct for differences in loan

portfolio risk across banks (see Berger and Mester, 1997);

$d_t$  are the binary time dummy variables which are designed to capture technological change. They also intend to absorb the impact of inflation on our results because in our analysis we use nominal values<sup>8</sup>.

The cost shares of funds, labor, and capital are given by:

$$S_1 = \beta_1 + \delta_{11} \ln p_1 + \delta_{12} \ln p_2 + \delta_{13} \ln p_3 + \gamma_{y1} \ln Y + \varepsilon_1 \quad (11)$$

$$S_2 = \beta_2 + \delta_{12} \ln p_1 + \delta_{22} \ln p_2 + \delta_{23} \ln p_3 + \gamma_{y2} \ln Y + \varepsilon_2 \quad (12)$$

$$S_3 = \beta_3 + \delta_{13} \ln p_1 + \delta_{23} \ln p_2 + \delta_{33} \ln p_3 + \gamma_{y3} \ln Y + \varepsilon_3 \quad (13)$$

The full model includes Eqns. (10)-(13). By construction,

$$\sum_{i=1}^3 S_i = 1, \delta_{ij} = \delta_{ji}, \gamma_{yi} = \gamma_{iy}, \sum_{i=1}^3 \beta_i = 1, \sum_{i=1}^3 \delta_{ij} = 0 \text{ and } \sum_{j=1}^3 \delta_{ij} = 0. \quad (14)$$

These conditions can be imposed directly on the model by specifying the translog model in  $(C/p_3)$ ,  $(p_1/p_3)$ , and  $(p_2/p_3)$  and dropping the third share equation (13). Now the full model consists of Eqns. (15)-(17):

$$\begin{aligned} \ln \frac{C}{p_3} = & \alpha + \beta_1 \ln \frac{p_1}{p_3} + \beta_2 \ln \frac{p_2}{p_3} + \beta_y \ln Y \\ & + \delta_{11} \frac{1}{2} \ln^2 \frac{p_1}{p_3} + \delta_{22} \frac{1}{2} \ln^2 \frac{p_2}{p_3} + \beta_{yy} \frac{1}{2} \ln^2 Y \\ & + \delta_{12} \ln \frac{p_1}{p_3} \ln \frac{p_2}{p_3} + \gamma_{y1} \ln Y \ln \frac{p_1}{p_3} + \gamma_{y2} \ln Y \ln \frac{p_2}{p_3} \\ & + \theta_e \ln \frac{E}{A} + \theta_{ee} \frac{1}{2} \ln^2 \frac{E}{A} + \sum_{t=1}^{T-1} \phi_t d_t + \varepsilon_{c/p_3} \end{aligned} \quad (15)$$

$$S_1 = \beta_1 + \delta_{11} \ln \frac{p_1}{p_3} + \delta_{12} \ln \frac{p_2}{p_3} + \gamma_{y1} \ln Y + \varepsilon_1 \quad (16)$$

$$S_2 = \beta_2 + \delta_{12} \ln \frac{p_1}{p_3} + \delta_{22} \ln \frac{p_2}{p_3} + \gamma_{y2} \ln Y + \varepsilon_2 \quad (17)$$

The model above reduces the number of estimated parameters from 23 to 18. The rest of parameters is estimated using Eqns. (14). We estimate the full model (15)-(17) by maximum likelihood to ensure invariance with respect to the choice of which share we drop.

The cost function in Eqn. (10) implies a marginal cost function of the form:

$$mc = \left( \frac{C}{Y} \right) * \frac{\partial \ln C}{\partial \ln Y} = \left( \frac{C}{Y} \right) * (\beta_y + \beta_{yy} \ln Y + \gamma_{y1} \ln p_1 + \gamma_{y2} \ln p_2 + \gamma_{y3} \ln p_3) \quad (18)$$

We estimate marginal costs for all bank observations and then regress them on total gross (before-tax) profits of each bank as shown in Eqn. (9). The relative profits measure (i.e., Boone indicator) is captured by the estimated coefficient  $\beta$ .

In our estimations, we use average annual values of assets, liabilities and their categories, calculated as a simple mean of their values reported on January 1 of the year under consideration and January 1 of the next year. This reduces the total number of banks in each year to 21-27. The sample includes 21 banks that operated throughout the entire period and 6 banks that were established within this period. The total number of bank-year observations is 180.

The estimates of the translog cost function are shown in Table 2. Marginal costs at the individual bank level were calculated using Eqn. (18). The dynamics of average marginal

costs of loans during 2002-2008 is shown in Table 3. For each year, individual marginal costs were weighted by the amount of loans on a bank's balance sheet. Table 3 clearly shows that average marginal costs in the Belarusian banking sector gradually declined from 29 percent to 13 percent over 2002-2008, which mainly reflects the decrease in funding rates over this period.

Table 2. Estimates of the translog cost function

Coefficient	Value	Standard Error	b/St.Er.	Coefficient	Value	Standard Error	b/St.Er.
$\alpha$	-1.1171	0.3472	-3.218	$\beta_{yy}$	-0.0207	0.0050	-4.150
$\beta_1$	0.8739	0.0266	32.896	$\theta_e$	-0.6149	0.0822	-7.483
$\beta_2$	0.0947	0.0289	3.281	$\theta_{ee}$	-0.2101	0.0248	-8.464
$\beta_y$	1.2593	0.0613	20.555	$\phi$ 2003	0.0047	0.0469	0.100
$\delta_{11}$	0.1465	0.0060	24.450	$\phi$ 2004	0.0244	0.0463	0.527
$\delta_{12}$	-0.1494	0.0062	-24.097	$\phi$ 2005	0.0714	0.0459	1.554
$\delta_{22}$	0.1559	0.0068	22.898	$\phi$ 2006	0.0678	0.0462	1.470
$\gamma_{y1}$	-0.0242	0.0023	-10.753	$\phi$ 2007	0.0276	0.0475	0.580
$\gamma_{y2}$	0.0243	0.0024	9.937	$\phi$ 2008	0.0097	0.0486	0.199

Table 3. Marginal costs of loans and the Boone indicator over time

Period	Marginal costs of loans, % of loans	The Boone indicator			
		$\beta$	Standard Error	t-ratio	P[ T >t]
2002	28.9	1.1262	0.7294	1.544	0.1391
2003	22.4	-0.0309	0.6998	-0.044	0.9652
2004	19.0	0.3366	0.7748	0.434	0.6678
2005	15.4	-1.7405	1.0949	-1.590	0.1250
2006	13.7	-1.6319	0.8957	-1.822	0.0810
2007	13.1	-2.4206	0.6788	-3.566	0.0015
2008	13.0	-2.3758	0.5514	-4.308	0.0002
2002-2008		-0.7435	0.3026	-2.457	0.0150

We next estimated the Boone indicator for the entire 2002-2008 period and for each year separately. The results are presented in Table 3. For the full sample period, the Boone indicator is negative (as expected), statistically significant but rather small in economic terms. The estimated  $\beta$  of -0.74 suggests that a bank with 1 percent higher marginal costs than another (more efficient) bank would have 0.74 percent lower profits than the more efficient bank. For comparison, we refer to the studies by Leuvensteijn *et al.* (2007) and Maslovykh (2009) who also estimated the Boone indicators from a translog cost function. Leuvensteijn *et al.* (2007) estimate the Boone indicator for 8 developed countries over

1994-2004 and report the highest value of -5.41 for the U.S., followed by -4.15 for Spain, -3.71 for Italy, -3.38 for Germany, -1.56 for the Netherlands, -1.05 for the UK, -0.90 for France, and -0.72 for Japan. This international comparison suggests that Belarusian banks are less competitive, as compared to the U.S. and the euro area. The degree of competition in the Belarusian banking sector seems to be similar to that in Japan. Maslovykh (2009) reports the Boone indicators for Ukraine, a post-Soviet transition country, for 2006-2008. For the entire period, the estimated Boone indicator is -1.61, implying that the Ukrainian banking sector is more competitive than the Belarusian one.

Overall, Boone indicators calculated for the entire sample period may conceal considerable differences over time. The annual Boone indicators in Table 3 show a decreasing trend (that is, indicating an increase in competition). For 2002-2004, the Boone values are not statistically significant; moreover for 2002 and 2004 the values are positive, which is against our expectations. However, starting 2005, the Boone indicators are negative, statistically significant, and exhibit a decreasing trend with relatively high values of competition for the most recent years – about -2.4 for 2007 and 2008. The plots for 2007 and 2008 (not shown in this paper) demonstrate that log profits are decreasing in log marginal costs; or, in other words, banks with higher marginal costs earn lower profits. International comparison suggests that Belarus, with its value of -1.7 in 2004, fits quite well into the distribution of the 8 developed countries in Leuvensteijn *et al.* (2007). For 2004 (the most recent year in their study), Leuvensteijn *et al.* report the following values of the Boone indicator: -4.54 for the U.S., -3.63 for Japan, -3.09 for the Netherlands, -2.69 for Spain, -2.66 for Germany, -1.81 for Italy, -0.49 for the UK, and 0.10 for France. For Ukraine, Maslovykh (2009) reports -1.24 for 2006, -1.15 for 2007, and -2.29 for 2008, which is comparable with our findings for Belarus.

Table 4. Correlation coefficients for the Boone indicator and different concentration measures

Concentration measure	Correlation coefficient	Concentration measure	Correlation coefficient
A negative value of the Boone indicator	1.00000	A negative value of Entropy	0.69000
CR1 (Belarusbank)	-0.34965	H, alpha = 0.25	0.73033
CR3	0.89097	H, alpha = 1	0.47676
CR4	0.91057	H, alpha = 2	0.41064
CR5	0.89965	H, alpha = 3	0.40805
HHI	0.40805	HKI, alpha = 0.005	0.31361
CCI	0.63409	HKI, alpha = 0.25	-0.04894
HTI	0.74254	HKI, alpha = 5	0.32360
Coef. of variation	0.52837	HKI, alpha = 10	0.35977

Finally, we calculated correlation coefficients for the Boone indicator and different concentration measures shown in Table 1. For convenience, we used the negative values of the Boone indicator and of the Entropy measure, so that a positive correlation coefficient indicates an increase in both concentration and competition. With only a few

exceptions, the results shown in Table 4 are positive implying that in 2002-2008 both concentration and competition in the Belarusian banking market increased. The positive correlation may be caused by a complex relationship between bank concentration and the measure of bank competitiveness calculated from marginal bank behavior. It may be the case that various factors related to market structure (such as institutional framework, regulation, contestability, foreign entry, and macro-economic stability) differently affect the competitive climate in the banking sector. It is also plausible that small-sized banks were able to provide meaningful competition to the five largest banks. To conclude, our finding contradicts the SCP paradigm and suggests that one should not focus solely on concentration indices as a measure for competition and that a concentrated market may be competitive.

## 5. CONCLUSIONS

This paper has attempted to assess whether high concentration in the Belarusian banking sector impacted on its competitiveness over 2002-2008. To analyze this issue we calculated various traditional concentration measures and the novel measure of competition (the Boone indicator). The results show a positive relationship between concentration and competition.

## ENDNOTES

<sup>1</sup> Proponents of this view rely upon the following arguments. First, they argue that competition leads to a decline in bank efficiency (primarily profit efficiency). The rationale behind this hypothesis is that competitive environment increases customers' propensity to switch to other banks, and the bank-customer relationships become shorter and unstable. Consequently, banks have to spend additional resources for screening, monitoring, attracting, and retaining their clients. Also, banks are likely to experience a greater share of non-performing loans and incur losses. Lower profits in more competitive markets make the banking system more fragile and vulnerable to adverse shocks, while higher profits in less competitive markets provide a 'capital buffer' against such shocks, increase a bank's 'franchise value' and deter risk-taking behavior of the bank's management. Second, some economists argue that banks in a less competitive, more concentrated market tend to be larger, more diversified, and hence less risky. Third, since it is substantially easier to monitor only a few banks, supervision of banks will be more effective and the risks of a bank failure less pronounced in a concentrated banking industry.

<sup>2</sup> Overall, for whatever reason, Belarus is rarely included into the analyses of development and performance of the banking sector in transition countries. We are aware of the following small set of studies analyzing the Belarusian banking industry either separately or in a cross-country setting: Fries *et al.* (2002), Daneyko and Kruk (2005), Minuk *et al.* (2007), Delis (2009), Delis and Pagoulatos (2009).

<sup>3</sup> For instance, Fernandez de Guevara *et al.* (2005) do not find any significant relation between concentration and competition; Bikker and Haaf (2002) find a negative relationship, and Claessens and Laeven (2004) find a positive relationship.

<sup>4</sup> According to the US Department of Justice, markets in which the HHI is between 1000 and 1800 points (0.1-0.18) are considered to be moderately concentrated, and those in

which the HHI is in excess of 1800 points (0.18) are considered to be concentrated. Transactions that increase the HHI by more than 100 points (0.01) in concentrated markets presumptively raise antitrust concerns under the Horizontal Merger Guidelines issued by the US Department of Justice and the Federal Trade Commission. (<http://www.justice.gov/atr/public/testimony/hhi.htm>).

<sup>5</sup> It is worth to note that “it is not necessarily the case that an increase in competition reduces *every* firm’s profits. (...) an increase in competition increases profits of a firm *relative* to a less efficient firm. (...) The benchmark firm could be the median firm or the least efficient firm in the market. The exact identity of this firm does not matter as it will end up in the time fixed effects.” For more explanations and derivations see Boone *et al.*, 2007, p. 43.

<sup>6</sup> There are two major ways how the production process in banking is described in the literature: the ‘production approach’ and the ‘intermediation approach.’ For empirical purposes, the crucial difference between these two approaches lies in their treatment of deposits. The intermediation approach considers deposits as an input factor, while the production approach considers deposits as an output. See, for example, Mlima and Hjalmarsson (2002) for an overview and comparison of different studies.

<sup>7</sup> We could also extend our model to multiple products in order to estimate a separate degree of competition for each product segment. However, in our sample, loans is the only output category produced by all banks. Many banks do not work with securities or investments.

<sup>8</sup> In some studies, variables are deflated by the GDP Deflator. Shaffer (1990), however, found no qualitative difference between real, nominal, and hybrid specifications.

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# **AN EVALUATION OF THE EGYPTIAN MONETARY POLICY DURING THE PERIOD (1997/1998-2008/2009)**

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## **ABSTRACT**

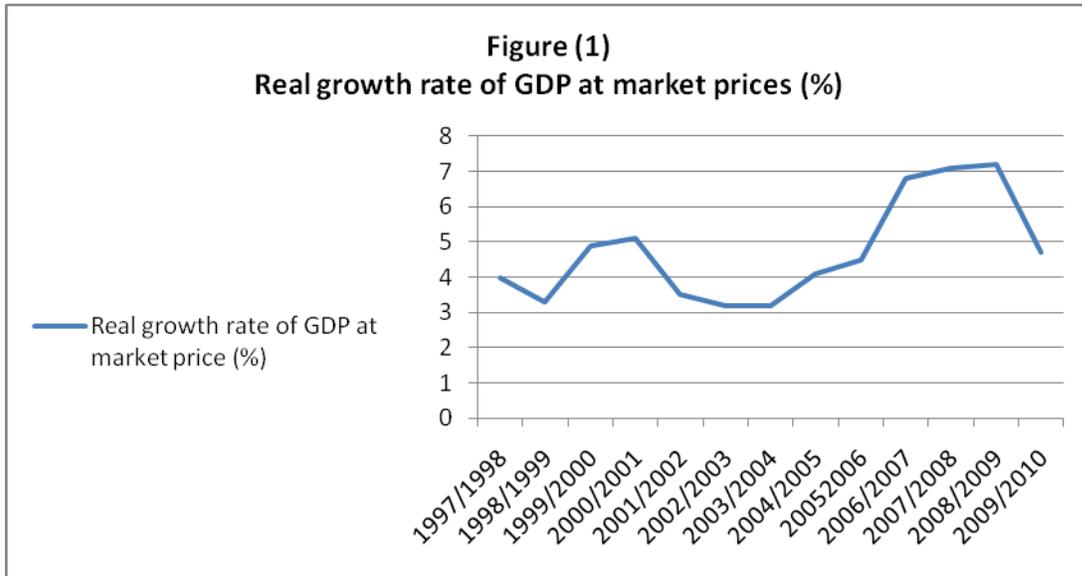
*Based on the Keynesian view of monetary policy that stresses the central bank's capability to have an impact on the real cost of borrowing by changing monetary policy, conducting successful monetary policy is necessary to stabilize output over an economic cycle depends on understanding of the timing and impact on monetary policy shocks on key economic variables. Starting the year 1997/1998 which witnessed the Asian financial crises and till the year 2008/2009, the Egyptian monetary authority was concerned with achieving multiple objectives, which were conflicting in several instances. These objectives included attaining high economic growth while maintaining low inflation and preserving a stable exchange rate. Using the inductive methodology the paper tries to evaluate the performance of the monetary policy towards accomplishing its announced targets during the mentioned period. The paper concluded that the monetary authority did not control a consistent indicator of the monetary stance, but rather used poor operational monetary policy instruments, with an inefficient discretionary approach, and therefore was unable to keep stable prices, boost economic growth rates and control the currency exchange rate. The paper suggests a middle framework between pure discretionary and strict rules approaches which permits the policy maker to focus on a target but at the same time allows flexibility to respond to different shocks to the economy.*

## **INTRODUCTION**

The principal objective of monetary policy during the period in consideration is more or less unchanged, focusing on price stability and stabilization of the exchange rate. Moreover, the monetary authorities had other goals which include fostering output, promoting exports, and raising foreign competitiveness.

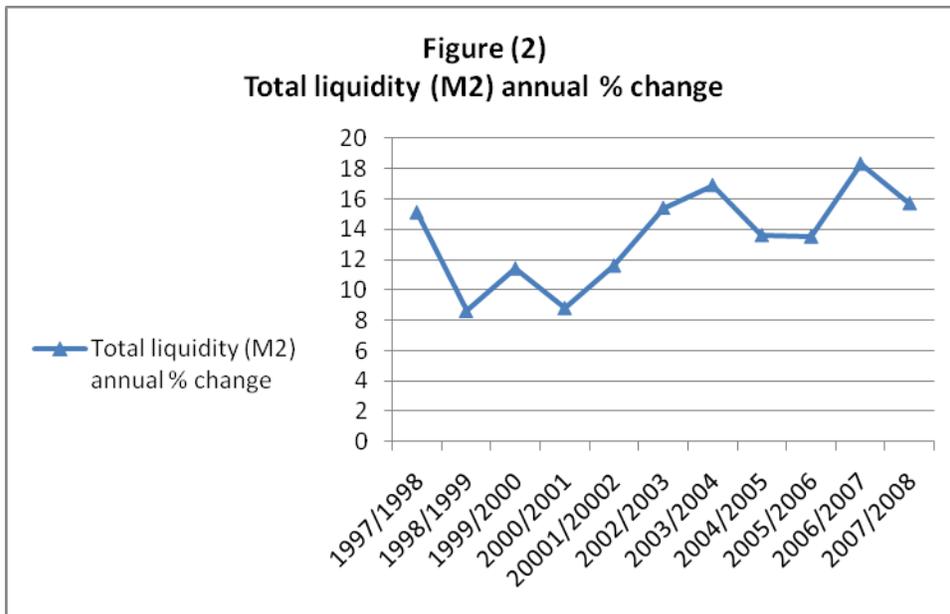
During the period 1997/1998 and 2002/2003, the central bank of Egypt's principle target was to control the excess reserves, growth in total liquidity M2 was the intermediate target. In 2003, the CBE changed its focus on realizing price stability as the main target of its monetary policy. Therefore we divide the period into two phases, the first one from 1997/1998 to 2002/2003 and the second phase from 2003/2004 to 2008/2009.

The following figures show the trends in some indicators that were the focus of the monetary policy in different intervals of time.



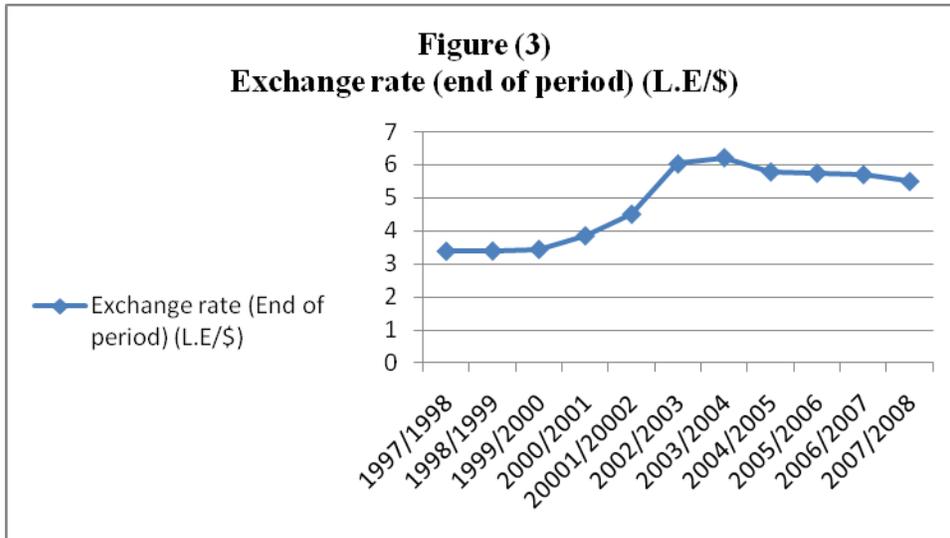
Source: Central Bank of Egypt annual reports different issues

Figure (1) shows the real GDP growth rate trends that started by the slow down resulting from the Asian financial crisis then ups and downs in short terms cycles.



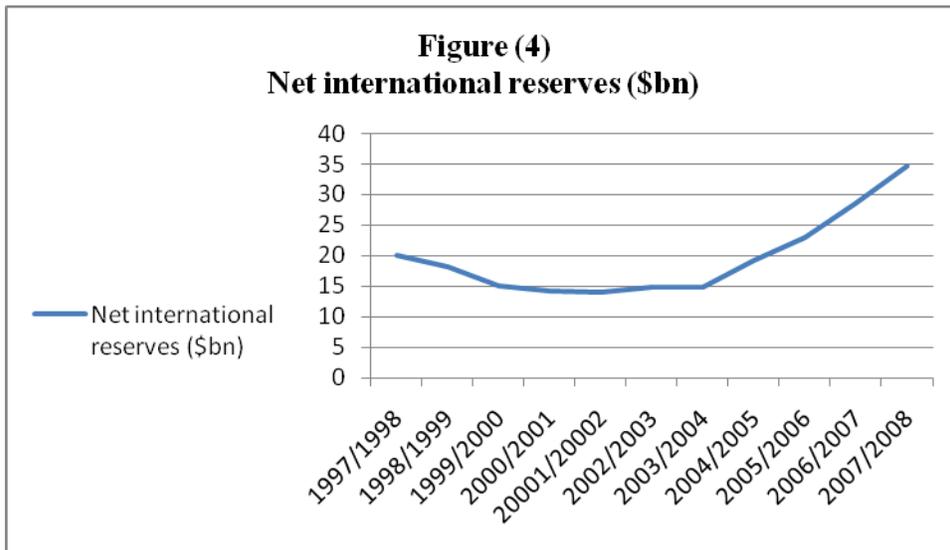
Source: Central Bank of Egypt annual reports different issues

Figure (2) shows the total liquidity (M2) annual percentage change during the period which showed ups and downs trends except for the period from 2000/2001 till 2003/2004.



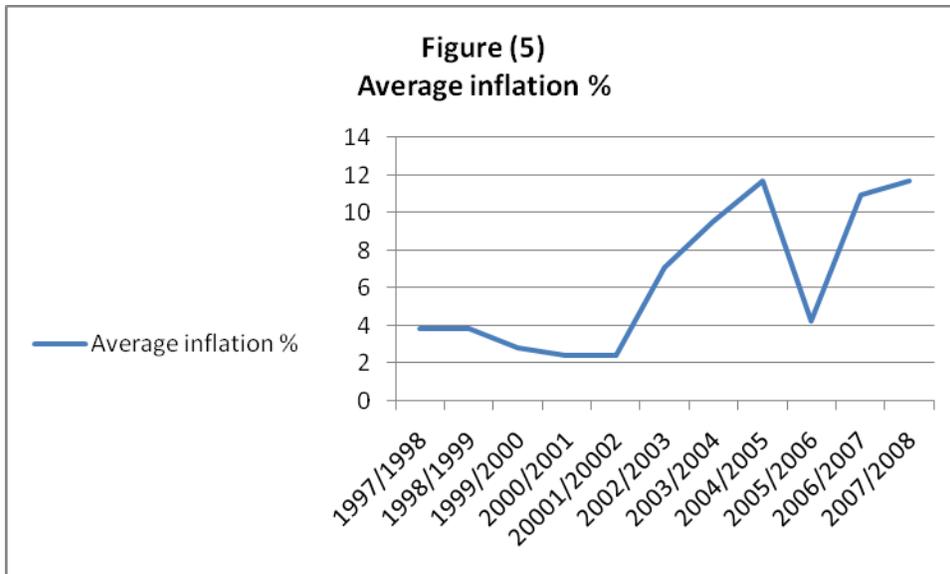
Source: Ministry of State for Economic Development statistical indicators

Figure (3) shows the exchange rate (L.E/\$) during the period which showed continued increase in values from the start of the period till 2002/2003 then hardly showed a trend of decline.



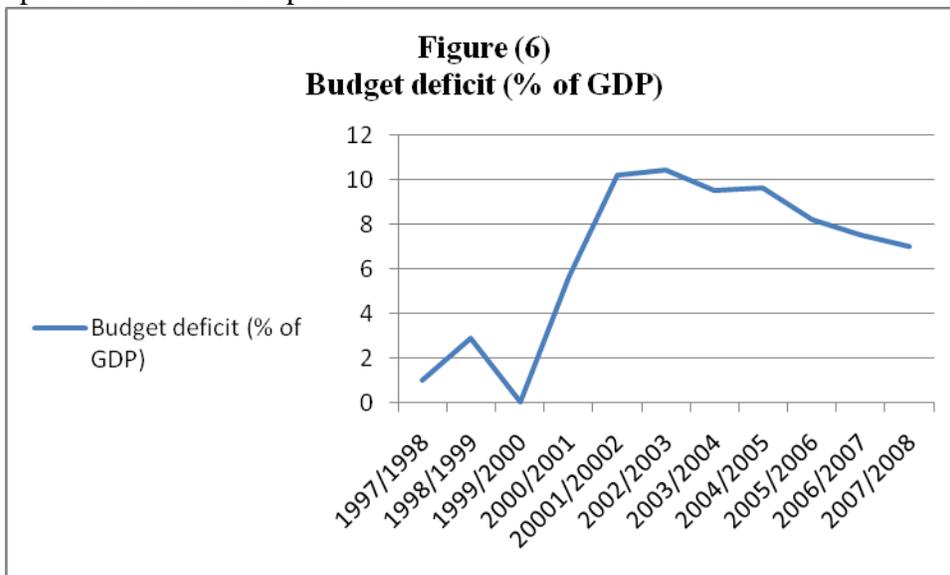
Source: Ministry of Finance data and statistics

Figure (4) shows the values of net international reserves (\$bn) during the period which after continues decreasing from the start of the period till the year 2003/2004, it started to grow till the end of the period.



Source: Central Bank of Egypt Economic Review different issues

Figure (5) shows the Average inflation rate during the period which was unstable and had ups and downs in sharp trends.



Source: Central Bank of Egypt Economic Review different issues

Figure (6) shows the budget deficit as a percentage of the GDP during the period, which showed a sharp rise from the year 1999/2000 till the year 2002/2003, then gradually started to decline.

Analyzing the different figures that represented main objectives of the monetary policy during the period in consideration, we conclude that the monetary policy had no clear influence on maintaining any of these objectives except for just short intervals of time.

In the following sections we will analyze each phase, steps and mechanisms taken to deal with the situation.

### **THE FIRST PHASE: RESPONSIVE POLICIES TO ECONOMIC SHOCKS (1997/1998-2002/2003 )**

In 1990's Egypt undergone massive reform of the banking sector within its adopted Economic reform program, the growth of the banking sector together with the liberalization process undertaken in the economy represented an extra burden on the Central Bank of Egypt as the main regulator of the banking industry.

In the period 1997/1998-2001/2002 in addition to the principle target of controlling the excess reserves, the short run burden of curbing inflation and macroeconomic adjustment fell on monetary policy.

This phase witnessed three major shocks the Luxor terrorist attack in 1997, and the Asian financial crisis of 1997-98, and the September 11 attack (2001) which negatively affected the growth of credit to the private sector. Furthermore the capital outflows that followed the international financial markets crisis contributed to the worsening of the overall balance of payments.

The monetary authorities responded to this situation by letting commercial banks absorb the increase in foreign exchange demand and increase domestic credit, this increased the pressure on the exchange rate and forced the central bank to tighten monetary conditions during 1999-2000. In a situation of high dollar demand, dollar shortages developed. The defense of the exchange rate peg eventually led to a sharp decrease in international reserves which in turn generated expectations for devaluation and led to an increase in the demand of US dollars and further losses in reserves during the period 1998-2000 as shown in figure (4).

Lacking access to monetary policy, the government adopted an expansionary fiscal policy that contributed to a budget deficit as shown in figure (6). This deficit was largely financed by the selling bonds to the central bank, causing an increase in the central bank credit to the government.

In the year 2000 a lower depreciation of the Egyptian pound was accompanied by a decrease of the discount rate and reserves requirements, in addition to an expansion in the central bank's credit to the government. These mixed policies generated expectations for depreciation and created new currency shortages encouraging the foreign currency black market.

The tight monetary policy imposed in 2001 slowed the growth of credit to the private sector.

Since the year 2001, the central bank has tried to revive the economy and increase liquidity by lowering the minimum lending rate and the obligatory reserve and liquidity ratios. It removed the obligatory reserve ratio for long-term deposits and authorized

banks to include several stocks and bonds in calculating liquidity ratios in addition to introduction of the domestic currency overnight interbank market.

The total liquidity (M2) grew in 2001/02, however loans to the government increased by 22.5%, while those to the private sector rose only 9.5%. In this uncertain climate, banks were very reluctant to offer loans but rather focusing their activity on the least risky sectors, such as electricity, oil, natural gas, communications and food processing.

The reduction in foreign currency reserves in the year 2002, along with the currency liquidity crisis put great pressure on exchange rates. For six months, the banking system's supply of dollars was not sufficient for the needs of importers and private individuals which had to be met by the black market.

The Egyptian pound was devalued by stages in the years 2001 and 2002, the central bank announced the pound would be fixed at E£4.51/\$, with fluctuation bands of 3 per cent each way for banks and currency exchange bureaux.

Since early 2002 however, the central bank's inability to supply foreign currency has effectively paralyzed the currency market, pushing banks and bureaux to rely on their own resources. This shortage of foreign currency is a serious obstacle to economic growth.

The increase in the money supply, however, was partially absorbed through increased government borrowing, partially through excess liquidity in the banking system (though share of banking deposits in M2 has declined), and partially through deterioration of the capital account.

### **THE SECOND PHASE MULTIPLE OBJECTIVES (2003/2004 – 2008/2009) TURNING POINT IN OBJECTIVES (2002/2003)**

Law No. 88 of 2003 of the "Central Bank, Banking Sector and Monetary System" made price stability entrusts the primary objective of the Central Bank of Egypt (CBE). The CBE thus moved from a quantitative operational target (excess reserves) to a price target. The global economy continued to slow down during this year. FDI flows posed a decline during 2002, for the second consecutive year, hitting its lowest level since 1998.

The CBE continued its target of maintaining price stability to maintain the real growth rate of GDP at factor cost, at 3.2%, which was the same level achieved in FY 2001/2002. In the year 2003 it moved towards a floating exchange rate regime.

The same year witnessed a reduction in the CBE lending and discount rate which led to an increase in the growth rate of domestic liquidity.

The results of the actual implementation of the monetary policy have been consistent with the set targets. The growth rate of domestic liquidity (M2) increased, money supply (M1) growth rate accelerated but the real GDP growth rate declined and inflation increased (figure 5).

This was partially a result of the effects associated with the floating of the Egyptian pound in 2003 and the consequent higher import prices.

#### **FOSTERING GDP GROWTH RATE (2003/2004)**

The performance of the global economy improved during this year, GDP real growth rate at factor cost increased.

The monetary policies helped increase investments in both government and private sectors. They also helped achieve a relative stability in the foreign exchange market and improve the balance of payment current account surplus.

The monetary policy aimed to maintain price stability through adjusting money supply to its demand, taking into consideration the targeted GDP real growth rate.

Accordingly, the CBE continued to use its monetary policy tools to achieve the required economic growth. The reserve requirement ratio CBE lending and discount rate remained unchanged, while open market operations conducted by the CBE aimed at absorbing the excess liquidity in banks. The Ministry of Finance issued treasury bills for the CBE to be used in such operations which resulted in an increase in domestic liquidity. In the same year net international reserves increased (figure 4), while inflation rate increased (figure 5).

The most increase in total credit facilities granted by banks during the year under review concentrated in those granted to the private business sector which increased debts of this sector to banks.

The year witnessed a rise in the foreign exchange rate as shown in (figure 3) which created a problem of bad and non-performing loans granted to investors in US dollars due to their inability to repay bank loans.

#### **A CONTRACTIONARY POLICY LOWERING INFLATION (2004/2005)**

The global economic performance slowed down during this year associated with the rise in world oil prices, thus affecting consumer demand and investment expenditure.

During this year, GDP growth rate rose. The monetary authority made a reduction in the overnight deposit and lending rates and the CBE lending and discount rate, and in its pursuit to achieve price stability, the US dollar selling rate announced by the CBE declined.

As for the management of international reserves, the CBE pursued an investment policy aiming at using other types of financial instruments, with a reasonable degree of risk and returns higher than deposits, thus net international reserves rose.

While a rise in domestic liquidity happened resulted from an improvement in net foreign assets, the monetary authorities raised interest rates to encourage the Egyptian pound as a saving instrument. The inflation rate declined.

The rise in total deposits during the year was concentrated on local currency deposits, the Central Bank started to raise interest rates again pursuing a non-expansionary monetary policy. This policy led to an increase in the annual growth rate of broad money (M2), The CBE used open-market operations to absorb the excess liquidity in the banking system.

The decline in inflation created a non-inflationary environment contributing to the rise in growth rates.

### **EXPANSIONARY POLICIES WITH NEW TECHNIQUES (2005/2006)**

The CBE worked on price stability through the use of overnight interest rates on interbank transactions as an operational target for this policy. It introduced a new system based on an interest rate “corridor”. The overnight lending and the overnight deposit rates, define the ceiling and floor of the corridor, respectively. By setting the rates on the standing facilities, the monetary authority determines the corridor within which the overnight rate can fluctuate.

The CBE continued during the year to absorb the excess liquidity in the banking sector through open market operations. It began issuing a new instrument namely, certificates of deposits (CDs) with maturities spanning up to one year, and CBE notes with maturities of over one to two years. The annual growth rate of domestic liquidity (M2) increased.

The preference for saving in local currency continued, with inflation remaining at an acceptable level. This is clearly shown by the fact that LE time and saving deposits remained the main contributor to the growth in broad money (M2) during the year.

The LE exchange rate continued to improve leading to a rise in net international reserves.

The increase in domestic liquidity was mainly attributed to the growth in local currency deposits at banks; and the rise in foreign currency deposits.

### **HIGHER GROWTH RATES AND INFLATIONARY PRESSURES (2006/2007)**

The market interest rates on deposits and loans have become more responsive to changes in the CBE key interest rates.

The annual growth rate of domestic liquidity (M2) accelerated with higher rates than that of real GDP (7.1 percent) plus the CPI inflation rate (8.5 percent). However, the fact that quasi money accounted for most of the increase in domestic liquidity helped to hinder the inflationary pressures. Net international reserves (NIR) at the CBE continued to increase, as a result of improved exchange rate and implementing the CBE’s new instruments.

At the end of the year the CBE started to raise interest rates (the overnight deposit and lending rates) in response to the inflationary pressures resulting from the acceleration of economic growth; as a result the inflation rate limited its acceleration.

### **CONTINUED INFLATION (2007/2008)**

During this year inflation gradually accelerated due to rise in international food prices, the regulated price adjustments of energy and petroleum products, and the high economic

growth rates. Expectations of higher inflation caused the CBE to raise the deposit and lending rates, which held back the growth of domestic liquidity (M2).

The CBE continued its higher degree of flexibility in the LE exchange rate. Net international reserves at the CBE increased.

### **CONTROLLING INFLATION (2008/2009)**

The CBE continued to pursue the objective of maintaining stable prices using the overnight interbank interest rate, and the corridor system. Due to rise in inflation, the monetary authorities decided to raise interest rates. At the end of the year, inflation started to decrease causing the CBE to lower interest rates.

The year witnessed an increase in domestic liquidity (M2) due to increase in sales of foreign currency to banks. M2 recorded less than half the growth rate of the previous corresponding period.

### **CONCLUSION**

The CBE in achieving its multiple objectives used various quantitative and price instruments at different points in time, leading to a lack of consistency in monetary management.

The CBE when dealing with the economic shocks of the first phase it imposed a pressure on the foreign exchange rate that forced it to apply a tighten policy and depleting net foreign reserves, at the same time it depreciated the currency resulting in further currency shortages.

In the year 2003, when the main objective of the monetary policy changed to maintaining price stability, the inflation continued to increase until reaching its higher levels (11.7%) in the year 2004/2005 (figure 5).

It was observed that, at the same period of applying economic reform programs that included major reforms in banking sectors (1990's), several economic shocks have faced the economy that was under the CBE's responsibility to deal with using its monetary policy tools. The CBE could hardly apply effective monetary policy at the same time of the implementation of major financial liberalization in the banking sector, due to lack of time to gain sufficient policy tools ready to perform successful monetary policies such as well marketed treasury bills, transparency, independency and effective financial and institutional framework). Ineffective policy decisions that were not consistence with macroeconomic outcomes can create economic distortions.

The CBE's decrease in the interest rates to pursue an expansionary policy- in the times of high exchange rates -increased foreign capital outflows and caused more depreciation of the domestic currency. Therefore monetary authorities when focusing on their main target should put into considerations other impacts. Furthermore the appreciation of the real exchange rate caused huge increase in governmental imports which were financed through bank loans enlarging the budget deficit. The monetary authority should move towards an exchange rate regime that reflects the real value of the domestic currency.

The effect of monetary policy on GDP growth rate in the long run depends on its ability to maintain price stability, while the legal framework in Egypt gave the CBE the responsibility to play this role, it might not have enough tools to perform this. It did not control a consistent interest rate-based indicator of the monetary stance. It introduced the domestic currency overnight interbank market in 2001, and the overnight interest rate was a weak measure of the monetary stance. The discount rate can be considered a poor operational monetary policy instrument because it is usually subjected to strong administrative control. Thus, shocks in the discount rate do not always indicate the monetary stance. Furthermore the bank lending and deposit rates have shown limited response to business cycle conditions.

It was obvious that the monetary policy during the period in consideration was discretionary rather than ruled. Discretionary policy has the problem of time lags between deciding that a policy should be changed and the full effects from the change in the policy, and it can cause uncertainty for private decision makers and might not fit for extended periods, in addition to its vulnerability to political pressures.

The paper suggests a middle framework between pure discretionary and strict rules approaches which permits the policy maker to focus on a target but at the same time allows flexibility to respond to different shocks to the economy.

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# **IMPACT OF LAISSEZ FAIRE IN INTERNATIONAL TRADE: A CRITIQUE OF THE PROPOSED UNITED STATES – COLOMBIA FREE TRADE AGREEMENT**

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## ***ABSTRACT***

*Trade theory advocates that the removal of barriers in a bilateral trade framework increases business flows and improves economic efficiency. Consequent factor market developments lead to new employment as well as capital expansion opportunities, which, when realized, contribute significantly to regional economic growth. In practice, socioeconomic variances and the level of business maturity actually dictate whether the outcome is a net gain for either partner. Colombia is the third largest trading partner of the US and its largest export market for agricultural products in South America. A Free Trade Agreement (FTA) between the United States and Colombia was negotiated and signed in June 2007, and is now awaiting congressional approval in the US. The opposition to this FTA in the US is due to Colombia's track record of human rights violations, although that has improved significantly during recent years. Prima facie indications are that the FTA can benefit both countries, especially during the economic recession. It can also provide the US with a strategically located, democratic government as a trade partner in South-America. This paper explores the benefits and negative facets of the US–Colombia FTA, based on evidence from the last decade.*

## **ECONOMIC RELEVANCE OF FREE TRADE AGREEMENTS (FTA)**

FTAs provide partner nations with reciprocal duty-free access to each others' markets, effectively creating a common market, thereby facilitating trade flows and increasing economic efficiencies. The increase in scope and speed of market access results in faster turnover and creation of investible domestic surpluses. FTAs normally provide better and cheaper goods and services through increased competition, which leads to consumer surpluses for all partners. Economic welfare gains from a FTA may be viewed as the total of increases in consumer and producer surpluses net of the changes in revenue from customs tariffs. There are also other spillover benefits of FTAs including higher levels of innovation and investment that can contribute to economic recovery, growth and distribution (Hoekman and Schiff, 2002).

Over 200 regional FTAs now account for about one-third of global trade. While these generally promote economic growth in member nations, they can also create obstacles for multilateralism. There is speculation whether a large number of FTAs will threaten the health of the worldwide free trade system (Newfarmer, 2005).

## **THE UNITED STATES – COLOMBIA FTA**

The *United States-Colombia Trade Promotion Agreement* (CTPA) is the proposed FTA, which is a bilateral commercial treaty for eliminating obstacles to trade and favoring private investment between the United States and Colombia. This agreement emerged from failed multilateral negotiations between the United States, Colombia, Peru, and Ecuador. The United States concluded negotiations with Peru in December 2005 while negotiations with Ecuador are continuing. The first bilateral trade negotiations between United States and Colombia were initiated in May 2004, and the US-Colombia FTA (will be henceforth called the CTPA) was signed in November 2006. The agreement was renegotiated to include more rigorous environmental and labor standards via a Protocol of Amendment that was signed in June 2007 which was presented by both countries to their respective congresses.

The proposed CTPA is a comprehensive FTA that will address issues relating to trade commerce, customs administration and trade facilitation, and remove technical barriers to trade, while safeguarding intellectual property rights, and labor and environmental standards. It will additionally include government procurement, investment, telecommunications and electronic commerce. Under this agreement, Colombia will eliminate most of its tariffs on US exports, and US companies will have greater access to Colombia's services sectors than other World Trade Organization (WTO) members. US companies will gain an advantage in Colombian markets by the elimination of tariffs on 80 percent of US consumer, industrial and agricultural goods. An additional 7 percent of US exports will be covered under the duty-free umbrella within five years of implementation, while the remaining tariffs will be eliminated ten years after implementation of the CTPA (Eslava, Haltinwanger and Kugler, 2004).

On the Columbian side, after the CTPA was signed it was submitted to the Colombian Congress in November 2006 and was approved in June 2007 and became a public law,

Ley 143, in July 2007. The Amendment was subsequently approved by Colombian Senate and House and became public Law, Ley 1116, in November 2007. The Colombia's Constitutional Court completed its review in July 2008 and concluded that the Agreement conforms to Colombia's Constitution.

The CTPA is still languishing in the US Congress. It was not approved before the change of administration in January 2009, because it failed to garner bipartisan support. The current administration will reportedly favor the free trade initiative, provided Colombia can demonstrate adequate protection of human and labor rights. But there is no declared timetable yet, to implement the CTPA, given the looming controversy over the safety of Colombian labor leaders.

This is, however, not the best terms of trade for the US. Currently, 90% of Colombian products enjoy unilateral free access to US under the *Most Favored Nation* tariff rates or the Andean Trade Preference and Drug Eradication Act (ATPDEA) signed in 2002. On the other hand, US exporters currently pay tariffs as high as 35 percent to enter the Colombian market. The CTPA will establish bilateral access and provide similar benefits to US exporters, thus creating economic opportunities for US manufacturers, workers, farmers and resource suppliers related to export businesses. It will generate better incomes for US Companies and could potentially increase US exports by 13.7 percent or \$1.1 billion annually, contributing \$2.5 billion to US GDP, according to the forecast from the US International Trade Commission (USTR, 2009).

According to the Latin America Trade Coalition's *Colombia Tariff Ticker*, the cost of the delay is real because US companies have paid \$2.3 billion in unnecessary duties to the Colombian Treasury in the 3 years since the FTA was signed. The amount of \$2.3 billion leads to higher prices in Colombia for US goods and services and reduced profits and jobs for US companies. Hence the CTPA can contribute positively towards the recovery from a long recession since it can offer US companies better access to Colombia's growing and dynamic market.

Colombia has the potential to be a strong trading partner, since there are already more than 10,000 US operating exporters, including 8,500 small and medium-sized companies.

### **US EXPERIENCE WITH ANOTHER FTA**

The North American Free Trade Agreement (NAFTA) between the United States, Canada, and Mexico was initiated in 1994 creating the world's largest free trade area in geographic terms (Agama and McDaniel, 2002). Duties and quotas were phased out and have been eliminated for all trade in NAFTA since 2008. The US-NAFTA trade has crossed the \$1 trillion mark in recent years, as shown in Table 1, and US exports to NAFTA has almost doubled from \$217 billion in pre-NAFTA 1993.

	Export	Import	Total
2007:	452	568	1020
2008:	412	555	967

Table1: US – NAFTA trade in billions of current US\$

US foreign direct investment (FDI) in NAFTA Countries (stock) was \$348.7 billion, while NAFTA's FDI in the United States was \$219.2 billion in 2007. While the expectations in the mid-1990s was that the NAFTA would improve the US trade balance and result in job gains in the United States, the US-NAFTA trade deficit has grown recently. The US goods account trade deficit with NAFTA was \$116 billion in 2007 and \$143 billion in 2008, while this was only \$9 billion in pre-NAFTA 1993. The US services account however shows a surplus with NAFTA of \$26.5 billion in 2007. Critics claim that the growing current account deficit with NAFTA may have cost 1 million jobs US-wide (Fernández-Kelly and Massey, 2007). However this is only a part of the story, since the pattern of the job losses by geographic location and economic sector is unclear. It is probable that low skill / low wage jobs were substituted by high skill / high wage jobs, which is the norm for international trade related employment and also consistent with the increase in the service account surpluses.

### **COLOMBIA'S EXPERIENCE WITH OTHER REGIONAL TRADE ASSOCIATIONS**

Colombia joined the general agreement on Tariffs and Trades (GATT) in 1981 and the country was an active member of this organization. Later, the Congress of Colombia approved the entry into the WTO, which replaced the GATT in 1994. Colombia became a party to all the agreements that are listed by the WTO. Other agreements currently implemented are (Fernandez, 2003):

- Andean Community
- The Group of Three (G-3)
- Colombia- Chile Agreement
- Andean countries and Mercosur agreement
- Colombia- Caricom Agreement
- Colombia – Panama Agreement
- Colombia and Central America countries

Colombia is a commercially significant market with functioning FTAs as well as some that are currently being negotiated.

### **Andean Trade Preference Act (ATPA) /ATPDEA**

This agreement started in December 1991 between the United States and four Andean countries (Bolivia, Colombia, Ecuador and Peru). The purpose of the agreement is to support the Andean countries in their fight against drug production and trafficking by

expanding their economic alternatives. This agreement was renewed and amended by The Andean Trade Promotion and Drug Eradication Act (ATPDEA) enacted in August 6, 2002. The ATPDEA provides duty-free treatment for certain products previously excluded under the ATPA. Although this agreement is a one-way preference program, it has had a positive impact on two-way trade between Colombia and the United States. Both US imports and exports to and from Colombia grew by an average of 8 percent per year between 1991 and 2007. Consequently, it created thousands of jobs in both countries. In addition, Colombia has been the largest market for US exports at \$8.6 billion, which represents 54 percent of US exports to ATPA members (Colombia, Bolivia, Ecuador and Peru).

FTAs being negotiated are:

The Colombia-Canada FTA which is in final negotiations and it could be implemented next year. Colombia closed the negotiations of a free trade agreement with Canada in June 7, 2008. This agreement will benefit both countries; it will provide market access, investment, rules for trade goods and services. Bilateral trade between Colombia and Canada accounted \$915 million.

The Colombia-European FTA (EFTA) Colombia initiated free trade agreement with EFTA members – Iceland, Norway, Switzerland and Liechtenstein – in June 2007.

Colombia-European Union Agreement The purpose of this agreement is to intensify and improve co-operation and enhance and facilitate bi-regional trade and investments.

#### **US-COLOMBIA TRADE PROFILE**

Colombia's total exports increased from \$12 US billion in 2001 to \$30 US billion in 2007, at a compounded annual growth rate of 16.5%, while total imports have increased from \$13 US billion to \$33 US billions, at a compounded annual growth rate of 16.8%, during the same period.

United States is the largest trading partner of Colombia in both exports and imports, as shown in Figures 1 and 2. The US was the source of over one-fourth of Colombia total imports in 2007. In 2007, the United States exported a record \$1.2 billion of agricultural products to Colombia. The top products were beef, pork, poultry, dairy products, vegetables, fruits and tree nuts, wheat, barley, rice, soybean, sugar and sweeteners, processed products, tobacco and cotton.

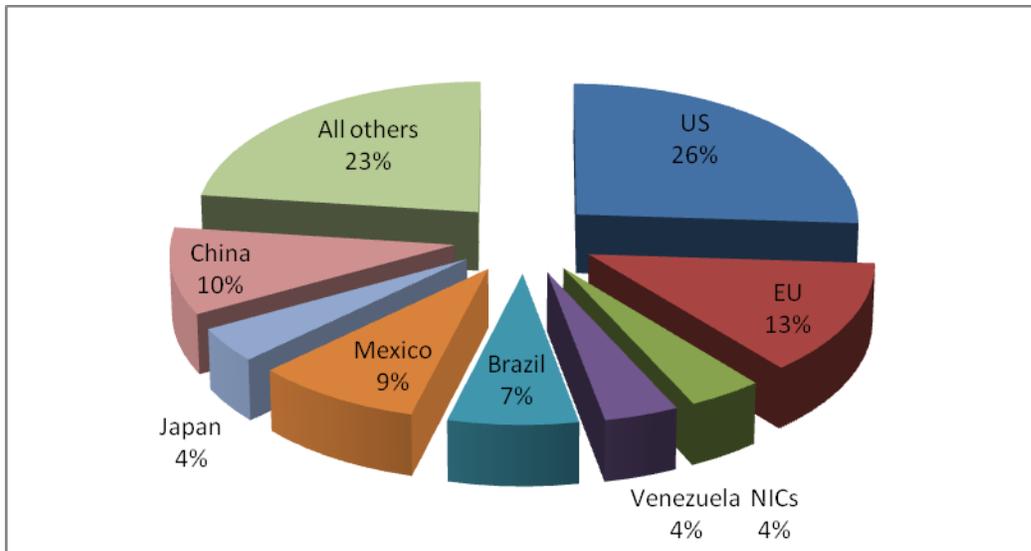


Figure 1. Colombian Imports by Country in 2007

In the same year, the US accounted for over one-third of all Columbian exports.

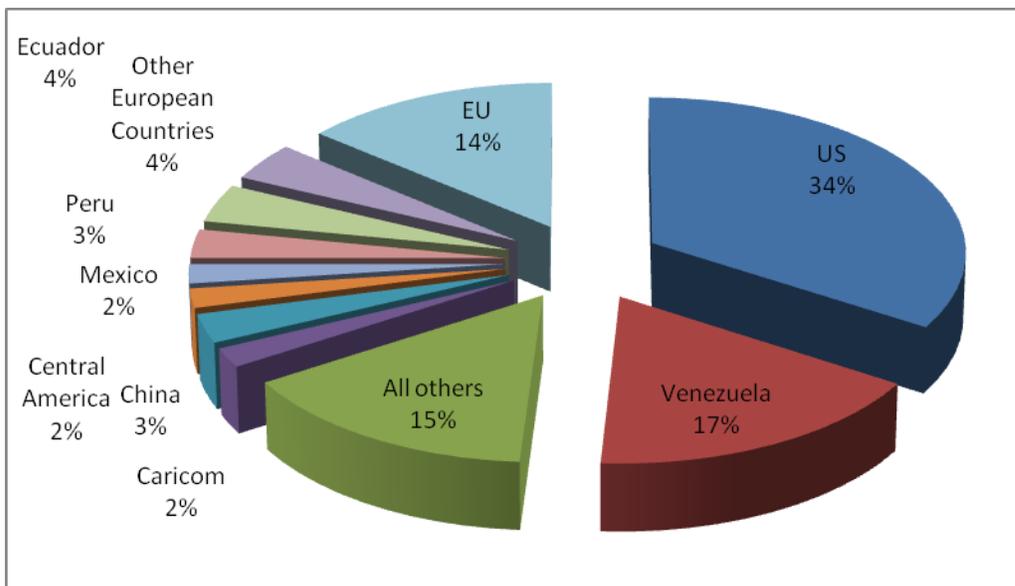


Figure 2. Colombian Exports by Country in 2007

Colombia is the third largest trading partner of United States in the Western Hemisphere outside NAFTA. Colombia represents a large market with significant import potential. It has the third largest population (47 million in 2007) and the fifth largest GDP (\$171 billion in 2007) in Latin America. It is also the largest export market for agricultural products in South America (Consulate of Columbia at Atlanta, 2008).

The total value of trade in goods and services between US and Colombia was \$18 billion in 2007. As shown in Table 2, Colombia is the third largest and the fastest growing export market for the US in South America.

Country	2006 US\$ billion	2007 US\$ billion
Brazil	19.2	24.6
Venezuela	9.0	10.2
<b>Colombia</b>	<b>6.7</b>	<b>8.6</b>
Chile	6.8	8.3
Dominican Republic	5.3	6.1
Argentina	4.7	5.8

Table 2 US Exports to Trading Partners in Latin America

In 2007, US exports represent \$8.6 billion, accounted for nearly 30 percent of economic growth. US exports to Colombia have almost double as Colombia's economy recovered from a recession in 2000-2001. Bilateral trade agreement between Colombia and the United States has expanded by 70% over the past decade as shown in Figure 3.

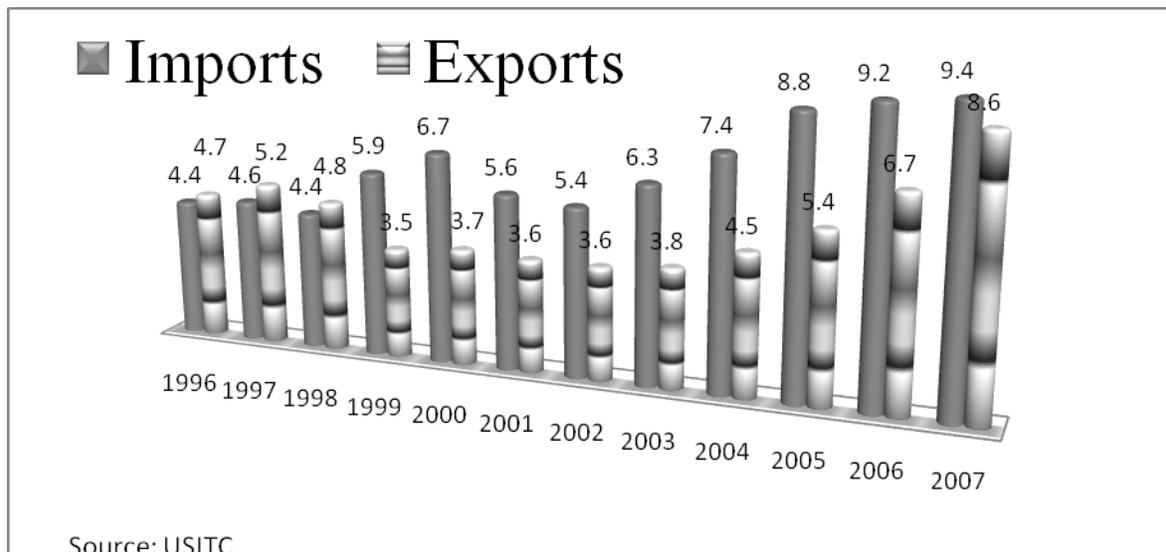


Figure 3. US-Colombia Bilateral Trade (US Imports and Exports in \$Billions)

Exports are critical to the stability and growth of US economy. In 2007, US exports contributed to about 30 percent of economic growth. Trade with Colombia provides an expanded economic opportunity in a growing and dynamic business climate.

The CTPA will provide benefits for many farm products that will receive duty- free treatment in Colombia. These include beef, pork, poultry, cotton, wheat corn, rice, and soybean meal, fruits and vegetables, including apples, pears, peaches and cherries, as well as processed food products like frozen french fries, cookies and dairy products.

### **SOCIO-ECONOMIC BENEFITS OF TRADE FOR COLOMBIA**

Economic progress in Colombia has helped to promote social development, reduce violence and curb the activities of drug cartels. Colombia is now more stable and prosperous but illegal elements and violence remain just below the surface. The CTPA has the potential to provide viable alternatives to violence and trafficking, through rapid economic growth, job creation and foreign investments. Colombia has been fighting corruption and illegal activities, and the approval of the CTPA can transform it into a reliable partner for the US in the region. This is borne out by some recent economic indicators, as stated below and depicted in Figures 4 and 5.

- Unemployment rate has fallen from 16.1 percent in 2001 to 12.4 percent in Jan 2008
- GDP has increased from 1.66 percent in 2001 to 7.62 percent in 2007
- Total imports have increased from \$13 US billion to \$33 US billions
- Total exports have increased from \$12 US billion to \$30 US billion

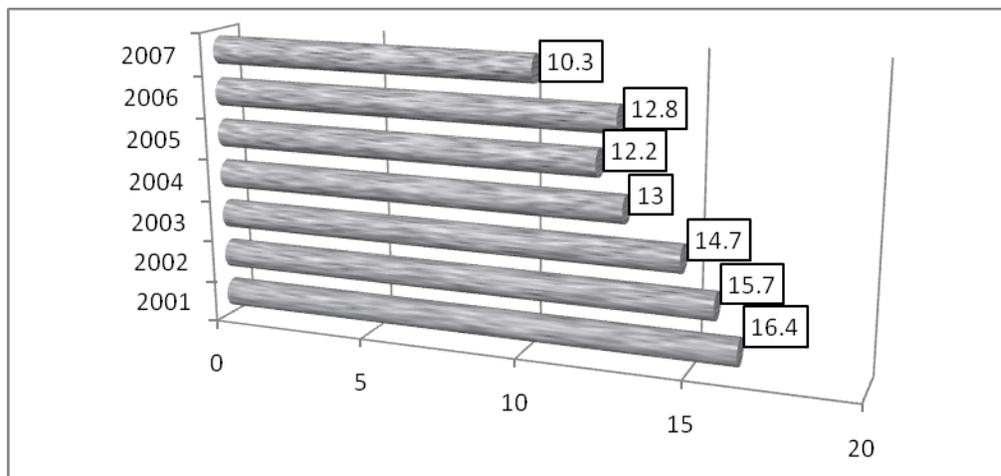


Figure 4. Colombia's Average National Unemployment Rate (Percent)

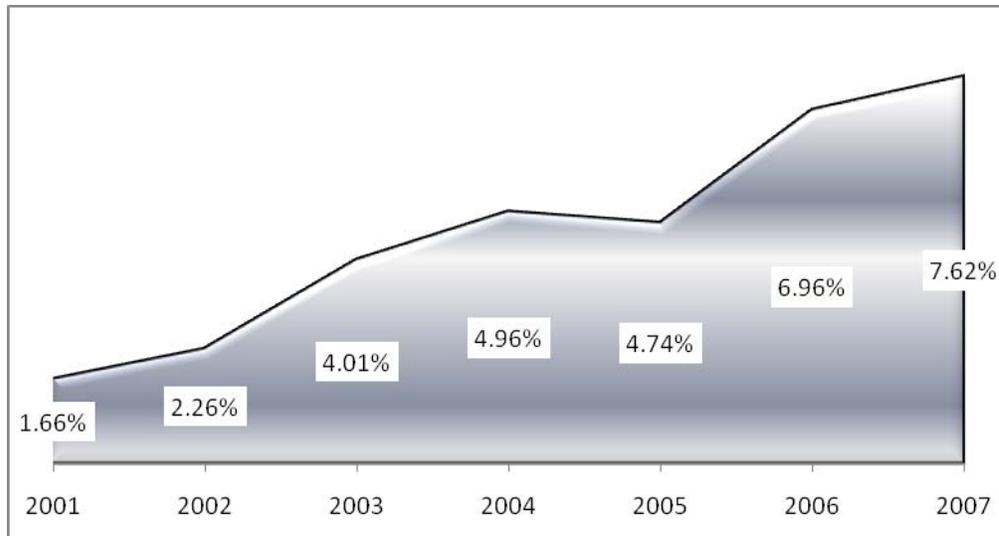


Figure 5. Colombia's Recent GDP Growth (Percent)

### **MUTUAL GAINS FROM THE CTPA**

The CTPA will provide US businesses, farmers, ranchers, etc. more cost effective access to the Colombian market, since over 80 percent of US consumer and industrial goods will enter Colombia duty-free. After the implementation of the CTPA, Colombia will eliminate its price band system, making a variety of US goods and services more price competitive. It will also eliminate barriers to US services, provide a secure legal framework for investors, protect intellectual property and improve the environment. Some key elements of the agreement are:

- Uniform market access, for example no agricultural products are excluded.
- Phased tariff elimination within 15 years, starting with immediate zero-duty for about 80% of US exports.
- SPS measures have been resolved for agricultural trade (SPS signifies *Sanitary and PhytoSanitary* measures set out in the WTO guidelines, on how governments can apply food safety and animal and plant health measures within trade agreements).
- Exports subsidies have been precluded by mutual agreement for products shipped into each others' markets.

The United States and Colombia have been working in tandem to combat regional terrorism and the illicit trade of narcotics. As a result, Colombia is more peaceful and prosperous than it was six years ago, suggesting that economic growth may help to alleviate crime and other societal maladies. The implementation of the CTPA will provide a boost for these efforts by serving to validate US endorsement of Colombia's recent aggressive efforts against crime, besides contributing to its overall development.

The CTPA enjoys overwhelming (65.5% in a sample of 950) support of the Colombian people, according to a survey conducted by the consulate of Colombia in Atlanta. Colombians also feel that stronger ties with the United States will help the country become more secure, stable and prosperous, as demonstrated by over 500 responses in 3

months, to a request for public comment on the CTPA made by US Ambassador Ronald Kirk. There also appears to be strong support for the CTPA from US businesses, as evidenced by a spate of opinion pieces in the Business Week and the Wall Street Journal during 2009.

The CTPA is particularly lucrative for US agriculture, since Colombia is the largest agricultural market in South America. The American Farm Bureau and over 40 other agricultural industry and farm associations recognize the advantages and strongly support the CTPA since it will provide US products exported to Colombia with the same duty-free access already granted to Colombian products imported into the US. For example, producers of corn, which currently attracts a tariff of 68 percent, will have immediate duty free access to Colombia's market of 2.1 million metric tons, under the CTPA. Similarly, US horticultural exports like apples, pears and cherries that currently face a tariff rate of 15 percent, will attract zero tariff upon the enactment of the CTPA.

Agricultural imports from Colombia were valued at over \$1.8 billion in 2008, with the top products being coffee and coffee products (\$847 million), fresh cut flowers (\$370 million) and fresh fruits – mainly bananas (\$208 million). Colombia does not pose an import threat to the US farm sector and there are no current *Sanitary and Phytosanitary* barriers preventing the export of US products to Colombia.

### **PROSPECTIVE RESOLUTION OF OUTSTANDING ISSUES**

The main reason for the US opposition to the CTPA is the violence against union workers by the paramilitary organizations, and the continuing presence of drug cartels. Although the overall level of crime in Colombia has been subsiding, US congressional members insist on concrete evidence of sustained results in reducing the violence and impunity, before ratifying the CTPA.

Colombia has a poor track record of prosecuting cartels that threaten, abduct and often assassinate union leaders. There is a history of labor leaders being assassinated consistently, but scant attempt by the state to apprehend and prosecute the criminals (Gracia and Zuleta, 2004). While some 4000 trade unionists were murdered since 1986, only five perpetrators have been convicted. Opponents also point out that there are continual violation of the rights of Colombian workers by corporations and paramilitary organizations.

However, recent statistics show a sustained downward trend in crime, suggesting that the Colombian administration is committed to curb paramilitary violence, hostility towards union members and judicial impunity. The Colombian government established a Protection Program in 1997 to improve the safety of vulnerable segments of society. Between 2002 and 2007, the funding for this program increased by 141 percent, with union members as its core target segment. The protection program has had a great impact and contributed to the reduction of assassinations of trade union members in Colombia. While murders in the country overall decreased by 40 percent, assassinations of union members have dropped consistently by 80 percent between 2002 and 2007, as shown in Figure 6.

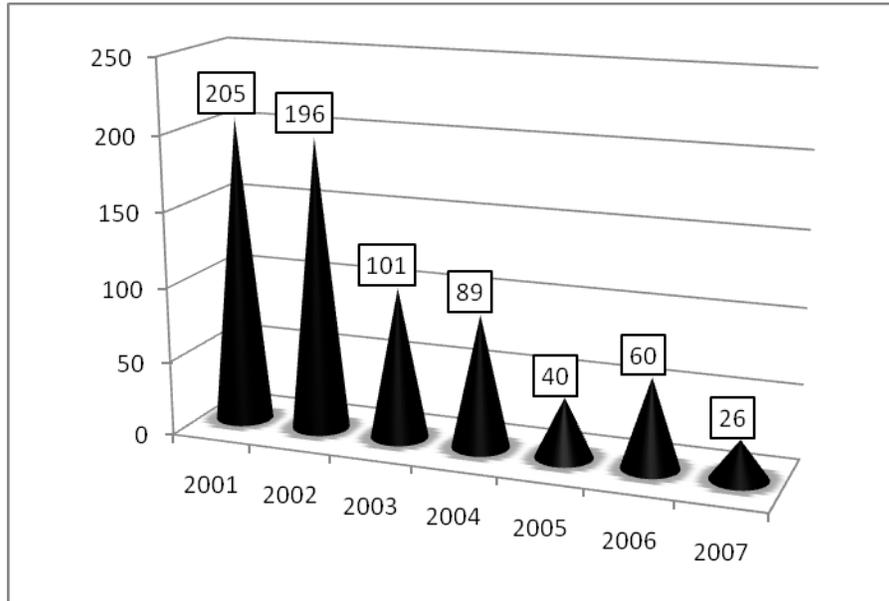


Figure 6. Declining Number of Assassinations of Union Members 2001-2007  
(Source: Embassy of Colombia.)

The Colombian government appears to be committed to employ significant resources to apprehend and prosecute the perpetrators of violent acts against union members. A culture of social dialogue has been accepted and enhanced through the creation of new mechanisms and the renewal of others including the *Tripartite Agreement* that consists of three parties – workers, employers and government – that work cooperatively to protect labor rights.

The United Nation’s International Labor Organization (ILO) removed Colombia from its labor watch list after 20 years. The Tripartite Agreement provides the mandate for the work of a new ILO office in Colombia that the Government authorized in 2006.

The actions to fight impunity include a constitutional reform that transformed the Colombian judicial system in 2004, with the support of the US Department of Justice. A new accusatory system will replace the old inquisitor system. The office of the Prosecutor General created a special sub-unit within the Unit of Human Rights, to investigate and prosecute violence against union members. Over 1200 criminal cases have been registered with a focus on 187 priority cases as determined by the unions, within one year of the advent of this subunit in February 2007. Specialized judges have also been assigned exclusively to cases of violence against union members. The resources allocated to the judicial branch and the office of the Prosecutor General have increased every year since 2002. The budget increased by over 70 percent, growing from US\$346 million in 2002 to US\$598 million in 2008. During the same period, the budget of the Judiciary also increased by almost 50 percent. This has helped the new judicial system to drastically

reduce processing time for cases, for example, the time for homicide cases has dropped by 75 percent and for drug trafficking by 90 percent (Griswold and Hidalgo, 2008).

In 2005, the Colombian Congress enacted the *Justice & Peace Law and Decree 128*, to demobilize violent guerrilla and paramilitary groups, through economic and social incentives, including de facto amnesties. The government has also extended permanent police presence to all municipalities of the country in 2007, which was absent in 168 municipalities even in 2002.

Colombia has a robust legal framework to protect the rights of workers, which includes the core labor standards defined by the ILO, namely:

- Freedom of Association and the Effective Right to Collective Bargaining
- Prohibition of Forced Labor
- Effective Abolition of Child Labor
- Non-Discrimination in Employment

Colombia has close to one million unionized workers in Colombia, and over 7,650 unions registered with Ministry of Social Protection. New resolutions have expedited the labor union registration process. Workers are allowed the right to form unions and the right to strike under the Constitution of Colombia. Colombia continues to reform its labor laws to achieve consistency with ILO standards. For example, in 2003, the Constitutional Court annulled various provisions limiting the rights of industrial unions to collective bargaining (Attanasio, Goldberg and Pavcnik, 2003).

## **PROGNOSIS**

While member nations do derive economic benefits from regional FTAs, they can be trade restrictive in the global context, simply because more remote nations do not have the same ease of access to the large US or the EU markets. Another negative for a developing nation could be the amount of resources they spend in negotiating FTAs, for instance in attaining compliance with standards set by the richer nation. In the short run, these redirected resources may imply loss of alternate domestic investment opportunities (Burfisher, Robinson and Thierfelder, 2001). So, in view of better long term prospects of an FTA signed between a developed and a developing nation, the higher income nation needs to safeguard the developmental goals of the lower income nation. These may take the form of inclusions of agriculture, which generate gains in rural areas, or lessening the stringencies in investment and intellectual property laws to lower enforcement costs, or the simple provision of trade-related technical assistance. The CTPA appears to be well grounded in these principles.

Although the CTPA is still pending ratification by the US Congress, it can evidently bring generate economies of scale and scope for both countries. In the US, it can potentially create thousands of jobs, which is vital in a period of economic recession, and considering that US unemployment rates (over 10 percent) are at historical highs.

The CTPA will benefit Colombia by opening its market to more import competition, which will provide its consumers with better quality products at lower costs. It can also

promote foreign direct investment and strengthen its socioeconomic relations with the largest economy in the world. A recent study by the University of Antioquia shows that not implementing the CTPA would decrease investment by 4.5 percent and GDP by 4.5 percent, while unemployment will increase by 1.8 percent and poverty levels will rise by 1.4 points.

The approval of the FTA would seal a deeper partnership between two nations that have been long-time friends and great defenders of market-based democracy. US will be a reliable partner in turbulent times and support a region where liberal values are under attack. Colombia has made significant progress in the areas of labor rights and protection for union members, since 2002. The government has strengthened the judicial framework of the nation, and improved the legal rights for trade unions. In addition, the government has reduced violence against union members, increased funding of the protection program and intensified the prosecution of violence against union members. The new challenge for Colombia is to build on the progress that has been made. The CTPA can provide the economic engine to sustain this momentum.

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# **STUDENT USE OF ONLINE STUDY TOOLS IN BUSINESS COMMUNICATION COURSES**

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## **ABSTRACT**

Many textbooks come with online study tools designed to help students succeed in classes. We as teachers promote the tools to our students as “free” add-ons that have the potential to increase their comprehension of material, ultimately improving their final grades. Do students actually use these tools, however? If so, what impact does their use have on the students’ exam grades? To address these questions, a study was designed to track the use and effectiveness (perceived and real) of the online study tools in five sections of an undergraduate-level business communication course at Stephen F. Austin State University. This paper presents the results of this survey, as well as suggestions for more effectively incorporating online study tools in the classroom.

## **INTRODUCTION**

Current college students are predominantly those who are part of the Millennial generation, one of the most technologically savvy generations in history. Numerous studies show that members of this generation incorporate the use of technology into their lives on a daily basis. In order to make textbook content more accessible and appeal to the learning styles of this generation, publishers have developed online study tools that include PowerPoint slides, audio lectures, interactive quizzes, games, and video segments.

Teachers often promote the tools to students as “free” add-ons that have the potential to increase their comprehension of material, ultimately improving their final grades. Research studies have been previously conducted regarding the use of online study tools when they first became available. Since this initial research, however, some very important questions remain. Do current students actually use these tools? If so, what perceived and real impact does their use have on the students’ exam grades? Also, does the teacher’s promotion of the tools affect student use and, ultimately, student grades on exams and other assessment measures?

The research for this paper was done to determine whether or not students used online study tools that are provided by publishers to help learn textbook content. With the purchase of a print textbook or online ebook, the online tools are available for the duration of a course. This study was conducted to determine how students perceive the usefulness of these online tools in preparing for an exam on textbook content. The study measured student use of online tools and the correlation, if any, between use of the tools and student grades on the exam. The students were surveyed after taking the first exam of the semester.

## **LITERATURE REVIEW**

The literature shows a wide variety of response and acceptance among students regarding the use of ebooks and online study tools. When ebooks and their ancillaries first appeared in the 1990s, many technology experts predicted that print books and print resources would become obsolete. However, in the 21st century, many college students still prefer a traditional print textbook, despite the growth in the ebook market. A four-year study by Gregory (2008) investigated undergraduate usage and attitudes toward electronic books. The findings showed that the students who were surveyed had mixed feeling about using ebooks, preferring traditional books over ebooks. Other research related to ebooks indicates low but increasing acceptance of ebooks (DuFrene, Lehman, & Biss, 2008).

There has been extensive research on how students use e books, but there has been no conclusive summary. This may be due to the wide variety of users and textbooks available and the fact that a print textbook is still being used by many instructors. In an article by Tenopir, the lack of data on the student use of ebooks was attributed to the fact that textbooks can be sold directly to students or to libraries; therefore, it is not yet determined how ebooks are being used by students and there is no single pattern of use that has evolved (Tenopir, 2008).

Until recently, students have shown a reluctance to read a textbook or access other ancillaries on an electronic device. However, ebooks are increasing in popularity because the technology for viewing content continues to improve (Mullan, 2009). Technological improvements are likely to lead to increased interest in the use of ebooks (McClure, 2009).

The potential of ebooks in education may be forecast by the increasing popularity of ebooks in general. Over the last five years, ebooks are the only book publishing segment showing consistent double-digit sales increase. The Association of American Publishers' (AAP) 2007 "S1 Report" showed that the sales of ebooks reflected an increase of 55.2 percent for that year (McKenzie, 2009). According to McKenzie, ebooks "bring lessons to life, engage struggling readers, and connect technology and learning." Struggling students have more choices and can benefit from built-in ebook functions and tools. Ebooks and online tools help 21st-century learners engage with technology, relieving the boredom often associated with traditional classroom activities.

With new social networking features designed specifically for the classroom, companies are combining the interactivity of Web 2.0 with text, providing evidence that ebooks are becoming increasingly important as the latest learning tool in academics. For example, VitalSource's Bookshelf etextbook platform, driven by Ingram Digital, provides free software that allows users to download, store, and manage etextbooks. Bookshelf 5.1 users have the ability to collaborate with each other; any Bookshelf user can, for example, subscribe to another person's notes. Instructors can use this function to make notes directly in the text, which students can then access to help learn the material more effectively. According to one professor, 75 percent of his class used the ebook more than the print book because they liked the fact that all the digital assets were easily accessible and that the instructor shared his notes (Mullan, 2009).

Such collaboration features as those offered by VitalSource have helped increase the number of etextbook users, but is not the only reason for increasing popularity. Programs such as iTunes have increased the popularity of portable digital content. Students are more used to the idea of paying for a file, and digital content is now familiar to consumers. Students can have a more individualized learning experience, and the program uses terms and formats that students easily recognize (Mullan, 2009). As more students use the iPod, iPhone, and other handheld devices, they will become more accustomed to accessing textbook information via the web (McClure, 2009).

According to William Chesser, general manager and vice president of Ingram Digital Education Solutions, ebooks will continue to impact higher education if professors are willing to take a chance and utilize new technology. Chesser says that the "professor is absolutely the key" to bringing new ways of teaching and consuming information to the classroom. This technology can totally change the way education is approached (Mullan, 2009).

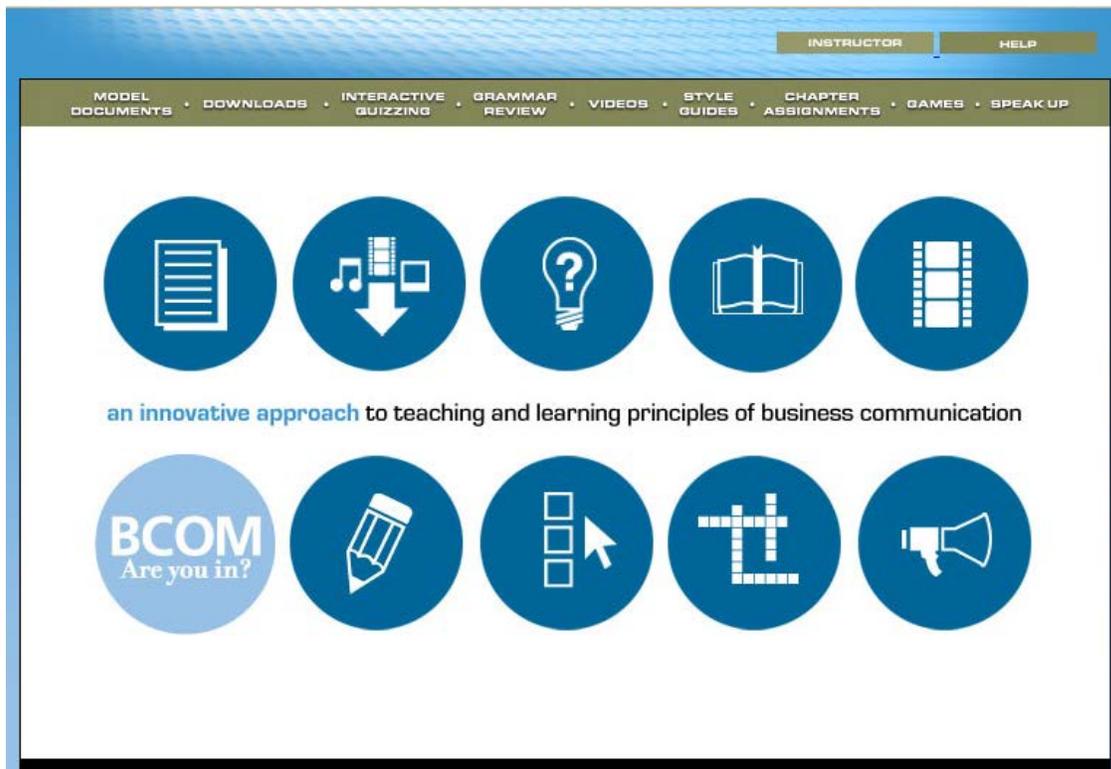
The literature shows that ebooks are changing the nature of education. Yet, given this method of delivering information, the question is whether or not students use all of the resources available to them electronically. Tenopir (2008) reported that there is no pattern of usage for ebooks because of the wide variety of users and subjects. Depending on the subject, some students may find online tools very useful. For example, Internet-based learning tools are found to be valuable for teaching foreign language. Podcasts, mobile-based flashcard programs, and writing corrections services are some tools that are beneficial when teaching language (Niemuth, 2010).

In a research study done at the University of Ottawa, students used interactive online learning tools for the study of anatomy, a core component of health science programs. Given high enrollment and content-packed curricula, it was difficult for students to have regular access to laboratories. Interactive anatomy images were made available to students. The survey results showed that the learning and self-testing tools were widely used by students who found them relevant and supportive of their self-learning. However, it is interesting to note that student examination outcomes did not differ between students who had access to online tools and a student group from the previous year who did not (O'Byrne, Patry, & Carnegie, 2008).

In the studies on the use of online study tools for teaching foreign language education and for teaching anatomy, both researchers reported a positive experience for students who perceived these tools as highly valuable. Perhaps the use of online study tools depends on the student, the subject, and the perceived value by the student. In a study on the response of students to an electronic textbook in business communication, only 15 percent indicated that they used the online study tools (DuFrene, Lehman, & Biss, 2008). Although professors may require ebooks and incorporate use of technology in the classroom, they cannot make a student use the study tools that are available. If there is no perceived value, the student will not likely use the tools. It is also interesting to note there is minimal research that shows significant correlation between student use of online study tools and grades on exams.

## METHODOLOGY

To address the question of the current use by students of available online study tools, a study was designed to objectively track the use and perceived effectiveness of the online tools in five sections of an undergraduate-level business communication course (BMC 247) at Stephen F. Austin State University. The textbook for these courses—BCOM by Lehman/DuFrene—has an online study component that consists of chapter quizzes, class PowerPoints, interactive games, audio lectures, model documents, grammar reviews, style guides and more, as seen below in the screen shot of the student portal to the online tools:



An anonymous survey was administered via WebCT/Blackboard to approximately 200 students (both business majors and non-majors) in February 2010. Students took the survey immediately after completion of the first computer-based exam covering chapter

content from the textbook. The survey solicits information in three areas: tools the students used, if any; level of perceived "usefulness" of the tools for increasing the exam score; and if no tools were used, the reasons why. A list of the questions appears below:

Question	Answer Options
Did you use the online study tools available from the textbook publisher (access code required)	Yes No
If you did NOT use the study tools, why not?	Did not have an access code because I purchased a used book. Did not feel they would be useful. Did not know how to access. Did not have enough time. I DID access them. Other
If you used the online study tools, which applications did you use?	PowerPoint slides Interactive quizzes Quizbowl game Crossword Puzzle game Vocabulary flashcards Audio chapter summaries Did not use online study tools
If you used the online study tools, how helpful do you think they were?	Very helpful Somewhat helpful Not very helpful No help at all
If you used the online study tools, do you think they better prepared you for the test?	Yes No Unsure Did not use
Based on the grade you earned for the first test, which of the following statements BEST describes your opinion of the publisher's online study tools?	They're great. I'll use them again. I'll use them again, but not as much. I'll use them again, but I'll concentrate on different online tools. I didn't use them, but I will next time. I won't use them again, because I didn't think they helped me. I won't use them because I don't have an access code.
Please feel free to further explain any of your answers to this survey. You may also add any comments about the ONLINE STUDY TOOLS.	Open-ended question

To assess the impact of the use of these online tools on students' test grades, a common set of questions was used on exams administered by the three different instructors in

seven separate sections of BCM 247. Two questions from each of the three chapters on the online interactive quizzes were placed on the exam, and the student responses were compared. The authors looked for any significant differences between scores in classes in which the tools were actively promoted by the instructor (four sections) and classes in which they were not promoted (three sections). Due to technological issues during the exam, results of the test questions were not usable from one of the sections in which the tools were promoted. (NB: Because the usage surveys were anonymous, the authors were not able to directly tie a students' exam grade to their individual exam score or the results of the sample questions.)

## RESULTS AND DISCUSSION

The results of the survey responses will be presented below.

### Extent of Use and Perceived Helpfulness

Questions regarding the use of the tools and their perceived positive impact on students' exam grades generated the following responses:

Questions and Response Options		Course Sections						
		A1	A2	B1	B2	C1	C2	C3
Did you use the online study tools?								
	Yes	37.00%	43.30%	40.90%	46.70%	33.30%	17.90%	6.90%
	No	63.00%	60.00%	59.10%	53.30%	70.00%	82.10%	93.10%
If you did NOT use the online study tools, why not?								
	Did not have an access code because I purchased a used book	3.80%	13.30%	0.00%	13.80%	6.70%	17.90%	25.00%
	Did not feel they would be useful.	7.70%	3.30%	9.10%	3.40%	16.70%	10.70%	25.00%
	Did not know how to access.	11.50%	10.00%	0.00%	6.90%	3.30%	3.60%	10.70%
	Did not have enough time.	30.80%	20.00%	31.80%	20.70%	16.70%	25.00%	25.00%
	I DID access them.	34.60%	40.00%	31.80%	41.40%	23.30%	17.90%	3.60%
	Other	11.50%	20.00%	31.80%	20.70%	40.00%	28.60%	17.90%
If you used the online study tools, which applications did you use?								

	PowerPoint slides	20.00%	23.30%	4.50%	14.30%	23.30%	14.80%	10.70%
	Interactive quizzes	32.00%	36.70%	22.70%	50.00%	10.00%	14.80%	3.60%
	Quizbowl game	24.00%	16.70%	22.70%	17.90%	6.70%	3.70%	3.60%
	Crossword puzzle game	16.00%	13.30%	4.50%	7.10%	0.00%	7.40%	3.60%
	Vocabulary flashcards	12.00%	0.00%	9.10%	7.10%	6.70%	3.70%	0.00%
	Audio chapter summaries	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	0.00%
	Did not use the online study tools	60.00%	53.30%	59.10%	50.00%	66.70%	81.50%	85.70%
If you used the online study tools, how helpful do you think they were?								
	Very helpful	28.00%	26.70%	18.20%	21.40%	10.00%	0.00%	0.00%
	Somewhat helpful	12.00%	26.70%	22.70%	25.00%	26.70%	17.90%	10.30%
	Not very helpful	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	3.40%
	No help at all	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Did not use them	56.00%	53.30%	59.10%	50.00%	66.70%	82.10%	86.20%
If you used the online study tools, do you think they better prepared you for the test?								
	Yes	40.00%	40.00%	36.40%	37.90%	26.70%	10.70%	13.80%
	No	4.00%	0.00%	0.00%	10.30%	0.00%	0.00%	0.00%
	Unsure	4.00%	6.70%	9.10%	3.40%	6.70%	10.70%	3.40%
	Did not use	52.00%	53.30%	54.50%	48.30%	66.70%	78.60%	82.80%
Based on the grade you earned for the first test, which of the following statements BEST describes your opinion of the online study tools?								

They're great. I'll use them again.	29.60%	20.00%	22.70%	27.60%	13.30%	3.60%	10.70%
I'll use them again, but not as much.	0.00%	3.30%	4.50%	10.30%	6.70%	3.60%	7.10%
I'll use them again, but I'll concentrate on different online tools.	7.40%	23.30%	13.60%	13.80%	16.70%	10.70%	0.00%
I didn't use them, but I will next time.	44.60%	40.00%	54.50%	44.80%	53.30%	67.90%	57.10%
I won't use them again, because I don't think they helped me.	7.40%	6.70%	4.50%	3.40%	6.70%	3.60%	3.60%
I won't use them because I don't have an access code.	0.00%	13.30%	0.00%	3.40%	6.70%	10.70%	25.00%
*Some students had two responses when there should have been only one response allowed.							

Although all classes were told about the online study tools available, actual usage of the tools was low. The highest percentage was reported at only 46.7 percent of the class accessing the tools. In the classes where the tools were promoted, usage rates ranged from 37 to 46.7 percent. The most common excuse for not using the tools was that students did not feel they had enough time to use them.

In classes promoting the online tools, the interactive quizzes were the most commonly used resource. The next most frequently used resources were PowerPoint slides and the Quizbowl game. In the remaining classes that did not promote the use of the study tools, student reported using the PowerPoint slides the most. However, the instructor posted slides on the course's homepage, so the students probably did not access the publisher's slides. The actual usage of the online slides is hard to determine because it is unclear which slides the students accessed. The least commonly used resource is the Audio Chapter Summaries, with only one student all sections reporting use of these.

Overall, students felt the online study tools were “somewhat helpful.” The percentage of students choosing this answer to question 4 of the survey ranged from 10.3 in one section to 26.7 in another. One student commented, “The online tools were somewhat helpful but nothing beats reading the book.” There is a wider range among the percentages of students who felt the tools were “very helpful”; while 28 percent of students in one class chose this answer, two sections had no students at all who chose this option. Interestingly, only one student in all sections thought the online tools were “no help at all.”

In all classes, student felt the online study tools better prepared them for the test. In classes in which online tools were promoted, 36.4 to 40 percent of student believed they prepared them well. One student commented, “I thought the online study tools were actually a lot harder than the actual exam was. I think this ended up being a good thing, though, because I had to dig for more answers when preparing for the test. When the test came around I felt like I was very prepared!” In the other classes, the percentages were lower, but this is likely due to the low usage rate.

Overwhelmingly, students who did not use the tools felt that they should have, and they stated that they will use them next time. As one student wrote, “I just didn't think of using them but now I know to.” Another wrote: “I planned on using the study tools to prepare for the exam but never got around to it . . . [N]ext time I will use the study aids in hopes of receiving a higher grade. :)”

### **Impact on Exam Grades**

Across all classes, the percentage of questions answered correctly is comparable whether online tools were promoted or not. If a question had a low percentage of correct responses, it was low across all sections. As illustrated below, question 1 had between 36.67 and 66.67 percent students responding correctly. Similarly, question 4 showed higher percentages correct at 50 to 93 percent correct.

Percentage of Correct Responses to Common Set of Questions						
	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6
<b>“Promoting” Classes:</b>						
Class A1	50.00%	53.33%	40.00%	76.67%	56.67%	26.67%
Class A2	66.67%	30.00%	60.00%	73.33%	63.33%	40.00%
Class B1	36.67%	20.00%	36.67%	50.00%	56.67%	63.33%
<b>“Non-promoting” Classes</b>						
Class C1	63.33%	30.00%	46.67%	90.00%	83.33%	50.00%
Class C2	50.00%	36.67%	46.67%	93.33%	70.00%	43.33%
Class C3	50.00%	20.00%	56.67%	80.00%	46.67%	60.00%

It is interesting to see that the scores were similar even though some sections admitted to using the online study tools more. Some students noticed similarities in the quizzes and test, noting “The online study tools were very helpful in that some of the same questions that were on the test were in some of the [quizzes].”

## **CONCLUSION**

The results of the student survey indicate that students view online study tools as helpful for preparing for the course exam—whether or not they actually used them. Of those who did not use the tools, many seem to wish they had: students choosing the option “I didn't use them, but I will next time” on question 6 of the survey ranged from a substantial minority (40 percent) in one section to a majority of students (67.9 percent) in another. This would, in itself, provide incentive for instructors to promote the use of online tools in classes, if the chosen textbooks for those courses come with similar tools.

An increased sense of preparedness, however, did not seem to have a measurable impact on the students' exam grades. No clear correlation emerged between the promotion of the online tools in classes and the percentage of correct responses on the sample test questions. Although many factors impact student exam grades, some increase in correct responses would have been expected in the “promoting” classes had the online tools had an actual (rather than a perceived) impact on student preparedness for tests.

The authors plan further research to follow up on issues raised from this study. An additional survey will be conducted after the second exam to see if use of the online study tools increases. Since such a high number of students said they would use the tools in the future (especially those who did not use them before the first exam), it will be valuable to discover whether the students follow through. The authors will also continue to track how students view the usefulness of online tools. As the survey shows, many of those who felt tools were useful did not actually use the tools. It will be interesting to see if students still view the tools in such a positive light after they have actually used them.

Online study tools are truly here to stay; more and more textbooks are being produced with online components aimed at helping students succeed in courses. If instructors are to effectively incorporate these tools into their classes, it is imperative that they gain an accurate view of how students use the tools, how helpful students think they are, and what actual impact the tools have on student exam scores and other assessment tools. Understanding these factors will not only help instructors guide students in the use of online study tools; it may also help textbook publishers develop tools that have a real and measurable effect on student success.

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# **OWNERSHIP STRUCTURE AND FIRM PERFORMANCE: EVIDENCE FROM INDIA**

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## ***ABSTRACT***

*Researchers have come up with varied assertions with regard to the relationship between ownership structure and firm performance. Studies show positive, negative as well as both positive and negative relationship at differing levels of equity holdings by managers. Majority findings argued about owner controlled firm's performance being better than manager controlled ones, yet lacking statistical assertion for the same.*

*This research work is empirically investigating the efficiency of ownership groups in enhancing corporate performance by analyzing firms traded on Bombay Stock Exchange (BSE). We are using BSE – 500 index firms to create an unbalanced annual panel data from 2001 to 2008. By using fixed and random effect techniques of panel data analysis, we wish to contribute towards the enduring debate of corporate governance as to which ownership group maximizes firm performance. This debate has so far, largely remained inconclusive with different researchers advocating varied view points.*

## **INTRODUCTION**

The relationship between ownership structure and firm performance has received substantial notice in the finance literature. Berle and Means (1932) are among the first breed of researchers to draw attention to the fact that firm performance is inversely affected as diffuseness of the ownership structure enhances. Succeeding studies by scholars have either supported or rejected this argument. Studies throughout the world have focused on different aspects of ownership and their effects on firm performance.

Differing viewpoints on the ownership debate by varied researchers has created a dilemma as to which ownership group maximizes firm performance. While Jensen (1993), Chew (1997) have tried to empirically prove that large investors with long term interest in firms help in improving performance in a market based economy. Others like Rajan and Zingales (1999) have criticized the relationship model of ownership structure

as the main cause of East Asian Debacle. Thus arguments vary as per the prevailing market system.

Highly efficient markets attract agency cost whereas weak markets have the possibility of principals expropriating shareholder's value. Literature on the latter is evidently missing in the finance literature since majority studies are conducted with regards to developed market model economies or relationship-centered, multi-tiered ownership economies.

Our study with regards to the developing country, India sheds some light on the governance practices in transition economies. India is a typical example where majority ownership is closely held. The primary problem in such closely held firms would be the controlling shareholder's abuse of the minority shareholders Shleifer and Vishny (1997). Our study of Corporate Governance in India adds to the literature due to the unique governance issues which are not present in developed nations.

Very few researchers have attempted to this type of study in the Indian corporate governance practices. Recent efforts by researchers in studying the impact of different ownership groups on firm performance has led to the hypothesis that Indian markets are inefficient in controlling owner expropriation of small shareholder's value. Also institutional investors do fail to effectively monitor owner and managerial behaviour. Khanna and Palepu (2000), Kumar (2004) observe that the firm performance, both in terms of accounting as well as market measures, declines with group diversification and then increases once the diversification exceeds a certain level.

In India, usually a business endeavor starts as proprietorship or partnership or closely held limited company. But as company grows, the closely held business house approaches market to raise equity capital through IPO (Initial Public Offering) route. This is the first stage when the diffusion of ownership occurs. Subsequently it goes for further issue of share capital (seasoned offering) depending upon fund requirement for capital investment and other factors like choice of capital structure, signaling impact of new issue and so on. The owners of the closely held company taking it to the stage of IPO are promoters in Indian context. They are considered insiders till they dilute their stake through disposal of their holding in the secondary market. The persons or bodies other than the promoters having investment in the share capital are non-promoter or non-promoter shareholders.

Our work continues along these lines of enquiry. It examines the link between firm performance and ownership structure for a panel of BSE 500 Index firms over the years 2001 to 2008. We take promoters and non promoters shareholdings as a proxy to concentration and diffuseness of ownership respectively. Market related as well as accounting returns are taken as proxies to performance. BSE 500 Index firms are used for our study as it represents 93% of the total market capitalization on BSE. The Index also covers almost all major industries of the economy. Thus our study gives a fair view of Indian corporate world.

The remainder of the paper is organized as follows. Section 2 briefly reviews the existing literature. Data and variable constructions are presented in Section 3. The methodology used and the obtained results are presented in Section 4. Finally, some concluding remarks are presented in Section 5.

## **LITERATURE**

Researchers started studying the impact of ownership structure on firm performance way back in 1968(Kamerschen and Mosen et al). Contributions by Oliver Hart (1995), Oliver Williamson (1988) and Jensen and Meckling (1976) have helped us appreciate the theory of separation of ownership and control. While few researchers focused on locus of control for their study, others have studied the role played by institutional investors, foreign investors and retail shareholders. Within the ‘conflicts of interest’ framework, seven major arguments have emerged that explain the literature on the impact of ownership structure on firm performance. The arguments are incentive alignment, takeover premium, entrenchment, cost of capital, efficient monitor, stulz’s integrated theory, and morck et al’s combined theory (Bhasa 2006).These arguments explain the motivations that govern the management and owners while running the organization in Anglo-Saxonic Framework.

Earlier studies tried to understand whether separation of ownership and control really had effect on firm performance. Mixed evidence could be seen on the performance of the owner controlled or manager controlled firms. In some cases owner controlled firms performed better, whereas the vice versa was seen in other studies. This elucidates that performance differs from firm to firm, industry to industry and country to country despite the uniformity in composition of ownership at a broader level. Thus we include some significant studies in our review.

Morck et al. (1988), taking directors shareholding as a measure of ownership concentration and holding both Tobin’s Q and accounting profit as performance measure of 500 Fortune companies and using piece-wise linear regression, found a positive relation between Tobin’s Q and board ownership . They observe that Tobin’s Q rises as board ownership increases from 0 to 5%, decreases between 5% and 25% and once again rises, though slowly, beyond 25%.The non-monotonic relationship explains two different phenomena of alignment and entrenchment

Loderer and Martin (1997) took shareholding by the insiders (endogenous) as a measure of ownership and Tobin’s Q as performance measure. They found (through simultaneous equation model) that ownership does not predict performance, but performance negatively predicts ownership. Cho (1998) found that firm performance had affect on ownership structure (signifying percentage of shares held by directors), but not vice versa.

Demsetz and Villalonga (2001) investigated the relation between the ownership structure and the performance (average Tobin’s Q for five years—1976-80) of the corporation (Considering ownership multidimensional and also treating it as an endogenous variable). No significant systematic relation could be ascertained using Ordinary Least Squares

(OLS) and Two-stage Least Squares (2 SLS) regression model. According to them, “The market responds to forces that create suitable ownership structures for firms, and this removes any predictable relation between empirically observed ownership structures and firm rates of return.”

Welch (2003), applying the model of Demsetz and Villalonga (2001), examined the relationship between ownership structure and firm performance of Australian listed companies. Her OLS results suggest that ownership of shares by the top management is significant in explaining the performance measured by accounting return but not by Tobin’s Q. However, when ownership is treated as endogenous, the same is not dependent upon any of the performance measures. Kapopoulos and Lazaretou (2007) tried the model of Demsetz and Villalonga (2001) for 175 Greek firms for the year 2000 and found that concentrated ownership structure leads to higher profitability.

Ganguli and Agrawal (2009) analyzed the relationship between firm performance and ownership structure in respect of Indian mid-cap listed companies following the models of Demsetz and Villalonga (2001) and Kapopoulos and Lazaretou (2007) with certain alterations. They studied the impact of ownership on performance and vice versa. The study concludes that in the case of listed mid-cap Indian companies, there exists a systematic positive relationship between firm performance and concentration of holding and vice versa in a statistically significant manner.

We follow the model of Ganguli and Agrawal (2009) by taking promoter and non promoter holding as a measure of concentration and diffuseness as a proxy for ownership structure. While their model concentrated on market based performance, we further extended our study to see the impact of both market based (Tobin’s Q) and accounting based (ROA, ROCE) returns. Their study was confined to one year data on mid cap companies, but we enhanced it to eight years data on BSE 500 companies. Thus we contribute significantly to the existing literature.

## **DATA SOURCES AND SAMPLE SELECTION**

We study the effect of ownership structure on firm performance taking Indian Corporate Sector firms. Indian corporate sector offers us a large number of corporate firms, thus leading to large sample statistical analysis. Indian firms unlike their other counterparts, maintain their shareholding pattern over the study period, thus enabling identification of ownership affiliation of each sample firm Patibandla (2002). With a well established regulatory framework for more than four decades, numerous initiatives by SEBI, Accounting system at par with advanced countries, India has paved its way to the highest standards of corporate governance.

The firm level data is primarily obtained from the corporate database prowess maintained by CMIE, Center for Monitoring the Indian Economy. The annual data used in the analysis consists of BSE 500 firms listed on the Bombay Stock Exchange (BSE), for which we could get their historical share holding pattern. Firms within financial services segments are not considered due to difference in laws governing them. Public Sector

firms are also not included in the analysis as their performance is influenced by a large number of social obligations and regulations, which may be difficult to account for.

We analyze data from 2001 to 2008. We also restrict our analysis to firms which have no missing data (on both independent and dependent variables) for at least 2 consecutive years. There are 685 firms in our sample, for which there is data required for at least 2 consecutive years. For this unbalanced panel of 3332 observations, we collect the following additional data for each firm observation: advertising, distribution, marketing and research and development (R&D) expenditure as a percentage of sales.

Despite the problem of attrition and missing data, our sample provides several distinct advantages over the samples used in earlier studies. We perform our analysis after restricting the performance measure to lie between 1st and 99th percentile to tackle the problem of outliers, which may be influential. This leaves us with 3332 observations for 4000 observations.

## **KEY VARIABLES**

### **Independent Variables**

Earlier studies suggest varying measures of ownership. We follow the model suggested by Demsetz and Villalonga (2001). They suggested two ownership variables, viz., the shareholdings of the firms' five largest shareholders and the shareholding of the firm's top management as criteria for concentration of ownership. We modified the model it as per Indian scenario as given by Ganguli and Agrawal (2009). Thus, the proxy used for ownership is the equity-holding structure. Thus, we include two ownership variables namely promoter shareholding and non promoter shareholding.

### **Dependent Variables**

Different researchers have used different firm performance proxies. While Morck et al.(1988), McConnell et al. (1995) and a host of other researchers have used Tobin's Q, Demsetz and Lehn (1985), Denis and Denis (1994) and other researchers have used accounting measures of performance. While the accounting measures portray the historical performance of the firm, market related performance proxies capture the expected future performance of the firm. A rapidly growing firm may have low accounting returns but its market performance can surpass the accounting performance proxies. On the other hand, firms those are well established and have strong accounting returns might perform weakly in terms of market-based returns. Hence, different proxies for firm performance may produce different results with the same ownership structure (Wan, 1999).

Our study uses three performance variables. Two measures are based on accounting information and one measure is based on market-related information. Though some firms are found to perform well as per their accounting information, markets may punish them due to some sentiment or the other. Hence using a market-related measure as a performance measure crosschecks the results derived from the analysis of accounting-based information.

The study uses return on assets (ROA) and return on capital employed (ROCE) as accounting-based performance measures. On the other hand, Tobin's Q has been employed as the market-based performance measure.

### **Control Variables**

The other possible determinants of firm performance which are not captured by ownership variables are included as control variables. The control variables used in the study have been selected with reference to those employed in earlier empirical studies. We use R&D Intensity, Advertising Intensity, Distribution Intensity and Marketing Intensity as the control variables. These expenditures may yield positive returns in future, thus enhancing firm performance. These variables also control for opportunities of discretionary expenditure by management. These are measured as a percentage of sales. These variables are used to control the operational aspects, based on empirical performance studies and literature reviewed in Cui and Mak (2002).

### **EMPIRICAL MODEL**

Our basic objective is to find out how firm performance gets impacted by ownership structure, i.e., concentration and diffuseness of shareholding pattern. We take performance (Tobin's Q) at the end of fiscal year as endogenous variable and promoters' and non-promoters' shareholding representing concentration and diffuseness respectively as exogenous variables. If promoters' holding is  $p$ , by definition non-promoters holding will be  $(1 - p)$ . We shall be confronted with severe multicollinearity problem if both the promoters' and the non-promoters' shareholdings are included as exogenous variables in the same regression equation. The problem can be avoided if we construct two separate regression models, following Ganguli and Agarwal's model whereby in the first equation we take promoters' holding as exogenous variable, while in the other we take non-promoters' holding as exogenous. Equation 1 shows the impact of concentration on performance, and the other equation reveals the impact of diffuseness on performance. Generalised Equation is given below.

$$\text{Performance}_{it} = \alpha + \beta(\text{Ownership})_{it} + \gamma X_{it} + \delta_i + \epsilon_{it}$$

### **Panel Data Analysis**

We regressed the dependent variable Tobin's Q on various explanatory variables.

### **Random Effects or Fixed Effects**

The use of either of the above models hinges on whether the cross section specific error components are correlated with the explanatory variables. If they are correlated, use of Random Effects or Error Component Model would be in appropriate. For testing this, we employ the Hausman Test for cross – section random effects. We conduct a Random effect and Hausman test and later conducted panel analysis using fixed effects. Firstly we conducted on Promoters as dependent variable with respect to Tobin's Q, ROA and ROCE. Then we conducted on Non Promoter's as dependent variable with respect to Tobin's Q, ROA and ROCE

## EMPIRICAL RESULTS

### Results with Promoter's Holding as Exogenous Variable

$$\text{Performanc}_{it} = \alpha + \beta(\text{Promoter Holding})_{it} + \gamma X_{it} + \delta_i + \epsilon_{it}$$

Explanatory Variable	Tobin's Q	ROA	ROCE
Constant	-0.301780 (-1.568711)	-3.231770 (-23.10493)*	-0.072252 (-0.371094)
Promoters Holding	0.061582 (2.312838)**	0.002914 (1.602494)***	0.010024 (4.373793)*
Adv Expenses	-0.059928 (-0.303662)	0.282945 (2.445973)*	0.227347 (1.602876)***
Mktng Expenses	-0.023627 (-0.110784)	0.309239 (2.489049)*	0.318705 (1.746864)***
Distb Expenses	-0.003632 (-0.061079)	-0.015579 (-0.455529)	0.037882 (0.790003)
R & D	0.919965 (3.245529)*	-0.007755 (-0.044465)	-0.261229 (-1.218928)
Sales	0.183047 (6.557291)*	0.130015 (7.449842)*	0.295899 (11.71948)*

### Results with Non Promoter's Holding as Exogenous Variable

$$\text{Performanc}_{it} = \alpha + \beta(\text{Non Promoter Holding})_{it} + \gamma X_{it} + \delta_i + \epsilon_{it}$$

Explanatory Variable	Tobin's Q	ROA	ROCE
Constant	0.200967 (0.871334)	0.039553 (1.848507)**	0.823542 (4.178228)*
Non Promoters Holding	-0.005705 (-1.944211)**	-0.000554 (-2.025947)*	-0.007568 (-3.409185)*
Adv Expenses	-0.063685 (-0.322605)	0.031172 (1.703858)***	0.229358 (1.614386)***
Mktng Expenses	-0.030908 (-0.144849)	0.003738 (0.188769)	0.313904 (1.717532)***
Distb Expenses	-0.003550 (-0.059683)	-0.001767 (-0.321103)	0.038641 (0.804483)
R & D	0.898812 (3.169127)*	0.023045 (0.878463)	-0.294608 (-1.372237)
Sales	0.184013 (6.592323)*	0.016857 (6.525012)*	0.293261 (11.58404)*

Significance at \*1%, \*\* 5%, \*\*\* 10%.

From the results table it is clear that firm performance is directly related to promoters holding and inversely related to non-promoters holding. The control variable like Sales is significant in all the cases related to promoter's holdings as well as non promoter's holdings.

## **CONCLUSION**

This study has examined empirically the relationship between the ownership structure and firm performance using an unbalanced panel of BSE – 500 Index firms over 2001 – 2008. We document that unobserved firm heterogeneity explains a large fraction of cross-sectional variation in firm performance that exists among Indian corporate firms. From the results obtained we can conclude that promoters' holding is a major contributor in the firm performance. There is a significant and positive relation between firm performance and promoters holding. The non-promoters holding is inversely proportional to the firm performance.

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# ASSET PRICING WITH SPIRIT OF CAPITALISM IN A RARE DISASTER FRAMEWORK

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## **ABSTRACT**

*Ever since the seminal paper by Mehra-Prescott (1985), numerous attempts have been made to explain the equity premium puzzle. Current research trends suggest the emergence of rare disaster framework as one of the most promising paradigms for explaining asset pricing puzzles. This paper seeks to explain the puzzles by proposing an asset pricing model that extends the rare disaster framework developed by Reitz (1988), Barro (2006, 2009), and Barro-Ursua (2008) in an intuitively appealing manner. Primary inspiration behind developing this model is the fact that fear and greed are known to play significant roles in asset price dynamics; but, surprisingly, no model in the existing literature has ever attempted to include proxies of both fear & greed. This model includes fear of rare disasters as proxy for fear; and direct preference for wealth- that is, spirit of capitalism, which has been used for explaining asset pricing puzzles by Bakshi-Chen (1996), and Smith (2001)- as proxy for greed. Two variants of the model have been developed: the basic model based on time-additive expected utility; and its variant employing Epstein-Zin-Weil recursive preferences. The basic model presented here is calibrated using Barro's dataset of 35 countries covering a period of over 100 years. Calibration results show that the model is capable of explaining the asset pricing puzzles with very reasonable values of parameters. In particular, it is capable of addressing Constantinides'(2008) criticism of the explanation offered by Barro-Ursua (2008). The model can also be suitably employed to explain several other asset pricing puzzles.*

## **INTRODUCTION**

The equity premium puzzle is celebrating its silver jubilee this year! And it is not because of lack of efforts on the part of economists. Ever since the seminal paper by Mehra & Prescott (1985), numerous attempts have been made to crack the equity premium puzzle. Diverse approaches- nonstandard preferences, transaction costs, investor heterogeneity, lower tail risk, learning etc- have been employed to resolve the puzzle from different perspectives. But the puzzle continues to exist. Despite the claims, no 'solution' so far has succeeded in generating even a mild consensus among economists that the puzzle has indeed been solved.

But then, twenty five years of hard work cannot entirely go to waste. A survey of the vast literature written in this pursuit will immediately lead to at least two non-controversial, straightforward observations. First, the equity premium puzzle does not come alone. It is, perhaps, the leader of a gang of other closely connected puzzles. Gabaix (2009)

enumerates nine such puzzles: risk-free rate puzzle, excess volatility puzzle, aggregate return predictability puzzle, value stocks vs. growth stocks puzzle, stock characteristics vs. covariances puzzle, yield curve slope puzzle, long term bond return predictability puzzle, credit spread puzzle, and option puzzles. In addition to these, some other puzzles may also be indirectly related to the equity premium puzzle. Second, of course, is the very fact that despite our best efforts over the past twenty five years the asset pricing puzzles remain largely unresolved. These two observations, viewed together, take us to a very disturbing conjecture: do these puzzles have a common or closely related origin; and if so, does it amount to a fundamental flaw in our understanding of macro-finance? Do we know the fundamentals of the relationship between finance & real economy? This ignorance acquires particularly dangerous overtones in the backdrop of the recent financial-turned-macroeconomic crisis (2007-09). And this should be sufficient to convince the skeptics as to why the equity premium puzzle deserves to be taken very seriously. It would not be an exaggeration to claim that our understanding of macro-finance will remain dangerously far from satisfactory as long as the equity premium puzzle continues to be a puzzle.

It appears logical to suggest that it is probably the lack of understanding of some fundamental issues that lies at the root of equity premium puzzle & the other related asset pricing puzzles. Scores of asset pricing models that have been developed appear to be attempts to identify these fundamental issues. Going through these models, it is possible to identify two distinct themes which are used to explain the asset pricing puzzles:

**(a) Fear:**

Starting with Rietz (1988), the most famous & ongoing development of this theme is seen in Barro (2006, 2009) and Barro & Ursua (2008). In fact, an intense debate is currently in progress over the ability of the rare disaster framework (the ‘fear’ theme) to explain the puzzles. Barro’s current (2009) model employs Epstein-Zin-Weil preferences & claims to solve the asset pricing & related puzzles with reasonable values of parameters. However, serious objections have been raised by several studies including Constantinides (2008), Copeland (2006), and Julliard & Ghosh (2008).

**(b) Greed:**

Inspired by Weber (1958), Bakshi & Chen (1996) developed the spirit of capitalism model which used the idea of direct preference for wealth (acquisition of wealth for status) to explain the asset pricing puzzles. Although, the spirit of capitalism is not the same as greed, direct preference for wealth (as used for modeling spirit of capitalism) can be taken as a proxy for greed. The theme of spirit of capitalism as the basis of explanation of the equity premium puzzle was further developed by Smith (2001) using Epstein-Zin-Weil (1989, 1990, 1991) recursive preferences. However this theme did not achieve much prominence & there have been recent studies, e.g. Boileau & Braeu (2007), and Zhang (2006), which conclude that the spirit of capitalism may not be sufficient to explain the puzzles.

Existing literature does not show any attempt to combine the two themes of ‘fear’ & ‘greed’. While ‘fear’ of rare disasters is currently a very prominent topic of research in

this area; ‘greed’ (spirit of capitalism being used as a proxy) appears to be an almost discarded theme. Existing literature also suggests that neither ‘fear’ alone nor ‘greed’ alone is sufficient to explain the asset pricing puzzles. An attempt to combine the two themes appears to be the most logical next step in the development of thought in this area.

In particular, following motivating factors can be identified behind developing this model of asset pricing:

1. Both fear & greed play crucial roles in asset pricing. Here we must be careful about the use of the words ‘fear’ & ‘greed’ which are used with the specific meaning of the economy-wide fear of rare disasters & economy-wide spirit of capitalism respectively. These words do not include idiosyncratic fear & greed which do not have an impact on asset pricing.
2. The themes of both ‘fear’ & ‘greed’ have been used separately to explain asset pricing puzzles with partial success. Combining the two can be expected to improve the explanatory power of the model.
3. Combination of the two themes may be more useful than a simple sum of the two impacts because of possible interaction between the two. This will lead to a model which is not just a summation of the two existing models.

This paper develops such a model by extending Barro’s rare disaster framework to incorporate spirit of capitalism. The model being presented here employs power utility. It is also possible to construct a variant of this model employing Epstein-Zin-Weil recursive preferences. Both the variants maintain the representative agent framework.

## THE MODEL

### Assumptions:

1. Lucas’ (1978) fruit-tree model of economy is assumed.
2. The economy is subject to exogenous stochastic production.
3. Asset pricing problem is formulated in terms of representative agent framework.
4. The number of trees is fixed. Hence, there is neither investment, nor depreciation. (This assumption can be relaxed without any significant difference in results.)
5. It is a closed economy. (This assumption also can be relaxed.)
6. All output is consumed:  $C_t = Y_t$  (1)  
where  $C_t$  = consumption in period  $t$   
and  $Y_t$  = output of fruit in period  $t$
7. Assets: There are two kinds of assets:
  - Equity claim in period  $t$  on  $Y_{t+1}$  (period  $t+1$  ‘s output). This is a claim on fruit production in period  $t+1$  and not a claim on tree itself.
  - Risk-free asset: It delivers risk-free return  $R_{t+1}^f$  during normal times, but there is partial default during rare disasters.

Utility function of the representative consumer is given by:

$$U(C_t, W_t) = \frac{C_t^{1-\theta}}{1-\theta} W_t^{-\theta} \quad \text{where } \theta > 0;$$

and  $\theta \geq 0$ , when  $\theta > 1$   
 $< 0$ , when  $\theta < 1$  (2)

where  $W_t$  is represents wealth in period t. This is the utility function taken by Bakshi & Chen (1996) in their first model which takes absolute wealth as a measure of status.

$\theta$  is the reciprocal of the intertemporal elasticity substitution. In power utility function this also equals coefficient of risk aversion but here it does not hold true since utility is taken as a function of wealth also.

$|\theta|$  is a measure of the strength of the direct- preference- for- wealth motive. It represents the degree to which the consumer cares about status.

The **objective function** of the consumer is given by  
**Maximize**  $U_t = E_t \sum_{i=0}^{\infty} [e^{-\rho i} U(C_{t+i}, W_{t+i})]$  (3)

### First Order Optimality Condition (Euler Equation)

Following the variational argument given by Grossman & Shiller (1982), the first order optimality condition ( the Euler Equation) can be derived as:

$$U'_C(C_t, W_t) = e^{-\rho \Delta t} E_t [U'_C(C_{t+\Delta t}, W_{t+\Delta t}) + U'_W(C_{t+\Delta t}, W_{t+\Delta t}) \cdot \Delta t] \frac{P_{t+\Delta t}}{P_t} \quad (4)$$

For analysis of two periods, it becomes:

$$U'_C(C_t, W_t) = e^{-\rho} E_t \left[ U'_C(C_{t+1}, W_{t+1}) + U'_W(C_{t+1}, W_{t+1}) \right] \frac{P_{t+1}}{P_t} \quad (5)$$

(5)

where

$P_{t1} = \text{period } t \text{ price of equity claim on period } t + 1 \text{ 's output}$

$P_{t+1} = Y_{t+1} = \text{output of period } t + 1$

Using equation (2) to calculate the first order derivatives, & substituting the values in equation (5) yields:

$$P_{t1} = e^{-\rho} Y_t^\theta W_t^\theta E_t \left[ Y_{t+1}^{1-\theta} W_{t+1}^{-\theta} + \frac{\theta}{\theta-1} Y_{t+1}^{2-\theta} W_{t+1}^{-\theta-1} \right] \quad (6)$$

Now  $C_t$  is optimally chosen as a constant ratio to wealth under i.i.d. shocks (Barro 2009 and Giovannini- weil 1989):  $C_t = mW_t$  (7)

Since equation (6) represents optimality condition, substitution of equation (7) in (6) is permissible. Making this substitution gives the price of one period equity claim as:

$$P_{t1} = e^{-\rho} \left(1 + \frac{\theta m}{\theta-1}\right) Y_t^{\theta+\theta} E_t [Y_{t+1}^{1-\theta-\theta}] \quad (8)$$

As in Barro (2006), log of **output** is modeled as a random walk with drift & jump process:

$$\log(Y_{t+1}) = \log(Y_t) + g + u_{t+1} + v_{t+1} \quad (9)$$

where

$g$  represents the drift or the growth rate of the economy

$u_{t+1}$  represents i.i.d. fluctuations which follow normal distribution:  $u_{t+1} \sim N(0, \sigma^2)$

$v_{t+1}$  is the term that represents rare disasters:

$v_{t+1} = 0$  if there is no disaster

$= \log(1-b)$  if there is disaster, where  $b$  is the fraction by which output contracts

Taking  $p$  as the mean number of disasters in a fixed interval, probability of occurrence of disasters is given by Poisson distribution.

$$\text{Probability of no disaster in a period} = \frac{p^0 e^{-p}}{0!} = e^{-p}$$

$$\text{From (9)} \quad Y_{t+1} = Y_t e^g e^{u_{t+1}} e^{v_{t+1}} \quad (10)$$

$$\text{Substituting this in equation (8)} \\ \Rightarrow P_{t1} = e^{-\rho+g(1-\theta-\phi)} \left(1 + \frac{\phi m}{\theta-1}\right) Y_t E_t [e^{u_{t+1}(1-\theta-\phi)}] E_t [e^{v_{t+1}(1-\theta-\phi)}] \quad (11)$$

Evaluating the expected values,

$$P_{t1} = e^{-\rho+g(1-\theta-\phi)+\frac{1}{2}(1-\theta-\phi)^2\sigma^2} \left(1 + \frac{\phi m}{\theta-1}\right) Y_t \{e^{-p} + (1-e^{-p})E_t[(1-b)^{1-\theta-\phi}]\} \quad (12)$$

$$\text{Taking } e^{-\rho+g(1-\theta-\phi)+\frac{1}{2}(1-\theta-\phi)^2\sigma^2} \{e^{-p} + (1-e^{-p})E_t[(1-b)^{1-\theta-\phi}]\} = \Omega \quad (13)$$

Equation (12) can be rewritten as

$$P_{t1} = \left(1 + \frac{\phi m}{\theta-1}\right) Y_t \Omega \quad (14)$$

Now expected gross return on one-period equity claim:

$$\Rightarrow E_t(R_{t1}^e) = \frac{e^{\rho+g(\theta+\phi)+(\theta+\phi)\sigma^2-\frac{1}{2}(\theta+\phi)^2\sigma^2} [1+(e^p-1)((1-E_t b)]}{\left(1 + \frac{\phi m}{\theta-1}\right) [1+(e^p-1)E_t(1-b)^{1-\theta-\phi}]} \quad (15)$$

Taking logarithms,

$$\log[E_t(R_{t1}^e)] = \rho + g(\theta + \phi) + (\theta + \phi)\sigma^2 - \frac{1}{2}(\theta + \phi)^2\sigma^2 - \log\left(1 + \frac{\phi m}{\theta-1}\right) \\ + \log[1 + (e^p - 1)((1 - E_t b))] - \log[1 + (e^p - 1)E_t(1 - b)^{1-\theta-\phi}] \quad (16)$$

Simplifying,

$$\Rightarrow \log[E_t(R_{t1}^e)] \\ = \rho + g(\theta + \phi) + (\theta + \phi)\sigma^2 - \frac{1}{2}(\theta + \phi)^2\sigma^2 - \frac{\phi m}{\theta - 1} - p[E_t(1 - b)^{1-\theta-\phi} - 1 + E_t b] \quad (17)$$

For a sample conditioned on no disasters, expected rate is higher by  $p \cdot E_t b$ :

$$\log[E_t(R_{t1}^e)]_{v_{t+1}=0} \\ = \rho + g(\theta + \phi) + (\theta + \phi)\sigma^2 - \frac{1}{2}(\theta + \phi)^2\sigma^2 - \frac{\phi m}{\theta - 1} - p[E_t(1 - b)^{1-\theta-\phi} - 1] \quad (18)$$

For risk-free asset:

From equation (6)

$$U'_C(C_t, W_t) = e^{-\rho} E_t \left[ \{U'_C(C_{t+1}, W_{t+1}) + U'_W(C_{t+1}, W_{t+1})\} R_{t1}^f \right]$$

Since  $R_{t1}^f$  is risk-free rate, it is known in advance. Hence

$$U'_C(C_t, W_t) = e^{-\rho} R_{t1}^f E_t \left[ \{U'_C(C_{t+1}, W_{t+1}) + U'_W(C_{t+1}, W_{t+1})\} \right]$$

This, on evaluation, leads to

On simplification, it leads to the result:

$$\log(R_{t1}^f) = \rho + g(\theta + \phi) - \frac{1}{2}(\theta + \phi)^2\sigma^2 - \frac{\phi m}{\theta - 1} - p[qE_t(1 - b)^{1-\theta-\phi} \\ + (1 - q)E_t(1 - b)^{-\theta-\phi} - 1] \quad (19)$$

Full expected return on bills will be lower by  $pqE_t b$ :

$$\log(R_{t1}^b) = \rho + g(\theta + \emptyset) - \frac{1}{2}(\theta + \emptyset)^2 \sigma^2 - \frac{\emptyset m}{\theta - 1} - p[qE_t(1-b)^{1-\theta-\emptyset} + (1-q)E_t(1-b)^{-\theta-\emptyset} + qE_t b - 1] \quad (20)$$

### Estimation of Equity Premium

$$\text{Equity Premium} = \log(R_{t1}^e) - \log(R_{t1}^b)$$

Using equations (17) & (20)

Equity Premium

$$= (\theta + \emptyset)\sigma^2 + p(1-q)[E_t(1-b)^{-\theta-\emptyset} - E_t(1-b)^{1-\theta-\emptyset} - E_t b] \quad (21)$$

For a sample conditioned on no disasters:

$$\text{Equity premium conditional on no disasters} = \log[E_t(R_{t1}^e)]_{v_{t+1}=0} - \log(R_{t1}^f)$$

Using equations (19) & (20),

Equity premium conditional on no disasters

$$= (\theta + \emptyset)\sigma^2 + p(1-q)[E_t(1-b)^{-\theta-\emptyset} - E_t(1-b)^{1-\theta-\emptyset}] \quad (22)$$

These results apply to unlevered equity. In the presence of leverage, the appropriate equity premium is obtained by multiplying the unlevered equity premium by a factor of  $(1+D)$  where  $D$  is the debt equity ratio, assumed to be constant.

### Pricing Longer Term Claims

Repeated application of evolution of output & Euler equation can be used to derive longer term claims on equity.

Share price  $P_t = \text{Sum of equity claims for each period upto } \infty$

$$= P_{t1} + P_{t2} + P_{t3} + \dots \infty$$

Summing up longer term claims yields the share price as:

$$P_t = Y_t \frac{\Omega}{1-\Omega} \left[ 1 + \frac{\emptyset m}{(\theta-1)(1-\Omega)} \right] \quad (23)$$

Hence price earnings ratio:

$$\frac{P_t}{Y_t} = \frac{\Omega}{1-\Omega} \left[ 1 + \frac{\emptyset m}{(\theta-1)(1-\Omega)} \right] \quad (24)$$

### CALIBRATION OF THE MODEL

To calibrate the model, Barro's 2006 dataset of 60 disasters in 35 countries during the twentieth century is employed. Following frequency distribution of disaster sizes is used for this purpose:

Table 1: Frequency Distribution of Disaster Size

b	freq	prob
0.17	20	0.333333
0.22	13	0.216667
0.27	3	0.05
0.32	9	0.15
0.37	5	0.083333
0.47	2	0.033333
0.52	3	0.05
0.57	3	0.05
0.62	2	0.033333
	60	1

For the calibration of the parameters  $g$  (growth rate),  $\sigma$  (s.d. of growth rate, no disasters),  $\rho$  (rate of time preference), and  $q$  (bill default probability in disaster) this paper follows Barro (2006). Hence the model is calibrated using  $g = 0.025$ ;  $\sigma = 0.02$ ;  $q = 0.4$ .

For consumption wealth ratio, the value of  $1/87$ , as calculated by Lustig, Nieuwerburgh, & Verdelhan (2008), has been chosen for the baseline model. For one case, the reciprocal of average price dividend ratio  $1/27$  is used.

The model is very sensitive to the value of  $\theta$  (coefficient of relative risk aversion) and  $\phi$  (spirit of capitalism parameter). For  $\theta$ , the range considered acceptable in the literature is between 2 and 5. For  $\phi$ , this paper follows Bakshi & Chen (1996) whose point estimates were in the range of 0.75 – 1.27. While  $\theta = 3$ , &  $\phi = 1$  are used for the baseline model, both high ( $\theta = 3$ , &  $\phi = 1.27$ ) and low ( $\theta = 2$ , &  $\phi = 0.75$ ) are used in different cases to assess the impact of varying these parameters.

Results of calibration are shown in Table 2.

**Table 2: Calibrated Model for Rates of Return**

	No disaster	Baseline	Low $\theta$	High $\theta$	High $p$	Low $q$	Low $g$	Low $p$	Low $\emptyset$	High $\emptyset$	High $m$	
$\beta$ (spirit of capitalism parameter)	0	1	1	1	1	1	1	1	1	0.75	1.27	1
$\theta$ (coeff of relative risk aversion)	3	3	2	4	3	3	3	3	3	3	3	3
$\alpha$ (s. d. of growth rate, no disasters)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
$\rho$ (rate of time preference)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03
$g$ (growth rate, deterministic part)	0.025	0.025	0.025	0.025	0.025	0.025	0.02	0.025	0.025	0.025	0.025	0.025
$p$ (disaster probability)	0	0.017	0.017	0.017	0.025	0.017	0.017	0.017	0.017	0.017	0.017	0.017
$q$ (bill default probability in disaster)	0	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4
$m$ (consumption wealth ratio)	0.0114943	0.011494	0.011494	0.011494	0.011494	0.011494	0.011494	0.011494	0.011494	0.011494	0.011494	0.037037
Expected equity rate	0.1044	0.068623	0.065831	0.039244	0.043197	0.068623	0.048623	0.058623	0.072644	0.06238	0.055851	
Expected bill rate	0.1032	0.037019	0.05139	-0.03078	-0.00253	0.032018	0.017019	0.027019	0.046664	0.023287	0.024247	
Equity premium, unlevered & unconditional	0.0012	0.031604	0.014441	0.070027	0.045723	0.036604	0.031604	0.031604	0.02598	0.039093	0.031604	
Expected equity rate, conditional	0.1044	0.07351	0.070719	0.044132	0.050384	0.07351	0.05351	0.06351	0.077531	0.067268	0.060739	
Face bill rate	0.1032	0.038974	0.053345	0.02883	0.000348	0.033484	0.018974	0.028974	0.048619	0.025242	0.026202	
Equity premium, Unlevered & conditional	0.0012	0.034536	0.017374	0.07296	0.050036	0.040026	0.034536	0.034536	0.028912	0.042026	0.034536	
$\Omega$	0.9238551	0.945896	0.944179	0.971782	0.966321	0.945896	0.960191	0.955402	0.943863	0.949716	0.945896	
Price-earnings ratio	12.132862	19.34005	20.39743	39.11454	33.58832	19.34005	27.60245	24.18345	18.1047	21.62862	23.46695	
Equity premium, levered & unconditional	0.0018	0.047406	0.021662	0.105041	0.068585	0.054907	0.047406	0.047406	0.03897	0.05864	0.047406	
Equity premium, levered & conditional	0.0018	0.051804	0.02606	0.10944	0.075054	0.060039	0.051804	0.051804	0.043389	0.063039	0.051804	

## DISCUSSION OF THE RESULTS

For  $p = 0$ , &  $\theta = 0$ , the model replicates the Mehra & Prescott (1985) case. For  $\theta = 0$  (i.e. no spirit of capitalism), the model reduces to Barro's (2006) model. The equations for rates of return & the equity premium suggest that the incorporation of the spirit of capitalism adds to the coefficient of risk aversion. Put another way, it increases the effective coefficient of risk aversion. Thus, based merely on the equations derived for equity premium- without any calibration- it can be asserted that the incorporation of the spirit of capitalism enhances the ability of the model to account for a large equity premium with low coefficient of relative risk aversion.

Calibration results support this assertion. This model manages to get the equity premium in the right ballpark even with a  $\theta$  (coefficient of relative risk aversion) of 3, whereas Barro's study requires  $\theta$  value of 4.

The two 'forces' of fear and greed are reflected in the parameters  $p$  and  $\theta$  respectively. These parameters occur several times in the expression for the equity premium. Complex interaction between the two forces is reflected in the second term of the expression where the two parameters are multiplied in a complex way. Implications of this interaction deserve to be further investigated.

Some other remarkable features can be observed

- The model's prediction of the size of the equity premium is very sensitive to the values of  $\theta$  (coefficient of relative risk aversion) &  $\theta$  (spirit of capitalism parameter). This can be observed in the wide divergence in the size of equity premium as  $\theta$  or  $\theta$  is varied.
- 
- The equity premium does not depend on the wealth consumption ratio. This is clear from the fact that  $m$  does not enter the expression for the equity premium.
- The model is not very sensitive to the values of  $g$ ,  $\rho$ , &  $q$ .
- 

In addition to this, a comment on the theme of 'fear' & 'greed' is in order. As stated earlier, the primary motivating factor of developing this model was to incorporate proxies of both 'fear' & 'greed'. If we consider  $p$  (the probability of rare disasters) and  $b$  (size of disaster) as a proxies for fear of rare disasters, &  $\theta$  (spirit of capitalism parameter) as a proxy for greed, we can see how these parameters determine the equity premium:

Equity Premium

$$= (\theta + \theta)\sigma^2 + p(1 - q)[E_t(1 - b)^{-\theta - \theta} - E_t(1 - b)^{1 - \theta - \theta} - E_t b]$$

We have already observed from the calibration results, the equity premium is relatively insensitive to changes in the values of  $q$  &  $\sigma$ . Hence, it can be argued that the equity premium is critically dependent on the proxies of 'fear' & 'greed'. The analogous behavior of  $\theta$  &  $\theta$  is also very insightful. The comparison of the relative roles of the two sets of parameters ( $p$  &  $b$  on the one hand, and  $\theta$  &  $\theta$  on the other) is a topic that deserves further investigation.

## **CONCLUDING REMARKS**

This paper is a part of an ongoing research project. The model developed in this paper employs time additive power utility. An alternative- often considered superior, although it yields similar results- is to develop a similar model employing Epstein-Zin-Weil recursive preferences. This variant of the model is being given final touches at present & will be incorporated in a future version of this paper shortly.

The most promising feature of the model presented in this paper is that it can address many critical concerns in an intuitively appealing & simple manner. What is remarkable about the incorporation of the spirit of capitalism in a rare disaster framework is that it greatly enhances the ability of the framework to explain large equity premium despite low values of the coefficient of relative risk aversion. This enhanced ability is what is needed to address Constantinides' (2008) criticism of the explanation given by Barro & Ursua (2008). This point is being specifically tackled using the other variant of the model which will be included in a subsequent version of this paper.

While the primary goal of this research is to develop a model that explains the equity premium puzzle, it is important to keep the larger picture in sight. As pointed out by Gabaix (2009), variable rare disaster framework can be used to understand a number of puzzles in macroeconomics & finance. Since this framework can be constructed using conventional expected utility formulation- as has been done in this paper- which is commonly used in macroeconomics, it can take us a step closer to the ultimate goal of unification of macroeconomics & finance. There is no need to emphasize that such unification is particularly desirable in the backdrop of the recent financial-turned-macroeconomic crisis.

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# **AN EX-POST EVALUATION OF SARBANES-OXLEY ACT ON FIRMS' INTRINSIC VALUE: A PRINCIPAL- AGENT FRAMEWORK**

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## ***ABSTRACT***

*The Sarbanes-Oxley Act of 2002 (SOX) is viewed as the regulatory solution to accounting and financial scandals that creates a way of re-aligning the goals and behavior of the manager-agent and auditor-agent with those of the shareholder-principal to maximize the firm's intrinsic value, true returns and risk. A principal-agent model with multiple agents and risk considerations is developed and empirical tests are used to evaluate the effectiveness of SOX. This framework seems to explain auditor-agent and manager-agent behavior in issuing accurately stated financial statements, implying the use of less aggressive earnings management strategies. Relative to the pre-SOX period, the new principal-agent relationship appears to explain greater goal congruence in the post-SOX period.*

# **A CONCEPTUAL FRAMEWORK FOR E-BANKING SERVICE QUALITY IN VIETNAM**

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## **ABSTRACT**

*Service quality is one of the key factors in determining the success or failure of e-banking. To gain and sustain competitive advantages in the rival-driven e-banking market, it is thus crucial for e-banks to understand in-depth what customers perceive to be the key dimensions of service quality and what impacts the identified dimensions have on the customers' perceived overall service quality, satisfaction, and loyalty. This paper attempts, based on an extensive review of relevant literature, to provide a number of hypotheses that integrate three important constructs in the context of e-banking in Vietnam - emerging as a new potential market, such as e-service quality, e-satisfaction, and e-loyalty.*

## **INTRODUCTION**

It has been observed that the incredible growth of Internet use by individuals as well as business organizations has altered the competitive arena, which is quite unique and considerably different from that of the traditional, physical marketplace. Accordingly, the distinctive character of a virtual market has prompted companies to alter their strategies of conducting business with consumers. The banking industry is no exception. Numerous banks have already been employing the Internet as an alternative service delivery channel (Such banks are referred to as e-banks hereinafter.) to traditional ones, such as face-to-face and telephone banking, in providing their customers with a variety of financial services. It has been pointed out that the introduction of e-banking services could offer both bankers and customers diverse benefits (Broderick and Vachirapornpuk, 2002). For instance, the direct interaction between the customer, and the e-bank's Web site or employees over the Internet enables the e-bank to lower its operating and fixed costs by reducing the number of employees, branch offices, and other physical facilities while maintaining a high quality level of customer service. These cost benefits could make favorable conditions for the e-bank to provide customer services with lower fees and higher interest rates on interest bearing accounts than traditional brick-and-mortar banks (e.g., Gerlach, 2000; Jun and Cai, 2001).

Thus, in order to take advantage of this new information technology, most of the traditional banks have already invested a huge amount of money in the e-banking infrastructure and served their customers through multiple service delivery channels. This financial market change creates even more stiff competition than ever before among e-banks. Moreover, e-banks have been facing increased challenges from nontraditional institutions, such as money management companies, securities companies, and insurance

companies, erosion of product and geographic boundaries, and changes in consumers' financial awareness. This unprecedented competitive market situation presents e-bankers with severe marketing and operations challenges.

Unfortunately, although many e-banks have long centered their attention on improving their e-banking service quality, they still appear to be lagging behind their customers' ever increasing demands and expectations, and struggling with retaining and expanding their loyal customer base. Obviously, to compete successfully in such a highly competitive e-banking industry, the banks should provide customers with high quality service (Mefford, 1993). In doing so, e-banks should thoroughly understand what dimensions are utilized by customers in evaluating e-banking service quality. Then, the banks can effectively take appropriate steps to enhance their e-banking service quality, and customer satisfaction and loyalty.

Up to now, a great deal of literature has identified key dimensions of customer service quality, customer satisfaction, and customer loyalty in the setting of traditional banking, where human interactions between customers and bank employees are dominant (e.g., Baumann *et al.*, 2005; Beerli *et al.*, 2004; Calik and Balta, 2006; Ehigie, 2006; Veloutsou *et al.*, 2004). However, very little research has addressed those issues in the banking environment, where non-human interaction is a primary service delivery and communication channel (e.g., Flavian *et al.*, 2004; Jabnoun and Al-Tamimi, 2003; Jun and Cai, 2001; Maenpaa, 2006; Siu and Mou, 2005).

Moreover, these studies have been primarily taken in the context of North America and Europe (Daniel, 1999; Mols, 2000; Pikkarainen *et al.*, 2004) and to a lesser extent in other regions including a mix of developed and developing countries, such as Singapore (Tan and Teo, 2000), Taiwan (Shih and Fang, 2004), Malaysia (Suganthi and Suganthi, 2001), and Thailand (Jaruwachirathanakul and Fink, 2005).

Little research on e-banking service quality has been implemented in countries that are emerging as new potential markets with very high economic growth rates. Among these countries is Vietnam where its economic growth rate is approximately over 8% per year and population of about 90 million (Gutman *et al.*, 2006). Together with Vietnam's entry into the World Trade Organization dated on 7 January 2007, its banking sector is increasingly being deregulated in accordance with the requirements set up by the World Trade Organization. These moves would strengthen competition among local and foreign banks in Vietnam, bringing about myriad of opportunities for banks that provide superior service quality, especially e-banking service quality, for their customers.

Therefore, the objective of this research is, based on relevant literature reviews, to provide a conceptual framework that integrates e-banking service quality, customer satisfaction, and customer loyalty in the context of Vietnam. More specifically, the present study attempts to (1) identify the salient e-banking service quality dimensions; (2) examine the relationships between the derived e-banking service quality dimensions and customer satisfaction; and (3) investigate the association between customer satisfaction and customer loyalty.

## **BACKGROUND**

### ***E-service quality***

Although both academicians and practitioners appear to continuously claim about what really constitute service quality across various industries, they are increasingly reaching the consensus that service quality is determined by the difference between customers' expectations of service providers' performance and their evaluation of the services they received (Parasuraman *et al.*, 1985, 1988). Parasuraman *et al.* (1985) have originally identified ten dimensions of service quality that substantially affect the customers' perceptions of overall service quality. These determinants were tangibles, reliability, responsiveness, competence, courtesy, credibility, security, access, communication, and understanding the customer. Parasuraman *et al.* (1988) later refine the ten dimensions into five based on factor analysis. These five dimensions are tangibles, reliability, responsiveness, assurance, and empathy. On the grounds of these five dimensions, they have developed a 22 item survey instrument namely SERVQUAL for measuring service quality. The SERVQUAL instrument has been widely used to value the service quality of a variety of service organizations, including banks (e.g., Cowling and Newman, 1995; Jabnoun and Al-Tamimi, 2003), although it has received some criticism (for a comprehensive review, see Cronin and Taylor, 1994; Dabholkar *et al.*, 1996).

It is apparent that SERVQUAL may not be sufficient for measuring service quality across industries, not to mention online businesses. The instrument does not take distinct aspects of e-service quality into consideration, since the five dimensions mainly focus on customer-to-employee, but not on customer-to-Web-site interactions. By the same token, some studies have been carried out in attempts to pinpoint major attributes that best fit the e-business setting. Cox and Dale (2001) argue that with the absence of non-human interactions in the e-setting, determinants such as competence, courtesy, cleanliness, comfort and friendliness, helpfulness, care, commitment, and flexibility were not particularly important, whereas other determinants such as accessibility, communication, credibility, understanding, appearance, and availability, were especially relevant to the success of e- businesses. Through 54 students' evaluations on three UK-based Internet bookshops, BarNes and Vidgen (2001) adjusted the SERVQUAL scale and developed a WebQual Index including 24 items. This Index concentrated on seven customer service quality aspects – responsiveness, competence

reliability, access, communication, credibility, and understanding the individual.

Zeithaml *et al.* (2001), based on the traditional service quality scale and a series of focus group interviews, have developed e-service quality dimensions for measuring e-service quality. These dimensions were access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, trust/assurance, site aesthetics, and price knowledge. Later, Wolfinbarger and Gilly (2002) rely on focus group interviews and an online survey, reduce the e-service quality scale into four main dimensions as customer service, privacy/security, reliability, and Web site design where reliability and Web site design are the most important. In addition, Madu and Madu (2002) have uncovered 15 e-service quality dimensions based on their literature review: performance, features, structure, aesthetics, reliability, storage capacity, serviceability, security and system integrity, trust, responsiveness, product differentiation and customization, Web store policies, reputation, assurance, and empathy. Moreover, Zeithaml *et al.* (2002) have proposed seven e-service quality dimensions – efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact, in which the first four dimensions involved core e-service and the rest were relevant to service recovery.

More recently, based on focus group interviews, Santos (2003) has unfolded two groups of e-service quality dimensions that strongly affect customer retention: incubative and active groups. The dimensions of the active group are mainly related with e-consumer service quality. They consist of reliability, efficiency, support, communication, security, and incentive. Cai and Jun (2003) have come up with the following four major dimensions of e-service quality: Web site design/content, trustworthiness, prompt/reliable service, and communication. They find that all of the four dimensions substantially impact e-purchasers' evaluation of overall e-service quality. Yang *et al.* (2004) have proposed the following six e-retailer service quality dimensions: reliability, access, ease of use, attentiveness, security, and credibility. According to Lee and Lin (2005), key e-service quality dimensions are Web site design, reliability, responsiveness, trust, and personalization. They have noted that trust is the most important determinant that influences overall service quality and customer satisfaction, followed by reliability and responsiveness. In addition, Parasuraman *et al.* (2005) have developed E-S-Qual as a measure of e-core service quality, comprising four dimensions, such as efficiency, fulfillment, system availability, and privacy and E-RecS-Qual as a measure of e-recovery service quality, consisting of three dimensions, such as responsiveness, compensation, and contact.

### ***E-banking service quality***

Many banks have utilized the Internet as a channel designed to offer customers a variety of financial services 24 hours a day. These services, of course, involve interactions between customers and banks' online information systems. More specifically, As noted by Rotchanakitumnuai and Speece (2003), e-banking makes favorable conditions for customers to access directly into their financial information and to make financial transactions with no need to go to the bank at any time.

Despite the importance of exploring the construct of e-banking service quality, there has been scant literature that seeks to capture salient e-banking service quality attributes. Jun and Cai (2001) have, based on the analysis of 532 critical incidents in e-banking, developed 17 dimensions of e-banking service quality: product variety/diverse features, reliability, responsiveness, competence, courtesy, credibility, access, communication, understanding the customer, collaboration, continuous improvement, content, accuracy, ease of use, timeliness, aesthetics, and security. They suggest that both e-only banks and traditional banks offering e-banking services should focus on responsiveness, reliability, and access dimensions. Polatoglu and Ekin (2001) investigate the Turkish consumers' acceptance of e-banking service and highlight three attributes that are very likely to influence the quality of e-banking service: reliability, access, and savings.

In addition, Broderick and Vachirapornpuk (2002), employing a participant observation technique and utilizing the data of 160 incidents from 55 topic episodes posted in the bulletin board by the e-banking community, have constructed a model of perceived service quality in Internet banking. They identify the following five key elements that are regarded as central influences on perceived service quality: customer expectations of the service, the image and reputation of the service organization, aspects of the service setting, the actual service encounter, and customer participation. They further note that among these elements, service setting and customer participation have the most immediate impacts on service evaluation. Flavian *et al.* (2004) have uncovered four dimensions, such as access to services, services offered, security, and reputation, which are perceived to have high bearings on corporate image of e-bank and e-banking service quality. Jayawardhena (2004) has derived five quality dimensions, such as Web site interface, trust, attention, and credibility, using the modified SERVQUAL scales. Similarly, Bauer *et al.* (2005) propose a total six dimensions of e-banking portal service quality: security, trust, additional services, added values, transaction support, and responsiveness.

In addition, e-SERVQUAL was adapted by Siu and Mou (2005) in their measuring service quality in e-banking of Hong Kong. Having used factor analysis, they have unfolded four dimensions, such as credibility, efficiency, security, and problem handling. Among these four dimensions, only efficiency was found to have remained the same as the original construct and the rest were newly generated. More recently, Maenpaa (2006) has, based on open-ended exploratory interviews, an extensive literature review, and quantitative analyses, developed seven dimensions of e-banking service quality: convenience, security, status, auxiliary features, personal finances, investment, and exploration. The researcher further suggests that banks offering e-banking services need to focus more on the growing consumer cluster of youngsters, who are viewed as the prospects of tomorrow. Recently, Pikkarainen *et al.* (2006) have taken e-banking services into consideration based on an end-user computing satisfaction perspective. They strongly argue that three dimensions – content, ease of use, and accuracy - are valid in measuring end-user computing satisfaction of e-banking. Furthermore, their results elicit a solid relationship between these dimensions and overall satisfaction of e-banking.

### ***E-banking services in Vietnam***

According to VinaCapital (2006), there are currently five state owned commercial banks, 38 joint stock commercial banks, four joint venture banks, 29 foreign bank branches, 45 foreign bank representative offices, five finance companies and nine finance leasing firms operating in Vietnam. There is no doubt that the number of banks is going to expand after Vietnam's entry into the World Trade Organization dated 7 January 2007. Since 1992, Vietnam has transformed its banking system into a diversified system in which commercial banks of all kinds provided services to a broader customer base. However, the four major banks (the Bank for Agriculture and Rural Development, the Industrial and Commercial Bank of Vietnam, the Bank for Foreign Trade of Vietnam, and the Bank for Investment and Development of Vietnam) account for approximately 70% of all lending activity. In 2005, foreign banks and joint ventures accounted for around 14% of lending activity. Giant foreign banks such as HSBC, Deutsche Bank and ANZ have all established their image and branches, and some have purchased shares in domestic commercial banks (VinaCapital, 2006). Most of the banks have been implementing e-banking services besides the traditional ones:

- The Bank for Foreign Trade of Vietnam (Vietcombank) started introducing its e-banking services in 2001 (Vietcombank, 2004). Its e-banking services allow customers to transfer money electronically; to get access to information such as account balance, exchange rates, and consultative information. In addition, Vietcombank's Connect 24Card allows customers to withdraw money from private accounts and international credit cards, check their account balance, make statement enquiry and transfer funds. Besides maintaining good business relationship with its long lasting customers such as state run corporations, large enterprises and import-export corporations, Vietcombank has also focused on small, medium companies and individual customers.
- The Industrial and Commercial Bank of Vietnam (Incombank) started introducing its e-banking services in 2000 (Incombank, 2004). This kind of service has allowed customers to get access to information such as their account balance, their recorded transactions, interest rates, exchange rates, and so on via its web-site. Incombank is now co-operating with some multi-national companies, such as Fujitsu, Intel and HP to develop more complete services relating to e-banking.
- The Bank for Investment and Development of Vietnam (BIDV) started introducing its e-banking service in 1998 (BIDV, 2000). Customers can check their account balance, transfer money and pay bills. BIDV's traditional customers are enterprises operating in the fields of information technology, telecommunication, building and construction. Because BIDV is primarily operating in large cities and towns, BIDV's e-banking focuses mainly on high income and enterprise customers.
- The Bank for Agriculture and Rural Development (Agribank) started launching its e-banking services in 2003 (Agribank, 2004). With a network of 1,650 branches and a number of transaction offices nationwide, Agribank has co-operated with

Western Union in offering remittance services to Vietnamese overseas and migration labors in 2,800 spots throughout Vietnam.

- Most of the other local banks and all the foreign banks operating in Vietnam have been offering e-banking services. For example, ANZ's e-banking offers customers secure and immediate e-banking services which include account balance inquiries, transaction history, funds transfer between accounts, account statement ordering, check book ordering and exchange rates.

## **HYPOTHESES**

Based on an extensive review of the literature on e-service quality in general and e-banking service quality in particular, the author has developed a number of hypotheses that aim at delineating the associations between e-banking service quality dimensions, overall e-banking service quality, e-banking customer satisfaction, and e-banking customer loyalty in the context of Vietnamese banking system.

### ***E-banking service quality dimensions and overall e-banking service quality***

There is no doubt that to survive in the ever-increasingly competitive e-banking industry, banks need to offer customers excellent quality services. As mentioned in the review on e-banking service quality earlier, few studies have attempted to identify key dimensions of e-banking service quality and examined their relative importance to overall service quality as perceived by e-banking customers. Jun and Cai (2001) suggest that responsiveness, reliability, and accesses are the most important dimensions of e-banking service quality. According to Polatoglu and Ekin (2001), reliability, access, and savings were very likely to influence strongly the quality of e-banking service. In the view of Broderick and Vachirapornpuk (2002), service setting and customer participation were the most immediate impact on service evaluation. In addition, Flavian (2004) argued that access to services, services offered, security, and reputation were perceived to have high bearings on corporate image of e-bank and e-banking service quality. In the same vein, Pikkarainen *et al.* (2006) contended that the dimensions of content, ease of use, and accuracy were the most important in measuring end-user computing satisfaction of e-banking. Considering the fact that various e-banking service dimensions were uncovered by different e-banking service researchers, it would be worth validating their findings with respect to the issues of what dimensions constitute e-banking service quality and whether or not each salient e-banking service quality dimension significantly affects customer perceived overall e-banking service quality. Therefore,

**H1.** Each of the dimensions of e-banking service quality will significantly influence the overall customer perceived e-banking service quality.

### ***Overall e-banking service quality and customer satisfaction***

Banks should delight their customers by exceeding their expectations to escalate customer satisfaction (Oliver, 1980). It should be noted that the expectancy/disconfirmation paradigm in the process theory established the foundation for a significant number of satisfaction research (Mohr, 1982). This paradigm consists of four constructs as expectations, performance, disconfirmation, and satisfaction. Based on

the expectancy/disconfirmation paradigm, Tse and Wilton (1988) have defined satisfaction as “the consumer’s response to the evaluation of the perceived discrepancy between prior expectations and the actual performance of the product as perceived after its consumption”. Seemingly, this definition is very close to that of the service quality construct. However, there are a web of distinctions between customer satisfaction and service quality. Satisfaction is a post decision customer experience, whereas quality is not (Bolton and Drew, 1991; Boulding *et al.*, 1993; Cronin and Taylor, 1994; Oliver, 1980, 1993; Parasuraman *et al.*, 1988). Moreover, in the satisfaction literature expectations reflect anticipated performance (Churchill and Suprenent, 1982) made by the customer as to the levels of performance during a transaction. In contrast, in the service quality literature, expectations are regarded as a normative standard of future wants (Boulding *et al.*, 1993). These normative standards symbol prolonged wants and needs that are kept unaffected by the adequate domain of marketing and competitive forces. Normative expectations are, hence, more stable and can be considered as representing the service the market oriented provider must constantly strive to provide (Zeithaml *et al.*, 1993).

There has, up to date, been a disagreement about what constitutes satisfaction. In attempts to specify the customer satisfaction construct, Giese and Cote (2000) have implemented a research that addressed a review of the satisfaction literature together with group and personal interviews. They view the customer as the final user of a product. Their study findings reveal three attributes that incorporated the construct of customer satisfaction: (1) customer satisfaction is a summary affective response that varies in intensity; (2) the response is related to a particular focus, a product choice, a purchase, or consumption; and (3) the response happens at a given time varying by circumstance, but is in general confined to time.

There has been a popular support for the proposition that customer satisfaction is an important variable in bank marketing management (Howcroft, 1991; Moutinho and Brownlie, 1989; Moutinho, 1992). The role of service quality in financial service delivery has also been spotlighted (Avkiran, 1994; Smith and Lewis, 1989). There may be many antecedents of customer satisfaction (Jamal and Naser, 2002). However, customer satisfaction often relies much on the quality of product or service offering (Naser *et al.*, 1999). Thus, it is logical to conjecture that service quality is an antecedent to satisfaction and is non-experiential in nature (Lee *et al.*, 2000; Oliver, 1993).

In the same spirit, Caruana (2002) has examined the effects of service quality and the mediating role of customer satisfaction in the retail banking, and supports for the contention that customer satisfaction performs a mediating role in the link between service quality and service loyalty. In this study, service quality has been found to be an important input to customer satisfaction. Furthermore, Jamal and Naser (2002) argue, in the study of impact service quality dimensions and customer expertise on satisfaction in the retail banking, that the core and relational dimensions of service quality are causal antecedents of customer satisfaction. Ting (2004) also has studied service quality and satisfaction judgments of customers in banking institutions throughout Malaysia and find that service quality is the antecedent of satisfaction. Recently, Pikkarainen *et al.* (2006)

have examined e-banking services and suggest that there is a positively relationship between e-banking service quality and overall satisfaction. Therefore,

**H2.** There is a significantly positive relationship between the overall customer e-banking service quality and e-banking customer satisfaction.

***E-banking customer satisfaction and customer loyalty***

The term loyalty has been defined in a number of ways by many scholars. There are two outstanding approaches to conceptualizing the construct: behavioral and attitudinal (Dekimpe *et al.*, 1997). In the behavioral approach, loyalty is elicited from customers observed purchase behavior, namely repetitive buying activity. Dick and Basu (1994) point out that the behavioral approach is inadequate to explain how and why loyalty is developed and retained and that to divulge real loyalty it is important to understand the attitudinal attributes determining repetitive purchase. Under the attitudinal approach, loyalty is hence elicited from the customer's attitude and behavioral intention towards the attitude object. These two approaches are likely to be merged by utilizing traditional attitude theory in which one of the primary premises is that behavior towards the object is determined by attitude towards the object and intention to act towards the object (Fishbein and Ajzen, 1975). More specifically, a causal chain is assumed from cognition to affect, from affect to intention, and from intention to behavior (Fishbein, 1980).

Since broadening a loyal customer base is widely accepted by academicians and practitioners as an extremely important competitive weapon to survive in today's stiff marketplace, many banks have developed and implemented diverse strategies and action programs to heighten their customer loyalty (Bahia and Nantel, 2000; Jamal and Naser, 2002). It is noteworthy that a loyal customer to a bank is one who will stay with the same service provider, who is likely to take out new products with the bank, and who is likely to recommend the bank's services to the other people (Fisher, 2001). Among a number of factors that have been considered as significant antecedents to customer loyalty, customer satisfaction is commonly recognized by many researchers for its basic role (Jamal and Naser, 2002). Satisfied customers are more likely to focus their business with one bank (Reichheld, 1993), give recommendations for the bank and tend to decrease the bank's cost of providing services because there are fewer complaints to deal with. Moreover, Beerli *et al.* (2004) empirically investigate the factors determining e-banking customer loyalty and conclude that both satisfaction and switching costs can be regarded as loyalty antecedents and that the influence exerted by satisfaction is far greater than that of switching costs. Recently, Ehigie (2006) has conducted a study to examine how customer expectations, perceived service quality and satisfaction predict loyalty among bank customers in Nigeria. The results from this study, based on multivariate analysis, reveal that perceived service quality and customer satisfaction are jointly associated with customer loyalty, but not customer expectation. Thus, to gain customer loyalty, bank management ought to satisfy their customers. Therefore,

**H3.** There is a significantly positive relationship between e-banking customer satisfaction and e-banking customer loyalty.

## CONCLUSION

With the Internet and Web technologies, e-banking customers can have unlimited access to the information they require and enjoy a wider range of choices in selecting banking products and services with highly competitive prices. As a result, it is generally difficult for e-banks to gain and sustain competitive advantages based solely on a cost leadership strategy in the rival-driven online banking market (Jun *et al.*, 2004).

Therefore, the service quality levels of the e-banks have increasingly become a key driving force in enhancing customers' satisfaction and in turn expanding their loyal customer bases. Service quality improvement initiatives should begin with defining the customers' needs and preferences, and their related quality dimensions. By understanding the dimensions that customers use to evaluate service quality, the e-banks can take appropriate actions to monitor and enhance their performance on these dimensions. Since few studies have examined systemically the relationships between e-banking service quality dimensions, overall e-banking service quality, customer satisfaction, and customer loyalty, the author of this study, to fill this research gap, have proposed a number of hypotheses in which the aforementioned constructs are integrated in the context of Vietnamese banking system.

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# **DEVELOPING SOCIALLY RESPONSIBLE MANAGERS: A PROJECT**

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## ***ABSTRACT***

*This article describes a project used in a business ethics class that has students investigate social problems that contribute to unethical professional conduct. Proactive intervention in these problems demonstrates managerial social responsibility in business and acts to diminish pressures that result in a loss of productivity and unethical behavior.*

*Students choose an area of concern, such as alcoholism or gambling addictions, and research how this problem affects the local community. They use both secondary resources from periodicals and Internet sites and primary information from individuals active in the area of interest. The project results in a deeper understanding of social problems and tools to meet the needs of colleagues and employees.*

# **CREDIT UNION FAILURES: A NEW ROLE FOR THE ‘TEXAS’ RATIO?**

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## ***ABSTRACT***

*This paper provides an assessment of the credit union industry by reviewing trends affecting the current and future financial strength of these institutions in conjunction with comparable analysis of their commercial banking competitors. We focus the analysis around an intriguing tool that has become a cause célèbre among many looking at the current trends among failing financial institutions, the so-called “Texas ratio”. This metric, although an extremely naïve tool, has proven to be quite useful in analyzing commercial banks. We examine the strengths and weaknesses of using the Texas ratio in general and then look at its potential use as a tool to help find credit unions most likely to develop serious financial difficulties.*

## **INTRODUCTION AND BACKGROUND**

As long as there have been financial institutions, there have been failures of those institutions. Such failures can have dramatic impacts on the lives of individuals and the economic well-being of communities and nations alike. The United States has suffered through recurring periods of financial turmoil resulting in the failure of numerous financial institutions (1819, 1837, 1873, 1907, the Great Depression of the 1930s, and the savings and loan crisis of the 1980s). It is presently in the midst of yet another serious situation.

The current crisis has many becoming increasingly concerned about the health of their local financial institutions. Since the beginning of 2008 over 170 banking institutions and 30 credit unions have failed. With failures appearing at such regular intervals it is not unusual to find regular headlines such as “If it’s Friday, there must be a bank failing somewhere across the country” (Ellis, 2009). Thus, we find a keen interest among researchers and the public at large to find those financial institutions most in danger of failure.

Although there has been much concern in the banking sector, this does not appear to be the case for credit unions. Yet with credit unions claiming more than 90 million members and controlling of \$700 billion of credit in the U.S. economy, their importance to the U.S. economy cannot be overlooked. The strength of the industry and especially of individual members within the industry can be of paramount importance to those members of society who rely on credit unions for their basic financial needs.

Trends in the industry have paralleled those of other financial institutions over the past couple of years. For example, the National Credit Union Administration, the prime regulator of credit unions and provider of deposit insurance for credit unions, has

increased its official number of “problem” credit unions from 211 to 351 over the past two years. Furthermore, the number of credit unions with nonperforming loans comprising more than two percent of their loan portfolios has jumped from 19 to 31 percent over the same time period; and those with nonperforming loans greater than five percent rose from 2.5 percent to 5.3 percent. Thus, it is becoming increasingly important to find ways of determining which financial institutions are most in danger of failing.

The search for insights into the phenomenon of failing financial institutions has seen many developments over the years. Although we find early studies of bank failures beginning in the 1930s (Spahr, 1932), most work in this area does not appear until much later. Research into the causes of failures did not begin in earnest until the seminal work of Beaver (1966) and Altman (1968) who both began using financial ratios as tools for predicting business failures. Meyer & Pifer (1970) and Sinkey (1975) appear to be the first to introduce this type of analysis into the realm of financial institutions as they began examining relationships between key banking ratios and bank failures. Kharadia & Collins (1981) conducted similar analysis on the plight of credit unions.

Subsequent studies have focused on using financial ratios to develop early warning systems that minimize the probability and costs of bank failures (Kolari, Glennon, Shin & Caputo, 2002; Wheelock & Wilson, 2000). Others (Curry, Elmer & Fissel, 2007; Purnanandam, 2007) have included other external variables (e.g., stock prices and interest rates) that also potentially affect the financial condition of financial institutions. Concurrently, the regulatory agencies have refined the internal models they use to screen for those institutions most likely to suffer financial difficulties (Cole & Gunther, 1998; Collier, Forbush, Nuxoll & O’Keefe, 2005; King, Nuxoll & Yeager, 2006).

Similar work does not appear to have been made with respect to credit unions. Although there has been much analysis of the operational aspects of credit unions and the credit union industry (e.g., Goddard, McKillop, & Wilson, 2002, 2008a, 2008b; Kane & Hendershott, 1996; Karels & McClathchey, 1999; Boldin, Leggett & Strand, 1998; Sollenberger & Stanecki, 2009), little can be found related to examining the potential risks of failure of those institutions. One limited exception, a study by Sollenberger and Taggart (2007), examines trends in various financial ratios that have occurred within the credit union industry. They paint a pretty picture of changes that occurred between 1986 (as the S&L crisis was just getting started) and 2006 (just prior to the most recent financial crisis). They focus on key figures such as the fall in the percentage of delinquent loans (2.19 percent in 1986, 0.68 percent in 2006) and the increase in the amount of capital and reserves available to protect institutions against loan losses (11.2 percent in 1986, 17.1 percent in 2006). However, looking at more recent data (the most recent being from the third quarter of 2009), we see troubling reversals in these ratios with the percentage of delinquent loans rising to 1.69 percent and capital and reserves falling to 15.1 percent.

Besides the academic studies cited above, one finds an increase in the number of private entities offering their own assessments on the health of financial institutions. IDC Financial Publishing, Veribanc, Sheshunoff Information Services, and SNL are among

many of the companies offering proprietary ratings and rating systems for evaluating the viability of financial institutions. There are also a variety of online services that offer “free” ratings such as Bankrate.com and TheStreet.com. Even the world of academia is has become involved as the School of Communication at American University offers a Banktracker database at [banktracker.investigativereportingworkshop.org](http://banktracker.investigativereportingworkshop.org) that provides a “troubled asset” ratio for banks and credit unions.

The “troubled asset” ratio provided by Banktracker closely mimics another tool, the so-called *Texas ratio* that has derived some notoriety in recent times. The Texas ratio is attributed to Gerard Cassidy and others at RBC Capital Markets in their analysis of Texas banks and savings and loans that experienced difficulties during the 1980s (Barr, 2008). The ratio can be found by dividing a financial institution’s non-performing assets (defined as its non-performing loans plus other real estate owned) by the sum of its equity capital and loan loss reserves. Cassidy noted that the Texas ratio was a good indicator of potential failure whenever the ratio reached 100 percent. It has gained much visibility as the public media and various elements within the blogosphere have begun publicizing it, in part due to its simplicity and in part due to its apparent rate of success.

One particular website, [bankimplode.com](http://bankimplode.com), has received much publicity since it began publishing a watch list of troubled banks based mainly on its use of the Texas ratio. Both the FDIC and NCUA maintain official watch lists of troubled banks and credit unions, respectively. However, given the private nature of the FDIC and NCUA assessments, there has been a groundswell of activity to try to ascertain which institutions are on those official lists (and which are not). Services like [bankimplode.com](http://bankimplode.com) appear to have had quite a lot of success in that regard. For example, in reviewing the [bankimplode.com](http://bankimplode.com) watch list published using data from the third quarter of 2008, we find that thirty-four of the top forty banks on their list had failed by the end of 2009; another three of the remaining banks have also moved “higher” up the list by the end of the third quarter of 2009.

With tools like the Texas ratio providing quick albeit most likely incomplete assessments of banks most in danger of failing it would seem natural to extend such an analysis to credit unions. And given the negative trends in both the banking and credit union sectors, using a tool such as the Texas ratio appears to have become even more relevant.

## **DATA AND METHODOLOGY**

Bank data for the study were gathered from quarterly FDIC and OTS call reports that are available through the FDIC’s *Statistics on Depository Institutions* database available at [www2.fdic.gov/sdi/index.asp](http://www2.fdic.gov/sdi/index.asp). Credit union data were gathered from NCUA call reports and made available through its website at [www.ncua.gov/DataServices/FOIA/foia.aspx](http://www.ncua.gov/DataServices/FOIA/foia.aspx). The data collected were from each quarter of 2008 and the first three quarters of 2009.

The focal point of the study was placed on the fourth quarter of 2008. The sample of institutions to be examined is constantly changing as more of them fail over time. Likewise, subsequent data from failed institutions disappears after the failures. Choosing the end of 2008 as the artificial point in time provides us with essentially four quarters of

operating data (the fourth quarter of 2008 and first three quarters of 2009) along with four quarters of failure data (institutions failing during calendar year 2009).

The analysis also focuses only on institutions with total assets between \$10 million and \$10 billion. Virtually the entire population of institutions failing over the past ten years has fallen within that range. Limiting the study to these institutions allows us to eliminate extremely large institutions (over \$10 billion in total assets), which is predominantly made up of banks, and extremely small institutions (under \$10 million in total assets), dominated by credit unions.

The study itself examines some of the key similarities and differences that exist between banks and credit unions that have recently failed and those that have not failed. We also review how well the Texas ratio may work in terms of isolating those institutions most in danger of failing, banks and credit unions alike. Simple mean and median comparisons are made to ascertain the basic similarities and differences. Basic discriminant analysis is also conducted to help find those sets of variables that are significantly related to failure.

As mentioned above, the Texas ratio is calculated by dividing an institution's nonperforming loans by the sum of its equity capital and loan loss reserves. The variables chosen for the study are thus either directly related to the calculation of that ratio or are components of its key determinants. One unfortunate complication is that while many of the variables (e.g., total loans, total equity, and allowance for loan losses) are defined similarly across the FDIC and NCUA data sets, others such as nonperforming loans are not. Therefore, varying levels of assumptions and adjustments are needed to make the data comparable.

For credit unions, nonperforming loans are defined as the sum of delinquent loans (delinquent being defined in terms of loans more than 60 days past due) and other real estate owned. For banks, it is defined as the sum of loans in nonaccrual status (loans that are more than 90 days past due), of loans more than ninety days past due but still accruing interest, and of other real estate owned.

A summary of the variables included in the study is as follows:

nonperform – total nonperforming loans, which is the sum of delinquent loans and other real estate owned

delinquent – loans that are more that 60 days past due (credit unions) or more than 90 days past due (banks)

oreo – other real estate owned; loan collateral owned by the institutions from defaulted loans

homemtg – home mortgage loans

cre – commercial real estate loans

busloans – commercial and industrial loans

helocs – home-equity lines of credit

mbs – mortgage-backed securities owned

all – reserve account held as allowance for loan losses

equity – total bank equity  
protect – sum of allowance for loan losses and equity  
size – natural log of total bank assets

### SUMMARY OF RESULTS

Although the resulting samples are somewhat skewed with banks tending on average to be larger than credit unions, we see in Table 1 that a breakdown by asset size reveals a surprisingly high proportion of credit unions of significant size and populations that are perhaps less divergent than might be expected.

Table 1 Sample Breakdown by Total Assets as of December 2008

Total assets	Credit Unions		Banks	
	Number	Percent	Number	Percent
\$1 bn – \$10 bn	143	3.1%	558	6.9%
\$500 mn – \$1 bn	189	4.1%	722	8.9%
\$250 mn – \$500 mn	308	6.7%	1242	15.4%
\$100 mn – \$250 mn	672	14.5%	2522	31.2%
\$50 mn – \$100 mn	766	16.6%	1704	21.1%
\$25 mn – \$50 mn	1017	22.0%	974	12.0%
\$10 mn – \$25 mn	1531	33.1%	361	4.5%
Total	4626	100.0%	8083	100.0%

We begin by examining the key similarities and difference between institutions that have failed and those that have not. Note that although statistical data based on means are provided, the discussion focuses on the median statistics in that tests showed that virtually all variables exhibited non-normal distributions as well as unequal variances.

Unsurprisingly, given the high level of correlations among the many variables in the study, most differences between failed and nonfailed institutions were statistically significant beyond the 99<sup>th</sup> percentile. We look instead at those differences with lower levels or essentially no level of significance as summarized in Table 2.

Table 2: Differences in Key Variables between Failing and Nonfailing Institutions Data as of 12/31/2008

Variable	Means			Medians		
	Nonfailed (n = 7950)	Failed (n = 133)	t-statistic*	Nonfailed (n = 7950)	Failed (n = 133)	Z-score*
texas	0.1598	1.4856	11.65	0.0927	1.0994	17.66
nonperform	0.0251	0.1536	12.40	0.0154	0.1158	17.07
protect	0.6658	0.1074	-2.35*	0.1591	0.1062	-13.91
size	11.9528	12.6181	5.97	11.8408	12.4066	6.07
delinquent	0.0198	0.1154	12.72	0.0116	0.0931	17.05
oreo	0.0058	0.0388	6.75	0.0013	0.0188	12.75

homemtg	0.3001	0.2166	-4.71	0.2521	0.1434	-5.74
cre	0.2310	0.2666	3.08	0.2186	0.2700	3.34
busloans	0.1382	0.1126	-3.13	0.1179	0.0863	-3.25
mbs	0.3785	0.1092	-1.28**	0.0564	0.0605	0.39**
helocs	0.0303	0.0425	2.50*	0.0146	0.0223	3.49
all	0.0143	0.0326	9.78	0.0124	0.0289	14.21
equity	0.6515	0.0747	-2.42*	0.1451	0.0722	-16.43

Credit Unions Variable	Means			Medians		
	Nonfailed (n = 4611)	Failed (n = 15)	t-statistic*	Nonfailed (n = 4611)	Failed (n = 15)	Z-score*
texas	0.0950	0.8326	3.45	0.0579	0.8374	5.49
nonperform	0.0158	0.0993	3.12	0.0116	0.0614	4.89
protect	0.2413	0.1204	-7.50	0.1923	0.1103	-4.74
size	10.9116	11.4631	1.87**	10.6419	11.4257	2.02*
delinquent	0.0147	0.0869	2.95	0.0109	0.0545	4.89
oreo	0.0011	0.0123	2.76*	0.0000	0.0064	5.27
homemtg	0.2455	0.3459	2.00**	0.2240	0.3193	2.09*
cre	0.0200	0.0722	3.08	0.0000	0.0765	3.76
busloans	0.0108	0.0065	-1.94**	0.0000	0.0000	1.69**
mbs	0.1043	0.0364	-3.13	0.0000	0.0019	0.09**
helocs	0.1610	0.1508	-0.36**	0.1332	0.1475	0.05**
all	0.0094	0.0532	4.52	0.0069	0.0446	5.41
equity	0.2319	0.0671	-12.41	0.1835	0.0717	-5.73

\* significant at less than 1%      \*\* at less than 5%

For the means, folded-F tests provide evidence that variances are different so the Satterthwaite t-test was indicated. For the medians, Wilcoxon z-scores are provided due to the presence of non-normal distributions.

As a whole, both banks and credit unions demonstrated very similar characteristics, with Texas ratios being significantly greater for failing institutions. Likewise, the components and sub-components causing the Texas ratio to rise (increased loan problems affecting the numerator, decreased protection from capital and reserves affecting the denominator) also are generally consistent between banks and credit unions. Note: the smaller denominator appears to be affected by lower amounts of equity rather than loan loss reserves. In fact, both failing banks and credit unions had significantly more reserves set aside to cover loan losses than nonfailing institutions but these additional reserves were offset and overwhelmed by lower amounts of equity.

A key difference between the institutions is seen in their lending portfolios. For credit unions, home mortgage lending is positively related to failures, whereas for banks it is negatively related. This may be due to the banks suffering more because they have higher levels of other risky types of lending such as commercial real estate. Banks have much higher levels of other real estate owned.

Another interesting result is that while credit union loan portfolios are more heavily skewed toward home equity lines of credit, it is the bank failures are more closely related to problems with these types of loans. This finding may be clouded by the differences in datasets because the bank data includes only variable-rate home equity lines of credit while the credit union data includes second mortgages, some member-related commercial real estate and fixed-rate loans.

We next examine the differences between banks that failed and credit unions that failed. This can provide insights into the extent to which the Texas ratio approach may be applicable to credit unions. As with the previous table, although both mean and median statistical data are presented (see Table 3 below), given the statistical problems of using the means, the discussion focuses on results found among the medians.

Table 3: Differences between Failed Banks and Failed Credit Unions  
Data as of 12/31/2008

Variable	Means			Medians		
	Banks (n = 133)	Credit Unions (n = 15)	t-statistic *	Banks (n = 133)	Credit Unions (n = 15)	Z-score *
texas	1.4856	0.8326	-2.69*	1.0994	0.8374	-2.51*
nonperform	0.1536	0.0993	-1.89**	0.1158	0.0614	-2.20*
protect	0.1074	0.1204	0.80**	0.1062	0.1103	0.61**
size	12.6181	11.4631	-3.67	12.4066	11.4257	-3.35
delinquent	0.1154	0.0869	-1.11**	0.0931	0.0545	-1.98*
oreo	0.0388	0.0123	-4.17	0.0188	0.0064	-2.52*
homemtg	0.2166	0.3459	2.44*	0.1434	0.3193	2.55*
cre	0.2666	0.0722	-9.52	0.2700	0.0765	-5.22
busloans	0.1126	0.0065	-12.69	0.0863	0.0000	-5.74
mbs	0.1092	0.0364	-2.91	0.0605	0.0019	-3.07
helocs	0.0425	0.1508	3.73	0.0223	0.1475	4.12
all	0.0326	0.0532	2.09**	0.0289	0.0446	2.27*
equity	0.0747	0.0671	-0.57**	0.0722	0.0717	-0.94**

\* significant at less than 1%      \*\* at less than 5%

For the means, folded-F tests provide evidence that variances are different so the Satterthwaite t-test was indicated. For the medians, Wilcoxon z-scores are provided due to the presence of non-normal distributions.

At first glance, it appears that the Texas ratio, as currently defined, may have some validity for evaluating credit unions, although clearly not as strongly as for banks. Whereas the suggested critical level suggesting potential failure when using the Texas ratio is 100 percent, both the mean and the median remain below that level for credit unions although they are significantly above it for banks. Thus, although the number of failures has been low, it may be that the Texas ratio threshold might need to be lowered when applying it to credit unions.

This point is strengthened when evaluating the components of the ratio in that credit unions appear to have failed with much lower levels of nonperforming assets than did the banks. Likewise, as seen in Table 2, credit unions that have ventured into the commercial real estate field have been more prone to fail, but in Table 3 we see that credit union failures have occurred with much lower levels of commercial real estate than bank failures. This may be indicative of problems that similarly occurred with the S&Ls in the 1980s when they began experiencing troubles after venturing into lending areas in which many did not have the required expertise.

Finally, in deference to the earlier work of Altman and others, basic discriminant analysis tests were conducted to examine if there were any differences in the relative importance of individual variables associated with failure that exist between banks and credit unions. A summary of results is found in Table 4.

Table 4: Stepwise Discriminant Results: Failed Credit Unions vs. Failed Banks  
Data for First Quarter 2008 through Third Quarter 2009

Credit Unions				Banks			
Variable	Partial R <sup>2</sup>	F value	Pr > F	Variable	Partial R <sup>2</sup>	F value	Pr > F
nonperform	0.0401	1363.73	<.0001	nonperform	0.1013	6380.30	<.0001
texas	0.0091	298.53	<.0001	texas	0.0183	1057.26	<.0001
all	0.0083	272.01	<.0001	mbs	0.0021	116.34	<.0001
oreo	0.0021	68.82	<.0001	size	0.0014	81.81	<.0001
eq	0.0010	32.25	<.0001	homemtg	0.0007	42.07	<.0001
size	0.0005	14.89	0.0001	cre	0.0013	71.61	<.0001
busloans	0.0002	8.16	0.0043	busloans	0.0016	90.61	<.0001
cre	0.0003	8.47	0.0036	helocs	0.0006	35.08	<.0001
				all	0.0003	16.88	<.0001

It appears from these results that the Texas ratio has closely associated with failing financial institutions, banks and credit unions alike. However, it is the composition of that ratio that perhaps is most interesting as failure is more strongly associated with the magnitude of an institution's nonperforming loans rather than its ability to protect itself with equity and loan loss reserves. In fact, nonperforming loans dominates in discriminating between failing and nonfailing institutions. On the protection side, it can be noted that while the amount of loan losses (or lack thereof) and, to a lesser degree, equity has some discriminating ability for credit unions, they are virtually non-factors when examining banks. Furthermore, it appears that the composition of their balance sheets may play a greater role in determining failure for banks as the level of investment in mortgage-backed securities, home mortgages, commercial real estate and business loans appear to provide some insights as to which banks fail and which do not.

This is further supported by the results of stepwise regression analyses to find those factors most closely associated with the Texas ratio itself which are summarized in Table 5 below

Table 5: Stepwise Regression Results  
Determinants of Texas Ratios: Credit Unions vs. Banks

Variable	Partial R <sup>2</sup>	F value	Pr > F	Variable	Partial R <sup>2</sup>	F value	Pr > F
nonperform	0.0338	1141.39	<.0001	nonperform	0.1444	9547.40	<.0001
oreo	0.0022	75.25	<.0001	all	0.0112	751.53	<.0001
eq	0.0006	21.58	<.0001	mbs	0.0003	22.20	<.0001
all	0.0007	23.65	<.0001	helocs	0.0002	15.83	<.0001
size	0.0001	5.02	0.0250	homemtg	0.0003	22.12	<.0001
				busloans	0.0001	9.22	0.0024
				oreo	0.0001	3.17	0.0750
				cre	0.0001	2.42	0.1199
				size	0.0001	3.47	0.0626

Once again, the numerator variables (nonperforming assets) clearly dominate the denominator (equity and allowance for loan losses) in being associated with higher Texas ratio scores. In fact, no factors other than nonperforming assets appear to offer any real explanatory value.

#### **SUMMARY AND CONCLUSIONS**

The Texas ratio has become a much publicized measure associated with attempts to find financial institutions most likely to fail. Although it is an extremely simplistic and naïve methodology, it has proven itself to be an effective measure for evaluating banks most in danger of suffering financial distress. And despite some complications due to differing data definitions, it appears that the tool may also be effective in evaluating credit unions.

While banks and credit unions are often seen as interchangeable with respect to the services provided, particularly at the consumer level, they generally have very different operating agendas and strategies. So, at least in historical terms, one may question the ease with which one can evaluate the overall financial strengths and weakness of one versus the other. However, as credit unions have begun to move into more traditional banking markets with two-thirds of credit unions now reporting outstanding balances for home equity lines of credit and 25 percent reporting commercial real estate holdings, up from 15 percent only five years ago, they are likely beginning to face many of the same problems as their banking counterparts.

To the degree the Texas ratio may or may not be useful in finding those financial institutions most in danger of failing, it certainly has its shortcomings. Much like trying to use the beta measure to capture all of the relevant risk of a company's stock, trying to capture all of the intricacies of potential financial institution failures within one easy to measure variable is overzealous. As with beta, it tries to deal with possible future events based on past activities, often a recipe for miscalculations as other key variables may be overlooked.

For example, there are marked differences between various types of lending and an individual institution's exposure to those types of lending. The Texas ratio is based on broad measures such as total loans, total nonaccruals, etc., and does not specifically examine loan portfolios. Given the assumption that some types of loans are more likely to be defaulted on than others, banks making more of those types of loans would likely be more prone to failure.

Likewise, focusing only on the amounts of past-due loans neglects the value of any collateral associated with the loans and the actual amount of potential losses given any actual default. Losses only occur when borrowers default and the extent of loss may be mitigated by the profitability of the loans prior to default (which helps provide the reserves available to protect against defaults) as well as the value of any collateral available upon default.

In conclusion, using the Texas ratio to examine the potential failure of financial institutions is a very interesting phenomenon. The ratio is based on publicly available data, involves simple calculations, and provides very straightforward output. This simplicity is a key difference from more rigorous models.

This initial study has shown some of the apparent usefulness of the Texas ratio. A more rigorous examination could provide greater insights, either to support future use of tools such as the Texas ratio or to refute them due to their naivety. More thorough testing is necessary along with potential revision of the model if it is to produce what it intends: a quick and simple tool to help isolate those financial institutions most in danger of failure.

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# **OUTSOURCING TO IMPROVE COMPETITIVENESS FOR SMALL BUSINESS**

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## ***ABSTRACT***

*The concept of a focused factory proposed by Skinner during the 1970's presents a view of competition that supports the idea of specialization advanced by Adam Smith in "The Wealth of Nations" (1776). Most recently, Friedman (2005) in "The World is Flat" presented a challenge faced by all organizations due to a new era of "Globalization" requiring an inevitable and dramatic adaptation to this new environment. This has led organizations to use outsourcing as a mechanism to specialize in limited activities to compete more effectively. There is a significant body of knowledge and theories for the use of outsourcing to increase the competitiveness of large firms. However, there is a noticeable void of information concerning the implementation of outsourcing practices to increase the competitiveness of small firms. This paper considers outsourcing for small business from a strategic perspective and makes a contribution to an area that has received limited attention in the current literature.*

# **PRODUCTIVITY GROWTH IN MSEs THROUGH TECHNOLOGY INCUBATION**

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## ***ABSTRACT***

*The significant contribution of Micro and Small Enterprises (MSEs) in economic development of India has been regularly talked about in all researches related to MSEs and their performance. They are known as seedbeds for innovation and entrepreneurship. An organized support system has been prevailing in India for startups and sustainable growth since independence. However the economic reforms like Liberalization, Privatization and Globalization on one hand and formation of World Trade Organization on the other hand had a negative impact on the performance of these enterprises.*

*Increased competition from imports, technological obsolescence and shrunk product life are some of the major challenges ahead MSEs. Sustainable growth of any enterprise is possible with its steady productivity growth. The previous researches have considered demographic factors, financial factors, Managerial factors, Motivational factors and personal factors responsible for productivity growth of MSEs. The present paper tests technical factors for their role in productivity growth of MSEs. Paper concludes with impact of key technical factors on productivity growth. It also tests the impact of level of interaction between incubator organizations and MSEs in productivity growth of MSEs.*

## **INTRODUCTION**

Productivity growth of manufacturing enterprises is one of the predominant indicators of economic development of respective region. The manufacturing enterprises in India are massively represented by Micro and Small Enterprises because of their share in total production of the country, total export, employment generation and capital investment (Annual Report 2007-08, Ministry of MSME Govt. of India). The Micro and Small Enterprises, by virtue of their nature of operations and constraints, have been developing anywhere, in any number and any sector (Sikka Pawan, 1999)). Their growth has been found to be consistently better than that of the overall industries in India. Despite of such

a valuable contribution to the nation's economy, they were operating in an un-organized manner. Government of India has been very protective through reservation of items for MSEs, incentives, subsidies and exemptions from duties and taxes since beginning. The MSEs, for this over protection and other challenges faced could not develop the capability to face the challenge of economic reforms that took place in nineties (Bala Subrahmanya, 2005)). That include Liberalization, Privatization and Globalization first and then formation of world trade organization. The primary requisite in this open competitive environment is capacity building on the part of innovation, research and development, technology transfer and many others. Authors are of the opinion that the survival and growth of MSEs now will be possible only by technology progress.

## **REVIEW OF LITERATURE**

Annual reports of Ministry of MSME (Micro Small and Medium Enterprises), Government of India are referred to review the growth statistics, support system and incentives for MSEs in India. The body of knowledge related to the research area has been explored through research papers, books and relevant web sites. The domains covered during the review of literature include Technical Entrepreneurship, Productivity Analysis, Technology Business Incubation and Small Enterprises. Only critical review that has paved way to formulate the research objectives based on the research gaps identified are being presented in this section.

The Micro and Small Enterprises (MSEs) in India have significant role in the economic development of the country. They contribute through large share in total production, exports, employment generation and capital investment (Annual Report 2007-08, Ministry of MSME Govt. of India). The growth of MSEs in India has consistently been better than that of the overall industries except the period of early nineties. However productivity related research on MSEs is under represented. Mali Paul (1978) has described 12 causes responsible for decline of productivity of organizations in general. He includes Rapid Technological changes and High Costs of manufacturing in the list of 12 causes. Technology Factor has been seen as predominant determinant with maximum contribution in Productivity Enhancement. The contribution of Capital, Labour and Technology is found to be 14%, 27% and 59% respectively in productivity enhancements (Morrison and McKee, 1978).

Sumanth D J (1990) has developed models to productivity measurement and performance evaluation of organizations. He stated that the quality and productivity are commonly used as indicators for business performance. However, the development of technology covers usually many financial years and thus the traditional Productivity Measurement Models fail to estimate its productivity. It also lacks models to estimate simultaneously effectiveness as well as efficiency for new technology development. Therefore the technology-oriented productivity measurement models developed by the researcher do not only consider technology-push and market-pull in evaluating the key technology, but also measures the productivity for each key technology in its development periods. However the model does not include the weight analysis for various input factors.

Measurement and analysis of productivity in small enterprises have always been a challenging task because of unavailability of the required data and the fear of

entrepreneurs from sharing the same. However analysis of technical efficiency and productivity using (Coelli, T.et al., 2005) Malmquist Productivity Index has become very popular in recent years. Data Envelopment Analysis Programme (Coelli, T.et al., 1996) had been used for the analysis. The DEA-Malmquist P.I. model decomposes into two components namely Efficiency Change and Technical Change through the programme. The present study uses the results of MPI-DEA of MSEs in India (Soni Vimlesh Kumar et al, 2009) to establish the sources of productivity change.

Regarding the technological needs of MSEs, Kelmer and Wanghman D. W. (1995) concluded that technology process is important, but the ability to utilize and capitalize on the advantage of technology through invention and innovation subsequently achieving through synergy is considered more important in running and survival of unit. It has been observed that the synergy plays very vital role in mobilizing the useful resources. Also the need of developing technical entrepreneurship has been strongly realized.

Baburao G. (1995; 1999) has further found that technologists and technicians who learn sufficient science and engineering acquire capabilities to know why and how of various theories and can design products and services based on their knowledge and skill competencies. It is the need of entrepreneurial engineers, for better outcomes in terms of Innovation and Technology Up gradation.

Lalkaka Rustam (2001, 2003) Worked on Technology Business Incubation – Its Role, Performance, Linkages, and Trends. Prominent contributor in the field of technology incubation has discussed about the role and mechanism of technology incubation process. Performance Parameters had been identified which could further be weighted and related with productivity improvement of incubated enterprises.

Wani V. P. (2033), in his Ph D dissertation explored five factors namely Personal, Managerial, Motivational, Technical and Financial for sustainable growth of Micro and small enterprises in India. The research findings recommends to increase the interaction between industry and academia through PBL, through proposed EDP model he describes how best the gap between entrepreneurial concepts and capabilities be abridged and the five factors be reinforced for sustainable growth. The research concluded with a potential scope to establish linkages between TBIs and MSEs for productivity growth.

Wulong Gu and Jianmin Tang (2004) observed that, at the firm level, productivity advances are largely a result of investments and innovations; that is, the creation and implementation of new concepts and knowledge. Innovation can emerge from new practices and changes to organizations, from the development of new technologies—for example, through research and development (R&D)—or from the adoption of new technologies.

Bala Subrahmanya, (2005) recommends for more integration of R&D input to MSEs, he advices in his paper to use local educational institutions to serve as common R&D hub for the nearby MSEs. Involvement of Academic Institutions with industry oriented projects is recommended to make the MSEs more vibrant.

Anita Gupta (2006) found that Today, India has acquired a prominent status in the era of knowledge economy. Technology and knowledge are the biggest assets which can be effectively utilized in a well conceived Technology Incubator programmed for the growth of the enterprises, jobs, region and the economy.

It is realized by the authors that Technological Factors as the major contributors to productivity improvement should be properly analyzed for better management and prediction of productivity growth in MSEs. Based on the literature review the objectives for the present study are defined. The next section enumerates the research objectives.

### **OBJECTIVES OF THE RESEARCH**

It is observed that the researchers before have analyzed determinants of productivity growth either considering all functional areas together or taking one or two of them for their impact on productivity growth. The work of Wani V P (2003), who has considered five major contributing factors to successful running of small enterprises and their sustainable growth, includes Technical Factors as a whole and concludes that it contributes significantly to sustainable growth. The work of Morrison and Mckee (1978), that keeps Technology as the biggest contributor to productivity growth. The present study thus finds it necessary to first identify the Technological Dimensions related to MSEs that have impact on their productivity growth. The Technological Dimensions identified need further analysis for their impact on productivity. Therefore the present research study was initiated with following major objectives.

1. To Identify the Technical Factors responsible for productivity growth of MSEs
2. To compute the impact of each technical factor on productivity growth of MSEs

The following section briefs the methodology adapted to achieve the objectives.

### **RESEARCH DESIGN, METHODOLOGY AND ANALYSIS**

The productivity of MSEs in India has been greatly affected by Technological Progress and the Technical Efficiency (Soni V K et al., 2009). It is therefore felt that the causes that bring in Technological Progress and positive Technical Efficiency change are to be identified. On the basis of literature review and interviews with field experts the technological dimensions that affect the productivity of MSEs through Technological Progress and Technical Efficiency change are enlisted. Table 1 presents the list of these technological dimensions to be tested.

**TABLE 1: LIST OF TECHNICAL VARIABLES**

<b>S.No.</b>	<b>Variable</b>	<b>Code</b>	<b>S.No.</b>	<b>Variable</b>	<b>Code</b>
1	Product Development	PD	2	Research & Development	RD
3	Sources of Technology	SOT	4	Product and Process Innovation	PPI
5	Technology Adoption	TA	6	Technology Acquisition	TACQ
7	Technology Transfer	TT	8	Response to Technology Change	RTC
9	Information and Communication	ICT	10	Technological Competence	TC

	Technology				
11	Logistic and Supply Chain Management	LSM	12	Skill Training	ST
13	Institutional Support (Technical)	IST	14	Infrastructural Support	IFS
15	Quality Consciousness	QC	16	Material Selection	MS
17	Quality Tools	QT	18	Critical Process Parameter	CPP
19	Technical Publications	TPUB	20	Data Management	DM
21	Ergonomics	ERG	22	Plant Layout	PL
23	Optimization Techniques	OT	24	Cost Benefit Analysis	CBA
25	Production Planning and Scheduling	PPS	26	Effective Business Communication	EBC

India is a huge country diversified socio economic bases in different states and even districts. The level of industrial entrepreneurship the country is found different in different regions. However to better represent the MSEs in the whole country, five districts with different socio-economic background are selected to conduct the study. Kerlinger (1992) suggests that field studies are non-experimental scientific inquiries designed to discover the relationship among variables in real social structure, such as communities, institutions and organizations. Cross-sectional, specific sample survey field studies are particularly useful for gaining a representation of the reality of a social structure utilizing a single administration research instrument.

The responses on the 26 technological dimensions as presented in table 1 are collected through survey of randomly selected 378 MSEs. The methodology being employed is a quantitative approach. The research process incorporated the understanding of the research domain, exploring meaningful questions and applying valid research methodology for these questions (Curran and Blackburn, 2001). All the derived data were analyzed using statistical techniques in order to detect answers to the identified research questions.

**Table 2: Geographical representation & Break-up of the Participants**

	Indore	Bhopal	Dewas	Dhar	Raisen	Total
Questionnaire Sent	109	105	65	42	57	378

(Source: Author)

The sample of the enterprises covers following industrial sectors.

1. Automobile Components Industries
2. Engineering and Fabrication Industries
3. IT Industries
4. Rubber and Plastics Industries
5. Garments and Apparel Industries
6. Food and Beverages Industries
7. Others

The data so collected after the survey is analyzed with SPSS 16.0. Following are the statistical methods employed for data analysis:

1. Reliability assesses whether the measurement of a construct can be duplicated over time instead of its being a random event (Panneerselvam, R., 2009). As suggested by Nunnally (1978), the reliability of the measure has been tested using Cronbach's alpha. All the variables measured the value of Cronbach's alpha greater than 0.8 supported the internal consistency of them.
2. Correlation analysis is run to check the inter-correlation among the variables. The analysis revealed fair inter-correlation among the technical variables. Inter-correlation indicate that the variables with high correlation coefficient can be grouped together, which in turn will reduce the data size also.
3. To reduce the data size by grouping similar dimensions Factor analysis is run with principal component analysis for extraction, varimax rotation and based on loadings of variables for factors six Technical Factors were derived. The KMO-Barlett's test statistics also verified that the construct of 26 technical variables satisfies the prerequisite for conducting factor analysis and can be explained by a few numbers of factors. Table 3 presents the KMO-Barlett's test statistics for the construct of the study. The KMO measure 0.770 being close to 1 verifies sample adequacy at 99% confidence interval.

**TABLE 3: KAISER-MEYER-OLKIN (KMO) AND BARLETT'S TEST**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.770
Bartlett's Test of Sphericity	Approx. Chi-Square	1871.991
	df	325.000
	Sig.	.000

4. The six factors extracted will be called as **Technical Factors** in the text now onwards.

**TABLE 4: FACTORS DERIVED AND RELAIILTY**

Factor	Technical Variables	Factor Loadings	Proposed Technical Factors
Factor '1'	Product Development	0.8831	INNOVATION AND INCUBATION (IAI) (ALPHA=0.9169)
	Research & Development	0.8648	
	Sources of Technology	0.8496	
	Product and Process Innovation	0.8461	
Factor '2'	Technical Publications	0.8803	INDUSTRIAL

	Data Management	0.8357	<b>ENGINEERING (IE)</b> (ALPHA=0.9065)
	Ergonomics	0.8735	
	Plant Layout	0.8768	
Factor '3'	Technology Adoption	0.6061	<b>TECHNOLOGY FORECASTING &amp; MANAGEMENT (TFM)</b> (ALPHA=0.8312)
	Technology Acquisition	0.6780	
	Technology Transfer	0.7328	
	Response to Technology Change	0.7140	
	Information and Communication Technology	0.7468	
	technological competence	0.7304	
Factor '4'	Quality Conciousness	0.8530	<b>OPERATIONS (OPRN)</b> (ALPHA = 0.8879)
	Material Selection	0.8582	
	Quality Tools	0.8179	
	Critical Process Parameter	0.8506	
Factor '5'	Logistic and Supply Chain Management	0.8197	<b>NETWORKING (NET)</b> (ALPHA = 0.8174)
	Skill Training	0.7875	
	Institutional Support (Technical)	0.7227	
	Infrastructural Facility Support	0.7562	
Factor '6'	Optimization Techniques	0.7608	<b>TECHNO- COMMERCIAL MANAGEMENT (TCM)</b> (ALPHA = 0.7366)
	Cost Benefit Analysis	0.7537	
	Production Planning and Scheduling	0.6994	
	Effective Business Communication	0.7121	

The Table 4 presents the six Technical factors with factor loadings and measure of Internal Consistency of each construct. The labels are such designated that they closely represent the group variables.

- To measure now the impact of these Technical Factors, multiple regression is run using ENTER method. Table 5 presents the model, beta coefficients and the significance levels for entered variable. The multiple regression reveals the removal of Technical Factor 'OPERATIONS'.

**TABLE 5: COEFFICIENTS OF REGRESSION**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-2.061	.723		-2.851	.005
IAI	.263	.069	.264	3.800	.000
IE	.246	.068	.252	3.627	.000
TFM	.293	.111	.183	2.638	.009
NET	.283	.096	.209	2.946	.004
TCM	.292	.126	.160	2.326	.021

a. Dependent Variable: Productivity Growth

**RESULTS AND DISCUSSIONS**

- 1) Innovation and Incubation; Industrial Engineering; Technology Forecasting and Management; Networking and Techno-commercial Management contribute significantly to productivity growth.
- 2) Techno-Commercial Management is found to be highest and Industrial Engineering the lowest impact making technical factor. However, the other technical factors fall in between the two with a marginal difference in their impact value. It indicates that all the five technical factors show almost equal importance, so far as the productivity growth of MSEs is concerned. These technical factors are supposed to bring in Technology Progress and positive Technical Efficiency change in MSEs.
- 3) The removal of ‘Operations’ from the equation, indicates that due to the shrunk product life cycle and customization of products the importance of Operations and its grouping variables does not have significant impact.
- 4) Examination of the grouping variables of the five predictors of productivity growth indicates that they very closely match with the roles, functions and outcome of modern Technology Business Incubators.
- 5) The results show that in today’s competitive environment the entrepreneurship and incubators’ intervention paves way to higher productivity growth. The positive and strong relationship of technical factors including technical education with productivity growth cautions the MSEs’ entrepreneurs to catch up and enhance their technological competence for better productivity results.

**CONCLUSIONS**

- 1) The characterization of Technology by products, processes and practices, with the knowledge embodied in these elements reflect in the present study. The descriptive statistics of technical variables presents the responses on 26 different technical variables and related statistics. It also indicates that technical variables affect productivity growth. However the measures of effect have been discussed and concluded hereafter.
- 2) The predictor equation modeled on the basis of result of multiple regression, reveals the impact of the technical factor to determine the productivity growth of MSEs. Techno-Commercial Management (TCM) contributes maximum with beta coefficient equal to 0.292. It indicates that grouping variables explained by TCM i.e. Optimization Techniques, Cost Benefit

Analysis, Production Planning Scheduling and Effective Business Communication are high impact making variables. It requires a balanced combine of Technology and Management inputs. The entrepreneurs are required to be equipped with knowledge of Technology and Management.

- 3) The equation is helpful in determining the optimum level of productivity growth that is achievable by positive intervention of relevant support system to enhance the capacity on the five factors.
- 4) The surprising exclusion of Factor 'Operations' from the multiple regression model is explained by the fast changing of technology and thereby flexibility needs in manufacturing related practices.
- 5) From the analysis of Technical Variables, the researcher concludes that the Technology Progress in manufacturing organizations is possible through Innovation; Incubation; Forecasting of Technology; and Networking. While Technical efficiency is enhanced through management of technology which includes Identification of appropriate Technology, Development and Techno-commercial Management; Networking; Application of Industrial Engineering Tools; Incubation and Innovation
- 6) It is concluded that having technical background of education and exposure to entrepreneurship programmes both support in productivity growth of the enterprise. Those who do not possess technical qualification may keep them updated with latest technology related knowledge through regular interaction with incubator organization. The technological and entrepreneurial competence such developed will facilitate in better performance of enterprise.
- 7) The level of interaction and association between MSEs and incubator organization affects productivity positively. It is concluded that MSEs should have strong association with incubator organizations.

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# **TECHNICAL ENTREPRENEURSHIP IN TECHNOLOGY BASED SMALL FIRMS IN INDIA: OBSERVATIONS AND IMPLICATIONS**

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## **ABSTRACT**

*India's rapid advancement to a fastest growing economy was possible primarily because of significant growth of science and technology institutions established in the country during the last five decades. The Industrial Reforms in 1991 have provided the needed capacity for the development of industrial output and to propel the overall industrial growth. This has led to the opportunities in entrepreneurial activities in many technology based firms in the country. But this has given rise to the issues like technology based inefficiencies in the management of small firms due to global competition. So there is much interest these days in the encouragement of entrepreneurship, and formation and growth difficulties faced by technology based small firms. Although technical ability has often provided the scientific knowledge necessary for an individual to become a successful technical entrepreneur, it is important to stress that sufficiency to ensure success lies in an ability to develop additional business management skills with which to exploit such expertise.*

*This paper seeks to inform these concerns by offering some conceptual insights on the role of technical education in developing the technical entrepreneur in the technology based firm formation and growth process. A survey includes some university students, faculties whose views are taken on technology aspects in SMEs support. The purpose of this research is two fold.*

- 1. To study technical entrepreneurship among engineering graduates.*
- 2. To study the technology up-gradation and role of academics institutions in the long-term sustainability of technology based small firms.*

## **INTRODUCTION**

The Asia-Pacific region is considered by many scholars, practitioners, and investors to be one of dynamic and rapidly growing economic regions in the world. Countries included in this region are Japan, China, Taiwan, South Korea, North Korea, Hong Kong, Thailand, Malaysia, Indonesia, Singapore, Philippines, Vietnam and India. The region is a voracious importer of new technologies and an innovative user of existing technologies. In India, the process of economic reforms started in 1983, which was followed by fierce liberalization in 1991. Indian market was opened up for foreign firms and Indian organizations were allowed to compete in the overseas markets with local and multinational organizations (Zafar Husain, 2002). The increasingly demanding global business environment calls for a separate management function which looks after

corporate interests on the technology front. The technical entrepreneur is an acknowledged key catalyst in the process of industrial formation and growth (Cooper, 1970; Rothwell and Zegveld, 1982; Cardullo, 1999).

The historical examples of past success in industrialization indicates the fact that technical entrepreneurship remains important today, and that there is a common heritage shared between the early and modern day entrepreneurs.

For example, the relatively recent development of the information technology industry in India is an instance of how technical entrepreneurs continue to create new industries. From the initial success of Infosys, Wipro and TCS through the contributions of Jobs, it is clear that technical entrepreneurs have played key roles in the birth, growth and consolidation of this new family of software and hardware computer-related activities. In the conventional industrial front, the business houses like Tatas, Birlas, Hindujas, Bajaj and Ambanies are on the forefront of technology based business development. From this it is clearly seen that the technical entrepreneurs continue to be a major force within industry and businesses. It might be argued that failure of venture is inevitable and that the management skill components of technical entrepreneurship is instinctive and cannot be taught, this paper will highlight that technical entrepreneurs can gainfully acquire business skills, through formal university education.

#### **SMALL BUSINESS ENTREPRENEURSHIP & INNOVATION:**

Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks, formulate an effective venture team, marshal the needed resources, build a social business plan, and finally, the vision to recognize opportunity where others see chaos, contradiction, and confusion (Kuratko, 2003, p.5). Entrepreneurship has more recently reemerged as a focal point for economic policy as an instrument for generating growth, jobs, and economic development. The strategic management of places, or what has been referred to as economic development policy, has a primary focus on strategic entrepreneurship to foster regional innovation and growth (Agrawal, Audretsch, & Sarkar, 2007). Growth theory in economics has evolved over the past half century as innovation has emerged as the source of growth and competitive advantage. Entrepreneurship and strategic management are both dynamic processes concerned with firm performance. Strategic management calls for firms to establish and exploit competitive advantages through product, process, and innovations. The technology management and technical entrepreneurship are the promising areas in small business entrepreneurship and innovation. This builds a basis for successful venture creation.

#### **Technology Management**

Industrial and academic interest in how to more effectively manage technology is growing as the complexity, cost and rate of technological innovation increase, at a time of increasing organizational and industrial change on a global scale. Emerging technologies, such as nanotechnology, biotechnology and information and communications technology provide significant opportunities for enabling innovation, profit and growth, but also

present a potential threat to firms' existing activities. Technology management is a challenging topic, in terms of both theory and practice, owing to its multidisciplinary and multifunctional nature. A number of disciplines are relevant from the academic perspective, such as science, engineering, economics, sociology and psychology. In business, contributions from both the commercial and technological functions are critical if innovative and successful products and services are to be delivered to the market.

### **Why Technical Entrepreneurship**

The mushroom growth of engineering colleges in the last two decades in India has resulted in unemployment of engineering graduates (Wani, 2003). This situation is aggravated by the educational system itself, which moulds students more for wage employment than for self employment. In technical institutions focus is only on developing technical capabilities of students and little emphasis is given on motivating them for self employment. This is in spite of the fact that entrepreneurship development cells have been established in the technical institutions. While India has the world's largest population of scientists, engineers and technicians, it has not derived full economic advantage from this skill base because of the mismatch of education and training and the limited employment capacity of labor market. The previous research indicates that high technology businesses based on entrepreneurs without technical skills rarely succeed (Rothwell and Zegveld, 1982; Oakey and Mukhtar, 1999). This is because, in order for entrepreneurs to be fully committed to new technical ideas, ideally they should have *intimate* technical knowledge of the product development concerned, and an almost "evangelical" belief in its market potential (Oakey, 1995).

Engineers who learn sufficient science and engineering acquire capabilities to know why and how of various theories and can design products and services based on their knowledge and skill competencies (Baburao G. 1999). Technical entrepreneurs have received increased attention over the past decade and now got recognized their ability to establish and run enterprises that generate high wage employment and high levels of wealth (Kathleen Allen & Timothy Stearns, 2003). A close relationship exists between enterprise and entrepreneurship. While not exactly the same, they merge significantly in an educational context with respect to the specific learner attributes they pursue and the development of which they treat as key objectives. Major divergence between the two exists in, on the part of entrepreneurship education, the reliance on venture creation (Breen John H, 2003). Therefore, it is important to create a culture where S&T people will create employment not only for themselves but also for others.

### **SMES and Innovation**

In this small business enterprise context and positive effects of smallness, some authors argue that SMEs have great ability to utilize external networks (Nooteboom, 1994; Rothwell and Dodgson, 1994) and to create astute alliances (Van Dijk et al., 1997), scarce bureaucracy and clannish structures (Sivades and Dwyer, 2000), great operational expertise and customer knowledge (Dahl and Moreau, 2002).

As per UNIDO-2008 Report, the small scale industries sector encompassing micro and small enterprises produced 39 percent of the total industrial output and 34 percent of the country's total exports. It currently contributes 7 percent of GDP and is growing at the

rate higher than that of the industrial sector. The growth rate of output and exports by SMEs has been in the double digits from 2004-05 to 2007-08.

Table 1: Growth Rates of production

Year	Growth Rate of SSI Sector (%)	Overall Industrial Growth Rate (%)
2002-03	8.68	5.70
2003-04	9.64	6.90
2004-05	10.88	8.40
2005-06	12.32	8.10
2006-07	12.60	11.50
2007-08	13.00*	8.00

Source: MSME Report 2008-09

\* Projected

On the other hand, some authors argue that SMEs have limited resources and capabilities for conducting in-house R&D activities (Hausman, 2005), weak external contacts (Srinivasan et al., 2002), underdeveloped education and training (Romano, 1990), reluctance to delegate authority or decision making to others (Dyer and Handler, 1994), and over-involvement in operational level decisions (Sethi et al., 2001). In order to overcome such disadvantages, a public intervention has frequently been advocated and a variety of intermediary institutions for innovation. These are in the form of science parks, innovation relay centers, business innovation centers, cluster initiatives, cluster development programs which have been adopted by governments around the world. The studies by Rustum Lalkaka (2002) and others on technology interventions through Technology Business Incubation in the European and American Universities have clearly indicated the positive effects on small business development.

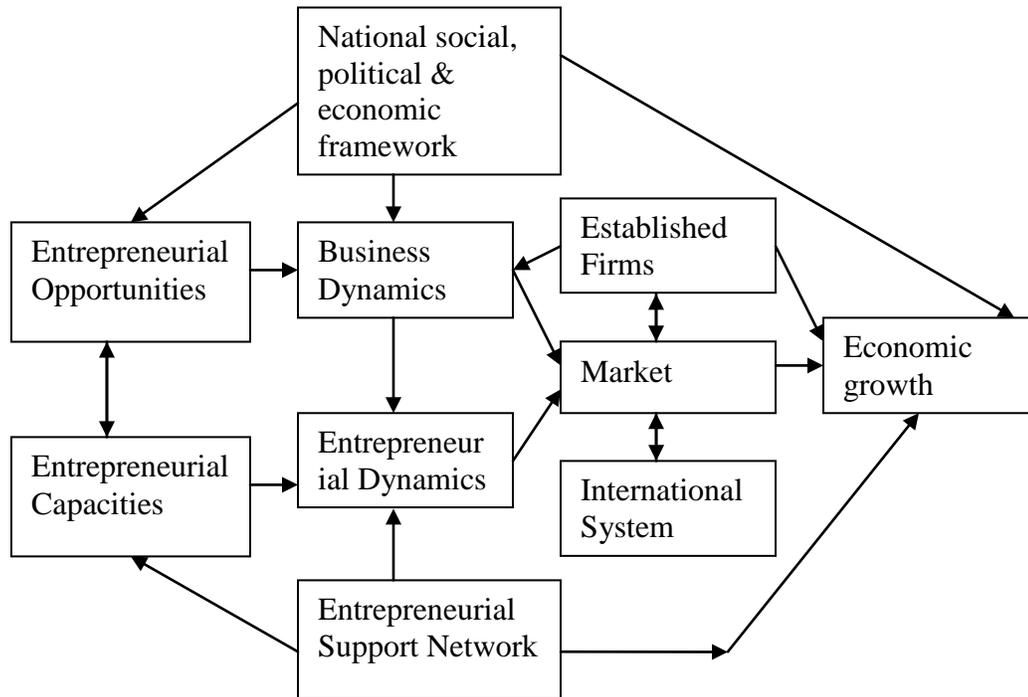
This can be made possible through innovative ideas and programs which can act as supporting link in overcoming the above drawbacks. Innovation is the dynamic, integrated chain of activities, starting with the identification of the new concept to meet market opportunities followed by its pursuit to commercial realization. It may originate on the factory shop floor or in the street, often an instrumental change rather than a major break-through.

### **THEORETICAL FRAMEWORK**

From this background, the observed pattern of shifts in the relative mix of skills in manufacturing, the increasing emphasis on knowledge and on innovation-driven rather than price-based competition, suggest to an equally imperative need for new thinking about economic development in developing countries. These changes are not new but qualitatively, they are more intense and arguably occurring more rapidly.

Rustum Lalkaka (2001) argues that the two interrelated forces are dramatically changing the global economic landscape today: technological progress and open markets. He further emphasizes the need to supplement these by social and economic changes and

globalization, government deregulation and privatization. A conceptual framework suggested by him, shown in Fig. 1 makes the basis for the present study.



**Fig: 1**  
**Entrepreneurship and Economic Development**

Source: Rustam Lalkaka (2001)

### **METHODOLOGY:**

The methodology adapted here includes the observations on technical entrepreneurship and small business links in Indian entrepreneurial context through various studies specifically highlighting the SME and small business development.

### **Study of Research Basis**

The previous studies on the SME links and technical entrepreneurship were taken as a basis for the present paper. It includes some examples of the links in Indian context, examples of institutions in enterprise creation. As suggested by Rustam Lalkaka (2001), in discussing the technology and economic trends, the following measures are essential in promoting techno-preneurship.

- 1) Establish supportive policies and instruments
- 2) Build and focus the educational system on entrepreneurial activity
- 3) Tackle the hurdles from venture creation to commercialization
- 4) Promote innovative structures such as innovation parks and business incubators
- 5) Financial support to innovation
- 6) Promote the culture and social values which measure entrepreneurship

Four examples of entrepreneurship and SME links are cited from literature for the purpose of making the basis of this study.

### **Study Of Initiatives Taken By Institutions To Promote Small Business Venture**

This describes the initiatives taken by IITs and IIMs to promote small business development through business incubation based on their own strengths and capabilities. Five business incubation programs from institutions of national importance are described to back the concept of technical entrepreneurship.

### **Study Of Engineering Institutions**

It is observed that the success of the industrial venture not only depends on what an entrepreneur knows but it also depends on how he applies his knowledge, the business environment, and supporting network. Therefore to assess the entrepreneurial motive and entrepreneurial capability, survey was conducted among the University graduates and faculty members. The questionnaire was prepared and after proper explanation, it was distributed for data collection.

## **RESEARCH BASE AND STUDY:**

### **Studies on Technical Entrepreneurship & SME Links**

Entrepreneurship is a global and multifaceted phenomenon which has positive relationship with economic growth that contributes towards the wealth and social development of a nation under given technological, industrial and political framework.

1) The study on Agra Shoe cluster by Rakesh Basant of IIM Ahmedabad (2002), in the post liberalization of Indian Economy, found that liberalization and globalization accentuated the need for local firms to enhance their capabilities. He further elaborated on the role of "external" linkages in knowledge flows in a cluster and was seen as a priority area of research. He identified the need to explore research issues within the broad framework of nature and determinants of knowledge flow to explore the links between cluster and industry dynamics more systematically. Industry dynamics impinges on technology and market opportunities and on the survival of startups and SMEs (Mytelka, 2000).

2) Bangalore IT industrial growth is a very shining example of the contribution of techno-entrepreneurship to the whole world. On the same line Pune and NCR Delhi are also the example of concentration of technology based industries in India. As per Rakesh Basant and Pankaj Chandra (2007), spin-offs from academic institutions have received a lot of attention in recent times especially in hi-tech city clusters. Technologies developed in the institutions (especially research oriented) are commercialized through new enterprises wherein students and faculty may participate. They further point out the role of academic institutions to respond in emerging skill needs of existing organizations by establishing new programs and courses. Through this study they have emphasize to form linkages between academic institutions and industry in the form of – student projects, technology licensing, consulting, industry-institution R&D projects, seminars & workshops, guest lectures, specialized training programs, internships, etc. They further investigated that

these linkages were very sensitive to the nature of academic institution and local organizations, including the sectoral and structural features of local industry. Efforts of cities like Bangalore and Pune in India have led to both becoming educational and industrial hubs in the country. Through this they also tried to identify the gaps and asked the respondents that why faculty and students from their institutions are not able to set up enterprises, they found three reasons: lack of seed funding, inappropriateness of research for commercialization, and absence of institutional regulations to set up firms.

3) In another study on SMEs by Pankaj Chandra (2007) emphasized the need to establish relationship between SMEs and innovation managers. The study explores alternative models of organizing small producers to facilitate improvements in productivity and innovation on product, process and practice related domains. This was explained with the help of three models learning from three global networks, i.e., TAMA in Japan, Wenzhou in China and Rajkot in India that have adopted a variety of mechanisms of coordination between small producers and has led to both capability enhancement and demand enhancement. He proposed distinctive determinants of a collaborative model for engaging SMEs in technological innovation over a period of time. These are : Focus of the Firm, Interactive Producers, Processing and Product Manufacturing, Innovation Investment, Markets, Market Makers (and market making processes), and Regulatory Support.

4) Prof Anil Gupta (2009) of NIF Foundation and IIM Ahmedabad initiated Grass-root Innovation Augmentation Network (GIAN) is India's first technology business incubator focused on incubating and commercializing grassroots innovations. He was instrumental in setting up this platform for small inventors who were not getting any support. The objective of GIAN is to build the value chain around these innovations with the end objective of making these available to the masses through the market mechanism or otherwise. Grassroots innovations are essentially solutions generated by people at the grassroots levels to tide over persistent problems, the solutions to which are either not available or not affordable by a large section of the consumer masses in developing countries like India. These innovations capture an unmet need of a large section of the population and building a value chain around these innovations to take them to market holds the potential of wealth creation in a truly sustainable and equitable manner. GIAN has access to thousands of innovations from across the country and has supported more than 100 innovations since its inception.

### **Institutions Initiatives in Enterprise Creation**

This section highlights the models of enterprise creation adopted by IITs and IIMs through conventional incubation model. It briefly summarizes the incubation-related initiatives and its incubation efforts.

1) IIT Bombay: Encouraged by the success of the initial experiment at the Kanwal Rekhi School of Information and Technology in 1999, the institute set up a full-fledged technology business incubator to cover other areas of science and technology. This effort was supported by the Department of Science and Technology of the government of India. The Society for Innovation and Entrepreneurship (SINE) came into existence in 2004 to

manage the business incubator and accelerate the growth of entrepreneurship in IIT Bombay. Many companies had been incubated and graduated from the incubation program. The incubator, with infrastructure spread over 10000 sq.ft. can accommodate about 15-17 companies.

2) IIT Kanpur: In collaboration with the Small Industries Development Bank of India (SIDBI), IIT Kanpur has set up the SIDBI Innovation and Incubation Centre (SIIC) to foster innovation, research, and entrepreneurial activities in technology-based areas. SIIC is providing a platform for start-ups by prospective entrepreneurs and intrapreneurs to convert their innovative ideas into commercially viable products. The research products of faculty members and students are upgraded and customized according to the requirements of the user or the market for commercialization. Unlike in Bombay, students of the MBA program of IIT Kanpur, working with a management consultant, help incubatee companies strengthen their business plans after conducting market surveys, if required, and developing financial plans. SIIC helps them find business partners and venture capitalists and provides consulting on business promotion with the help of the MBA students and faculty of IIT Kanpur and consultants.

3) IIT Delhi: An institutional arrangement operates the Foundation for Innovation and Technology Transfer (FITT) has been operating for quite some time. FITT came into existence before any other IIT incubator, as a part of the ICICI Bank– and World Bank–funded Technology Institution Programme. It was initially set up as a technology licensing office and intellectual property rights cell. It now runs the Technology Business Incubation Unit, supported by government of India's Department of Science and Technology. Therefore, incubatees from outside the institute can also get support.

4) Indian Institute of Management, Ahmedabad: Centre for Innovation Incubation and Entrepreneurship (CIIE) was set up in 2001 at IIM Ahmedabad to create new technology ventures. The data underlying the study of CIIE case was compiled from various sources, using questionnaire techniques. CIIE has maintained a customer feedback database, in which feedback from participating firms was received. Important feedback data was collected through informal discussions. CIIE conducts a nationwide competition for high-tech innovations with mass impact to identify innovations that can be converted into commercial enterprises. Winners are provided incubation and other support. These live incubation projects provide exciting learning opportunities for IIMA students as they do projects with incubatees, under the supervision of the IIMA faculty. Apart from providing managerial support to the incubatees at these technology and design institutions, CIIE also undertakes collaborative incubation with them. . The graduation period of the incubatee is expected to be about 20 months. Although incubators in technology institutions are primarily commercializing technologies developed in those institutions, CIIE provides support to technologies developed anywhere in the country. The focus is on high-tech and mass impact innovations. The incubation model is flexible enough to satisfy a variety of needs of the incubatees, including long-distance incubation.

5) NDBI Ahmedabad: National Design Business Incubator (NDBI) is an initiative of the National Institute of Design (NID), Ahmedabad set up with the support of Department of

Science and Technology, Govt. of India, New Delhi. The mandate of NDBI is to nurture a culture of entrepreneurship in the creative minds of young designers, so that their ideas metamorphose into newer and niftier products or services capable of being marketed and sold. The focus of this center was to create *designpreneurs*. The data underlying the study of NDBI case was compiled from various sources, using questionnaire techniques. Over the period of three years, National NDBI has maintained a customer feedback database, in which feedback from participating firms was received. Important feedback data was collected through informal discussions. During its three years of existence, NDBI has processed over sixty applications, of which thirty five have been accepted for the program. Of these, fourteen have subsequently established a new firm.

### **Case Study**

The institute wise engineering students were categorized with their inclination towards self-employment and wage-employment as career option. The institute wise entrepreneurial motive and capability of the students of both categories is detailed in the Table 2.

### **Objectives And Hypothesis**

The objectives of this were three fold.

1. To study the inclination of students towards self employment.
2. To know students opinion about entrepreneurial motives
3. To assess the entrepreneurial capability of the students

The hypothesis states that, there is a positive relationship between technical entrepreneurship and small business development.

To support the hypothesis, it was tested with the objectives by studying the available literature on small business developments, some examples of enterprise creations initiatives taken by institutions and finally conducting a small study on technical educational students' opinions in small business development and technical entrepreneurship.

#### **The Data Collection and Study**

Based on the recommendations by Rustum Lalkaka (2001), the study of inclination of engineering graduates towards self and wage employment is conducted through questionnaire based survey. The survey includes 168 sample respondents from four self financed engineering institutes from Mumbai-Pune region in Maharashtra, India.

#### **Data Analysis and Results**

Out of 168 students, 52.39 % of students opted for self employment and 47.61% of students opted for wage employment. From the tables of the factors / input by faculty for developing engineers as entrepreneurs, it is observed that: the knowledge and developing personality of students is important contributor. The learning attitude / receptive mind of the faculty and industrial exposure/entrepreneurial awareness are less important. The results are shown in Table 2 & Table 3.

Table 2: Entrepreneurial Motive and Capability of Engineering Students

Institute → ↓ Option	Self-employment Option			Wage-employment Option		
	No of Students	Entrepreneurial Motive	Capability	No of Students	Entrepreneurial Motive	Capability
SIT	25	0.9013	0.6577	20	0.4802	0.7135
KJSCE	19	0.8048	0.6652	10	0.4996	0.6933
DKTE	19	0.9000	0.6672	29	0.5799	0.7581
SCOE	25	0.8983	0.6396	21	0.5984	0.7649
% of options	52.39			47.61		

Table 3: Faculty's Response Analysis

S.N.	Name of the Institution	Teachers char. affecting capability of student			
		Knowledge	Continuous learning	Developing Entrepreneurial skills	Entrepreneurial exposure
1	SIT	0.9084	0.7561	0.8473	0.6491
2	KJSCE	0.9138	0.7487	0.8692	0.6461
3	DKTE	0.8629	0.7714	0.8571	0.6191
4	SCOE	0.8771	0.7333	0.7786	0.5571

### DISCUSSIONS AND CONCLUSIONS:

From the present study, it is observed that, among the engineering graduates, majority (52.39%) of the students have strong entrepreneurial motives although their capability is comparatively less than wage employment option students. This is a good sign that the entrepreneurial culture is spreading and the institutional resources can be developed to the future entrepreneurial requirements. It can be made possible by creating awareness through the incubation kind of facilities, creating venture funds for novel ideas, and access to technology development programs.

The technology is changing at a very fast pace and technical education system will have the responsibility of developing the technical manpower capable to handle these challenges and develop small business development environment. Technological innovations often results a between the technology on one hand and the market on the other. Bridging this gap needs a new way of thinking about commercialization of innovations in small businesses. Academic institutions can play an instrumental role in developing certain qualities in the students.

Indian economy opening up and offering new avenues to entrepreneurs, there is a need to revise a present management of technical/professional education to inculcate entrepreneurial qualities in students. Problem Based Learning (PBL), Industrial Project, Rigorous and Vigorous Internships, Faculty involvement in industrial problems may be the ways to be close to technical entrepreneurship in future. In today's knowledge society, the technology drives the economic development, and since the technical education is at the centre of focus, it's now necessary to bring flexibility in methodical teaching-learning process.

None the less, although technical ability has often provided the scientific knowledge necessary for an individual to become a successful technical entrepreneur, it is important to stress that sufficiency to ensure success lies in an ability to develop additional business management skills with which to exploit such expertise. The lack of industry orientation among academic institutions and the limited R&D orientation constrained links between industry and academia over the years. As both change, it is expected that more academia-industry links through incubation and new enterprise creation activities becomes possible.

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# LEGAL AND ETHICAL IMPLICATIONS OF EMAIL

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## **ABSTRACT**

*The Bear Stearns trial of two hedge-fund managers, Matthew Tannin and Ralph Cioffi, made headlines because much of the prosecution's case was based on personal emails sent between the two men. However, while it may seem obvious to the average observer that these men were at fault, they were acquitted by a New York jury. This acquittal raises important questions about the use of email as evidence in criminal cases.*

*The authors will review recent case law involving the discoverability of employee emails. Drawing on literature in rhetorical criticism, we examine the transcripts of the Bear Stearns case to see how the court evaluated the use of email. Finally, we consider how the arguments made both for and against the use of employee email in criminal trials can give us insight into the implications of new communication technologies (like email) on law and business practices.*

# ENTERPRISE RISK MANAGEMENT (ERM) – FAILURE IS NOT AN OPTION

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*“You want a valve that doesn’t leak and you try everything possible to develop one. But the real world provides you with a leaky valve. You have to determine how much leaking you can tolerate.”*  
- Obituary of Arthur Randolph, January 3, 1996

## **ABSTRACT**

*The Enterprise Risk Management (ERM) framework provides a useful framework for planning, conducting, and evaluating risk management evolutions in a wide range of enterprises. This paper addresses an overview of ERM, including background, conceptual framework, implementation guidance, and thoughts for future consideration.*

In September 1992 (amended 1994) the Committee of Sponsoring Organizations (COSO) of the Treadway Commission published *Internal Control – Integrated Framework (COSO-IC)*, the result of a project begun in 1987 to develop integrated guidance on internal control. This publication presented a common definition of internal control and a framework for evaluating and improving internal control systems. COSO-IC defined internal control as “a process, effected by an entity’s board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- Effectiveness and efficiency of operations.
- Reliability of financial reporting.
- Compliance with applicable laws and regulations.”<sup>i</sup>

In addition to the above three internal control objectives, COSO-IC identified five components of internal control:<sup>ii</sup>

- Control Environment
- Risk Assessment
- Control Activities
- Information and Communication

- Monitoring

The COSO-IC framework gained widespread acceptance. It became the predominant standard used by U.S. companies use to evaluate their compliance with the Foreign Corrupt Practices Act of 1977 (FCPA). According to a poll by CFO Magazine released in 2006, 82% of respondents claimed they used COSO-IC for their internal control framework. Other frameworks identified by respondents included COBIT (Control Objectives for Information and Related Technology) 33%, AS2 (Auditing Standard No. 2, PCAOB) 28%, and SAS 55/78 (AICPA) 13%.<sup>iii</sup>

Following the turn of the millennium, several high-profile business scandals and failures (Enron, Tyco, Adelphia, Peregrine, and WorldCom) led to enactment of the Sarbanes-Oxley Act of 2002 (SOX), which extends the long-standing requirement for public companies to maintain systems of internal control and requires management to certify and the independent auditor to attest to the effectiveness of those systems. COSO-IC became the broadly accepted standard for satisfying those reporting requirements.

In response to accompanying calls for enhanced corporate governance and risk management, in 2004 COSO published *Enterprise Risk Management - Integrated Framework (COSO-ERM)*, which defines enterprise risk management (ERM) as a “process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.”<sup>iv</sup> COSO-ERM expanded the earlier definition of internal control to provide a more robust and extensive focus on the broader subject of ERM. COSO-ERM expanded the objectives identified in COSO-IC, to include Strategic in addition to COSO-IC’s Operations, Reporting, and Compliance.<sup>v</sup>

COSO-ERM also modified the five components identified in COSO-IC with eight components, as follows:<sup>vi</sup>

- Changed Control Environment to Internal Environment
- Added Objective Setting, Event Identification, and Risk Response
- Retained Risk Assessment, Control Activities, Information and Communication, and Monitoring

While COSO-IC focused on component units within the enterprise, COSO-ERM focuses on the enterprise level and intermediate division or subsidiary levels as well as the individual component units.

The changes in emphasis resulting from these differences between COSO-IC and COSO-ERM can be summarized as follows:

COSO-IC	COSO-ERM
Rules-based, bottom-up approach, at least initially.	Top-down, holistic, principles-based approach.
Focus on controls over transactions.	Focuses on risks associated with events.

When used for SOX compliance purposes, does not specifically address operational, strategic or compliance risks not related to financial reporting.	Specifically addresses operational, strategic, and compliance risks as well as financial reporting risks.
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Like the earlier COSO-IC framework, the COSO ERM framework is also gaining increasing acceptance as a standard for risk management in various enterprises.

A somewhat different approach was taken by the Casualty Actuarial Society (CAS) in 2003. CAS defined ERM as the “discipline by which an organization in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organization's short- and long-term value to its stakeholders.”<sup>vii</sup> CAS conceptualized ERM as proceeding across the two dimensions of risk type and risk management processes.<sup>viii</sup> The risk types and examples include:<sup>iv</sup>

- Hazard risk (tort liability, property damage, natural catastrophe)
- Financial risk (pricing risk, asset risk, currency risk, liquidity risk)
- Operational risk (customer satisfaction, product failure, integrity, reputational risk)
- Strategic risks (competition, social trends, capital availability)

The CAS risk management process involves:<sup>x</sup>

- Establishing Context: This includes an understanding of the current conditions in which the organization operates on an internal, external and risk management context.
- Identifying Risks: This includes the documentation of the material threats to the organization’s achievement of its objectives and the representation of areas to the organization may exploit for competitive advantage.
- Analyzing/Quantifying Risks: This includes the calibration and, if possible, creation of probability distributions of outcomes for each material risk.
- Integrating Risks: This includes the aggregation of all risk distributions, reflecting correlations and portfolio effects, and the formulation of the results in terms of impact on the organization’s key performance metrics.
- Assessing/Prioritizing Risks: This includes the determination of the contribution of each risk to the aggregate risk profile, and appropriate prioritization.
- Treating/Exploiting Risks: This includes the development of strategies for controlling and exploiting the various risks.
- Monitoring and Reviewing: This includes the continual measurement and monitoring of the risk environment and the performance of the risk management strategies.

Other risk frameworks in use throughout the world include:

- AIRMIC – Association of Insurance and Risk Managers
- ALARM – The National Forum for Risk Management in the Public Sector (UK)
- AS/NZ 4360:2004 (Australia/New Zealand)
- British Standard 31100
- CoCo – Criteria of Control (Canada)

- Combined Code on Corporate Governance (UK)
- FERMA – Federation of European Risk Management Associations
- Internal Control (Hong Kong)
- IRM – Institute of Risk Management
- ISO 31000 (International Organization for Standardization)
- King Report on Corporate Governance (King 1)
- King Report on Corporate Governance in South Africa (King 2)
- Risk and Insurance Management Society (RIMS) Risk Maturity Model<sup>xi</sup>

Risk management expert Felix Kloman defines risks as, “a measure of the probable likelihood, consequences (favorable and unfavorable), and timing of a future event or situation that would affect the company.”<sup>xii</sup> Such a definition focuses upon both the downside risk and the upside opportunity.

## BACKGROUND

A review of how things have changed since the 1970s provides some perspective as to the significance of risk management:

1970s	End of Vietnam War Yom Kippur War and first Arab oil embargo, 1973 Dow-Jones Industrial Average (DJIA) high of 1011, 1976 Foreign Corrupt Practices Acts (FCPA), 1977 Fall of the Shah of Iran, US Embassy hostage situation, Iranian oil embargo, 1979 Oil increased from \$5/bbl to \$15/bbl over the decade
1980s	The “Reagan Years” IBM PC, 1981 DJIA low of 776, 1982 Oil \$20/bbl, mid-80s DJIA high of 2722, 1987 Stock market crash, 1987 COSO begins research into fraudulent financial reporting, 1987 Fall of Berlin Wall, 1989
1990s	Desert Storm, 1991 COSO-IC released, 1992 Development of the Internet Fall of Barings Bank, 1997 Oil \$10/bbl, 1997 COSO concludes research, 1997 Fall of Long Term Capital Management, 1998 First DJIA close over 10000, 1999 Y2K efforts, 1999-2000
2000	DJIA high of 11723 Dot-Com bubble burst

2001	Terrorist attack of 9/11 Fall of Enron Basel II Accords introduced
2002-03	Fall of Arthur Andersen, WorldCom, and Adelphia Sarbanes-Oxley Act of 2002 DJIA low of 7286, 2002 Continued political unrest Global “War on Terrorism” CAS-ERM issued, 2003 Oil \$30/bbl
2004	Auditing Standard 2 (AS2) released by PCAOB First year for SOX 404 compliance for large public companies COSO-ERM released Oil \$50/bbl
2005-06	AS2 required for external auditors Oil \$79/bbl, 2006
2007	Audit Standard 5 (AS5) supersedes AS2 DJIA high of 14164 Oil \$99/bbl
2008	Global recession Failure of US financial institutions and TARP response Oil \$120/bbl
2009	DJIA low of 7062 Economic stimulus plan Oil \$50-\$70/bbl

Flowing through those events are the following general trends that must be kept in mind in comparing the need for a more rigorous ERM today than previously:

YESTERDAY	TODAY
Simpler times	Requirements, systems, and tools are more complex
Frequent breakdowns occurred within companies, but repairs could be made without computer scientists, engineers, attorneys, environmental experts, accountants, and financial analysts. Failure in one area of the business seldom directly impacted another area	Breakdowns can lead to a significant “domino effect” with far-reaching consequences
Hazards which ultimately resulted in losses were easier to contain.	Media’s role has changed from observer to a catalyst of negative public opinion

In November 2007, Standard & Poor’s (S&P) announced a Request for Comment: Enterprise Risk Management Analysis for Credit Ratings of Non-financial Companies.<sup>xiii</sup> When the comment period closed in March 2008, over 90 responses had been received. The comments generally supported S&P’s proposal to introduce ERM analysis for non-financial companies. In May 2008 S&P announced that they would want to include ERM in its evaluation of non-financial companies. During the third and fourth

quarters of 2008, S&P worked to develop benchmark and evaluation criteria. In 2009, S&P began to include ERM in its evaluation of credit ratings. S&P focused on the risk management culture and strategic risk management. S&P views ERM as a gauge of the quality of management at the helm.

Also in November 2007, S&P reported on its ERM evaluation process for insurers.<sup>xiv</sup> S&P conducted a pilot program that included 78 insurance companies. The composition of the pilot companies was 37% property and casualty, 21% life, 13% reinsurance, 12% health, 12% multiline, and 1% mortgage insurers. The S&P ratings breakdown was 13% AA and AAA, 45% A, and 42% BBB and lower. S&P found the quality of risk management to be as follows:

- 8% Excellent – Master of controls, unknown future risk preparations, and strategic applications
- 24% Strong – Basic risk controls in place for all major risks, plus processes to prepare for unknown future risks and to make strategic choices among risks based on risk/reward framework
- 62% Adequate – Basic risk controls in place for all major risks
- 6% Weak – lacking basis controls for important risk(s)

S&P also found that in assessing the ERM impact on ratings:

- 5% ERM evaluations strengthened the ratings
- 25% ERM evaluations affirmed or supported ratings
- 65% ERM evaluations were neutral to ratings
- 5% ERM evaluations were negative to ratings

The convergence of these results suggests a possible correlation between findings and ratings, as follows:

Findings		Impact	
Excellent	8%	5%	Strengthen
Strong	24%	25%	Affirm/support
Adequate	62%	65%	Neutral
Weak	6%	5%	Negative

The crisis in the global banking industry provides an obvious recent example of the consequences of failure to assess enterprise risks effectively. This sector once claimed leadership in risk management. That reputation has been lost in a flurry of bad loan portfolios, failed banks, nationalization/bailouts of some banks, and shotgun mergers of others. Several prominent organizations have weighed in with analyses of what went wrong.<sup>xv</sup>

The Financial Stability Forum (FSF) issued a report on 2 April 2009, “FSF Principles for Sound Compensation Practices,” which stated in part:<sup>xvi</sup>

- “Compensation practices at large financial institutions are one factor among many that contributed to the financial crisis that began in 2007. High short-term profits led to generous bonus payments to employees without regard to the longer-term risks they imposed on their firms. These perverse incentives amplified the excessive risk-taking that severely threatened the global financial system and left firms with fewer resources to absorb losses as risks materialized. The lack of attention to risk also contributed to the large, income cases extreme, absolute level of compensation in the industry.”

- “To date, most governing bodies (henceforth, ‘board of directors’) of financial firms have viewed compensation systems as being largely unrelated to risk management and risk governance. This must change.”
- “As a practical matter, most financial institutions have viewed compensation systems as being unrelated to risk management and risk governance.”

Shortly after the FSF report, the Institute of International Finance (IIF) issued a report stating that the crisis “raised questions about the ability of certain bank boards to oversee senior managements and to understand and monitor the business.”<sup>xvii</sup>

The Economist Intelligence Unit (EIU) surveyed banks worldwide and reported that only 18% had an ERM strategy in place that was “well-formulated and rolled out across the business.”<sup>xviii</sup>

The Association of Chartered Certified Accountants (ACCA) reported that:<sup>xix</sup>

- The principal source of the global credit crunch is a failure of corporate governance at banks, which encouraged excessive short-term thinking and a blindness to risk.
- Risk management and remuneration/incentive systems must be linked. Executive bonus payments should be deferred until there is incontrovertible evidence that profits have been realized, cash received, and accounting transactions cannot be reversed.

Bruce Caplain has identified three factors that are imperative in an enterprise’s ERM effort:<sup>xx</sup>

- Management’s commitment, including the Board
- The enterprise’s governance structure of oversight functions that focus on risk and on identifying and mitigating issues
- The design of the enterprise’s ERM effort—is it just another program, or is the risk mind-set fully embedded?

As suggested by the foregoing, the value of ERM may be at its greatest during times of economic decline or crisis. Several factors operate:

- The changing risk environment<sup>xxi</sup>
  - Arguably there have never been more risks to a business than there are in the current marketplace.
  - Even leaving aside today’s prevailing concerns around the credit crunch, consider the following:
    - Technology entering new markets
    - Changing consumer habits
    - New products
    - Dealing with emerging economies.
  - These are all aspects of business which carry far greater risks than they used to, thanks to the effects of globalization and a more demanding end-user.
- Increased scrutiny from legal and regulatory agencies<sup>xxii</sup>
  - SEC

- Department of Justice
  - Stock exchanges
  - Securities fraud trial lawyers
  - Sections 302 and 404 of the Sarbanes-Oxley Act
  - Foreign Corrupt Practices Act of 1977
  - Industry-specific regulations (privacy, anti-money-laundering, risk-based capital requirements)
- Increased criticism from shareholders and other stakeholders<sup>xxiii</sup>
    - Outsourcing/third party resources
    - Credit rating agencies
    - Institutional investors
    - Personal liability for Board members

**CONCEPTUAL FRAMEWORK**

The COSO-IC, COSO-ERM, and CAS-ERM structures share many common elements. The CAS-ERM risks can be related to the COSO-IC and COSO-ERM objectives, as follows:

COSO-IC OBJECTIVES	COSO-ERM OBJECTIVES	CAS-ERM RISKS
	Strategic	Strategic risk
Operations	Operations	Operational risk
Financial Reporting	Financial Reporting	Financial risk
Compliance	Compliance	Hazard risk

Similarly, the CAS-ERM process can be related to the COSO-IC and COSO-ERM components, as follows:

COSO-IC COMPONENTS	COSO-ERM COMPONENTS	CAS-ERM PROCESSES
Control Environment	Internal Environment	Establishing Context
	Objective Setting	
	Event Identification	Identifying Risks
Risk Assessment	Risk Assessment	Analyzing/ Quantifying Risks
	Risk Response	Integrating Risks
		Assessing/ Prioritizing Risks
Control Activities	Control Activities	Treating/ Exploiting Risks
Information and Communication	Information and Communication	
Monitoring	Monitoring	Monitoring and Reviewing

This suggests a conceptual framework as follows:

- Establishing environment/context

- Establish management’s philosophy regarding risk, recognizing that unexpected as well as expected events may occur
- Establish the entity’s risk tolerance and risk culture
- Consider how all aspects of the entity’s activities may impact the risk culture
- Setting objectives
  - Consider risk strategy in setting management objectives
  - Determine at a high level how much risk management and the board of directors are willing to accept
  - Align risk tolerance with risk appetite
- Identifying events/risks
  - Identify both internal and external occurrences that can affect strategy and achievement of objectives
  - Differentiate risks (possible negative effects) and opportunities (possible positive effects)
  - Note that a particular event may have both risk and opportunity components
- Assessing/analyzing/quantifying risks
  - Utilize both quantitative and qualitative approaches
  - Understand the extent to which events may impact objectives
  - Assess risks for both likelihood and impact
- Responding/integrating/prioritizing risks
  - Once a risk has been identified and analyzed, there are several alternatives for treating the risk:
    - Accept the risk.
      - Management “self-insures” by doing nothing
      - Accepts implications
    - Avoid the risk
      - Management eliminates the activity
    - Transfer, share, outsource the risk
      - Financial risks – Use of derivatives, hedging or insurance
      - Operational risks – Use of third parties to perform
        - Payroll processing
        - Manufacturing
        - Other back office
    - Mitigate the risk – Fix the problems
  - Evaluate the options in relation to
    - The entity’s risk appetite
    - Costs vs. benefits of various responses
    - Effects of alternatives on impact and likelihood of risks
  - Select and execute the most appropriate response
- Controlling/treating risks and exploiting opportunities

- Implement policies and procedures to ensure that management’s risk tolerance and other management directives are carried out
- Occur throughout the organization, at all levels, and in all functions
- Include both information technology controls and application controls
- Recording, reporting, and communicating information
  - Identify, capture, and communicate relevant information in a form and on a timetable to assist stakeholders in carrying out their duties and responsibilities and evaluating opportunities
  - Communicate down, across, and up the organization
- Monitoring and reviewing
  - Conduct continuous ongoing management reviews and separate examinations to ensure the proper functioning of other ERM components
  - Adjust scope of monitoring and reviewing activities to reflect ongoing risk assessment

Conceptually, the elements of the process may be viewed in matrix form, as follows:

	Strategic	Operations	Financial Reporting	Compliance
Establishing environment/context	√	√	√	√
Setting objectives	√	√	√	√
Identifying events/risks	√	√	√	√
Assessing/analyzing/quantifying risks	√	√	√	√
Responding/integrating/prioritizing risks	√	√	√	√
Controlling/treating risks and exploiting opportunities	√	√	√	√
Recording, reporting, and communicating information	√	√	√	√
Monitoring and reviewing	√	√	√	√

## IMPLEMENTATION GUIDANCE

The conceptual approach to implementing ERM includes the following stages:

- Planning
  - Understand the entity’s environment, business model, and risk management process
  - Understand and document the entity’s tone at the top and risk appetite
    - Determine risk philosophy
    - Survey risk culture
    - Consider entity’s organizational integrity and ethical values
  - Establish the ERM organization within the enterprise

- Decide roles and responsibilities
  - Designate Chief Risk Officer with sufficient power to facilitate accomplishment of objectives
- Risk Assessment
  - Conduct enterprise risk assessment
    - Interviews
    - Facilitated sessions
    - Documentation
  - Train appropriate personnel for ongoing risk management activities
  - Assess risks
    - Identify
    - Measure
    - Prioritize
  - Manage risks
    - Control
    - Share or transfer
    - Diversify
    - Avoid
- Risk Response/Mitigation
  - Implement corrective plans/activities
  - Monitor risks
    - Process level
    - Activity level
    - Entity level
  - Monitor ongoing program development and implementation

The following table presents graphically the appropriate entity’s approach to various risk reaction and control activities, depending upon the impact of the related risks and the entity’s evaluation of the extent to which the activity prepares the entity to deal with the risk. A third dimension, the likelihood that the risk will materialize, should also be considered.

IMPACT	High	Mitigate	Assure
	Low	Assess cumulative impact	Redeploy?
		Low	High

PREPAREDNESS

Common faults in implementing ERM have been found to be:

- Lack of visible, active support from Board and/or C-level management
- Implementing without a framework or plan
- Organization not ready – too much too soon

- Lack of integration with business goals and objectives
- Implementing as a project or part-time endeavor
- Failure to address the need for change management
- Failure to drive ERM to its full potential

By contrast, ERM success factors have included:

- Strong, visible support from C-level management
- Alignment of ERM to the key strategic and financial objectives and business processes
- Dedicated team of cross-functional staff to integrate ERM into significant business practices / processes
- Recognition that ERM is a continuous process and takes time to evolve
- Adequate training and supporting tools
- Leveraging well-accepted processes within the organization and introducing ERM as a value-add rather than a new stand-alone program

The changes that are required include:<sup>xxiv</sup>

- Clear and consistent support from Executive Management and the Board
- Long-term commitment to ERM, linked to strategic planning
- Building ERM into business processes efficiently and without undue administrative burden
- Well defined roles and responsibilities for risk, leading to improved accountability
- Risk considerations built into incentives and performance management

### **THOUGHTS FOR CONSIDERATION**

Enterprises should consider the following thoughts with respect to their ERM effort:

- What is the number one risk facing your company today?<sup>xxv</sup>
  - Reputational
  - Operational (technology, human capital, physical security)
  - Regulatory/legal
  - Market
  - Credit
  - Disaster (natural, terrorism)
- What is your enterprise's philosophy towards risk?<sup>xxvi</sup>
  - Risk assessment
    - Annual point-in-time snapshot
    - Internal audit driven
    - Focus on current issues
  - ERM
    - Real-time, ongoing assessment
    - Continuous risk monitoring
    - Ownership of risk by process owners, embedded in the business
- How has risk management evolved in your organization?<sup>xxvii</sup>
  - Developing

- Implementing
- Improving
- Integrating
- What is the number one change barrier to overcome in your organization?<sup>xxviii</sup>
  - People
    - Lack of time/skills/resources
    - Difficulty obtaining buy-in from employees
    - Lack of management support
  - Processes
    - Regulatory complexity
    - Difficulty defining risk appetite
    - Unclear lines of responsibility
  - Information
    - Lack of available data
    - Threats from unknown/unforeseeable risks
    - Difficulty in identifying emerging risks
- How can you and your group foster an ERM culture within your organization?

S&P has proposed the following questions for management meetings:<sup>xxix</sup>

- What are the company's top risks, how big are they, and how often are they likely to occur? How often is the list of top risks updated?
- What is management doing about top risks?
- What size quarterly operating or cash loss has management and the board agreed is tolerable?
- Describe the staff responsible for risk management programs and their place in the organization chart. How do you measure success of risk management activities?
- How would a loss from a key risk impact incentive compensation of top management on planning/budgeting?
- Tell us about discussions about risk management that have taken place at the board level or among top management when making strategic decisions.
- Give an example of how your company has responded to a recent "surprise" in your industry and describe whether the surprise affected your company differently from others.

The following questions must be answered if ERM is to be made "real" for an enterprise:<sup>xxx</sup>

- What do we want to accomplish?
- What could stop us from accomplishing it?
- What should we do to make sure that those things either (1) don't happen, or (2) can be managed if they do happen?

## CONCLUSION

As the complexity of modern life, and the speed with which things happens, increases continuously, the need for an effective ERM is steadily and continuously increasing. In implementing ERM, the most important consideration may be to remember what ERM is and can do, and perhaps more importantly, what it is not and cannot do.

Consistent with this discussion, ERM is about:

- Identifying and assessing key risks
- Designing and implementing processes by which those risks can be managed
- Maintaining residual risks at a level acceptable to the organization
- Linking risks back to the organizational objectives

Just as importantly, ERM is not:

- A silver bullet against bad judgment
- A once a year event
- A stand-alone, one-off initiative
- A guarantee that goals and objectives will be achieved

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# YOU CAN FIGHT CITY HALL AND WIN - A SMALL TAXPAYER VICTORY IN TEXAS

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## **ABSTRACT**

*Taxpayers seem to be barraged by either new or increased taxes as governmental entities seek ways to increase revenue. To avoid the dissent of more taxes, some cities institute new fees instead. However, a recent decision by the Supreme Court of Texas limits the ability of local governments to assess such fees. The decision was based on a case where commercial property holders were required to register and pay a fire safety fee. Those paying the fee considered it to be an occupancy tax and not a legitimate fee. Because of opposition, the city first reduced the fee and then later repealed it. One of the taxpayers brought a class action suit against the city of Dallas to receive reimbursement of the fee. He originally resisted the fee and did not pay until “threatened” with violation of a criminal offense and a penalty. After the fee was abolished, he requested a refund; however, the city did not have a refund procedure in place for protested fee payments. The taxpayer pursued the matter and the court determined that since he only paid the fee after being made aware of the possible criminal offense violation, he was entitled to a refund because the threat of a criminal offense for not paying a fee can act as duress in compelling individuals to pay such a fee. This case represents a small victory for taxpayers in Texas.*

## **INTRODUCTION**

In the current economic environment, all levels of government are facing severe funding difficulties. Large shortfalls in revenue are common and there is much discussion regarding how best to solve this problem. One of the ways most often suggested is to increase revenue by way of new taxes or increased tax rates. In many cases, governments are seeking to avoid criticism for raising taxes by instead instituting new fees. Such fees are appealing when the governmental entity can claim that the fee is fair because it is simply charging the taxpayer for benefits received or services provided.

A recent decision by the Supreme Court of Texas limits the ability of local governments to assess such fees. In the case of *Jim Lowenberg, on Behalf of Himself and all Others Similarly Situated, Petitioner, v. City of Dallas, Respondent*, the Court handed commercial building owners a small tax victory.

The City of Dallas had passed Ordinance 22206 which became effective on January 1, 1995. The Ordinance was to provide funds for fire protection for commercial buildings. Compliance with the Ordinance required a certificate of registration “to own, operate or control a commercial

building within the city.” Certificates were valid for one year. To obtain the certificate required the submission of an application disclosing some basic fire safety information relating to the property such as the type of business, unique aspects of the building, fire safety protection features and any hazardous operations. Payment of a “fire registration fee” was required with submission of the application. This fee ranged from \$70 up to \$2,150 depending upon the square footage of the building. Under the ordinance, anyone not having the required certificate committed a criminal offense punishable by a fine of up to \$2,000.

The City’s purpose for the ordinance was to establish “a fire safety registration program ... to improve fire prevention and suppression services and thus to reduce loss of life and property to fire.” The purpose of the fee was “to recover ... the costs of fire prevention services to commercial properties that had previously been funded by general revenue [and] the additional commercial-property-related costs of obtaining and administering fire registration information.” Though called a fire registration fee, the fee was seen by many as an occupancy tax.

The fee was very unpopular with those affected. Following its announcement, there was so much opposition that the City of Dallas actually reduced the fee by 50% even before it went into effect. It was totally abolished after only nine months. However, the City did not refund any fees that had already been collected or stop collecting fees which were due from when the Ordinance had been in effect.

Lowenberg applied to have his commercial building registered under the Ordinance but did not pay the \$80 fee. Almost eight months after the fee was abolished, the City requested payment from him, warning that “[v]iolators will be issued citations ... and, upon conviction, will be subject to fines up to \$2,000.” Lowenberg continued his refusal to pay. In February 1997, more than 16 months after the fee had been abolished, he was cited to appear in municipal court. He then paid the fee and the charge was dismissed. He had paid under protest but the city had no protest procedures. Consequently, in July 1997 he began legal action to recover his payment. It took more than 11 years before the issue was finally resolved.

After an initial defeat, he filed a class action lawsuit. He alleged the registration fee was an unconstitutional taking in violation of his state and federal constitutional rights, and was an occupation tax in violation of Article VIII, Section 1 (f) of the Texas Constitution. The trial court agreed with him, declaring that the fee was an illegal occupation tax, that persons who paid the fee on or after July 28, 1995 (approximately 19,000) were entitled to a refund, that claims for payments made before that date were barred by limitations, and that the refund totaled \$1,009,751.25. Final judgment for the plaintiffs for refunds, prejudgment interest, and attorney fees was rendered in January 2003 for \$1,847,454.36.

On appeal the decision was reversed by the court of appeals. The court concluded unanimously, as a matter of law, that the registration fee was an unlawful tax. However, with one dissenting vote, it also held that the fees were not paid under duress and therefore recovery was barred by the voluntary payment rule.

Upon review, the Supreme Court of Texas agreed with the court of appeals that the registration fee was an unlawful tax. The relevant part of the Texas Constitution, Article VIII, Section 1 (f)

states that an “occupation tax levied by any county, city or town for any year on persons or corporations pursuing any profession or business, shall not exceed one half of the tax levied by the State for the same period on such profession or business.” It was Lowenberg’s contention that the registration fee was really a tax on the business of owning, operating, or controlling a commercial building, and since the state levies no such tax, the fee was constitutionally prohibited.

In making its decision the Court quoted its prior decision in *Hurt v. Cooper*, where they stated, “It is sometimes difficult to determine whether a given statute should be classed as a regulatory measure or as a tax measure. The principle of distinction generally recognized is that when, from a consideration of the statute as a whole, the primary purpose of the fees provided therein is the raising of revenue, then such fees are in fact occupation taxes, and this regardless of the name by which they are designated. On the other hand, if its primary purpose appears to be that of regulation, then the fees levied are license fees and not taxes.”

In *Lowenberg*, the registration fee was intended to offset the administrative costs of collecting fire safety information on commercial buildings and incorporating it in a database used in fire prevention efforts. These, the court held, were clearly regulatory efforts. However, the city had acknowledged that the fee was also intended to raise enough revenue to cover all costs of fire prevention in commercial buildings, which would shift that burden off taxpayers. The city also conceded that the fee was to benefit the general public by improving fire protection for everyone. The court had “little trouble concluding that the fee was a tax”, noting that even if the fee was intended to be used only for fire protection of commercial buildings, the revenue it generated greatly exceeded any regulatory costs. Despite the fact that the City is a home-rule municipal corporation with broad powers of self-government, the Court held that “it cannot impose regulatory fees that are really taxes prohibited by the Constitution.”

The second issue for the Court to address was the voluntary payment rule. It had stated in *Dallas County Cmty. Coll. Dist. v. Bolton* “a person who pays a tax voluntarily and without duress does not have a valid claim for its repayment even if the tax is later held to be unlawful.” The court of appeals in *Lowenberg* held that, as a matter of law, class members’ payment of the registration fee was not under duress because “The ordinance in this case did not otherwise impact business operations, the right to do business, the building premises, or the title to the real property.” In light of the public policy consideration, the terms of the ordinance, and the options available to challenge the fee, we cannot hold that the possibility of being fined up to \$2,000 constitutes the type of duress that would “interfere with another person’s exercise of free will and judgment.”

In so ruling, the court cited Bolton’s observation that “a common element of duress in all its forms . . . is improper or unlawful conduct or threat of improper or unlawful conduct that is intended to and does interfere with another person’s exercise of free will and judgment.” However, the Supreme Court stated that *Bolton* only dealt with economic duress. They felt the court of appeals has focused too narrowly on whether the threat of a \$2,000 fine posed a financial hardship and failed to consider that nonpayment of the registration fee was a criminal offense – a Class C misdemeanor. The Supreme Court had not considered duress from criminal penalties in *Bolton*. However, it had made this consideration in *Hoefling v. City of San Antonio* where a butchery paid an unlawful occupation tax under protest only after the city began

criminal proceedings. Holding that the business could recover the tax, the court stated, “If appellants had voluntarily paid the sum claimed as a tax, then they would not be entitled to recover it; but they paid it upon coercion, after the institution of criminal proceedings against them, and under the agreement of the parties are entitled to recover the sum so paid, together with costs incurred in all the courts.”

The rule in *Hoefling* applied to the current case, they held. Both the butchery in *Hoefling* and *Lowenberg* were cited with a criminal charge. However, in a more extensive defense of the taxpayer, the Supreme Court held that it was not the citation which coerced payment, but the actual Ordinance itself, which had made nonpayment of the fee criminal. In so deciding, they noted the wording of the Ordinance: “A person *commits an offense* if he owns, operates, or controls a commercial building in the city without a valid certificate of registration issued under this article.”

The original trial court had awarded attorney fees against the City under the Declaratory Judgment Act. In one of its arguments contending that this was an error, the City argued that the declaratory judgment claim was mooted by the class members’ voluntary payments followed by the repeal of the registration fee. In its strong support for the taxpayer in this case, the Supreme Court was very emphatic in ruling against the City’s argument. They held “But the City cannot extract millions in unlawful fees and fines, decide the whole thing was a mistake, keep the money, and insist the whole matter is moot. For those who paid, the controversy remains real.” In so deciding, the court reversed the judgment of the court of appeals and rendered judgment in accordance with the judgment of the trial court, in favor of Lowenberg.

## **ANALYSIS**

While this case related to the City of Dallas, the decision is applicable to any county, city or town in the entire state of Texas. It clearly reinforces prior case law which held that it does not matter what any such body calls an occupation tax, if it raises more revenue than is required to fulfill a regulatory function, the assessment is a tax. If it is a tax, its size is limited by the Texas State Constitution to one half of the tax levied by the State on the same businesses. If no such state tax exists, then a local tax cannot either. The Court clearly stated that if the levy was to be recognized as a fee, it could only be set at a level high enough to pay for the performance of the function for which the fee was instituted.

The Court strengthened the position of the taxpayer in this case by expanding the definition of duress. While referring to its past rulings on economic duress, the Court held that the actual wording of an ordinance could in and of itself be held to be duress when nonpayment of the fee was defined to be a criminal offense. Normal law abiding citizens, including those in business, have no desire to commit criminal offences, and so the definition of not paying a registration fee as a criminal offense can act as duress in compelling them to pay such a fee

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# **STRATEGIC HUMAN RESOURCE MANAGEMENT: GOING GREEN**

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## **ABSTRACT**

*Strategic management of green jobs is the organic phenomena of the future for the U.S. as well as international countries. Thus, a current strategic challenge for companies is the re-engineering and rebirth of green industries including automotive, construction, energy, environmental, and refuse/waste. To assist companies in the strategic management of going green, this article presents and discusses a strategic framework for the execution of green job rollouts including a focus on the project management life cycle phases and a consideration of the human resource functions that are needed to execute going green.*

## **INTRODUCTION**

Green jobs have grown faster than any other occupation from 2000 through 2006 and the continued fast growth of the jobs is projected through 2016 (Executive Office of the President Council of Economic Advisers, 2009). Thus, the labor market is embracing the change and renewable energy is considered one of three categories that will create many new job opportunities in various industries including service and manufacturing. The U.S. government has expressed interest in creating five million green jobs within the next ten years (California Green Solution, 2009).

Green jobs were virtually not identified prior to the 1960s; however, in the 2000s the green job market has become a significant employer in North America and Europe (Gallon, 2001). In fact, green jobs “now rival those for the traditional sectors such as oil, chemicals and steel” (Gallon, 2001, p. 22). Some have suggested that “failing to consider the environmental impact of strategic decisions may affect the financial stability of the firm and the ability of that firm to compete relative to others in the industry” (Ilinitich & Schaltegger, 1995, p. 29).

Organizations are social systems that consist of interdependent, standardized processes and activities that are executed by human resources and bounded by space and time (Katz & Kahn, 2004). Projects are viewed within the context of organizations and are considered as temporary initiatives (Lundin & Soderholm, 1995) that transform inputs, processes, and outputs to achieve strategic goals and objectives (Swanson and Holton, 2001). For example, an acquisition of a new company, a new training curriculum, execution of a merger, and a system-wide organizational development intervention are all activities that are implemented through projects. Projects are

complex undertakings which require examination, planning, and execution of unique parameters within a constrained time period.

Project management is the methodology that supports project execution and “is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements” (PMI Global Standard, 2004, p. 8). The findings, of a survey of members within the Organization Development and Change Division of the *Academy of Management*, reported that project management was one of the top seven foundational skills within organizational change initiatives (Henderson, 2005). Project management provides a framework in which to define organizational requirements and teams work to develop activities including visioning, reflecting, monitoring, and evaluating. These activities are executed within a methodology that utilizes a systematic execution of tasks with the end goal of integration and participation from all work levels to successfully complete projects (Kerzner, 2004).

Research conducted by Schaffer and Thomas (1992) revealed that some initiatives fail due to a piecemeal approach to project implementation and that companies have started to sanction a holistic approach to project management to ensure successful implementations. More specifically, initiatives failed because (a) management failed to demonstrate the efficiency for the project (b) is not considered a field that promotes the execution of strategic plans, and (c) failed to communicate its impacts to internal and external customers. (Gilley, Eggland, & Gilley, 2002). Project management, within the context of strategic management, is seen as a framework in which organizational action can be examined and executed. Additionally, project work has become an increasingly important consideration for organizational success.

The underlying goal of strategic human resource management is to support the execution of strategic organizational goals by effectively and efficiently using human resources (Bohlander & Snell, 2007). Mathis and Jackson (2008) suggest that strategic human resource management processes are instrumental in obtaining resources and include recruiting and placement, selection, training and development, total rewards, performance assessment, and employee relations. The human resource activities are used to obtain resources and their associated competencies and skills which are used as a starting point for long-term strategic and resource planning (Bohlander & Snell, 2007). Strategy execution includes the techniques, tasks, and assignments that are needed for a strategy execution (Thompson, Strickland, & Gamble, 2007). Thompson, Strickland, and Gamble (2007) posit that “adding to a company’s talent base and building intellectual capital is more important to good strategy execution than additional investments in plants, equipment, and capital projects” (Thompson, Strickland, & Gamble, 2007, p, 361).

The purpose of this paper is to present and discuss the role of project management as a strategic management tool for the execution of green job initiatives. More specifically, three project phases, as defined by the *Project Management Body of Knowledge*, will be used as a framework for the execution of green job initiatives. The project phases include initial, intermediate, and final. Project management and green jobs will be discussed in order to provide introductory information related to the detail discussion of green job project phase execution as defined by the *Going Green Strategic Execution Model* in figure 1.

## **PROJECT MANAGEMENT**

“Project management is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives” (Kerzner, 2004, p. 4). The identified benefits of project management include: (a) “identification of time limits for scheduling”, (b) “identification of a methodology for trade-off analysis”, (c) “measurement of accomplishment against plans”, (d) “early identification of problems so that corrective action may follow”, and (e) “knowing when objectives cannot be met or will be exceeded” (Kerzner, 2004, pp, 3-4).

Project management originated as a framework for executing work activities in the early 1900s and was introduced as a means to plan and manage projects (Packendorff, 1995). Project management historically has been used as a systematic approach to organize workplace processes and tasks and has been grounded in construction project methodology (Betts & Lansley, 1995), engineering, information systems, and government (Kerzner, 2001). Currently, project management has been used in various industries including pharmaceutical, banking, consulting, hospitals, accounting, advertising, and legal (Kerzner, 2001).

Project phases are defined based on the completion of one or more project deliverables (PMI Global Standard, 2004) such a staffing plan, a total rewards plan, or performance review process. “A project phase is generally concluded with a review of the work accomplished and the deliverables to determine acceptance, whether extra work is still required, or whether the phase should be considered closed” (PMI Global Standard, 2004, p. 22). Also, a project phase may be completed without the beginning of a new project phase such as the completion of the entire project and the close of the final phase.

Research conducted by Schaffer and Thomas (1992) revealed that some initiatives fail due to a piecemeal approach to project implementation and that companies have started to sanction a holistic approach to project execution to ensure successful project implementations. More specifically, holistic applications of projects have revealed that (a) human resources including employee training impacts operational results, and (b) management commitment on training and customer focus influences quality initiatives, and (c) improvement of trends and variations in processes is likely to improve frequency in changes (Barad & Raz, 2000).

## **GREEN JOBS**

The American Recovery and Investment Act (ARRA) is focused on investing in green job initiatives via loan guarantee programs that will improve the energy efficiency of homes and facilities as well continue to support other construction projects (Executive Office of the President Council of Economic Advisers, 2009). “Green jobs vary widely- from automakers making and maintaining hybrid and alternative energy cars, to green building and remodeling services and consultants, home energy auditors, environmental studies, teachers and authors, wind turbine engineers and maintenance crews, lawyers for biofuel, wind and solar companies and many more” (California Green Solutions, 2009, p. 1). The following non-traditional and traditional industries have been identified as offering the more green jobs: green buildings and green homes, tradesmen, training and certification, transportation, services, computers, hospitals, and natural resources and environmental management (Job-hunt.Org)

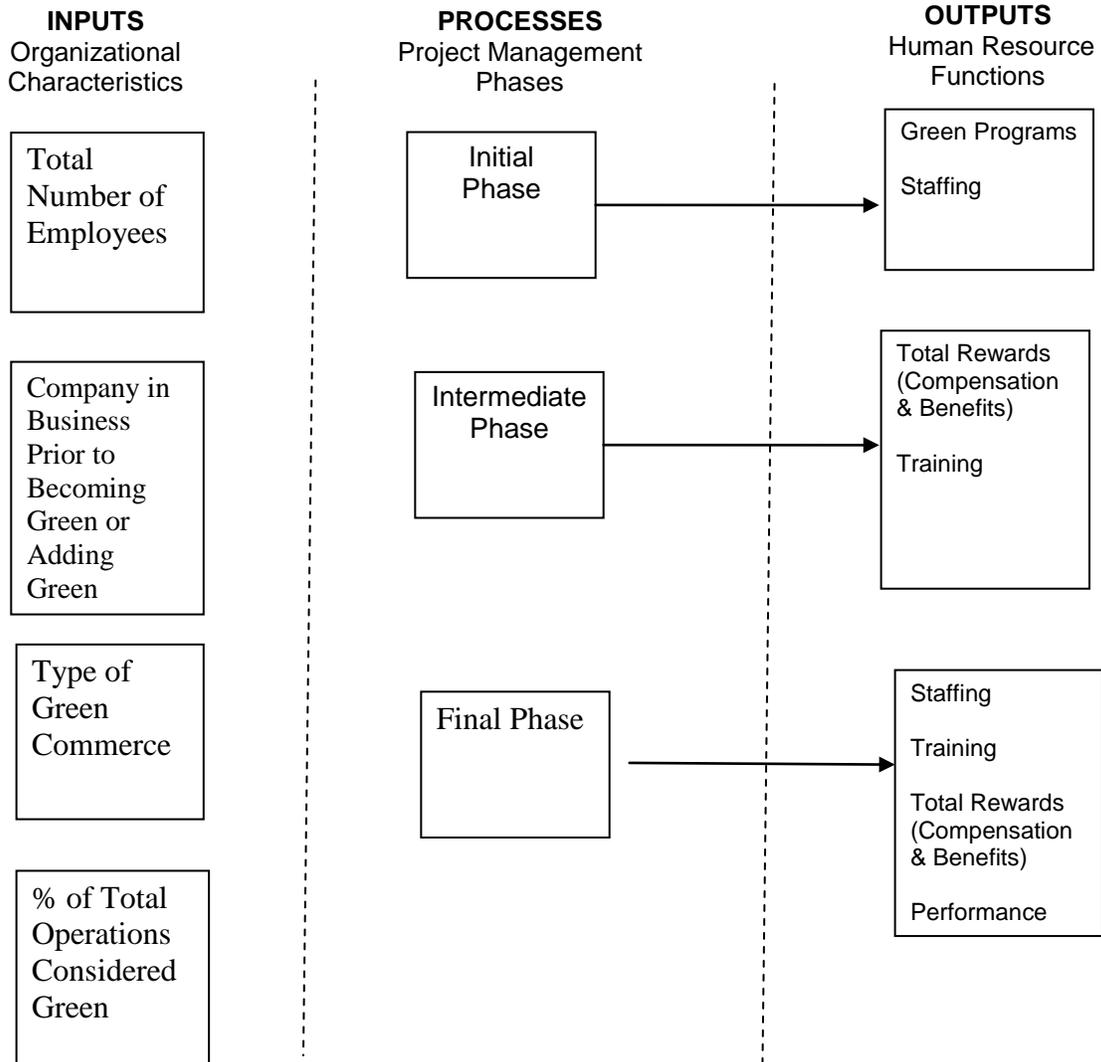
Green job initiatives will not only plan for new green job positions but also plan for extensions and modifications of traditional jobs as organizations work to conserve energy, reduce toxic waste, and cogenerate energy (California Green Solutions, 2009). For example, electrical mechanics will not only be able to fix car engines but also be able to fix combustion engines and computer control operators will also be able to cut steel for wind towers (Green Jobs Now: National Day of Action to Build the New Economy, 2008). However, the tasks for executing green job employment will not change drastically as there is a need to identify job specifications for staffing, recruiting and hiring activities, and onboarding employees if the skill sets are not currently being housed within the organization. Some of the trends in green jobs that cross various industries include: (a) restoring and reconfiguring systems, projects, and services; (b) new projects and services in new green companies and newly formed green divisions; (c) entrance of older workers by re-skilling; and (d) development of new curriculum in schools that focus on science, art, and mechanics (Job-hunt.Org).

More specifically, green jobs have been identified as impacting workers within the middle and lower level skill sets. Thus, curriculums have focused on the skills sets for sales engineers, technicians, installers, and operators. Inadequate skills and training have been identified, by the National Renewable Energy Lab, as the major drawbacks to the speedy execution of renewable energy in the United States (Green For All). As early as December 2007, money was allocated for workforce training programs with a focus on providing job opportunities for former military work, people with disabilities, youth, and poverty-stricken families (Green For All). The training included educating workers in the fields of solar installations and weatherization as well as transportation and construction (Job-hunt.org.). Mathematics and science have been identified as the skill sets needed to measure, evaluate, and effectively run sophisticated tools and systems (California Green Solutions, 2009).

### **GOING GREEN: STRATEGIC EXECUTION MODEL**

Organizations use resource inputs as opportunities to make decisions about the green job initiatives including considerations related to the processes that must be examined and executed for green job execution and the outputs of the processes that support the ongoing human resource functions of workforce management. See figure 1 for the going green model that will be discussed as a strategic framework for executing green job initiatives.

**Figure 1: Going Green Strategic Execution Model**



To support the model in Figure 1, ten companies executing green job initiatives were interviewed and some of the data obtained from the interviews are included in the project management phases below. See Table 1 also for a summary of interview data.

**Table 1**

<b>Interview Data Summary</b>	<b>Frequency</b>
Total Number of Employees	
Less than 20 Employees	3
101-500 Employees	4
501 – 1,000 Employees	1
Greater than 5,000 Employees	2
Company in Business Prior to Becoming Green or Adding Green Commerce	
Yes	5
No	5
Type of Green Commerce	
Lighting/Manufacturing	1
Chemicals	1
Recycling	2
Consulting	1
Energy	1
Waste Recycling	1
Architecture	1
Wind Energy	1
Construction	1
Percentage of Total Operations Green	
10-25%	1
26-5-%	2
76-100%	6
No Response	1
Recruiting Practices Different from Green Initiatives	
Yes	3
No	7
Pay Scale Different for Green Jobs In Your Industry	
Yes	4
No	6

## **PROJECT MANAGEMENT PHASES**

“More and more companies are now regarding project management as being mandatory for the survival of the firm” (Kerzner, 2004, p. xxi). Project management is a methodology that can be used to strategically frame the activities of the team with the ultimate outcome of achieving quality based on improving processes to implement change. More specifically, project management methodology is a framework used to systematically and holistically transform the theoretical to the practical. The project management phases are discussed below with an emphasis on the tasks and activities associated with the execution of green job initiatives.

### **Initial Phase**

The initial phase is focused on documenting the project benefits as well as deliverables associated with the temporary initiative (Kerzner, 2004). During the initial phase of the project, the “process necessary for documenting the business needs and the new product, service, or other result that is intended to satisfy those requirements” is completed (PMI Global Standard, 2004, p. 45).

Based on data obtained from interviews, one of the first considerations for green job execution is to identify what green programs your company will sanction. As a business evaluates the demand for green products or services, an awareness is established that the climate may be conducive for the addition of a green product line or service expanding and revitalizing the core business. An established energy company with a focus on producing oil and gas, for example, may review adding a business unit to reduce carbon dioxide, develop biofuels, consult on energy reduction, and develop solar or wind energy operations. Leaders in the construction industry are adding or transitioning in the architectural and construction area to green structural design for commercial and residential property utilizing energy efficient, renewable and recycled products. As a company recognizes the need and opportunity for green commerce either to stay competitive or establish the lead in obtaining market share, companies must decide their level of commitment to the prospective green program. Some organizations eliminate their traditional businesses and focus their human resources completely on the selected green commerce. Other companies integrate green commerce to further enhance their current business. “Many Fortune 500 companies have entire departments devoted to retooling their businesses to be more environmentally friendly” (Wooten, 2009, p. 22). The Green Jobs Act of 2007, authorizing \$125 million in funding for creating training programs in green industries, along with additional legislation for sectors of green commerce, has further solidified the interest of business leaders (Green For All).

Since many of the green initiatives have simply not been a major part of the commerce landscape prior to the last few years, several issues concerning green job opportunities are evident. First, an experienced labor force may not be readily available in the area of green commerce nor the education and training specific to many green collar jobs. The organizations surveyed indicated they either were currently attempting to fill green jobs from within first with a formal posting process or their intent was to establish a formal posting process as the organizations grew. For the vast majority of companies establishing green commerce, staffing plans include positions with core skills and competencies outside of the green aspect of the position with a developmental plan to train on-the-job for specific organizational green skills. The companies must identify the core competencies that best apply and establish not only a recruiting plan but

an appropriate interview and selection process also (Entrepreneurs' Organization, 2009). A critical path for the success of the staffing plan is to identify all the prospective traditional careers from which successful candidates may be drawn. For example, a land man in the oil and gas industry will lack the background and experience for wind energy land issues and resolutions, but may have enough transferable skills to successfully accomplish the job with on-the-job training and experience.

Whether the green collar jobs fall within an existing structure or are developing as the business solidifies, the scope of employment needs can change due to the scope of business, the environment, technology and many other factors. One Houston based company interviewed, dedicated to renewable services, has grown from 2 employees in 2006 to over 300 by year-end 2009 with revenues increasing from \$11 million dollars in 2008 to an estimated \$78 million in 2009. Another large recycling company interviewed started its first U.S. plant facilities with a workforce comprised generally of blue collar workers. With the progression of the business and access to enhanced technology, these same facilities are now staffed primarily with engineers and white collar workers. Most of the organizations surveyed and interviewed did not put as much emphasis on hiring an employee completely skilled in the arena of the green sector, but indicated they evaluated prospective employees on enthusiasm for green purposes or the company mission in respect to green.

### **Intermediate Phase**

During the intermediate phase, the project plan is developed and “this is the process necessary for defining, preparing, integrating and coordinating all subsidiary plans into a project management plan” (PMI Global Standard, 2004, p. 48). The project plan identifies who will perform activities, how those activities will be conducted and when (Martin & Tate, 2001). The plan includes a work breakdown structure that partitions that project deliverables and tasks into smaller, incremental components. The intermediate phase includes the execution of the project plan such that the tasks are completed and the project progresses with the end goal of the execution of green jobs. The intermediate phase includes “monitoring the ongoing project activities against the project management plan and the project performance baseline” (PMI Global Standard, 2004, p. 59).

Some of the tasks that should be included in the project plan for the execution of green jobs include an identification and execution of total rewards (compensation and employee benefits) and training programs for green employees. Total reward programs, including compensation and employee benefits, are typically reviewed and established during the intermediate phase. Some of the organizations interviewed indicated that the standard benefits (medical, 401(k), vacation) were sufficient while others indicated that their workforce valued time off for participating in community green endeavors and considered it a company benefit to encourage and offer paid time off to participate. Other benefits include healthy snacks provided by the company in break rooms and green investment options included in the 401(k) plan. Another organization interviewed provided its sales staff with fuel efficient vehicles for sales calls.

Green job execution also includes identifying compensation for green jobs. This task may include obtaining data from research companies related to job titles, job descriptions, and median annual salaries. For example, green job opportunities may include: (a) hydrologists who earn

median annual salaries of \$64,604, (b) environmental engineers who earn median annual salaries of \$63, 673, (c) pollution control technicians who earn median annual salaries of \$47,403, (d) biologists who earn median annual salaries of \$53,665, and (e) environmental attorneys who earn median annual salaries of \$90,146. (Tampabay.com, 2009).

The scope of training may be evaluated by the philosophy of the organization and perceived and validated based on need. Training for green jobs can be both on-the-job and formalized. For example, a wind energy generation company that was interviewed wrote curriculum and offered seminars to all employees. The company considered the staff completely green, from the engineering to the accounts payable staff, and therefore emphasized the education of wind turbines and operations as important throughout the organization. Within this same organization, positions connected to day-to-day operations conduct position specific on-the-job green training in order to effectively meet company goals. Additionally, based on the interviews, organizations in the construction and recycling aspects of green industry find LEED and other certifications necessary and often sponsor existing employees through the certification process as well as target certification requirements for specific or key open positions.

As green organizations provide opportunities for employees to acquire knowledge, skills and certifications in green commerce, the organization gains the qualifications necessary to successfully bid for contracts with federal, state and local entities and aggressively compete in the private sector. A company interviewed, with over 5,000 employees, has integrated a unit of employees dedicated to efficiency within one of the traditional operations groups. Although none of the employees were trained specifically in green commerce, improvements for the traditional business has brought huge rewards for their organization by reducing costs and increasing on-time services to their clients.

The project team needs to incorporate project status reports and meetings as well as analyze actual against planned performance to help ensure the progression of the project to completion. Therefore, project managers are ensuring the project team is checking and monitoring progress, comparing progress to the project plan, taking corrective action to ensure tasks are aligned with the plan, and auditing performance (Lewis, 2003, p. 12).

### **Final Phase**

During the final phase, the teams are verifying work completions, administratively closing the paperwork, and handing over the project deliverables. More specifically, during the final phase, the project is approved by the requesting department and the deliverables and activities are handed over to the requesting department for ongoing maintenance (Kerzner, 2004). A final status report is completed and includes a report noting that green job programs have been identified and are ready to begin operations, including employees to execute the programs that have been rewarded, and employees that have skills and training to provide efficient and effective performance.

A final close-out report is also prepared in the final phase and includes recommendations to the organization for process improvements for future project considerations (Martin & Tate, 1998). For example, one of the major strategic issues identified during the interviews, impacting green commerce on a forward basis is the commitment placed on the industry by the Federal, State, and

local governments as well as the American population. Although large segments of green industries do not currently receive funding or tax credits from the government, some of the industries receive funding or tax credits. For example, the wind and solar industries receive incentives and are at least partially subject to a three year window. As green commerce continues to evolve, a change in policy, legislation, or tax law to business or individual consumers could make a difference in demand for services and the ability to be competitive with traditional businesses. “A recent report released by the office of Sen. Kit Bond of Missouri states that green jobs, primarily in energy-generation, require high taxpayer subsidies to sustain them. The report argues that the net gain in jobs from expansion in green industries is overestimated, as many existing jobs will be eliminated” (Wooten, 2009, 23).

Another future consideration beyond the final project phase is adequate and appropriate staffing including training (California Green Solutions, 2009). Predicting future staffing needs and developing a sufficient plan for the future as the industry and particular businesses evolve is an ongoing challenge. Understanding and addressing staffing needs for particular certifications and licenses to meet legal or business requirements, conduct business or remain competitive is necessary. Establishing a plan, whether with educational institutions or other sources, to develop a feeder group of entry level candidates perpetuates the building of an experienced and qualified workforce.

Performance evaluations and compensation packages are among additional future project considerations. Six of the ten companies interviewed indicated there were pay differences in their industries for green jobs versus traditional positions. Since green commerce in many industries is relatively new, this could increase within the next few years, especially within key positions. Green jobs provide an opportunity within industries for employees to differentiate themselves. One of the organizations interviewed indicated that for some specialized job positions, once an employee has the experience, the employee can command approximately 15% higher compensation in the industry.

## **CONCLUSION**

The temporary project initiative of executing green jobs transforms inputs, processes, and outputs to achieve strategic goals and objectives (Swanson and Holton, 2001). Green job projects are complex undertakings which require examination, planning, and execution of unique parameters within a constrained time period. The parameters used for measuring the success of a project includes ensuring the project is within the time frame specified, within cost, and accepted by the customer denoting the desired outcomes (Kerzner, 2004). “Central to the problems of improving quality and productivity is the difficulty in translating an organization’s strategic objectives into operational results. Consistent improvement is achieved by combining innovative strategic thinking with effective operational execution” (Griswold & Prenovitz, 1993, p. 5). Project management provides the strategic framework for the execution of green job rollouts including ongoing coordination of strategic execution and project implementation.

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# **EFFECT OF WORK MOTIVATION AND ORGANIZATIONAL CHARACTERISTICS FIT ON APPLICANT ATTRACTION BASED ON PERSON-ORGANIZATION FIT THEORY**

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## **ABSTRACT**

*Person-organization fit (P-O fit) is an important topic that has attracted the attention of both scholars and managers during recent years. P-O fit theory is grounded in interactionist theory and maintains that attitudes and behaviors are a consequence of the interplay between attributes of the person (P) and characteristics of the organization (O). Most P-O fit researches have focused on discussing the congruence between individual and organizational values. This study applies the concept of supply and demand between organizations and job seekers to explore the match between organizational characteristics and individual's work motivation. In addition, this study tries to explore the effect of work motivation and organization characteristics fit on applicant attraction.*

*An experimental study is conducted to examine the congruence of organizational characteristics and work motivation. The experiment in a 2 (organizational characteristics: Individually-based setting vs. Group-based setting) × 2 (work motivation: intrinsic motivation vs. extrinsic motivation) factorial design is developed. We have no intension to deny that an organization may have Individually-based and Group-based organizational characteristics simultaneously. However, an organization or a department of an organization may tend to be designed and emphasized as Individually-based (or Group-based) organizational characteristics. Regarding the congruence of organizational characteristics and work motivation, if organizations want to attract suitable employees, those organizations should provide the important information (i.e., Individually-based or Group-based organizational characteristics) in recruitment messages. This information may help the job applicants to better understanding the organizations and make the application decision.*

## **INTRODUCTION**

Employee recruitment is a pivotal process in order to attract more potential job seekers to apply (Barber, 1998). However, most organizations' resources and capital have limited. In order to reduce the unnecessary waste of human capital, organizations should attract more appropriate rather than potential job seekers to apply.

Person-organization fit (P-O fit) is a topic that has attracted the attention of both scholars and managers during recent years. P-O fit has been defined in a variety of ways including value congruence, goal congruence, needs-supplies fit, and demands-abilities fit (Kristof, 1996; Verquer, Beehr & Wagner, 2003). Value congruence, the most frequently assessed dimension of P-O fit, involves the similarity between organizational values and those of the organization's

employees (e.g., Boxx, Odom, & Dunn, 1991; Kristof-Brown, Zimmerman, & Johnson, 2005). Needs-supplies fit may be the most important type of fit from an employee perspective (Cable & DeRue, 2002). Thus, differentiating from most studies which frequently explored value congruence, this study mainly investigates needs-supplies fit which were discussed by few studies (e.g., Turban & Keon, 1993).

The roots of P-O fit research can be traced back to Schneider's (1987) Attraction-Selection-Attrition (ASA) framework. According to ASA framework, organizations engage in specific behaviors that are designed to attract applicants who will perform effectively and interact well with others within their organization. For example, organizations may present organizational characteristics to call for individuals "who can suit with the particular situation." And work motivation can directly express what individuals work for and needs for. Thus, this study chooses job seekers' work motivation to explore the application of needs and supplies fit. Some recruitment studies assert that recruitment process should belong to two-way activity (Chatman, 1989; Bretz & Judge, 1994). If an employer can provide the organizational characteristics to fit in with job seekers' work motivation, job seekers will be attracted and apply to the employer.

Thus, the purpose of this study is to investigate how the fit between individuals work motivation and organization characteristics influences applicant attraction to organizations. And we expect to identify the link between applicants' work motivation and organizational characteristics and to provide employers samples on designing recruitment messages which can attract more appropriate job seekers to apply.

## **LITERATURE REVIEW**

### **Work Motivation**

The different areas of psychology define and treat the concept of motivation in vastly different ways (Miner, 2006). The basic of motivation is to determine what causes certain behavior to happen and why people are doing what they are doing (Reeve, 1997). Pinder (1998) further described work motivation as: "a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behavior, and to determine its form, direction, intensity, and duration". Furthermore, Locke and Latham (2004) deeply defined work motivation as the direction (choice), intensity (effort), and duration (persistence) of work behavior. This definition recognizes the influence on work-related behavior of both environmental forces (e.g. organizational reward systems) and forces inherent in the person (e.g. individual needs and motives).

### **Attraction-Selection-Attrition (ASA) Framework**

One of the P-O fit models that have initiated much empirical research in the past decade is Schneider's attraction-selection-attrition (ASA) framework which develops on the basis of interactionist ideology (Schneider, 1987). This framework describes the mechanism of mutual adaptation between the person and the organization. People are not randomly assigned to organizations, but they select themselves into and out of organization.

### **Person and Organization Fit (P-O FIT)**

Kristof (1996) defined P-O fit as "the compatibility between people and the organizations in which they work." This definition focuses on fit of the person with the whole organization rather

than a specific job, vocation, or group (Kristof, 1996). It takes into account two types of relationships that may occur between an individual and an organization: The organization and the individual contribute to the fulfillment of needs of the other (i.e., complementary fit) or the organization and the individual share similar characteristics (i.e., supplementary fit). Moreover most researches deeply take complementary fit perspective on exploring value or goal congruence. And complementary fit has been further distinguished according to whether needs are held by the person or environment (Edwards, 1991; Kristof, 1996): (1) the degree to which the needs of the person are fulfilled by intrinsic and extrinsic rewards in the environment is termed needs–supplies fit (French, Caplan & Harrison, 1982; Kristof, 1996); (2) the degree to which needs of the environment are fulfilled by capabilities of the person is called demands–abilities fit, such that environmental needs are reframed as demands imposed on the person (French et al., 1982; Kristof, 1996).

### **Application Attraction**

Applicant attraction is an important antecedent to other recruitment outcomes (Barber, 1998; Carless, 2005). Because it is of the utmost importance that talented applicants with high potential remain in the selection, identifying the factors that increase organizational attractiveness to desirable candidates is a recruitment priority. Applicant attraction may be an important determinant of job acceptance (Rynes & Barber, 1990). Also, the applicant pool may increase if applicants say positive things to other potential employees following their selection experience (Rynes, 1993) or re-apply for jobs with the company in the future. On the basis of the theoretical and practical value of applicant attraction, the present study focuses on applicant attraction, rather than other recruitment outcomes.

## **MODEL DEVELOPMENT**

### **Work Motivation and Organizational Characteristic Fit**

Staw (1986) proposed three systems of organizational change: Individually-based system, Group-based system and Organizationally-based system. And the two of three organizational types adopted in this study are more similar to the organizational characteristics in Taiwan. One represents an environment that encouraged and rewarded individual behavior.

Job seekers with similar needs are attracted to particular organizations and tend to stay in those organizations if their needs are met (Bretz et al., 1989). The features that describe intrinsic work motivation include a focus on needs for individual effort, achievement and competitive disposition; pursuing to work challenge and enjoyment. However, these features are highly congruent with the Individually-based organizational characteristics that work by tapping the desires and goals of individuals (Staw, 1986).

Hypothesis 1a: The higher intrinsic work motivation applicants applying to an organization designed by individually-based will have a higher congruence than those applying to an organization designed by group-based.

Alternatively, the features that describe extrinsic work motivation include a desire for high levels of cooperative disposition, getting other people's praise and recognition. These features are highly congruent with the Group-based organizational characteristics that work by taking advantage of more social selves, using group pressures and loyalty as the means of enforcing desired behavior and dispensing praise for accomplishment (Staw, 1986).

*Hypothesis 1b: The higher extrinsic work motivation applicants applying to an organization designed by group-based will have a higher congruence than those applying to an organization designed by individually-based.*

### **Work Motivation and Organizational Characteristic Fit Affect Application Attraction**

Prior P-O fit studies in the context of recruitment found a positive relationship between P-O fit and applicant attraction (Dineen, Ash & Noe, 2002; Judge & Cable, 1997). Furthermore, some applicant attraction studies (e.g., Kristof-Brown et al., 2005; Chapman et al., 2005) also support that P-O fit is one of relevant predictors of applicant attraction at the pre-hire stage. And theories of need fulfillment (e.g., Rice, McFarlin, Hunt, & Near, 1985) explain the primary mechanism by which needs-supplies fit influence applicant attraction and the attitude to apply (Kristof-Brown, Zimmerman & Johnson, 2005). This study expects that the relationship between organizational characteristics and individual preferences or needs which form from the conception of needs-supplies fit has effect on applicant attraction. As mentioned above, this study generates the following hypothesis.

*Hypothesis 2: Work motivation and organizational characteristics fit positively affect applicant attraction.*

## **METHOD**

### **Sampling Plan**

Participants who have more work experience highly realize that (1) setting for affiliation of the group or (2) setting for individual's self is more important to work in the organization. And these two settings are organizational characteristics which were manipulated in the experimental design. However the two setting can be found from the characteristics of high technology business simultaneously. Hence, we select the persons who are working in the high technology business as this study's subjects. And the population is from Southern Taiwan Science Park (STSP).

### **Experiment Design**

This research attempts to identify what an employer should send out organizational information in order to attract to job seekers who have higher intrinsic work motivation (or extrinsic work motivation), while those particular job seekers receive the employer's recruitment message. Thus, the experimental design used here manipulates organizational characteristics. Work motivation and applicant attraction are directly measured. An experiment in a 2 (organizational characteristics: Individually-based setting vs. Group-based setting)  $\times$  2 (work motivation: intrinsic motivation vs. extrinsic motivation) between-subjects design was developed to test P-O fit.

### **Measures**

*Work Motivation* This study adapts Work Preference Inventory (WPI) scale that was developed by Amabile (1994) to measure individual's work motivation. WPI scale contains 30 items which were divided into basic primary dimensions: intrinsic motivation and extrinsic motivation. All items are measured on a 6-point Likert type scale ranging from 1 (completely disagree) to 5 (completely agree).

*Person-Organization Fit* To measure P-O fit, we modify three items from studies by Cable and DeRue (2002). All items are measured on a 7-point Likert type scale ranging from 1 (completely disagree) to 7 (completely agree). The higher scores indicated that subjects perceived themselves have more fit with the organization.

*Organizational Attraction* We use five items to measure the applicant attraction to the organization. These items were adapted from previous studies on recruitment (Turban & Keon, 1993; Cable & Judge, 1994, 1997; Hu, Su & Chen, 2007). All items are measured on a 5-point Likert type scale ranging from 1 (completely disagree) to 5 (completely agree).

*Control Variable* Recruiting researchers have investigated gender differences in job attribute preferences and applicant attraction (Chapman et al., 2005). A potential rationale for these gender differences is the influence of role conflict (Wiersma, 1990). Therefore, differences between male and female respondent could be included in the study.

### **Data Analysis Methods**

According to the research purpose of this study and the need for test hypotheses, this study uses descriptive statistics, reliability analysis, one-way ANOVA, and regression analysis for the analysis technique of this study.

### **Expected Contributions**

To differ with most researches which focused on exploring value congruence, this study adopts the conception of supply and demand view on investigating needs-supplies fit which were discussed by few studies. Additionally, we expect to provide some ideas to employers who want to recruit job seekers with the particular type of work motivation. They can present the specific characteristics which have higher congruence with the particular individuals.

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# **A BASIS FOR ASSERTING THE EFFICACY OF ALTERNATIVE ABILITIES IN PERSONNEL SELECTION**

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## **ABSTRACT**

*Proponents of alternative abilities (sometimes referred to as multiple intelligences) have had little success convincing personnel psychologists that these cognitive measures should be used in personnel selection. These proponents have failed to demonstrate to personnel psychology's satisfaction that these alternative cognitive abilities add much to the predictive validity of general mental ability (i.e., psychometric g). I suggest a different ruse de guerre in demonstrating the efficacy of these measures. I argue that, perhaps surprisingly, research in both personnel and cognitive psychology actually converge on the idea that job knowledge is the critical variable in predicting job performance, even more important than general mental ability. I further argue that these various alternative abilities can be regarded as a more sophisticated articulation of the specific structure of this otherwise loose construct of job knowledge and that successful performance relies on the development of expertise in job knowledge domains. The implications for better understanding job knowledge and its role in personnel selection are discussed.*

## **INTRODUCTION**

In the world of personnel selection, as well as that of educational selection, general mental ability (GMA, also known as psychometric *g*) reigns supreme as the psychological measure of choice. Compared to other psychological measures such as motivation, personality, as well as other measures of cognitive ability, GMA has been shown to have the highest levels of predictive validity for both training and job performance (Hunter & Hunter, 1984; Ree & Earles, 1991, 1994; Schmidt & Hunter, 1998). Not only do other measures of ability fail to stand up to GMA, but they generally fail to add significant predictive power (i.e., incremental validity) beyond that of the general factor (Gottfredson, 1986; Ree & Earles, 1992; Schmidt, Ones & Hunter, 1992).

The ubiquity and efficacy of the general factor is to some extent a mathematical consequence of the intercorrelation among cognitive tests. People who do well on one type of cognitive ability test tend to do well on other types, too (Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg & Urbina, 1996). This results in positive correlations among the various cognitive measures. Wilks (1938) demonstrated that the presence of such a positive manifold (i.e., positive intercorrelations) makes the general factor more or less inevitable as one increases the number of tests in the battery. In the mid 1930s, an educational researcher brought some student data from tests of cognitive ability to Wilks and told him of a surprising finding. No matter how the researcher weighted the measures in a test battery, the scores resulting from the application of those weights seemed to rank order students the same. The weights made no

significant difference on the students' rankings. After examining the mathematics behind this surprising result, Wilks presented a theorem that says, among other things, that when this positive manifold is present, as the number of tests is increased, the correlation between any two arbitrary linear composites for the battery converges to one. In other words, as Wainer (1976) put it, there comes a point very rapidly where "it don't make no never mind" how the individual components are weighted. You can weight the items so that they all load on one general factor, and there is no way to dispute that weighting mathematically. That means that when the conditions for Wilks's theorem are present, there is no way to argue mathematically against the general factor. Ironically, the more one tries to add a variety of ability measures to the battery, the more certain Wilks's theorem and, therefore, GMA are to manifest themselves.

Despite the apparent mathematical inevitability of GMA in cognitive test batteries, many researchers believe that there are other important cognitive factors that could serve as useful determinants of job performance (e.g., Gardner, 1983; Neisser, 1976; Sternberg, 1985; Wagner, 1985). Carroll (1992) points out that even though the first principal component, GMA, accounts for the largest proportion of the variance in a test battery, it probably only accounts for not much more than half. This means that there is potentially plenty of room for improvement. Unfortunately, in the eyes of many personnel psychologists, this potential has yet to be realized. The most promising work, at least theoretically, has been in the field of cognitive psychology. Researchers such as Kyllonen and Christal (1989, 1990) worked on developing cognitive components tests into personnel selection batteries. As opposed to traditional tests, which measure alternative abilities, these tests attempt to measure internal cognitive structures and processes, such as working memory, declarative and procedural knowledge, and information processing speed (Anderson, 1983). While the question of whether or not these tests can add significantly to the predictive validity of GMA remains open, it has been shown that they themselves produce a positive manifold comparable to that of traditional ability tests. This in turn produces a first principle component that accounts for more than half the variance in the battery, just like GMA in traditional tests. What is more, that general factor correlates between .95 and .994 with GMA (Stauffer, Ree & Carretta, 1996). The implication is that these cognitive components tests appear to be measuring largely what traditional tests measure, that is, GMA.

### **JOB KNOWLEDGE TRUMPS GMA**

Despite the fact that many personnel psychologists do not hold out much hope for new cognitive tests that can add significant predictive power to GMA (i.e., incremental validity), there remains good reason to believe that certain alternative abilities (e.g., Gardner, 1983, and Sternberg, 1985) could actually do better than GMA. The key lies in the often-overlooked fact that the vaunted predictive power of GMA is conditional. Schmidt and Hunter (1998) note this condition in their conclusion that GMA is the most valid predictor of training and job performance for applicants who are "*without previous experience in the job*" (p. 262, emphasis added). That is, when job applicants are relatively homogenous in terms of job experience and job knowledge, GMA predicts best who will gain knowledge more rapidly and therefore be more successful in the job. But when applicants differ in terms of experience and job knowledge, GMA loses much of its power to predict. What is often forgotten in discussions of the efficacy of GMA is that ability testing generally occurs at the entry level, where all applicants are equally knowledgeable (that is to say, equally unknowing). Therefore GMA's primacy does not easily extend into many staffing situations where job candidates are heterogeneous with respect to experience and job

knowledge.

Figure 1 below illustrates how GMA is thought to translate into performance (Hunter, 1986; Schmidt, Hunter, Outerbridge, & Goff, 1986).

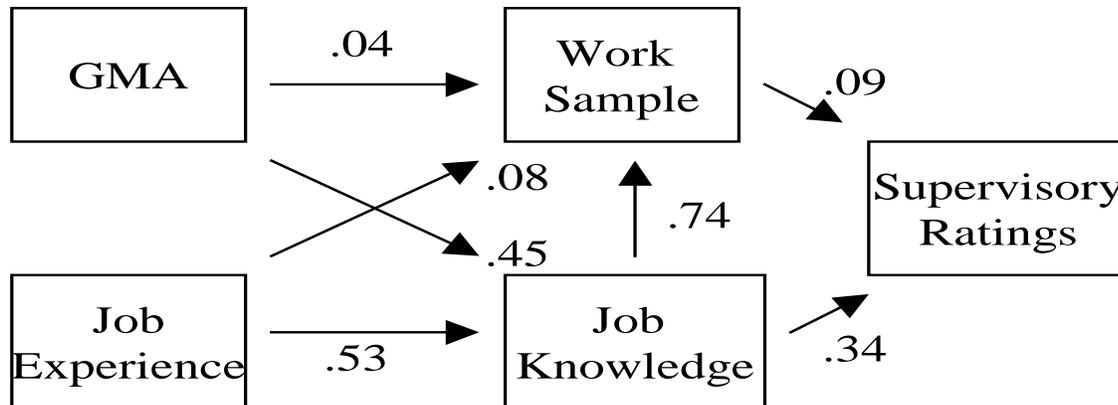


Figure 1

The key is job knowledge. At the entry level, candidates are more or less homogeneous in experience and job knowledge. So, as one would expect, the higher a candidate is on GMA, the faster and more effectively he or she would be expected to gain job knowledge. That translates into successful task performance, as captured in the model by work sample tests, and higher supervisory ratings. When candidates are not equal in terms of their experience and knowledge in a particular area, those differences matter more than GMA.

For certain personnel psychologists, this model dovetails well with Cattell's (1971) investment theory of intelligence (e.g., Schmidt, 1994). In the investment theory of intelligence, people take their GMA endowment and invest it in the accumulation of knowledge in specific knowledge content areas. Cattell's (1971) investment theory claims that there are two major (oblique) second-order factors that show up when the principle components from cognitive tests are rotated. These two correlated factors are crystallized and fluid intelligence. Fluid intelligence is thought to be the brain's basic reasoning capacity (i.e., a person's initial cognitive endowment). Crystallized intelligence is a set of developed cognitive skills (what I will call foundational knowledge) that is valued in a particular culture. Crystallized intelligence is obtained through the investment of fluid intelligence. People choose which cognitive skills they will invest in, how long they will invest in their development, and the intensity with which they make that investment.

For cognitive psychologists, this idea fits well with theories on the psychology of expertise (Bedard & Chi, 1992; Chi, 1988, 1989; Ericsson, 1994; Gobet, 1998). Theories of expertise would concur to some extent with investment theory but go on in more detail to explain how superior cognitive abilities supervene from this investment. Working in a content area and receiving quality cognitive experiences related to that content area for many years—the typical estimate is about ten years (Anderson, 1983; Gobet, 1998)—people attain expert status. Cognitively this is characterized by a well-developed, well-organized long-term memory. This

well-developed long-term memory contributes significantly to the expert's cognitive efficiency when dealing in that content area, replacing GMA as the key cognitive attribute in determining successful performance within that content area.

A classic example of this comes from Chase and Simon's (1973) extension of DeGroot's (1946, 1978) work with chess novices and chess experts. They found that while the novices and experts they worked with were basically equal in terms of GMA, the experts had a distinct and significant advantage, a cognitive skill apart from GMA that made them much more efficient in solving chess problems. In one set of experiments, novices and experts were shown images of various chessboard configurations for a few seconds. Pieces were arranged on the board in various ways. After viewing a particular configuration, a subject would be asked to reproduce the configuration on a chessboard. While novices struggled trying to remember what individual piece went where, experts called upon their extensive long-term memory to link different pictures to various situations they had memorized. The novices tended to juggle several pieces of information in their short-term memories and soon found themselves unable to recall sufficient information to reproduce the situation reflected in the image. All experts had to do was note the similarity of the configuration to a specific situation, say, the Kolmogorov-Smirnoff move of 1941, draw the specifics from their long-term memory, and reproduce the configuration. Even if the configuration did not precisely correspond to a specific situation the expert had tucked away in long-term memory, it was much easier for the expert to modify a similar situation than it was for the novice to try to retain and process individual pieces of information. The expert had less to juggle in short-term memory. Long-term memory carried most of the workload. A well-developed, well-organized long-term memory serves to improve cognitive efficiency above and beyond a person's GMA. While it is expected that GMA contribute to the speed and efficiency with which expertise is gained, expertise and the resultant cognitive efficiency are still simply a matter of tens of thousands of hours of quality experience in a particular subject-matter area. According to this view, it is possible for a person of lesser GMA to invest in a content area sufficiently to become more cognitively efficient and capable (i.e., more expert) than people of higher GMA who do not invest sufficiently in that content area.

Bedard and Chi (1992) enumerate the major findings of expert-novice research, what they call *invariants of expertise*. First, experts know more than anyone else about their specific subject-matter area or *domain*. Second, experts have a well-developed, well-organized long-term memory that results in cognitive efficiencies. Third, experts perform better than anyone else in problem solving and other tasks in that subject-matter area. Fourth, the advantage experts have is confined to their subject-matter area. That is, being a good problem solver in one area does not make one a good problem solver in another. In fact, it is found that experts demonstrate exceptional problem-solving skills in their subject-matter area but show sloppy problem solving skills in other areas, much like any other novice (Anderson, 1983). For the purposes of personnel selection, we could easily call these the invariants of expert job knowledge. These principles have, for example, been demonstrated in studies of aircrew selection (see, e.g., Zelenski & Carretta, 1995). Important skills such as situational awareness and problem solving, as well as traditional measures of flight performance, were found to be primarily a function of flight experience and had less to do with GMA as experience levels went up. Among novices (i.e., new flight trainees) who undergo the same experience (i.e., the same flight training), GMA correlates more highly with end-of-training flight performance. But as pilots develop in their careers, those

who get more flight experience tend to develop better flight skills.

### **TACIT KNOWLEDGE AS JOB KNOWLEDGE**

It appears then that, rather than being at odds with each other, personnel and cognitive psychology actually converge on the idea that job knowledge is more important than GMA in performance within a specific context. This notion becomes particularly intriguing when we consider the role alternative abilities could play in selection. It has been suggested by personnel psychologists that Sternberg's (1985) constructs of tacit knowledge and practical intelligence are no more than forms of job knowledge (Ree & Earles, 1993; Schmidt, 1994; Schmidt & Hunter, 1993). Interestingly, rather than recognizing the potential for collaboration, they used this revelation to dismiss Sternberg's work and potential contribution as redundant and, therefore, unproductive. In viewing practical intelligence and tacit knowledge as nothing more than job knowledge (or crystallized intelligence), they failed to see how Sternberg's work could be used to better understand how job knowledge operates and how it can be developed. This is indeed unfortunate. The job knowledge construct as presented in selection models is somewhat vague, which is perhaps why cognitive psychologists like Sternberg are reluctant to equate it with tacit knowledge or practical intelligence in general. What cognitive psychology offers is the intriguing idea that this vague notion of job knowledge can be broken down into different types of knowledge. That is, we can conceive of sets of knowledge that represent overlapping content areas beyond that of the visible task domain and declarative facts, which is what traditional job knowledge tests tend to measure (McCloy, Campbell, & Cludneck, 1994). For example, many jobs might require expertise in oral or written communication. Some jobs might require expertise in organizational politics or impression management. Other jobs might require expertise in controlling one's emotions or inspiring others to act. All of these represent content areas beyond that of specific job tasks that are believed to influence job performance. Novel skills and abilities such as emotional intelligence might be viewed as reflecting degrees of expertise in specialized knowledge domains that might manifest themselves in certain ways common to many jobs. Viewed in this way, it may be proposed that accomplishment in much of what we view as alternative abilities may proceed in much the same way as the development in expertise proceeds in more traditional domains. Research in tacit knowledge might provide a link between these alternative abilities and job knowledge.

As part of his triarchic theory of intelligence, Sternberg (1985) differentiates practical and creative intelligence from analytical intelligence, which is the type of intelligence he believes tests of GMA measure. It is practical intelligence that he and his colleagues have approached as primarily knowledge-based (e.g., Sternberg & Wagner, 1993; Sternberg, Wagner, Williams, & Hovarth, 1995; Wagner & Sternberg, 1985). Much of this knowledge, he believes, is not acquired through formal training. Such knowledge is referred to as *tacit*, because it is difficult, if not impossible, to articulate. And because it is difficult to articulate, tacit knowledge is difficult to teach. People are pretty much left on their own to acquire it. While Sternberg sees tacit knowledge as comparable to the procedural knowledge in theories of expertise (Chi, Glaser, & Farr, 1988), he denies that tacit knowledge is, as personnel psychologists claim, simply job knowledge. Job knowledge, he claims, is made up of both declarative and procedural knowledge. Tacit knowledge is procedural. In fact, Sternberg considers tacit knowledge to be a subset of procedural knowledge. While he suggests that job knowledge and tacit knowledge overlap, that is, while some tacit knowledge may fall in line with traditional definitions of job knowledge, he

denies that all tacit knowledge is job knowledge (Sternberg & Grigorenko, 2001). Given that we are here concerned with personnel selection and are not concerned with tacit knowledge that is unimportant to the job, it is difficult to claim that tacit knowledge relevant to the job is not job knowledge. It seems that the only clear distinction that can be made is that tacit knowledge is, by definition, strictly procedural while job knowledge is both procedural and declarative. This means that tacit knowledge relevant to successful job performance may be the procedural component and therefore simply a subset of traditional job knowledge. This notion is reinforced by Sternberg's insistence that tacit knowledge is "more than a set of abstract procedural rules. It is context-specific knowledge about what to do in a given situation or class of situations" (Sternberg & Grigorenko, 2001, p. 5). Given that we are interested in knowledge that leads to successful performance in specific contexts, it is difficult to argue that relevant tacit knowledge is somehow distinct from what we consider to be traditional relevant job knowledge. It may be true that traditional job knowledge tests do not measure this in precisely the same way Sternberg would measure tacit knowledge. But few personnel psychologists, I suspect, would refuse to accept it as part of the overall job knowledge construct.

Sternberg's work in trying to find a place for tacit knowledge in personnel selection has established its predictive validity (Sternberg, 1997; Sternberg & Grigorenko, 2001). It has even demonstrated incremental validity over GMA. What it has not done is consider tacit knowledge in the way personnel psychologists consider job knowledge and demonstrate that it is indeed different from job knowledge. For example, what can be gleaned from a content analysis of the instruments used in that work is a sense that measures of tacit knowledge look very much like tests of job knowledge. Take for example the three items from a tacit knowledge instrument for a school principal reproduced in Sternberg and Grigorenko (2001). Each item presents a real-world problem peculiar to school principals and asks the examinee to rate the desirability of each of ten possible solutions to the problem. The first problem asks the principal how he or she would handle a case of overnight school vandalism that the principal has discovered before students have begun arriving. The second situation has the principal's school receiving a substantial grant, but a condition of the grant places the school in the position of having to spend \$5,000 before they actually get the money. The third problem is that a teacher has written an angry letter full of bad grammar to the superintendent. The superintendent is concerned that a teacher would write such an unprofessional and poorly written letter and has asked the principal to get involved. It is not clear from these three items that this particular tacit knowledge instrument could in any way not be regarded as a job knowledge test for school principals. Even though it could be that this type of knowledge is not explicitly taught, as Sternberg asserts, it is clearly knowledge relevant to the job and, therefore, should be considered job knowledge.

The work on tacit knowledge in the workplace has also failed to consider individual differences in experience among examinees in the way the Hunter-Schmidt model does (see Figure 1 above). Sternberg (1997), for example, cites a study conducted by Eddy (1988) where 631 U.S. Air Force basic trainees were given a tacit knowledge test designed for managers. Eddy correlated the trainees' managerial tacit knowledge scores with their scores on each of the ten subtests of the Armed Services Vocational Aptitude Battery (ASVAB). All but two of the ten correlations were significantly different from zero. Sternberg takes this and the fact that GMA correlates moderately with job knowledge as evidence that tacit knowledge is measuring something different. There are two problems with this interpretation. First, it is not clear why a group of

predominately teenagers should be considered to have any kind of expertise in management. Theirs' are the scores of management novices with little to no experience in the content area, which means that those scores should be more or less random. That in turn means that one should not expect those tacit knowledge scores to correlate with anything, which is precisely what Eddy observed. If they had been given some time in management situations and then tested to see what tacit knowledge they had gained, then we would expect to see differences in GMA translate into differences in job knowledge. But Eddy's study allowed for no time to be spent in a managerial experience, so there was no reason to expect that differences in tacit knowledge corresponding to GMA should emerge. Second, even at that, it may be that GMA better predicts the acquisition of declarative forms of knowledge, and to the extent that traditional job knowledge tests measure declarative knowledge and tacit knowledge tests measure procedural knowledge, it may be true that GMA better predicts traditional job knowledge.

### **A COMMON GROUND**

What Sternberg is basically arguing is that tests of GMA measure primarily analytical intelligence and that there is something more to successful job performance than analytical intelligence. He believes that analytical intelligence plays a major role in predicting successful job performance, but he also believes that tacit knowledge can add significant incremental validity to GMA. And he feels that tacit knowledge is substantially different than traditional job knowledge and that it is not correlated with analytical intelligence. Personnel psychologists argue that tacit knowledge can be considered job knowledge and can be expected to behave as traditional job knowledge behaves with respect to GMA and job performance. They claim that findings that GMA and tacit knowledge are uncorrelated are due to poor research design or statistical artifacts like severe range restriction (Sternberg's samples tend to be Ivy League students who are highly selected on the basis of GMA scores; Ree & Earles, 1993; Schmidt & Hunter, 1993). Despite the seeming animosity of their two positions, there is sufficient common ground between the two views to begin assembling a more comprehensive view of job knowledge.

First of all, as suggested above, the Hunter-Schmidt model (Figure 1), Cattell's investment theory of intelligence (Cattell, 1971), Sternberg's (1985) triarchic theory, particularly its views on practical intelligence and tacit knowledge, and theories on the development of expertise and long-term memory (Anderson, 1983; Chi, et al., 1988; Ericsson, 1994; Gobet & Simon, 1998) all seem to agree that in the vast number of instances in personnel selection where candidates are heterogeneous in terms of their relevant experience, knowledge is the key to predicting successful job performance. The more expert a candidate is in relevant knowledge content areas, the more successful he or she will be. The question that really separates these different views is in their understanding of what this knowledge construct is all about. I believe that the key to bringing these diverse viewpoints closer together and developing a more useful adaptation of the Hunter-Schmidt model is to expand the notion proposed by Sternberg (1998) that all these different abilities and types of knowledge are products of some form of expertise development.

The idea of ability testing providing a snapshot of one's progress in cognitive skill development is one that even proponents of GMA have been offering for decades (Humphreys, 1992). For Sternberg (1998) there is little difference between the snapshot taken by an ability test and one taken by a knowledge or achievement test. Each yields a score that places the examinee on some

point on a novice-expert continuum within a content domain. So even the most basic of ability tests, especially tests of GMA, require some expertise to do well on them. And just as with knowledge, experience in the domain contributes to development of an ability. So one's standing on an ability is nothing more than a reflection of their expertise in a particular domain, which in turn is a function of their experience in that domain. Ability is knowledge for all but the most primitive of cognitive functions. The verbal and quantitative skills, for example, that make up the bulk of tests of GMA actually appraise one's development in these basic verbal and quantitative domains. And because knowledge in these basic verbal and quantitative domains is required for development (i.e., knowledge acquisition) in many other domains, GMA correlates with knowledge scores in those dependent domains. That is, the more expert you are in these requisite foundational domains, the more easily you can acquire knowledge in higher-level, dependent domains. This means that if one could map out the complex hierarchical structure of the most relevant domains that go into the performance of a particular job, one would be expected to find that these basic verbal and quantitative domains represented in a test of GMA would form foundational domains that service many (if not most) of the relevant higher-level domains. But because it is not possible to parse out the primitive cognitive abilities component in GMA from verbal and quantitative domain knowledge, we cannot simply cast GMA as just another knowledge construct or set of knowledge constructs in a modified Hunter-Schmidt model. It does, however, aid in understanding why, for example, some people score highly on verbal ability and not so well on quantitative ability, or vice versa, if we view GMA as being to some extent a measure of expertise in the basic verbal and quantitative domains. Some people invest their primitive endowment in acquiring basic quantitative knowledge. Others invest it in basic verbal knowledge. Others have better quality experiences or spend more time in one domain and not as much in the other. Reframing the Hunter-Schmidt model to reflect these findings from cognitive psychological theories of expertise could help us identify relevant domains and, therefore, jobs in which alternative abilities are more likely to make significant contributions.

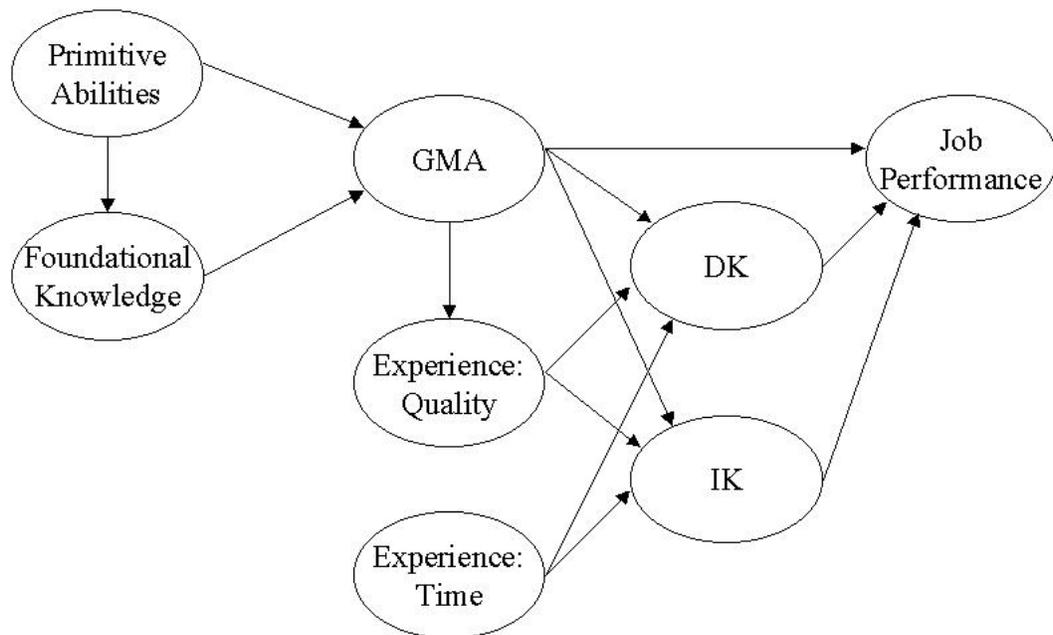


Figure 2

Figure 2 shows the modified Hunter-Schmidt model. It begins by suggesting that tests of GMA measure a combination of innate primitive cognitive abilities and development in certain foundational knowledge domains, primarily basic verbal and quantitative abilities. Because GMA reflects development in the foundational domains resulting from investments of primitive abilities, those abilities cannot be separated from foundational knowledge in GMA scores. So our selection model must use scores that confound primitive abilities with foundational knowledge.

The Hunter-Schmidt job knowledge construct is divided into independent and dependent knowledge to illustrate how certain knowledge domains might retain their relative independence from GMA. To the extent that a knowledge domain can be acquired without the foundational knowledge represented in tests of GMA, it will not be expected to correlate as highly with GMA. Such knowledge is considered independent knowledge (IK). To the extent that a knowledge domain requires this foundational knowledge, it is said to be dependent knowledge (DK). Despite this distinction, no knowledge domain is expected to be uncorrelated with GMA for a couple of reasons. First, GMA cannot separate foundational knowledge from primitive abilities, and primitive abilities are expected to influence knowledge development in any domain, to include foundational knowledge and independent knowledge. Second, foundational knowledge and the success in acquiring it are expected to help a person develop basic learning skills and strategies that will help them acquire knowledge in other domains, even if that knowledge is directly unrelated to the foundational knowledge.

Even though the distinction and operation of independent versus dependent knowledge offers some hope that we can identify knowledge domains representing alternative abilities that will provide significant incremental validity over GMA, they are redolent of the specific abilities-multiple intelligences arguments that have failed to demonstrate incremental validity and, therefore, may not actually be as promising as they seem. But the distinction is fundamentally important. It reframes the question in terms of expertise/knowledge development and, in concert with that perspective, offers a perhaps more straightforward rationale for the expectation that there are job-relevant cognitive abilities not accounted for by those found in tests of GMA. And given that rationale, it might serve to guide analyses of both the job's content and the knowledge required for success toward the discovery of overlooked abilities in the form of knowledge domains. Take for example the alternative ability called emotional intelligence (Mayer & Salovey, 1997). Emotional intelligence is defined as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Sternberg & Kaufman, 1998). Based on this definition, the development of emotional intelligence would be expected to rely very little on foundational knowledge but would be expected to relate to learning skills. It is also expected to relate in important ways to the successful performance of many jobs (Goleman, 1995). It would, therefore, be considered independent knowledge, and depending on the extent to which it forms an important part of a job's success, it could be expected to add more incremental validity than, say, measures of working memory and information processing speed, which, upon reflection, could not realistically be expected to do anything but correlate significantly with either primitive abilities or foundational knowledge.

Whether or not the restructuring of the job knowledge construct and the search for job-relevant domains that do not rely on foundational knowledge actually produces alternative abilities that add significant incremental validity is, of course, an empirical one. Given the lack of success in finding such abilities, it is not clear whether or not such a strategy will prove fruitful. But the possibility is there, and it appears to offer a better rationale for unboweling such abilities in the form of IK domains.

The real basis, however, for asserting the efficacy of alternative abilities when viewed as job-relevant knowledge domains is the pivotal role of the experience construct as the critical mechanism for compensating for, and thereby mitigating the effects of, individual differences in primitive abilities and foundational knowledge. While more sophisticated theories of how expertise is acquired are being debated among cognitive psychologists, Cattell's (1971) investment theory of intelligence will suffice as the bases for explicating the experience mechanism under this modified Hunter-Schmidt model.

As with the job knowledge construct, the model splits the experience construct into two separate dimensions. The first dimension follows traditional notions of experience, which focus simply on the amount of time spent working in a particular field. This is true of both personnel psychology's view of job experience and cognitive psychology's view of expertise. The modified model retains this idea of tenure in a content domain, labeling it *time*. Like the traditional view of experience, it is uncorrelated with GMA but joins with GMA to influence the acquisition of both IK and DK. The second experience dimension, *quality*, is correlated with GMA. Both the set of primitive abilities and foundational knowledge are expected to promote the emergence of environmental opportunities and developmental skills that enhance the quality of one's experience while in the domain. That is, there are qualitative factors that enhance the development of expertise. If two people spend the same amount of time in a domain, the one whose experience includes those qualitative factors is expected to develop more expertise than one whose experience does not. At least some of those qualitative factors are expected to supervene from one's accomplishments in the domains measured by GMA (e.g., better schools, better job and training opportunities, access to the fast track, the improved likelihood that coaches and mentors will take that person under their wings). So rather than simply a function of how long one has been working in a domain, acquisition of expertise is regarded as a function of the combination of time and the quality of the experience during that time.

It is the individual differences in the way people choose to invest their GMA, the differences in the quality and tenure of the experiences they have, and the relevance of the resulting expertise relative to GMA that mitigates the relationship between GMA and job performance. To the extent that the job relies on IK and higher-level DK, GMA will exert a smaller influence on knowledge acquisition. In terms of building a hierarchy of knowledge when developing expertise in different job-relevant domains, the higher up the domain, the more indirectly related it is to GMA. For example, it is recognized that as one moves up in the managerial ranks, successful performance relies less on basic technical skills and more on conceptual skills. Whereas a broad range of technical skills rely more on a smaller set of foundational skills, conceptual skills are less likely to rely on GMA and will require expertise in more diverse and more novel knowledge domains.

Additionally, within both IK and DK, there exists declarative and procedural knowledge as well as explicit and tacit knowledge. If it is true that traditional job knowledge tests measure predominately explicit, declarative knowledge, then we can expect to find incremental validity in fuller measures of job knowledge. Because tacit knowledge, which is considered to be predominately implicit and procedural, is not dependent on foundational knowledge, it forms a substantial part of the set of the IK domains. So rather than asserting the efficacy of tacit knowledge on the basis of its distinctness from GMA and traditional job knowledge, tacit knowledge can be held up as a set of relevant job knowledge domains, the mastery of which is relatively independent of one's foundational knowledge but yet crucial for successful job performance.

Framing tacit knowledge in this way frees proponents from having to identify what knowledge properly qualifies as tacit knowledge and that the (potentially) thousands or more peculiar knowledge domains that could be labeled "tacit" should all be considered to share the identical same relational properties vis-à-vis other constructs like GMA. For instance, if one tacit knowledge test for one occupation is shown to correlate nearly zero with GMA, it is still difficult to assert than any other tacit knowledge test (let alone all of them) would be expected to do the same. Measures of tacit knowledge are job specific. They are not like emotional intelligence, or even GMA, the measures of which can be used for pretty much any job. Measures of tacit knowledge are highly job specific. This does not make them bad measures. In fact, they are expected to be quite useful under this model. It is just not useful to appeal to soi-disant universal properties that are supposed to belong to all tacit knowledge measures. Such universal properties would be very difficult to establish. Instead, particular measures of tacit knowledge would be treated as any other job knowledge measure. A content analysis would demonstrate that the test does in fact measure relevant aspects of the job in question. The one difference would be that tacit knowledge measures would behave as measures of IK domains and, therefore, would be expected to add more to the prediction of job performance than would the more traditional measures representing the DK domains.

Again, tacit knowledge's efficacy would be based not in its appeal to general, content-free characteristics of all tacit knowledge measures. Its efficacy would be found in its content specific nature for the particular job or job families under consideration. We cannot simply make the claim that a particular job knowledge measure is measuring tacit knowledge, therefore, it is expected to possess greater predictive power. Its independence must be established within the context of the job for which it claims to be relevant. Tacit knowledge does not refer to its own general knowledge domain comparable to those of alternative abilities like emotional or political intelligence. Tacit knowledge refers to thousands (if not millions) of specific knowledge domains that do not generalize across job families but, rather, apply narrowly and specifically to at most a small number of jobs.

## **PROPOSITIONS**

The modified model suggests a number of propositions. First of all, the model essentially views the structure of tests of GMA as Cattell (1971) did in his investment theory of intelligence, with primitive abilities corresponding to Cattell's fluid intelligence and foundational knowledge corresponding to his crystallized intelligence. The difference is in the perspective. That is, the modified Hunter-Schmidt model casts off the term "intelligences" and all the baggage that goes

with it in favor of notion that these skills represent various knowledge domains. But the distinction made by the terms "fluid" and "crystallized" intelligences is important for the understanding of how GMA translates into alternative abilities, here conceptualized as specific knowledge domains. To the extent that a job-relevant knowledge domain relies on foundational knowledge, it will be more highly correlated with GMA.

*Proposition 1: DK will correlate more highly with GMA than will IK.*

The knowledge one develops is a function of both the time he or she spends in the domain and the quality of that experience. Time will be independent of GMA, but quality will be influenced by it. Therefore, quality will mediate the effects of GMA on both DK and IK.

*Proposition 2: Quality of experience will correlate positively with GMA. Time will not correlate with GMA.*

*Proposition 3: Quality will mediate the relationship between GMA and both IK and DK.*

Next, the effects of experience on knowledge acquisition in terms of both time and quality will be positive. The more time one spends in the domain, the more knowledge he or she is expected to acquire. Similarly, the better the experience, the more knowledge acquired. As people become more heterogeneous in their experience, the less effect GMA will have. Experience will have the greater effect on knowledge development. However, to the extent that GMA does still exert some influence, it will have a greater impact on the acquisition of DK.

*Proposition 4: Time will have a direct positive effect on both DK and IK. Quality will have a direct positive effect on both DK and IK.*

*Proposition 5: The direct effect of experience (time and quality combined) on DK and IK will be greater than that of GMA.*

*Proposition 6: The direct effect of GMA will be stronger for DK than IK.*

Finally, keeping in mind that DK and IK indicate knowledge domains that are job relevant, the development of DK and IK lead to better job performance. GMA and experience combine to improve DK and IK. This is how GMA and experience translate into better job performance. Whereas experience's effect on job performance is manifested entirely through job knowledge, GMA still has some, but not much, influence on job performance. This, of course, assumes that DK and IK represent exhaustive sets of job-relevant knowledge domains, the identification and measurement of which may not actually be achieved in practice.

*Proposition 7: DK and IK will mediate the relationship between GMA and job performance.*

*Proposition 8: DK and IK will mediate the relationship between GMA and job performance.*

*Proposition 9: The direct effects of DK and IK on job performance will be stronger than that of GMA.*

## **CONCLUSION**

The basis for asserting the efficacy of alternative abilities lies in their conceptualization not as representing cognitive processes but as knowledge domains, the mastery of which are essential to job performance but have heretofore gone unrecognized. It is well known and accepted by both

proponents and opponents of what Sternberg and Wagner (1992) called the *g*-ocentric view of the world (i.e., the dominance of psychometric *g* or GMA) that when people are homogeneous in terms of their experience and job knowledge, GMA loses its predictive power. Most selection situations are of this type, and job knowledge is the key to predicting job performance in this case. GMA's influence is mitigated by experience, exerting its influence indirectly through factors that affect the quality of the experience and the extent to which foundational knowledge is related to knowledge acquisition in higher level domains. As demonstrated in novice-expert research, individual differences in experience in relevant domains can eventually nullify individual differences in GMA as important determinants of job performance. It is this mechanism that I think provides the best basis for asserting the efficacy of alternative abilities. Individual differences in an alternative ability are actually individual differences in mastery or expertise in a knowledge domain and arise primarily from individual differences in the quality and amount of experience one has in that domain. To the extent that that domain is relevant to the job, those individual differences in expertise translate into related individual differences in job performance.

The primary implication for management is that concerted efforts must be made to study and try to understand what knowledge domains are important for successful job performance and of what those knowledge domains consist. Part of the reason standardized tests of GMA, as well as other psychological tests such as personality inventories, have enjoyed such widespread use is that they can be used off the shelf in any number of jobs without a lot of expensive, time-consuming job analysis. But, again, management must keep in mind the superior predictive validity of GMA is conditional. When people are heterogeneous in their experience and job knowledge, those things are much better determinants of who will succeed than is GMA. What the model presented in this paper provides is a way for alternative abilities to be considered as viable predictors of job performance, when viewed as specialized and potentially job-relevant knowledge domains. That means that jobs must be studied more carefully to discern what skills and abilities might be important. Managers must think beyond the immediate task structure, which is what extant tests of job knowledge seem to be measuring, and explore alternative knowledge domains.

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# INFLUENCE OF PATERNALISTIC LEADERSHIP ON ORGANIZATIONAL ETHICAL CLIMATE

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## ABSTRACT

*Different ethical climates result in different organizational outcome. For example, Myint (2006) indicated that benevolent and principle ethical climates may enhance overall organizational commitment. Leaders' behaviors play the essential roles to influence and shape the ethical climates of organizations. The content and style of leadership and practical policies are influenced by the culture, while Chinese society is different from Western society in cultural values. In terms of the Chinese business organizational leadership: The clear and obvious character of top managers in Chinese business organizations also called paternalistic leadership (PL). Prior studies regarding the relationship between paternalistic leadership and ethical climate have focused on the discussion of their overall relationship. However, the existing literature lacks for discussions of the sub-dimension relationships between paternalistic leadership and ethical climate.*

*This study argues that different paternalistic leader behaviors may lead to different type of ethical climates. Thus, this study tries to explore the sub-dimension relationships between paternalistic leadership (i.e., authoritarian leadership, benevolent leadership, and moral leadership) and ethical climate (i.e., egoism climate, benevolence climate and principle climate). The results of this study clarifying our current knowledge of the influences of paternalistic leadership on ethical climate can be useful in guiding efforts intended to enhance the usefulness of organizational training programs and recruiting or promoting activities for subsequent leaders.*

## INTRODUCTION

Leadership is about the leader's ability to mobilize followers towards a particular goal. Founders of organizations establish the initial culture of their organizations (e.g., Schein, 1992; Schneider, 1987; Schneider, Goldstein, & Smith, 1995), and founders and subsequent leaders continue to influence the organizational culture (e.g., Thompson & Luthans, 1990; Schein, 1992; Yukl, 2002). The development of leadership theories has been based on the values of Western society. However, the leadership is imbricated in culture as a special phenomenon (Hofstede, 1980). The content and style of leadership and practical policies are influenced by the culture.

The philosophy and practices of management in Chinese business organizations come to the foreground among many researchers, (Redding, 1990; Whitley, 1992; Cheng, 2003) on the preliminary investigation. In terms of the leadership: The clear and obvious character of top managers in Chinese business organizations also called paternalistic leadership (hereinafter referred to as PL). PL as a style that combines strong discipline and authority with fatherly

benevolence and moral integrity couched in a personal atmosphere (Westwood & Chan, 1992; Farh & Cheng, 2000). The dimensions of PL and its style not only appear in the family enterprises but also are found in the non-family enterprises and government organizations in Asia (Pay, 1981, 1985).

One of the important organizational-specific factors influencing perceptions of the ethical climate is leader behaviors since leaders are seen responsible for inspiring moral values and ethical standards in their subordinates (Dickson et al., 2001; Trevino et al., 1998). The “climate” of an organization leads the development of each staff member, the influence of which is widespread. For example, when the low climate of an organization comes, all members will be hauntingly influenced and in low spirit, the attitudes all staff members assume will not be active when an organizations does not properly runs.

According to previous research, the exploration about the PL and ethical climate, has been under the overall constructed relationship without considering sub-dimensional relation between these two constructs mostly, and the discussion relating to ethical climate are partially insufficient. With this in mind, further investigation of the relationship between paternalistic leadership and ethical climate associated with it would be an appropriate step toward gaining a better understanding.

The purpose of this study is to explore how the PL and ethical climates relate to each other. Because different ethical climate result in different outcome of organizations on the contrary. For example, a self-interest ethical climate has a significant negative influence on work satisfaction. Strategies that organizations may use to diminish such self-centered concerns include ethics audits and the use of personal moral development level as selection and promotion criteria. (Elci and Alpkın, 2008).

In other word, we can chose leaders or develop training programs for leaders so that correspond to we wanted. This study could help fill the gap in the existing antecedents of ethical climate literature. And the results of this study are helpful for senior managers in companies regarding the issues with leadership.

## **LITERATURE REVIEW**

### **Paternalistic Leadership**

Paternalism can be analyzed with respect to the parental relations or organizational level relations. Paternalistic leadership (PL) is the prevalent leadership style in Chinese business organizations. With an approach similar to patriarchy, PL entails an evident and powerful authority that shows consideration for subordinates with moral leadership (Cheng et al., 2004). PL has three specific dimensions, i.e., Authoritative, Benevolent and Moral leadership.

While Benevolence and Moral leadership refer to the warm consideration of the subordinates and exhibition of moralistic leadership activities respectively, Authoritarianism entails a stringent control and power play in the leader-follower relationship (Chen, et al., 2007).

## **Organizational Ethical Climate**

Ethical climate has been defined as “the prevailing perceptions of typical organizational practices and procedures that have ethical content (Victor and Cullen, 1988).” Due to differences in individuals’ positions, work groups, and employment histories, perceptions of organizational climate may vary within the organization (Victor & Cullen, 1988; Schwepker, 2001). Thus, it can also be described as a type of work climate that reflects organizational policies, procedures, and practices that have moral consequences (Mulki et al., 2007)

Organizational leaders play a role in shaping ethical climate by both stating and implementing ethical policies and practices (Grojean et al., 2004). Since the loci of analysis often combine in unique ways for different organizations (Cullen, Victor, & Bronson, 1993), researchers (e.g., Cullen, Parboteeah, & Victor, 2003; Joseph & Deshpande, 1997) often develop hypotheses using the three basic criteria of moral judgment: egoistic, benevolent, and principled.

*Egoism Climate.* An egoistic climate is emphasized on maximizing self-interest (Cullen et al., 2003).

*Benevolence Climate.* Benevolence is primarily based on concern for others (Victor and Cullen, 1987; 1988).

*Principle Climate.* Principled climates are manifested through the application of organizational and plant rules and codes of conduct (Martin and Cullen, 2006).

## **MODEL DEVELOPMENT**

### **Authoritative Leadership And Egoism Climate**

The authoritative leader may behave four kinds of behavior as follows: (1) autocratic style (2) debasing behavior (3) Image building (4) didactic behavior; and the subordinate reacted by compliance, obedience, fear, awe and shame (Cheng, 1998). Therefore, authoritative leaders use of the leader's legal right and always have others do things on his way without considering the employees volitions; in other words, that is to demand and rule employees with his own standard in order to take benefits for himself.

However, at same time such an approach of management ignores the individual demand of a subordinate and his feelings; subordinate would be blamed or punished when violating rules. In order to avoid mistakes, subordinate would rather finished his own assignment than get involved in helping his coworkers.

In other words, egoism climates promote self-interested behaviors, which encourage employees to be committed to their own interests, and not to their coworkers or the organization (Cullen et al., 2003). In the long-run, the organization has gradually become a self-interest organization. According to the descriptions above, the following hypothesis can be stated:

*Hypothesis 1: There is a positive relation between authoritative leadership and egoism climate.*

### **Benevolence Leadership and Benevolence Climate**

Benevolent leadership has two features as follows: (1) Individualized care: involves not only the magnanimous work but also the private questions including looking after the family support, and an emergency help; besides, take the long-term employment for old, loyal staff. (2) Avoid embarrassing subordinates in public: When they make mistakes, and even protect subordinates who make grave errors. For show below average of subordinates than formally, and leaders should continue to their subordinates whose performance are less well than average. Even subordinates should be punished privately (Cheng, 1998).

As mention above, subordinates was concerned by leaders and felt that positive experiences and reputation of the organization were the overriding factors leading them to trust an organization. Hence, they would see the organization as his part. One specific behavior that subordinates pay close attention to the organization shares information with third parties. In addition, subordinates felt good relationship management was important as well as personal contacts.

*Hypothesis 2: There is a positive relation between benevolent leadership and benevolent climate.*

### **Moral Leadership And Principle Climate**

The moral cultivation of the leadership is a critical point in Chinese organizations. The authoritative and benevolent behaviors of a leader should supported by the nobility of his morality; set an example by his own acts, be able to serve the public without thinking of advantage to himself.

Go further, in this ethical climate, its makes employees to observe the principle and rule of operation strictly and understand the directions and policies of organization. For operating smoothly, a leader focused on an organization's disciplines but less on his interaction with subordinates. All things have to operate according to the principles, and basic training is absolutely essential. They regard the disciplines as essential of his life. Thus, this leadership style contributes to lawful subordinates.

*Hypothesis 3: There is a positive relation between moral leadership and principle climate.*

### **Authoritative Leadership And Benevolent Climate**

Authoritative leaders adopt autocratic style, unwillingly empower, only exist the single way of operation between groups, lack of communication channel of parallelism in groups, and disadvantage interaction for each member. Moreover, a leader conceals information for subordinates, there is a poor communication between leader and subordinate (Feng, and Cheng, 2000). Therefore, working under the authoritative leadership, although there are high work spirits, but lack of interaction each other and unintelligible demand of employee. An authoritative leader control, order command, has long distance with subordinate, unconcerned with subordinate, so that unestablish an work environments of warm and caring, and can not create a good organizational ethical and subordinates are more likely to be evasive, competitive, devious, or uncertain in their actions with one another on the contrary (Snowden, 2002). Given above, the negative actives of subordinates have a contrast with positive benevolence leadership.

*Hypothesis 4: There is a negative relation between authoritative leadership and benevolence climate.*

## **METHOD**

### **Sample**

As noted earlier, we can infer to there are some component of PL in Public Sector. Therefore, the subjects in this study were sampled from qualified civil servants in Taiwanese Public Sector, for example, police agency of ministry of the interior, civil servants in township office, city government, and the unit of judiciary in Hualien, Taipei, Kaohsiung, Taoyuan etc. The population for this investigation included all qualified civil servants in Taiwan. This study expects have over 400 respondents.

### **Measurements**

*Paternalistic Leadership.* The paternalistic leadership scale that was developed by Cheng, Chou and Farh (2000) was employed for measurement of this factor. Each of the three subtypes of leadership was measured with the 5 or 6 highest factor-loading items of the factor analysis result of Cheng et al. (2000). Each type was measured using a six-point rating scales, with 1 representing "strongly disagree" to 6 representing "strongly agree".

*Organizational Ethical Climate.* Egoism climate, benevolence climate, and principle climate were adopted from Victor and Cullen (1988) 9-item scale, three items for each climate type. Each type was measured using a seven-point rating scales, with 1 representing "extremely disagree" to 7 representing "extremely agree". Therefore, a low score shows the absence of a climate and a high score shows the presence of a climate.

### **Data Analysis Procedures**

In order to achieve the purposes of this research and test, SPSS software was employed to help us analyze the collected data.

### **Descriptive Data Analysis**

To better understand the characteristics of each variable, descriptive statistic analysis was used to illustrate the means, and standard deviation of each research variable.

### **Linear Regression Analysis**

We used the correlation coefficient and the linear regression analysis to test the hypotheses of this study. If the p-value is between 0.05 and 0.01, the hypothesis is strongly significant. And if the p-value is less than or equal to 0.01, the hypothesis is extremely significant. To analyze the relationship of the linear components between criteria and predictors, we used canonical correlation analysis.

### **Control Variable**

*Tenure in the organization.* Tenure was included based on the assumption that employees have the 6 months at least in the Public Sector Organization. Thus, employees' tenure can be argued to affects the relationship between PL and organizational ethical climate. It was measured in years.

*Demographics.* Demographics including sex (men=1, woman=2), age.

## **EXPECTED CONTRIBUTIONS**

### **Theoretical Implications**

According to previous research, the exploration about the PL and ethical climate has been under the overall constructed relationship without considering sub-dimensional relation between two construct mostly, therefore, this study further explore the relations. The contributions of this study are the following. Farh & Chen (2000) posit the following question: “there are many issues with PL to be clarified; otherwise we do not understand completely the PL and predict its relationship between organizations, groups and employee effectiveness.” Our results provide evidence of leadership style as clear antecedents of organizational ethical climate.

### **Managerial Implications**

As noted earlier, we can know different ethical climate will lead to different outcome of organizations (Elci & Alpan, 2008; Wech et al., 1998). Hence, how to select the best leader and what is the standard are very important. Fullan (2004) asserted Leaders are not born; they are nurtured. Therefore, for training programs: Top manager should depend on organizations circumstances to training a leader who is proper for development of organizations. For recruiting or promoting activities: top manager can choose a person who has possessed of ability of leader and/or focus on the personalities that have resolutely make a decision and confidence, when employees are passive or lax discipline.

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# INFORMATION SYSTEMS DEVELOPMENT PROJECT PERFORMANCE IN THE 21<sup>ST</sup> CENTURY

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## **ABSTRACT**

*This paper presents the results of a 2009 survey of professional IT auditors that explored their perceptions about root psychological and sociological causes of Information Systems (IS) project failure based on the punctuated equilibrium theoretical framework. As predicted by punctuated equilibrium theory, the results of the survey indicate that radical as opposed to incremental organizational changes are more effective in turning around “runaway” projects. The results indicate that IS development project performance is worse in government than in the private sector, and provide support for the continued use of punctuated equilibrium models for research in information systems development project performance.*

## **CURRENT INFORMATION TECHNOLOGY (IT) ISSUES**

The rate of information systems development project failure in the 1980s and 1990s was routinely documented to be above 50%, the larger the development; the more likely it was unsuccessful (SIMPL & NZIER, 2000). A 1994 study of IS development projects in the British public sector estimated that 20% of expenditures were wasted, and a further 30% to 40% did not produce perceivable benefits (Wilcocks, 1994). Also in 1994, the U.S. General Accounting Office reported that spending of more than US\$200 billion in the previous twelve years had led to few meaningful returns. A 1995 study of over 8,000 IS projects by Johnson revealed that only 16% were completed on time and within budget (Johnson, 1995). The U.S. Internal Revenue Service, with an annual computer budget of US\$8 billion, managed “a string of project failures that have cost taxpayers \$50 billion a year [mainly defined as revenue forgone] - roughly as much as the yearly net profit of the entire computer industry” (James, 1997). Collins and Bicknell (1997) estimated that public sector failures in the United Kingdom cost £5 billion. The Wessex Health Authority’s Regional Information Systems Plan was cancelled after more than £43 million had already been spent, with little achieved (Collins et al., 1997). The New Zealand Police abandoned an IS development in 1999, at a cost of more than NZ\$100 million, after years of development provided little more than an e-mail system and a number of terminals run by a 1970s-era mainframe. A study by SIMPL & NZIER (2000) found that the success rate was only 55% for projects under US\$750,000; however, for those with budgets over US\$10 million, no projects were successful. A 2001 U.S. Standish Group survey of IS projects found success rates were as follows: 59% in the retail sector, 32% in the financial sector, 27% in manufacturing, and 18% in government. Overall, the average success rate was 26%. In all, 46% of the projects had

problems, including being over budget, behind schedule, or delivered incomplete. Another 28% failed altogether or were cancelled, and cost overruns averaged nearly 200% (SIMPL & NZIER, 2000).

The beginning of the 21<sup>st</sup> century showed little improvement in IS development project performance. In 2002, the United Kingdom's National Health Service initiated the largest-ever public sector project at an estimated cost of £11 billion. This led to the introduction of new information systems in almost every hospital, but it was still considered a failure (Rainer & Turban, 2009). A benefit payment scheme involving the British Post Office, the Department of Social Security, and the computer company ICL was abandoned after three years and a cost of £300 million (The Economist, 2002). An already obsolete air-traffic support system opened at Swanson in the United Kingdom, in 2002, six years late and £180 million over budget (The Economist, 2002). The Canadian Firearms Program increased from initial estimates of C\$113 million to more than C\$1 billion, an overrun of almost 900% (Auditor, 2002). Georgiadou (2003) found five out of six corporate projects are considered unsuccessful, with one-third cancelled. Of the two-thirds that were not cancelled, price and completion times were almost twice what had originally been planned. Dalcher and Genus (2003) reported US\$150 billion was wasted per annum on information and communications technology failures in the public and private sectors in the United States and US\$140 billion in the European Union. A 2004 Standish Group report estimated a success rate of 29%, with 53% of the projects having problems, and a failure rate of 18%. The Royal Academy of Engineering and the British Computer Society (2004) found that 84% of public sector projects resulted in failure. Vast sums of money, mostly provided by aid agencies, have been spent on health and other information systems in South Africa, on donor-funded IS projects in China, and on World Bank funded projects in Africa. Overwhelmingly, these projects have resulted in varying degrees of failure (Heeks, 2002, 2004). The Standish Group's 2009 report showed only 32% of all projects succeeded, while 44% were problematic and 24% failed. In the United States the best known IS project failures are the FBI Trilogy Project (Knorr, 2005; US GAO, 2006), the California Motor Vehicles Driver Licensing System (Bozman, 1994), and the Denver airport baggage handling system (Montealegre & Keil, 2000).

In summary, the consensus is that 20% to 30% of all IS development projects are perceived as overwhelming failures, while 30% to 60% are partial failures (Collins et al., 1997; Corner & Hinton, 2002; Georgiadou, 2003; Heeks, 2002; Iacovou, 1999; James, 1997).

IS projects that run wildly over time and budget have been labeled "runaways" (Glass, 1998; Mann, 2003). Runaway projects have been said to take on a life of their own without adding business value (Zmud, 1980; DeMarco, 1982; Abdel-Hamid & Madnick, 1991; Johnson, 1995; Mahring & Keil, 2008). One of the main reported causes of "runaway" projects has been said to be management over-commitment to the project (Keil, 1995). The management behavior that underlies runaway projects resembles what IS researchers have called the process of "escalation of commitment to a failing course of action" (Brockner, 1992; Keil, 1995; Schmidt & Calantone, 2002). The reverse of this process has been defined as IS project de-escalation (Keil & Robey, 1999; Montealegre & Keil, 2000; Royer, 2003; Heng et al., 2003). The literature suggests four general types of determinant factors of project commitment: project, psychological, social, and organizational. (For a good review see Newman & Sabherwal, 1996). The tendency for managers to over-commit to an obviously failing project has lent credence to the strategy that it is

sometimes better to radically change the entire organization rather than incrementally improve the immediate project team (Pan et al., 2006a, 2006b). This line of research stems from punctuated equilibrium models that have their roots in biology (Eldredge & Gould, 1972) and are increasingly being proposed in the organizational sciences (e.g., Tushman & Anderson, 1986; Mokyr, 1990; Gersick, 1991).

Most of the research on IS project failure was conducted prior to the age of IT governance practices put in place after the 2002 Sarbanes Oxley Act. IT governance implies a management system in which top management has a much larger influence on IS development project decision-making. The exploratory research presented here responds to the need for an improved understanding of IS project performance in the post-Sarbanes Oxley environment. The primary purpose of this study was to determine the extent to which, given recent increase in IT governance practices, runaway projects continue to be common and to help determine promising new areas for future research in preventative measures. Another purpose of the study was to determine if, as predicted by punctuated equilibrium theory, radical organizational changes are more effective in withdrawing commitment to runaway projects than are incremental measures.

The remainder of the paper is organized as follows. Next is a review of the literature around the social and psychological causes of “runaway” projects. Then we present our research method followed by a discussion of the results conclusions.

### **Social and Psychological Causes of “Runaway” Projects**

Management literature identifies four general types of determinantal factors of project commitment: project, psychological, social, and organizational (Newman & Sabherwal, 1996; Keil & Robey, 1999; Pan et al., 2006; Hirschheim, Klein, & Newman, 1991). Project factors include the costs and benefits as perceived by management. Projects are considered prone to over-commitment when they involve a large potential payoff, when they require a long-term investment before substantial gain, and when setbacks are perceived as temporary surmountable problems (Keil, 1995; Keil, Man & Rai 2000).

Psychological factors cause managers to believe the project will eventually be successful (Brockner, 1992). Contributing causes include the manager's previous experience, the degree to which the manager feels personally responsible for the outcome (Newman & Sabherwal, 1996), and cognitive biases (Tversky & Kahneman, 1981). Other research has suggested that managers may engage in a kind of "self-justification" behavior committing additional resources to a project instead of ending it and admitting that their earlier decisions were flawed (Whyte, 1986; Staw & Ross 1987; Ross & Staw, 1993). This line of research, known as self-justification theory (SJT), is grounded in Festinger's (1957) theory of cognitive dissonance. Prospect theory focuses on the cognitive biases that influence human decision-making under uncertainty. A derivative of this theory is the so-called "sunk cost" effect in which decision makers exhibit a tendency to "throw good money after bad" (Garland & Conlon, 1998). That research suggests that sunk costs may influence decision makers to adopt a negative frame, promoting risk-seeking (IS project escalation) behavior. Approach-avoidance theory suggests there is a natural tendency for management to over-commit to IS projects because of the “completion effect,” which suggests the motivation to achieve a goal increases as an individual gets closer to that goal (Garland & Conlon, 1998; Pan et al., 2006). The completion effect is particularly relevant to software

projects, which frequently exhibit the so-called "90% complete" syndrome (DeMarco, 1982; Garland & Conlon, 1998).

Social factors also promote IS project over-commitment (Newman and Sabherwal, 1996; Pan et al., 2006). Social factors include competitive rivalry with other social groups, the need for external justification, and norms for consistency (Brockner et al., 1979; Hirschhem, Klein, & Newman, 1991). Projects are prone to over-commitment when competitive rivalry exists between the decision-making group and another social group, when external stakeholders believe the project will be successful, or when norms of behavior favor persistence (Ross & Staw, 1993). One social determinant of commitment is "the desire not to lose face or credibility with others" (Staw & Ross 1987). The concept of "face saving" is grounded in self-justification theory (Whyte, 1986; Staw & Ross, 1987; Ross & Staw, 1993) and is discussed in the IS project de-escalation literature (Montealegre & Keil, 2000).

Organizational factors in project over-commitment include the structural and political factors that form the "ecosystem" of a project. Information systems researchers (e.g., Keil, Mann & Rai, 2000) have referred to several other organizational factors that may affect commitment to an IS project: top management's knowledge of information technology (Vitale et al., 1986), information intensity of the organization's value chain (Johnston & Carrico, 1988), and the maturity of the IS function (Sabherwal & King, 1992). Other organizational factors identified in the literature include top management support for the project, administrative inertia in the organization, the extent of project institutionalization, and the extent to which it is perceived as strategic (Johnston & Carrico, 1988).

More recent work on IT project de-escalation suggests projects may be resistant to de-escalation because long periods of organizational "equilibrium" periods are difficult to disrupt because of the constancy of the "deep structure" of the organization (Gersick, 1991; Pan et al., 2006; Orlikowski, 1993). As a result, organizations may be unable to change substantially unless forced by a radical organization change or other crisis (Tushman & Romanelli, 1985; Sastry, 1997). In a number of industries, it has been observed that long periods of unsuccessful "incremental" organizational change tend to be interrupted by short periods of radical change called "revolutionary periods" (Abernathy & Utterback, 1978; Utterback & Suarez, 1993). This pattern termed "punctuated equilibrium," was originally identified in the biological sciences (Eldredge & Gould, 1972) and was subsequently adopted in the management literature (e.g., Tushman & Anderson, 1986; Mokyr, 1990). According to punctuated equilibrium theory, organizations tend toward "equilibrium" because of the permanence of the organization's "deep structure." The *deep structure* of an organization consists of its "alliances, associations and co operations with interlocking interests" (Anderson & Tushman, 1990). This analysis complements Tushman and Romanelli's (1985) identification of "performance pressures . . . whether anticipated or actual" as the fundamental agents of organizational reorientation. Tushman, Newman, & Romanelli (1986) described the scenario of an organization falling into serious trouble before responding by replacing its top management as typical. They found "externally recruited executives are more than three times more likely to initiate frame-breaking change than existing executive teams . . . Failures caused by inappropriate deep structures are destined to elude the (misdirected) efforts of current system members to correct them. Unless such failures kill the system, they command increasing attention and raise the likelihood that newcomers will either be attracted or recruited to

help solve the problems. The newcomer has the opportunity to see the system in an entirely different context than incumbent members, and he or she may begin problem solving on a new path" (Tushman, Newman, & Romanelli, 1986).

The preceding review demonstrates the extreme complexity of the study of information system (IS) development project performance. Existing research demonstrates the presence of many important factors that affect such a project. This raises the question of the most important areas for further IS practice research: Should the focus be on the subtleties of the various indirect psychological and social factors mentioned above? Or, is it more practical to concentrate on the practice of project management itself? The answers to these questions are the impetus for this study.

## **RESEARCH METHOD**

In order to address these research questions concerning IS development projects a simple questionnaire was developed to survey IT audit professionals. The design of the survey was based on Dillman's (1978) "total design method." Auditors were selected for the study because they are likely to be more objective than other IS project stakeholders, such as managers directly responsible for problematic projects. The sample was designed to select professional IT auditors who would be most likely to be involved in information systems development. The pool of individuals represented approximately one thousand (1000) Information Systems Audit and Control Association (ISACA) members in the Houston, Texas area. The survey was designed to gather data concerning the perceived frequency of problematic IS development projects, the perceived major sources of problems, and the recommended magnitude of corrective actions. A survey is usually the most cost-effective way of collecting data on a large number of IS projects (Mann, 1996). To get a reasonable response rate, the survey was designed to be completed in less than ten minutes. To ensure the survey questions demanded minimal cognitive effort, questions consisted mostly of paired category choices.

The pool of one thousand auditors (1000) was emailed a link to the survey that was posted on the international ISACA web site. The approximately one hundred (100) respondents were asked to consider projects with which they were familiar that fit the definitions of "problematic," "runaway," and "failed" on the survey form. The survey had five sections: introduction, demographics, project performance, corrective actions, and closing. Please see Appendix A for the actual survey questions. The survey was refined through two iterations of pre-testing.

The demographics of the sample are shown in Tables 1, 2, 3 and Table 12 below. Almost half the respondents reported having more than fifteen years experience, while over 40% reported having more than five years experience. Almost 80% reported having the Certified Information Systems Auditor (CISA) certificate; and, about half reported they had been involved with either a problematic or a runaway project (Table 12).

**Table 1: Length of Participant Professional Experience**

Question #	Category	Responses
3.1	More than one year experience	87%
3.2	More than 15 years	48%
3.3	Between 5 and 15 years	45%

**Table 2: Type of Participant Industry Experience**

Question #	Category	Responses
3.3	Financial Services	22.4 %
	US State Government	4.7 %
	National Government	8.2 %
	Manufacturing	31.8 %
	Trade	14.1 %
	Health Care	10.6 %
	Transportation	8.2 %

**Table 3: Participant Credentials**

Question #	Category	Responses
3.4	CIA (Certified Internal Auditor)	28.6 %
	CISSP (Certified Information Systems Security Professional)	23.4 %
	CISA (Certified Information Systems Auditor)	77.8 %
	PMP (Project Management Professional)	26.9 %

Variables, such as auditor experience, could have affected the results. However, a similar survey of IT auditors showed these variables did not affect overall results (Keil et al., 2000). Thus, to keep the survey brief, we chose not to control for these factors. Furthermore, as was the case in Keil et al. (2000), our method did not allow us to measure non-response bias. To increase the reliability of the survey instrument, three different measures of project performance were operationalized: (1) “failed” projects, (2) “problematic” projects and (3) “runaway” projects. Actual measurement items are shown in Appendix B.

## RESULTS AND DISCUSSION

### Overall Project Performance

The results for overall project performance are shown in Table 4. Significantly more of the respondents reported the overall rate for both problematic and failed projects are above 50%. These high frequencies are corroborated by the fact that 40% of the respondents reported having been involved with a “runaway,” and 60% reported involvement with a “problematic” project (See Table 12). The findings regarding “runaways” reported here appear to contrast sharply with researchers who contend that software project runaways are rare events (Glass, 1997).

### Sources of Project Problems

As can be seen in Tables 6 and 7, the most important sources of problems for both problematic and runaway projects were perceived to be formal attributes of the project team such as size, skills, etc., rather than informal social or psychological attributes of project stakeholders.

### Government Versus Private Sector Performance

Table 8 shows significantly more respondents believed that all three project types - failed, problematic, and runaway - are more likely to occur in government than industry. We argue that this result is consistent with that predicted by punctuated equilibrium theory (the argument is presented as an informal theorem in Table 7).

### The Role of "Collective Belief" in Management Over-Commitment

Another important determinant of management commitment to an IS project has been termed the "collective belief" in the eventual success of the project (Royer, 2002). Our results suggest that government managers seem less confident in their abilities than do private sector executives (See Table 8, question 2.2) and that government is more likely to produce runaways and failures than is the private sector (Table 9, question 3.11). However, these results run counter to that reported in Royer (2002). There it was found that "collective belief" in the eventual success of the project was a primary determinant of management over-commitment.

**Table 4: Perceived Overall Project Performance**

Measurement Construct	Survey Question #	Response Choice	Responses
Project failure rate	2.1	Greater than 50%	62.5%
		Less than 50%	37.5%
Problematic project rate	2.5	Greater than 50%	65.0%
		Less than 50%	35.0%
Problematic projects become runaway	3.5	Greater than 50%	**66%
		Less than 50%	**33%
Rate at which runaways are turned around	3.10	Less than 20%	71.6%
		Greater than 20%	28.4%
Premature project termination rate	3.12	Less than 20%	55.4%
		More than 20%	44.6%

\*\* Indicates that differences in the proportions are not statistically significant

**Table 5: Perceived Causes of Problematic Projects**

<b>Survey Question #</b>	<b>Response Choice</b>	<b>Most likely cause</b>	<b>Least likely cause</b>
2.7	Formal attributes of the project team (size, structure, skills, etc.)	68.0 %	31.7 %
	Formal attributes of the surrounding enterprise (size, structure, skills, etc.)	63%	34 %
	Informal social relationships among the project stakeholders	31.0 %	68.3 %
	Psychology of individual project stakeholders (beliefs, fears, motivations, confidence, etc.)	48 %	50 %

**Corrective Actions, Incremental or Radical?**

Survey section three (corrective actions) was designed in part to measure whether, as predicted by punctuated equilibrium theory, respondents thought it more effective to apply radical (aka “revolutionary”) measures to turn around “runaway” projects than to apply more moderate (aka “incremental”) ones (Gersick, 1991). These results are consistent with the punctuated equilibrium argument presented as an informal theorem in Table 9: for “runaway” projects, question 3.8 (See Table 11) respondents believed it more beneficial to choose the radical action of replacing project management rather than the incremental action, simply educate them. However, for “problematic” projects, the respondents reported the opposite conclusion: that an incremental change (i.e., education) is more beneficial than the more radical change, replacing staff (See Tables 11 and 12). Overall though, our results strongly support the conclusion that project factors are more important than organizational factors in determining project failure or success.

**Corrective Actions, Top Management or Middle Management?**

In all cases, our respondents believed it more beneficial to take corrective action at the project management level than at the top level of management (See Tables 11 and 12). These results suggest the most important causes and remedies for poor project performance have to do more with project management practices than with the structure of the surrounding organization. This does not support the notion that IT governance initiatives introduced by many large organizations early in the 21<sup>st</sup> century have improved performance of IS development projects.

**Risk Aversion in Runaway Projects**

Another purpose of the study is to help managers decide on an appropriate level of risk aversion in “runaway” projects. On survey question 3.12 (See Table 4) respondents reported an insignificant difference between those that believe managers prematurely kill runaway projects less than 20% of the time, and those that believe managers prematurely kill runaway projects

more than 20% of the time. Thus, we speculate that managers actually kill projects prematurely about 20% of the time. How managers feel about this likelihood is important to the

**Table 6: Perceived Causes of Runaway Projects**

	<b>Response Choice</b>	<b>Most likely cause</b>	<b>Least likely cause</b>
Survey Question 3.9	Formal attributes of the project team (size, structure, skills, etc.)	75%	25%
	Formal attributes of the surrounding enterprise (size, structure, skills, etc.)	63%	37%
	Informal social relationships among the project stakeholders	27%	73%
	Psychology of individual project stakeholders (beliefs, fears, motivations, confidence, etc.)	45%	55%

**Table 7: Punctuated Equilibrium: the “Deep Structure” Theorem**

8.1	If an organizational structure is controlled by elected government officials, its “deep structure” is harder to change than that of private industry.
8.2	If the “deep structure” of an organization is relatively harder to change, it will be relatively more likely to produce over-committed projects.
8.3	If management is over-committed to a project, it is more likely to runaway or fail.
8.4	Therefore runaway projects and failed projects should be expected to occur more often in government than in the private sector, all other things equal.

**Table 8: IS Project Performance: Government versus Private Sector**

<b>Measurement construct</b>	<b>Survey Question #</b>	<b>Government Sector</b>	<b>Private Sector</b>
Most likely sector for problematic projects	2.6	71.3 %	28.8%
Most likely sector for failed projects	2.3	78 %	21%
Most confident sector	2.2	11.2 %	89%
Most likely sector for runaway projects	3.11	80.0 %	20.0%

organization's bottom line. For example, suppose management decides to kill any project at the first sign it is escalating. If so, the organization may often kill good projects prematurely, experiencing loss and committing what Keil and his colleagues (Keil et al., 2000) called a "Type 1" error. On the other hand, allowing too many cases of escalation to be continued on the grounds the project may be incorrectly classified (a "Type 2" error) causes loss by wasting valuable resources. These results suggest that managers tend to be too risk-averse to runaway projects. Consequently, we believe managers should include this new information in determining an appropriate balance between Type 1 and Type 2 errors.

## **SUMMARY AND CONCLUSION**

### **Implications for Practice**

In summary, we believe this study's primary contribution to the practice of IS project management is the evidence it provides concerning the prevalence of project over-commitment in both government and private industry in the 21<sup>st</sup> century. The results suggest most large IS projects will exceed their original budgets and timelines by more than 50%, and much more often in government than in private industry. Second, the study provides evidence corroborating Keil et al. (2000) that "runaway" projects occur frequently, and new empirical evidence that they occur more often in government. Furthermore, the study supports other research that suggests "runaway" projects should be treated fundamentally differently from merely problematic projects, in that more radical organizational changes are needed to reduce management commitment ((Pan et al., 2006a, 2006b; Wright & Capps, 2010). In addition, the results imply managers should consider being more aggressive in promptly shutting down projects that show signs of over-commitment before they needlessly waste valuable resources. The results

**Table 9: Punctuated Equilibrium: the Revolutionary Changes Theorem**

9.1	The “deep structure” of an organization consists of more members of top management than of project management.
9.2	The deep structure of an organization is more likely to be changed by a radical (or revolutionary) change than by a more modest (or incremental) change (Gersick, 1991).
9.3	Replacing top management constitutes a more radical organizational change than does educating top management.
9.4	Radical organizational changes are more effective in correcting runaway projects than are incremental changes. (From 8.2, 8.3 and 10.1 – 10.3)

suggest managers prematurely kill escalating projects only about 20% of the time. Finally, the results support the idea that nothing is more important in promoting successful IS development project outcomes than best project management practices.

Our survey respondents consistently rated project management factors more important than top management factors in determining project success. Furthermore they rated formal organizational factors more important than informal social or psychological factors. (See Tables 5 and 6).

These particular results underscore the importance of good monitoring of projects. And as Keil et al. (2000) suggest: “To minimize the problems associated with project escalation, managers would do well to implement early warning systems aimed at detecting escalation as early as possible. One way to minimize budget and schedule escalation is to define the de-escalation trigger points at the outset of the project. In this way, when the cost and schedule begin to approach the predefined trigger points, managers can take steps to de-escalate the project and contain the damage. Another related tactic is defining termination conditions at the outset of the project” (Keil et al., 2000). There is a wealth of information on the best practices in IS software development published by Carnegie Mellon’s Software Engineering Institute (<http://www.sei.cmu.edu/>) and the University of Texas’ software quality institute (<http://lifelong.engr.utexas.edu/sqi/index.cfm>) (See also Wright & Capps, 2008).

To sum up, our study’s data does not support a conclusion that IT governance measures implemented by many large organizations in the early 21<sup>st</sup> century have measurably improved IS development project performance. On the contrary, our results support the Standish Group 2009 report, which indicated that such projects are performing worse than they did in the 20<sup>th</sup> century.

### Implications for Future Research

The most interesting research questions this exploratory study raises are related to why IS development projects “run away” or fail significantly more often in government than in private industry. The results indicate that all three project types - failed, problematic, and runaway - are much more likely to occur in government than industry. Is this because the deep structure of government organizations is more resistant to change than that of the private sector? Such a result would be consistent with that predicted by punctuated equilibrium theory (See Table 7). Other unanswered questions related to punctuated equilibrium theory are whether government projects are more often “over-committed” than those in private industry; and, what are the conditions under which incremental organizational changes are preferable to radical changes? Our results suggest that under certain conditions an incremental change, education, is more beneficial than a more radical change, replacing staff (See Tables 9 and 10). However, for “runaway” projects, question 3.8 (See Table 11), this pattern was reversed: the respondents believed it more beneficial to replace project management staff rather than simply educate them.

Because project failure is a politically sensitive subject, and thus difficult to study empirically, many more in-depth case studies are needed, with an aim of generating an explanatory theory of project escalation and de-escalation cycles (Pan et al., 2006a, 2006b; Wright & Capps, 2010). Our results support the claim others have made that further insights can and will come from punctuated equilibrium theory (Eldredge & Gould, 1972; Tushman & Anderson, 1986; Mokyr, 1990; Gersick, 1991; Wright & Capps, 2010) as well as from other organizational theories (Sutton, 1987; Eisenhardt, 1989; Ancona, 1990; Isabella, 1990; Pettigrew, 1990; Elsbach & Sutton, 1992; Shenhar, 1998; Cule & Robey, 2004).

**Table 10: Correcting Problematic Projects**

Survey Question #	Response Choices	Responses
3.1	Improving top management	39.1%
	Improving project management	60.9%
3.2	Replacing top management	4.3%
	Educating top management	95.7%
3.3	Replacing project management	39.1%
	Educating project management	60.9%

What's more we believe there is a need for the IS audit and academic community to join hands in conducting further pragmatic research. Global surveys of IS auditors concerning the frequency, circumstances and characteristics of problematic IS development projects would be helpful. There are several advantages of relying on IS auditors for this type of research. As reported by Keil et al. (2000) these include: “... IS auditors do not have directly vested interests in project outcomes because their careers are unlikely to be made or broken by a project's success or failure; IS auditors can be expected to report more objectively than managers and other project participants; IS auditors have access to objective data on project performance; and IS auditors

have experience with multiple projects and formal standards for judging projects” (Keil et al., 2000). Unfortunately, the Information Systems Audit and Control Association in recent years has reduced its support for global survey research.

**Table 11: Correcting Runaways Projects**

Survey Question #	Response Choices	Responses
3.6	Improving top management	36.2%
	Improving project management	63.8%
3.7	Replacing top management	18.8%
	Educating top management	81.2%
3.8	Replacing project management	68.1%
	Educating project management	31.9%

The outsourcing literature (See Tiwana & Bush, 2007) also promises to be of help in the study of IS development project performance. The relationship between control practices and the project commitment escalation process is an additional promising area for future research (See Kirsch, 1997; Mahring, 2002; Kirsch, 2004; Tiwana & Bush, 2007). Another area for research would be to go beyond the results of Mahring (2002) and Kirsch (2004) to explore whether the constitution and effectiveness of Information Technology Governance is inversely related to management over-commitment to projects. Specifically, it would be of interest to determine if the organization's ability to adapt control practices to the dynamic nature of complex projects reduces the likelihood of escalation periods. The relationship between over-commitment and the requirements determination process is also a promising one for future research (See Kirsch & Haney, 2006).

### **Limitations of the Study**

Because our research was limited to proxy measurements consisting of the beliefs of self-reported information systems (IS) auditors, the conclusions drawn herein must be interpreted with caution. Admittedly, this method raises the possibility of bias or an error in the data set. It is conceivable auditors are more likely to be assigned to troubled projects and thus their estimates of the frequency of project problems may be biased upward. Conversely, IS auditors may tend to be employed by organizations more aware of the need for good project management. If so, it is possible that IS auditors' estimates of project problems may be biased downward. Further, this study's data may have been more reliable if it had been gathered from specific individual projects.

However, such an approach was not deemed appropriate or necessary for an initial exploratory study. Because the study relied on self-reported information concerning past events, the results are also limited by possible recall bias. However the same research method has been used in similar research (i.e., Keil et al., 2000) and we know of no effective methods for avoiding subject recall bias. Despite these limitations of the methodology, we believe this study contains important contributions to research and practice of information systems development.

**Table 12: Perceived Causes of Problematic Projects**

Survey Question #	Response Choice	% Responses	
3.5	Rate that problematic projects become “runaways”	Greater than 50%  **60%	Less than 50%  **40%
3.12	Premature runaway termination rate	Less than 20%  **57%	Greater than 20%  43%
2.4	Percent involved with a “problematic” projects	Yes?  **60%	No?  **40%
3.4	Percent involved with a “runaway” project	Yes?  38%	No?  62%

\*\* Indicates that differences in the proportions are not statistically significant

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# **FACTORS EXPLAINING ICT DIFFUSION: CASE STUDY OF SELECTED LATIN AMERICAN COUNTRIES**

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## **ABSTRACT**

*In this age of eminent globalization, the need for countries to remain competitive has sprawled the boost of technological adaptability and acceptability among countries: be it developed or developing in perspective. To gauge such, ICT diffusion has become a vital issue for researchers in regard to its impact on the economic development. The rationale behind such is: the higher extent of ICT adoption in societies, the higher the economic and social development is observed. This paper investigates into a set of Latin American countries to capture the relative effect of various social, economical, and infrastructural variables into the overall ICT level, where ICT level is proxied by the Network Readiness Index adopted from World Economic Forum. The result indicates that the expenses of a country on IT as well as literacy and urbanization are factors to consider.*

## **INTRODUCTION**

A consensus among scholars and policy makers is to understand the impact of globalization on world economies, also to gain an advantage in the opening of the competitive world that lowering of barriers would create, as such economies need not ignore the infusion effect that of information technology and its diffusion within the immediate and its surroundings could cause. While this phoneme has increased trade, countries at present are relying on other strategy to attract more business and growth within its economy. Via regionalization, most countries that seems to share similar traits often are compelled to rally around each other to attract the best of its community, as such in this study we focus on the Latin American countries (henceforth LAC) to understand what indicators would impact (either increase or decrease) ICT in these countries. A selected number of LAC was chosen based on their gross domestic product per capita purchasing power parity. The rationale is, high per capita countries are most likely to attract and spend more on information and communication technology.

In considering ICT, two terms most linger: ICT Diffusion and Digital Divide. Here we distinctively bridge the gap between both concepts.

### **ICT Diffusion**

In pursuit of growth and sustainability, countries continue to equip themselves with tools and resources to necessitate a clear-cut Information Communication Technology Diffusion. Diffusion here entails the implementation of essential measures that facilitates a country's network readiness (were readiness is considered on the basis of adaptability and efficiency of countries productivity). Information and Communication Technologies (ICTs) are identified as network technologies (WEF, 2009) and key factors influencing economic growth (ITU, 2007; OECD 2003 & 2004; WEF, 2009). The sector of information and communication services is considered to be vital to the development processes of societies as long as it is competitive and vibrant in structure (World Bank, 2007). ICTs diffusion has been dynamic and variant across countries (OECD, 2003). The diffusion is perceived important due to the fact that ICT is substantially related to the electronic commerce in particular (OECD, 1999), and to the economic development at large (WEF, 2009). The accurate usage of ICT in investment skills, organizational change and innovation leads to efficiency and flourishing business (OECD, 2004).

ICTs continue to be an important factor in the development, effectiveness and efficiency of human lives. This is evident in the information sharing and network building that engulfs most sectors (education, health, agriculture, financial markets etc.). Institutions and other business mediums continue to elevate towards more integrated and productive businesses environment (World Bank, 2007).

### **Digital Divide**

Digital divide is defined as the divergence of the ICTs worldwide and the disparity of digital opportunities within nation states and their dispersion among countries and territories (Digital Divide, n.d.). Despite the fact that digital divide has been bridged to some extent, there still exists inequalities across the world. As such, the challenge in this regard has been the process of diffusing and integration of ICTs within societies and seizing the benefits of ICTs for economic development (OECD, 2004).

Across developed, developing and least developed countries, digital divide has been a persistent issue with reference to the speed and quality of access to ICTs. Nevertheless, the gap across countries and regions has been contracting (ITU, 2007) due to increasing number of people having access to various communication devices and services.

The measures of ICTs include the number of mobile subscribers, main telephone lines, internet users, and fixed broadband subscribers. The mobile phone usage was analyzed as the most evenly distributed ICT service device across countries of various income levels, whereas the fixed broadband subscribers was found to be the most unevenly distributed (ITU, 2008). Most common measure of ICT is the digital opportunity index, where each country is given a weighted score based on their various ICT indicators highlighted above. Below is the Table 1 showing the largest ten countries in the Latin America and their digital opportunity scores. The highest score (0.57) is given to Chile followed by Argentina whereas Guatemala has the lowest score (0.37)

preceded by Ecuador and Peru (both 0.40). Considering the range of these scores (from highest 0.80-Korea to lowest 0.03-Niger) these selected countries fall fairly in the middle section. Average of these ten countries (0.45) is slightly higher than the world average of 181 countries' scores (0.40) and higher than the world median score (0.41-shared by Tunisia, Georgia, Panama, Ukraine, Egypt, Tonga).

<b>Chile</b>	<b>0.57</b>
<b>Argentina</b>	0.51
<b>Brazil</b>	0.48
<b>Mexico</b>	0.47
<b>Venezuela</b>	0.46
<b>Colombia</b>	0.45
<b>Dominican Republic</b>	0.42
<b>Peru</b>	0.40
<b>Ecuador</b>	0.40
<b>Guatemala</b>	0.37
<b>Average</b>	<b>0.47</b>

**Table 1.** Digital Opportunity Scores of Largest Ten Countries in Latin America.  
**Source:** International Telecommunication Union (2007)

## LITERATURE REVIEW

The literature on digital divide and ICT measures could be classified into two streams of research: measuring digital divide across countries and explaining ICT measures (Billon, Marco & Lera-Lopez, 2009). The first stream explores the disparities of ICTs among countries by identifying the extent of which digital divide is scattered. The second stream employed analysis of a single or multiple ICT measure such as internet users, telephone mainlines, mobile phones, number of PCs etc in explaining their construct in terms of other social, economic and infrastructural variables for a particular set of countries. World Bank, Heritage House and Freedom House databases are used, as sources for most of the variables in many studies (Bagchi, 2005; Bagchi et al., 2004; Udo et al., 2008, Crenshaw & Robinson, 2006).

<b>Bagchi (2005)</b>	<i>Studied digital distance and its determinants in terms of various indicators: economic, social, ethno-linguistic and infrastructural factors</i>
<b>Becchetti and Adriani (2005)</b>	<i>Empirical results indicates that the level and rate of growth in income per worker predicatively explained by the role of the ICT diffusion.</i>
<b>Crenshaw &amp; Robison (2006)</b>	<i>Examined the diffusion of internet usage in numerous developing countries within the context of globalization, integrating the cost of particular ICT usage, education and the extent of liberalization of the country</i>

<b>Kiiski &amp; Pohjola (2002).</b>	<i>Affirms that GDP per capita and internet access cost have been the significant explaining factors as opposed to the previous studies that found the competition in telecommunication as a significant explanatory variable</i>
<b>Udo et al. (2008)</b>	<i>Incorporate a qualitative approach covering four developing countries in order to determine the differences of ICT diffusion</i>
<b>Venkatesh and Brown (2001)</b>	<i>Using a qualitative survey approach, investigated the determinants of PC adoption by US households whether it pertains to utilitarian, hedonic or social outcomes.</i>

**Table 2.** Brief Summaries of Extant Literature.

## **METHODOLOGY:**

To measure the impact ICT diffusion in the selected countries in the Latin America region, we analyzed the regions IT readiness levels on socio-economic indicators that might affect ICT diffusion either positively or negatively. These variables, which some are already incorporated in the computation of ICT readiness Index, includes unemployment rate, Gross Domestic Product (GDP), GDP per Capita, Urbanization, working age, income equality, adult literacy rate, network readiness index, prior to regressing these variables on the readiness scores, we ran a correlation matrix to confirm that most of these variables were actually not too correlated with our dependant variable. As table 4 shows the correlation matrix. Other data that was included in some part of the regression was the HDI (human development Index), and the Gini Index.

The variables tested include the following:

<b><i>Unemployment</i></b>	<i>The percentage of those in the <u>labor force</u> who are unemployed helps measure a country's economic position at a particular stage of study. This economic position includes insufficient effective demand for goods and services in the economy thereby creating unemployment as firms and organizations result to downsizing</i>
<b><i>Gross Domestic Product (GDP)</i></b>	<i>Annual growth rate is the annual percentage change in the total annual output of a country's economy in constant prices. GDP is the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment, and government spending.</i>
<b><i>GDP (per capita)</i></b>	<i>A country's productivity in terms of the value of goods and services produced per person. It is computed by dividing the overall GDP by the country's population. It can also be related to productivity and efficiency.</i>
<b><i>Urbanization</i></b>	<i>A process in which people migrate from smaller village or towns to bigger cities and suburbs in search of greener pastures. This process can be connected to industrialization. As a country gets more industrialized, more jobs and other opportunities are created for its</i>

	<i>citizen</i>
<b>working age (percentage)</b>	<i>Gives an investor an idea of a country's work force at a defined range. Depending on the industry, firms can access and forecast their potential productivity and availability of labor based on the age range it plans to hire</i>
<b>Gini Index</b>	<i>Measures the degree of income inequality in a society or country. The level of income inequality addresses the issue of fair or uneven income distribution in a given country or society</i>
<b>Human Development Index (HDI)</b>	<i>A summary composite index that measures a country's average achievements in three basic aspects of human development: health, knowledge, and a decent standard of living. Health is measured by life expectancy at birth; knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio; and standard of living by GDP per capita (PPP US\$).</i>
<b>Adult Literacy</b>	<i>Derived from HDI; comprises of adult literacy rates and the combined gross enrolment ratio for primary, secondary and tertiary schooling, weighted to give adult literacy more significance in the statistic.</i>
<b>Networked Readiness Index</b>	<i>degree of preparation of a nation or economy to participate in and benefit from ICT developments</i>

**Table 3.** Definition of variables.

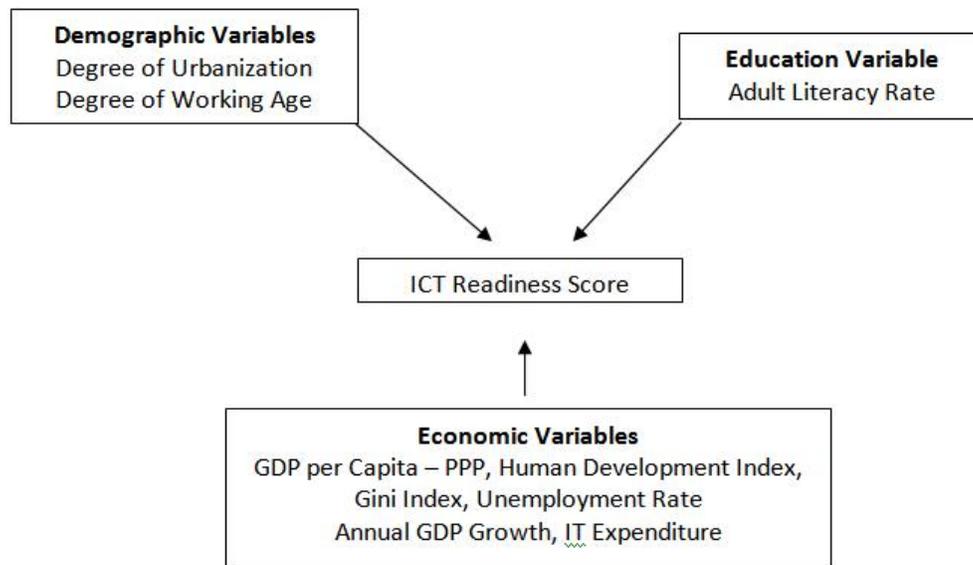
**Source:** World Economic Forum (WEF) & World Development Indicator (WDI)

### **The Conceptual Model:**

There are varying methods used to evaluate the factors that impact ICT diffusion, although very few has paid attention to the diffusion of ICT in developing nations, like Godwin et al (2008). Although Godwin et al (2008) focused on qualitative analysis to show nation specific impact, we have chosen to use a regression model to quantitatively show to what extent variables: grouped into three categories impact ICT diffusion in the selected developing countries with emphasis on Latin American Countries. Other authors have focused more on developed societies. For instance, Dedrick et al (1995) used nation specific analysis to investigate the factors accountable for the divergence in ICT diffusion in nine developed countries. They concluded that various factors like economic development, education system, infrastructures, investment in ICT and government policies were reasons for the differences in ICT diffusion. Ein-Dor et al (1997) found that unique factors like government policies of countries were attributed to degrees of ICT diffusion.

In our study we pay attention to the raising impact of regionalization. As such, we look at the factors that impact ICT diffusion in Latin American Countries. In this paper we select the ten biggest earning countries in reference to their gross domestic product of the largest Latin

American Countries. All the factors selected have been considered in previous research as impacting ICT diffusion, but to what extent in developing countries? As such the figure 1 below is a theoretical concept outlining our dependent and independent variables.



**Figure 1.** Conceptual model.

The ICT Readiness Score extrapolated from the global information technology report published by the world economic forum is used as our dependent. The scores underlines that high level of technological readiness and innovation are essential engines towards growth needed in countries to prevail over economic crisis as well as position itself for growth and sustainability.

### **Analytic Model**

In this study, we use Latin American countries specific information extracted from various international non-governmental agencies like the United Nations Development Program, World Development Indicators from World Bank Group, and Global Technology Report from the World Economic Forum to regress and test to what extent does any of our variables which are categorized into Demographic, Education, and Economic Variables impact the readiness and diffusion of ICT for each of these countries. We picked ten biggest Latin American countries that are Mexico, Brazil, Argentina, Colombia, Venezuela, Chile, Peru, Dominican Republic, Guatemala, and Ecuador based on the gross domestic product.

Our present study uses longitudinal (2002 – 2008) data for these countries. In running the test, we assume that:

Not all variables would impact Technological readiness in the aforementioned countries; as such we have created four models, to test to what impact these variables impact ICT Diffusion.

The possibility of a lag effect may exist. A situation where a dependant variable is correlated with values of the independent (delayed) variable. Amongst scholars that have

used this method include, Lo and MacKinlay (1990) and Caetano and Caleiro (2009). Although their study was not based on ICT, we consider their work to reduce the effect of multicollinearity as well as endogeneity. As such, we decided to test our four regression model (given below) on three stages. First, a situation where there is no lag on the right as well as left hand-side variables. Second, we take into consideration a one year lag effect, and third, we take into consideration a two year lag effect.

□□ In all our results, we must check for the presence of variance inflation factor and test for robustness.

Consequently, the basic regression model used to test the disparity and diffusion of ICT among Latin and Central American countries is as follows:

**Model 1:**

$$ICT\_RI_{AC} = \beta_0 + \beta_1 Urb_{AC} + \beta_2 ALR_{AC} + \beta_3 PPP_{AC} + \beta_4 IT\_Exp_{AC}$$

**Model 2:**

$$ICT\_RI_{AC} = \beta_0 + \beta_1 Urb_{AC} + \beta_2 ALR_{AC} + \beta_3 PPP_{AC} + \beta_4 IT\_Exp_{AC} + \beta_5 WA_{AC} + \beta_6 UnRATE_{AC}$$

**Model 3:**

$$ICT\_RI_{AC} = \beta_0 + \beta_1 Urb_{AC} + \beta_2 ALR_{AC} + \beta_3 PPP_{AC} + \beta_4 IT\_Exp_{AC} + \beta_5 WA_{AC} + \beta_6 UnRATE_{AC} + \beta_7 AGDP_{AC} + \beta_8 Gini_{AC}$$

**Model 4:**

$$ICT\_RI_{AC} = \beta + \beta_1 Urb_{AC} + \beta_2 ALR_{AC} + \beta_3 PPP_{AC} + \beta_4 IT\_Exp_{AC} + \beta_5 WA_{AC} + \beta_6 UnRATE_{AC} + \beta_7 AGDP_{AC} + \beta_8 Gini_{AC} + \beta_9 HDI_{AC}$$

**RESULTS**

The results shown below are in two stages; first we offer a descriptive statistics and then show our regression model (OLS) results for each model and considering the presence of lag or no-lag effect on variables. Our descriptive results are:

	Mean	Std. Dev.	Min	Max
ICT_RI	1.8673	2.0717	-1.08	3.91
HDI	0.8228	0.0257	0.79	0.866
PPP	9707.842	2770.679	5806.616	14495.33
AGDP	6.8000	3.2937	1.7714	18.2866
WA	57.6437	2.5254	53.6236	63.1874
IT_EXP	4.4288	0.8487	3.4375	6.148
ALR	91.6381	4.4686	84.1927	97.6446
GINI	51.7373	4.4989	43.44	58.66
URB	78.3273	10.6308	62.94	93.32
UNRATE	9.374	3.4998	3.16	15.02

	ICT_R I	HDI	PPP	AGD P	WA	IT_E XP	ALR	GINI	URB	UNRAT E
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ICT_RI	1.000									
HDI	0.153	1.000								
PPP	0.423	0.850	1.000							
AGDP	-0.212	0.128	-0.119	1.000						
WA	-0.461	-0.271	-0.585	0.027	1.000					
IT_EXP	0.148	0.188	-0.056	-0.120	0.291	1.000				
ALR	0.108	0.649	0.629	0.348	-0.733	-0.013	1.000			
GINI	-0.023	-0.603	-0.621	-0.255	0.174	0.404	-0.388	1.000		
URB	0.083	0.701	0.642	0.475	-0.557	-0.033	0.920	-0.598	1.000	
UNRATE	-0.131	-0.158	-0.265	0.456	-0.140	0.298	0.366	0.356	0.363	1.000

**Table 4:** Descriptive statistics & Correlation Matrix.

Across the table, we see that GDP per capita as measured with the purchasing power parity does have the highest positive correlation with ICT\_RI (ICT Readiness Index), HDI (Human Development Index), Urb (Urbanization) and, ALR (Adult Literacy Rate) yet, their correlation is not considered in this paper as high, hence we regress all, although we were cautious because some of the variable maybe highlighted correlated with each other. The OLS regression results below gives us a better insight on their impact to ICT Readiness. All regression results are robust (to reduce the effect of outliers and variations), standardize, and constantly checked for high multicollinearity (to reduce the pressure of correlation among variables) mean on all variables.

Using STATA to run for the regression, the results took into effect missing variables; as such our data size was reduced from fifty (50) to thirty (30) observations. The result shows forth, were based on a VIF of less than 2.5 mean VIF.

The regression results on table 5 hold that socio-economic variable like expenditure on IT (IT\_Exp) and working age of Latin America Countries impact ICT Diffusion at the three stages. Although both indicators are significant their coefficients had distinctive and unique impact: where working age consistently showed that an increase in working age would negative impact ICT Readiness in LAC, and an increase in IT expenditure would positively impact the ICT Readiness or diffusion in LAC. Other variables like the union of adult literacy and urbanization (a') and GDPs did manifest level of significance. From the three stages of regression, we find that a year lag had better power and using a no lag or a year lag would yield almost same effect (impact variables).

No Lag Model	Regression Co-Efficient			
Independent Variables	Model 1	Model 2	Model 3	Model 4
GDP per Capita	0.0005***	0.0003	0.0003	0.0003*

Proportion of IT Expenditure to GDP	0.4272	0.8461*	1.8184**	0.8649**
a' = Combination of Adult Literacy Rate and Urbanization	-0.0887	-0.1734*	-0.4479***	-0.1685***
Working Age		-0.5557***	-1.0354***	-0.5609***
Unemployment Rate		0.0129	0.1488	
Annual GDP Growth			0.2452	
Gini Index (Income Inequality)			-0.3162	
Constant	2.8727	41.4705***	101.5646***	41.5392***
R - Squared	0.2668	0.4960	0.6366	0.4959

One Year Lag Model		Regression Co-Efficient			
Independent Variables	Model 1	Model 2	Model 3	Model 4	
GDP per Capita	0.0004***	0.0000	0.0000	0.0003*	
Proportion of IT Expenditure to GDP	0.6210*	1.0642**	1.3007***	0.8661**	
a' = Combination of Adult Literacy Rate and Urbanization	-0.0690	-0.0692	-0.2308*	-0.1494**	
Working Age		-0.5795***	-0.7326***	-0.5505***	
Unemployment Rate		-0.1766	0.0100		
Annual GDP Growth			0.0627		
Gini Index (Income Inequality)			-0.2083		
Constant	0.8652	38.2972***	68.1663***	40.2880***	
R - Squared	0.3032	0.5456	0.6084	0.5221	

Two Years Lag Model		Regression Co-Efficient			
Independent Variables	Model 1	Model 2	Model 3	Model 4	
GDP per Capita	0.0004**	0.0005	0.0006*	0.0004*	

Proportion of IT Expenditure to GDP	-0.3519	0.0762	0.4673	0.1097
a' = Combination of Adult Literacy Rate and Urbanization	-0.0591	-0.1832	-0.3280*	-0.1492**
Working Age		0.1816**	-0.2172**	0.1835**
Unemployment Rate		0.0634	0.2985	
Annual GDP Growth			0.1829***	
Gini Index (Income Inequality)			-0.1261	
Constant	5.0338	23.3245**	37.7064*	21.8816**
R - Squared	0.2569	0.4136	0.6594	0.4103

**Table 5:** Regression Results (No lag, one year and two years lag models)

To further strengthen this paper, we decide to run a stepwise regression. Although this method is mostly used on the onset of knowing which variable would impact a dependant indicator, but we decided to use this method at the confirmatory stage: where it will serve to reaffirm that the indicators tested were actually impacting the left hand side variable. The three stages were also applied, hence easy to compare all regression results as shown in table 6.

Both Table 5 and 6 shows results considering the No-Lag Effect, One Year Lag, Two Year Lag, and Stepwise Regression. While testing, we created a new variable as “A” which is a combination of Adult Literacy and Urbanization – this was so because, their individual VIF mean score were high, and we reasoned that it could be so, because like in most developing countries like Latin America, the proportion of literate people are more in the urban areas – hence the higher the urban force and literacy level, the more ICT Diffusion would take place. Hence our regression model changed from the initial to the following:

<b>Stepwise</b>			
<b>Independent Variables</b>	<b>No Lag</b>	<b>One Yr Lag</b>	<b>Two Yr Lag</b>
GDP per Capita			0.0003**
Proportion of IT Expenditure to GDP	1.4604***	1.2623***	
Adult Literacy Rate	-1.0417***	-0.7442***	
Urbanization	0.1391**	0.1898***	
a' = Combination of Adult Literacy Rate and Urbanization			-0.1272***
Working Age	-1.4458***	-1.010***	
Unemployment Rate		-0.1400**	-0.1557***

Annual GDP Growth	0.1813*		0.1682***
Gini Index (Income Inequality)			
HDI (Human Development Index)	38.9992***		
Constant	129.9856***	110.0959***	18.5379***
R - Squared	0.7303	0.7123	0.5818

**Table 6.** Stepwise Regression results (no lag, one year lag and two years lag models)

Excluding the stepwise regression model, we see that the presence of lag-effect does not really show when regressing for ICT Diffusion in Latin American Countries, this could be because literacy, urbanization, working age for labor force etc are not influenced by diffusion, rather ICT could be an enhancer to these variables, and as such they work together. Although, we can state finitely that ICT Expenditure (have a positive correlation coefficient) and the Age of Work force (Labor Force) (have a negative correlation coefficient) does have strong correlation in explaining the level of ICT Diffusion in Latin American Countries.

### **LIMITATIONS AND FUTURE RESEARCH**

A sample size of ten countries in Latin America was used in this research. These countries were chosen in terms of their GDP and populations size. The selected countries might not have been a good representation of the entire Latin Americas, thus, this might be viewed as a limitation or constraint.

The data collection process was hampered by the unavailability of data for certain periods. This might have slightly thrown off the absolute validity of the data in terms of the variable computation. Some countries had missing data for some of the year being studied. Even though, based on our analysis, the missing data does not pose a significant treat to the overall result; awareness of this constriction is vital for future research.

The time periods observed for the purpose of this research are 2002-2008. For Future research, an extended period would probably yield a more grounded result. For example, unforeseen events like natural disasters, terrorism and other economical and political events might significantly swerve the behavioral dynamics of a country's stability. If so, such events should be evaluated and accounted for when compiling and deciding what countries would better serve as a representative of an entire region.

Also, perhaps it may best to perform a country analysis on the variables as one considers the entire Latin American Countries. By focusing on each country at a time, it would clearly indicate which variable(s) do affect the Diffusion of ICT in these countries.

For the purpose of this study, we contained our research within the boundaries of the Latin America; a comparison of different geographic regions would also be a good interesting idea for future research. This would expand the criteria for ICT infusion determinant, as differences in culture and governmental policies would greatly differ when addressing vastly divergent societies. Another idea would be to use countries that share similar economic traits like

developing, emerging and developed countries. The combination of countries from these economic classifications might result to an association disparity.

## **DISCUSSION AND CONCLUSION**

This paper examines the threads of association between the levels of ICT in countries with analytical insights into the economic, social and demographic frameworks. Researchers and Scholars have pundit to come to a conclusion that ICT level is a function of economic development and infrastructure of a country, as well as a driver for competitiveness. The macroeconomic variables that we have operationalized in this study have helped in explaining the ICT phenomenon in Latin American countries. In most of the regression analysis, GDP per capita, IT expenditure divided by GDP are found to be significant in explaining the variance in the ICT scores of countries. These results are supporting the extant literatures like Bagchi (2005), Bagchi et al. (2004), Billon et al. (2009) implying the importance of GPD per capita.

An important aspect of this study is the government and policy implications for these Latin American Countries, holding all things equal, the expenditure on information technology as it relates to GDP or any other variable should be increase. An increase on expenditure would impact ICT Diffusion in Latin American Countries by an average of forty-eight percent. Hence, allowing infrastructural improvements and enhancing both individual and business usage of ICT goods and services across the country. The degree of Working age (a social factor) which is another significant variable posit a negative association with ICT level, The rationale behind this is based on the following argument. Such association relates to the fact that the younger the labor force, the more association and assimilation with connection and communication through ICT, thus, the increase of network, which could translate to more social interaction. Therefore, the individual and business usage of mobile phone, PC, internet, etc. increases as the level of working age decreases. The urbanization and literacy rate due to their multicollinearity, the construct `a` was used instead in the analyses. Therefore, in most of the regression analyses `a` construct found to be capturing the significant portion of the dependent variable variance. We have concluded that the country having more urbanization and literacy rate would create more access to and opportunities of ICT to those of its citizens. The more engagement into and experience of the usage of ICT goods and services are the remarkable findings.

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# REDEFINING THE INFORMATION TECHNOLOGY IN THE 21<sup>ST</sup> CENTURY

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## **ABSTRACT**

*As one of the most influential developments, Information Technology (IT) is quickly transforming today's business infrastructures and reshaping the way people work and live. To meet the fast changing trends in the 21<sup>st</sup> century, IT should be redefined in five major areas: Power of Computing; Internet-working and Telecommunications; New Features with Emerging Trends; Security and Disaster Recovery and Green IT.*

## **Introduction**

Innovations in computing and Internet technologies have transformed the way people conduct businesses, engage in social lives and daily activities. The IT innovations have created new products and services, destroyed old business models and replaced them with new business styles, disrupted entire industries, built new business processes and transformed the day-to-day conduct of business (Laudon, K. & J. 2007). During the process of making business strategies, it is crucial for industry leaders, business executives, and technology developers to refresh their traditional concept of information technologies. According to current research, the following five topics are most typical areas reflecting the contemporary IT domain:

- 1) Challenge of computing powers and the Moore's principle of law;
- 2) Challenge of Internet development - the key field of IT movement today;
- 3) Trend of IT strategic changes;
- 4) Top priority – information security and disaster recovery planning; and
- 5) Mission critical – global warming and green IT.

This paper will critically examine these five areas of trend. It will point out their impact on the development of IT in the future. It will further emphasize how the industries should reshape their business strategies.

## Challenge of computing powers

There are two major misconceptions among the IT industry regarding the future development of computing technologies. The first misconception believes that the processing speed has reached the limit, and the power of computing will stay on the current level with no rooms to further increase. The second one is saying that the Moore's Law will be discontinued.

To clarify these misconceptions, it is necessary to understand Moore's Law correctly. In 1965, the Intel co-founder, Mr. Gordon Moore made a provocative prediction that "the number of transistors on a chip will be doubled in about every two years" (Intel, 2009). This is known as Moore's Law.

From the technical perspective, the more transistors are integrated in a processor, the faster is the processing speed. Further, the bigger the storage capacity, the more powerful is the performance that a computer can provide. The research chart in Figure-1 below showed that the number of transistors on the first generation of a personal computer was about 1000 in the 1970's. Since then, the power of computing has actually doubled in every 18 months. When the Intel Itanium-II processor was introduced in 2005, it had integrated with nearly 1 billion transistors. This history of development proved that Mr. Moore's prediction was exactly correct.

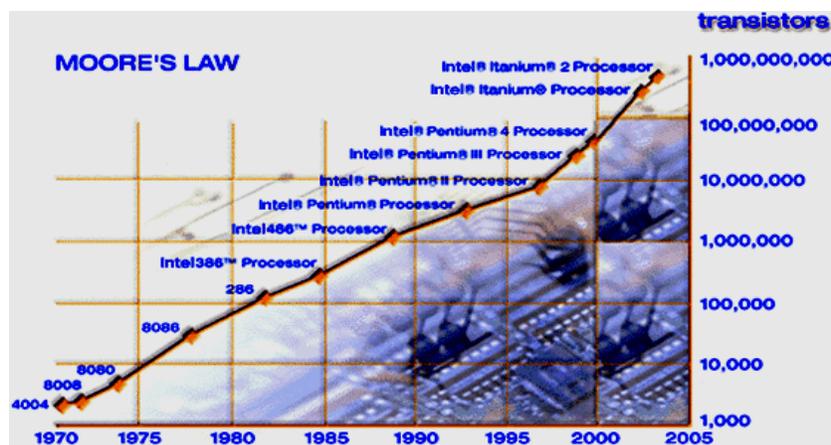


Figure-1: Computing power doubled along Moore's Law

However, people noted that the speed of processor was stalled when it reached 3.6Gbps by the end of 2005 (Figure-2). This fact made business managers and many industry leaders believe that computing speed was unable to continue going higher, and the Moore's Law has reached its limit.

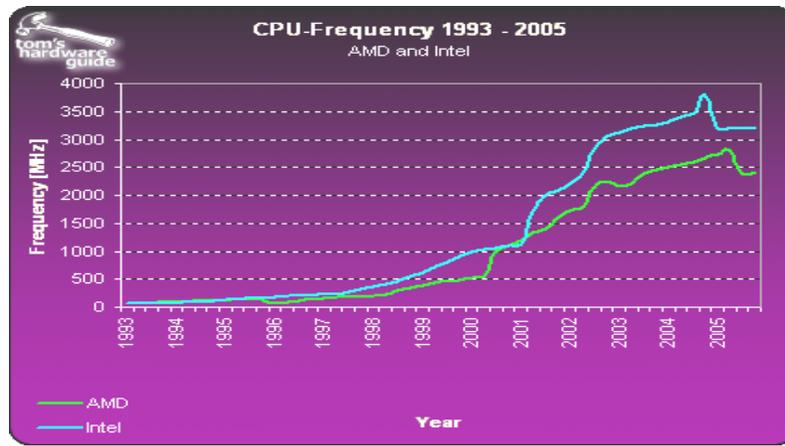


Figure-2: CPU speed dropped after 2005

So what does that fact really mean to us? Actually, the discontinued processing speed was not because of its limitation, but because the direction of computing development made a crucial correction around 2005. Since 2000, the Internet has typically featured with the multi-media-based applications. It requires much reliable and smooth performance and close collaborations with clients' computers. In addition, the computer power saving has become another highly concerned issue. Working under the current Internet environment with heavy data traffics, a single-core or traditional processor needs to feed huge amount of strings of instructions from internal storage devices. These processes "slow down computer performance, and also increase power consumption and reduce power efficiency on the chip" (Lee, 2009). Comparably, a dual or multi-core processor could handle incoming data strings simultaneously. So the processing speed and the power consumption can be handled more efficiently. Based on such concerns, IT industry re-adjusted their strategy quickly. The solution appears to lie in multi-core processors in smaller chips. The vertical dimensions in Figure-3 indicate the number of cores needed on the recent PC market. These figures clearly show that making multi-core based processors were quickly moved up on PC market and highly demanded to meet the needs of the new Internet development by 2005.

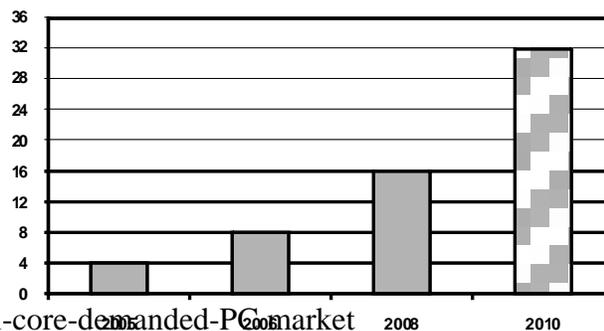


Figure-3: Multi-core-demanded-PC-market

To answer the question as to whether Moore's Law has reached its limitation, it is necessary to clarify one of the key factors: Can the current computer hardware technology continue to shrink the size of transistors? Table-1 provides a glance for Intel transistors. Since Intel designed its first Pentium processor with the size of 800nm transistor in 1993, the transistor size dropped to 45nm in 2007. Shortly after Intel announced its latest 32nm processor in 2009, another new chip

lowers the size of features in the circuitry to 22 nanometers, and “the thumbnail-sized pieces of silicon each contain nearly three billion transistors, which will be in mass production in 2011”(Intel, 2009). Furthermore, Intel is expected to touch “the 16nm mark sometime around 2013 and the 11nm mark by around 2015”(TFS, 2008). The Intel’s roadmap clearly indicates that the Moore’s Law will continue in the next decade.

<b>Year</b>	<b>Processor name</b>	<b>Transistor count</b>	<b>Minimum feature size</b>
1993	Pentium	3.1 million	800 nanometer
1997	Pentium II	7.5 million	350 nanometer
1999 (Feb)	Pentium III	9.5 million	250 nanometer
1999 (Oct)	Pentium III	28 million	180 nanometer
2004	Pentium4	42 million	90 nanometer
2005	Itanium II	950 million	65 nanometer
2007	P1266	1.7 billion	45 nanometer
2009	P1268	1.9 billion	32 nanometer
2011	P1270	3 billion	22 nanometer
2013	P1272		16 nanometer
2015			11 nanometer
2020			10 nanometer

Table-1 A glance of transistor development (Source: Intel)

### **Key field – challenge of Internet development**

The contemporary human civilization was shaped by several milestones of technology innovations. Thirty years ago, the rise of **Microsoft** changed the way people work with computers. The Windows operating system provided huge capabilities for computers to work with multi-tasks that were connected through virtually unlimited network resources. The world was characterized with Microsoft computers in the last century.

Fifteen years ago, when Internet jumped into Web2 age, **Google** invented search technology that completely refreshed the way people use and work with the Internet. Quickly, Google further introduced online ads, apps, Web-browsing, and cell-phone systems that dramatically improved the Internet capabilities and efficiency. The ways how people work, live, communicate, entertain, and almost entire human activities are profoundly altered by the contemporary Internet. The face of the 21<sup>st</sup> century is vividly visualized as an Internet world.

Just few years ago, as a new wave of Internet development, MySpace, Facebook, YouTube and Twitter, the so-called **Social Networks** emerged quickly, and are reforming the traditional culture of Internet aggressively. Through the social networks, people can freely communicate, exchange business and personal information, and share all kinds of resources. The social networks have virtually eliminated the geographic distance for people, closed their social and cultural gaps, and made human society more transparent.

Most recently, a brand-new concept **Cloud-Computing** appeared above the Internet horizon. This idea is a computing paradigm shift where computing is moved away from personal computers or an individual application server to a “cloud” of computers. Among the cloud computing, “its processing, storage, networking and applications are accessed as services over networks” (IBM, 2009). In the past, IT means productivity through individual PCs. Today IT is about collaboration sharing powers of supercomputing among the Internet cloud. “If the traditional Internet helped us to share information, the cloud is going to be defining a way for people how to fully utilize computing powers through the Internet”(Schmidt, E. 2009). In short, Cloud Computing is “the next step in the evolution of the ‘Real Internet’, or what the Internet was really meant to be in the first place” (Fingar, P. 2009).

Facing those great IT inventions, the Metcalfe’s Law redefined how to assess the vast potentials of the contemporary Internet: “the value of a telecommunications network is proportional to the square of the number of connected users of the system” (Wikipedia, 2009). The law explored not only why the Internet has had such an astonishing development, but also further proved the fact that Moore’s Law will continue from another development aspect.

### **Trend of IT strategic changes**

To wisely adjust business strategies, it is believed that the following looming trends of IT industry should be clearly recognized and followed:

- Computing Mobilizations
- Computing Virtualizations
- IT Collaborations
- Traditional Industry Convergence & Transformations

### **Computing Mobilizations**

While computing power doubles about every 18 months, the demand for personal computers with smaller size and powerful mobile features grows rapidly. Back in January of 2006, PCs were outselling laptops almost 2-to-1. Laptops took the lead and became the number one selling personal computing device in America sometime in October 2007. “By December of 2009, laptops will be outselling PCs by more than 2-to-1” (The Source Version, 2008).

Since then, all kinds of ultra-thin, ultra-light and ultra-small computing devices, known as Netbook computers, are moving the market share quickly. More significantly, the recent booming of smart-phones has quickly changed not only the telecom but also the computing industries. Sophisticated smart phones to web-enabled game consoles – “will increasingly take over many of the functions of the PC in the world's two largest economies” (The Economist, 2007). A set of smart-phone is no longer just a phone, but plays plenty of computing functions as PCs do. With numerous features, people are easily sending emails, searching information, locating directions, communicating with others, running business applications, and entertaining with audio or video functions on their smart-phones. According to Eric Schmidt, CEO of Google, in 2009, the rough number of PCs is around 800 million; the rough number of mobile phones is on the order of 3 billion. Even more importantly, “the growth rate of mobile phones is quite a bit higher than that of personal computers” (Daylife, 2009).

The mobilized computing enabled firms to have “led the way towards knowledge-based strategic loci that rapidly transform business practices and market competitiveness” (Parker, 1996). The traditional electronic-business is gradually transformed to mobile-business. These developments have created a new social and business reality. In addition, “the impact of new electronic and mobile technologies on inter-organizational transaction processes, as well as on the strategy, structure and management of modern organizations is also set at the center of the research attention” (4th Mediterranean Conference on Information Systems, (2009).

### **Computing Virtualization**

With the recent changing technology, computing virtualization is playing new roles. Virtualization is the process of presenting a set of computing resources so that they can all be accessed in ways that “are not restricted by physical configuration or geographic location” (Laudon, 2007). “Virtualization erases the differences between proprietary computing platforms, enabling applications designed to run on one operating system to be deployed elsewhere” (Carr, N., 2005).

Virtual computing demonstrated how multi-operating systems, multi-applications could be performed at a same computing device simultaneously. With virtual workstations, servers, and virtual storage through virtual applications, businesses save not only large amount of operational costs, but also reduce business risks, increase efficiency and enhance business resilience. Facing painful lessons learned from IT disaster history, virtual storage provided the best answer for reliable disaster recovery plans. More significantly, virtualization has paved a clear direction how to reduce the energy consumption more efficiently, and how to improve the green environment globally.

### **IT Collaborations**

Despite enormous advances in computing power, “the world’s IT infrastructure – is already under severe stress from today’s computing tasks” (IBM, 2009). In the past, IT means productivity through individual PCs. Today IT is about collaboration sharing powers of supercomputing among the Internet cloud. We all believe that Moore’s Law will continue, and the key is to continue shrinking the size of transistors. We also believe that Quantum computing will deeply alter the traditional computing theory. But computer technology would not possibly break into that stage without working with material technologies collaboratively. The recent cloud computing innovation confirmed the fact: None of contemporary technologies can be developed alone. Collaboration is the only right direction to go.

### **Traditional Industry Convergence & Transformations**

During last decades, the development of traditional industries and IT were “following separate paths, reflecting their unique business models, operational format and deployment scenarios” (Ensing, P. & Leeder, M. 2009). Since the computing power and the Internet boom, the operational models of several traditional industries have been converged with IT. Meanwhile, their business formats have been transformed dramatically.

It is not uncommon today that TV programs, movies, audio broadcast can be easily received from the Internet with broadband connections. On the other hand, the recent development shows, more computing functions are equipped on TV sets. People can use TV to browse

Internet and run several applications. The PC-TV convergence is certainly going to change the infrastructure of these two major industries.

A few years ago, Power Line Communications (PLC), and Broadband over Power Lines Communications (BPL), or Power over Ethernet (PoE) were successfully converged with two major industries between electric power engineering and information technology (see Figure-4). Recently, as the technology becomes more mature, the integration among the electric and electronic domains is aggressively transforming the traditional layout of their infrastructures. Most recently, a very interesting research, known as Witricity, standing for wireless electricity, is a term coined by MIT researchers, to describe “the ability to provide electricity to remote objects without wires” (Wireless Electricity, 2009). It will make it possible for power charge through radio waves for many kinds of wireless device.

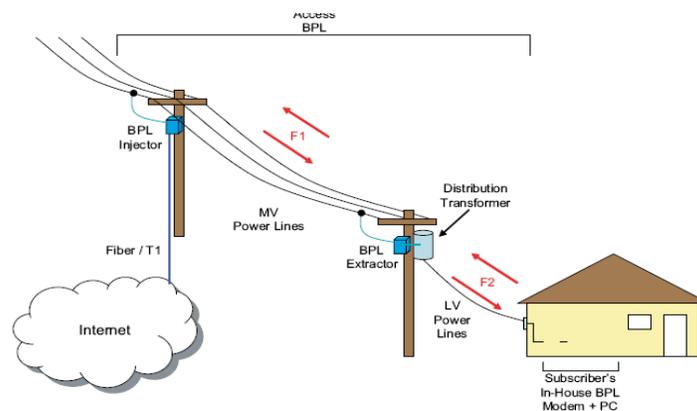


Figure-4: Outlook of broadband over power line

Facing such fundamental changes, the U.S. government is paying major attention to the development status of these technologies. Currently, Federal Communications Commission (FCC) and other Federal agencies “are debating the issues of the rules governing broadband over power line systems”(FCC, 2009). Anyway, the so called double-E convergence (between Electrical and Electronic industries) has become an inevitable reality. It’ll significantly transform the operational models for the entire business and industrial world.

### **Top priority – information security and disaster recovery planning**

While the Internet has provided almost unlimited powers for human society today, it also allows people easy access to any networked computer systems freely. So the computer system can be best characterized as “never have computer networks been more vulnerable than they are today” (White, C. 2008). From an individual’s computers, to business systems through the entire Internet could be disabled in a few seconds. Common threats by launching malicious software, hacking attacks with varieties of criminal offenses are seriously affecting normal business operations, social and individual activities. Recent U.S. government regulations are forcing companies to take security and control more seriously by mandating the protection of data. For any business managers, managing security for their information systems “has never been more important than it is today”(Ciampa, M. 2005). They “need to make security and control a top priority” (Laudon, K & J. 2007).

To avoid having business discontinuities and losing critical information whether arising from natural or human causes, it should be a vital and highly prioritized task for all business and organization leaders to get prepared. As described below, the entire country of America has experienced three painful lessons learned since the last decade:

Not until the first inland terror-attack on the twin towers of World Trade Center in 1993, did all U.S. businesses had data backup policies. Few companies even invested in shared data backup. RagingWire-Telecommunications, a California disaster recovery firm, estimated that “of the 350 companies that operated in the World Trade Center before the 1993 bombing, 150 were out of business a year later because of their unrecoverable data during the disruption” (eWeek, 2001). Since then, American received the first lesson learned – “No business is really secure until its data are recorded on two different sets of media” (Peterson, R. & Chapel, E. 2003).

Yet, the first lesson learned wasn’t sufficiently enough. Many small or mid-size companies lost their critical data during the Sept. 11 attack, as their backup tapes, CDs were all kept in the same building at WTC. The 2<sup>nd</sup> lesson learned for the U.S was that all the businesses should do remote-backup. “If data is not backed up a sufficient distance out of harm's way, your company may not survive the disaster”(Brewer, D. 2006). After 2001, most companies started storing their data resources in different places. Many major businesses also set up multiple sites of data centers.

The challenge facing disaster recovery never ended. In 2005, the devastated Katrina hurricane made entire New Orleans city under water. Even though many companies and schools had remote backup systems, their data could not be recovered after the disaster. The 3<sup>rd</sup> lesson learned made American driving to a new direction – working with virtual computers, backup data through the virtual storage. “People will move to the clouds for disaster recovery” (Kovar, J. 2008), it’d the most reliable way to recover business information for now.

The three lessons learned have propelled IT businesses making Disaster Recovery Planning a most updated and top-prioritized strategy in the 21<sup>st</sup> century.

### **Mission critical – global warming and green IT**

In the past decades, the resources used in manufacturing and distribution, and the energy and the materials consumed have resulted in tremendous amount of “e-waste.” IT industry has become one of the major global environmental issues. According to the United Nations Environment Program, around 20 to 50 million tons of e-waste are generated worldwide each year. Each year, Americans discard “more than 2.63 million tons of computers, cell phones, and other electronics—many containing lead, mercury, cadmium, beryllium and other harmful materials” (CIO, 2009). Nationally, “more than 100 million televisions and computers become obsolete each year, but only 11% will be recycled” (CNN, 2009).

Facing such serious environmental challenges, all businesses, in particular IT leaders are obligated making green-IT-strategy a mission critical. Currently, the “Eliminate, Reduce, Reuse, Recycle for electronic devices and resources, known as ER3 principle is considered the most efficient rule making control for business green projects” (Taylor, R. 2009). Besides, several up-

to-date developments, like virtualized computing, solar and new energy technologies, and enforced electronic device recycle programs, have provided more significant solutions for green-IT project. The study results show that there are many positive aspects to the approach that have been taken in managing the environmental issues by U.S. firms. Yet, “most of the largest and valuable companies in the U.S. have an environmental policy in name, but little else to indicate appropriate management of environmental issues” (The State of U.S, 2009).

In closing, regardless of the type of businesses and the geographic areas, giving controls for global warming with the green business plans is a critical obligation for the entire human world. As the major e-wastes producer, the green plans are indeed a mission critical for IT industry.

## **CONCLUSION**

Facing the new directions that the recent IT development has led the world, it is an unavoidable task for all business and industry leaders to refresh their concepts of what the IT should be really meant to be. In the 21<sup>st</sup> century, information technologies must address all the following areas: The Moore’s Law is still true. Computing powers will double in about every 2 years. Meanwhile, the shape, the size and the operational models of computing technology are reforming.

The Internet will continue to destroy the old businesses, transform the traditional industries and reshape the social infrastructures. Along with high-speed wireless and the telecommunications, the Internet continues to alter the entire human society.

The contemporary information technologies are typically featured in mobilizations for computing devices, virtualizations for business operations, IT collaborations with all kinds of technologies; convergence and transformations for traditional businesses and industries. These features are certainly the leading direction for the movement of businesses and technologies in the 21<sup>st</sup> century.

Security protection and disaster recovery planning for vulnerable information systems should be always taking high priority for all the businesses, organizations and individuals.

It is mission-critical that information technologies should play major roles to provide a clean, green and healthy environment for human world.

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# ADVANCING PATIENT HEALTHCARE BY UTILIZING INFORMATION TECHNOLOGY IN HOSPITALS

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## **ABSTRACT**

*This paper originated with strategic management work done at Jamaica Hospital in Queens, NY and the Jewish Home and Hospital for the Aged in Manhattan, NY. As background for the project, the initial phase involved industry-wide studies of healthcare institutions throughout this country and abroad. During these studies, which involved both field research and a review of the research literature, many samples of which are given throughout this paper, it became apparent that advances in hospital Information Technology (IT) are having a dramatic impact on improving patient healthcare services.*

## **BACKGROUND**

By creating the "Digital Hospital", a number of hospitals in this country are leading the way in developing and using information systems to solve plaguing industry problems, including the fact that manually kept records were not up-to-date, incomplete, or misplaced and illegible physicians handwrote prescriptions (Clark, 2004; Editorial Staff, 2005A, B). Errors resulting from these problems alone have been estimated to kill over 7,000 U.S. hospital patients yearly and drive up healthcare costs by an estimated \$2 billion (Evans, 2004; Marks, 2004; Turner, 2004). Even though major costs are involved, plans are underway to do the same in overseas hospitals, for example in England. Evidently in 2004, not enough U.S. hospitals were moving into the digital area, however. As a result, in mid-2004 Secretary of Health and Human Services, Tommy Thompson supported by President Bush, unveiled an ambitious 10-year initiative to transform hospitals in this country more aggressively and rapidly (Turner, 2004; Bush, 2004). Individual states, for example Massachusetts, were also considering both government and private financial support for this effort (Peter, 2004). The focus of this initiative will be on computer entry of prescriptions, improved intensive-care unit (ICU) staffing, and easier access to individual patient records for both the patient and hospital staff by integrating patient and other hospital records into integrated databases.

## **ROLE OF ADVANCED AND BASIC INFORMATION TECHNOLOGY APPLICATIONS AS IMPROVED HOSPITAL HEALTHCARE ENABLERS: A FRAMEWORK**

The discussion in the following section provides an overview framework developed from this study, a framework which might help provide guidance to those thinking about understanding, developing, and introducing IT systems into their hospital environment. This framework is outlined in Figure 1.

Figure 1: Major Areas Medical It Systems Are Generally Developed In

Client/Patient Orientation An Integrated Accessible Electronic Database Prescription Writing and Delivery Intensive Care Units (ICUs) Telemedicine/Telesurgery Healthcare Facilities and Their Financing Other IT Related Systems
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### **Client/Patient Orientation**

Hospitals face specific problems, such as the difficulty to coordinate and integrate diverse customer interactions in a way that (a) makes individual customers feel that they were being treated as individuals and (b) enables the hospital to coordinate its services to these individuals. Hospitals have many divisions, such as radiology, emergency room care, test labs, prescriptions, medical nursing assistance, hospital rooms, and kitchens and food service, which provide services to patients. The doctors deal with these different divisions, as well as with individual patients, as do nurses and other staff members whose time needs to be scheduled and managed. Tracking is needed to bill patients, preferably in a coordinated way, to maintain staff schedules, and to manage all operational areas efficiently and effectively. Interestingly, many hospitals studied do not even have an integrated billing system for patients, who still receive separate bills for different department services and room accommodations. This creates some confusion among patients and their insurance companies.

### **An Integrated Accessible Electronic Database**

Based on hospital experiences with information technology development, the starting point almost always involves building accessible integrated electronic databases, especially in relation to individual patient information, as suggested in the preceding section. The most significant applications of such databases are in the prescription writing and delivery area and in the Intensive Care Unit (ICU) area. These findings are consistent with the authors' studies of individual hospitals and the areas which might benefit most from improvements.

### **Prescription Writing And Delivery**

Probably the most visible evidence of the new digital systems at the Children's Hospital in Pittsburgh is the trolley used by physicians when visiting individual patients. The trolley has a laptop computer and wireless network card, which physicians use to log into a program

containing all the clinical information on each of their patients. The physicians fill out medication orders online and send these orders from the ward on the seventh floor to the in-house pharmacy in the basement, where a robot puts the prescribed drugs in an envelope for the nurses to dispense. All of this is made possible by the electronic patient database. This laptop enabled system significantly reduced the major problems encountered from medication errors under the old paper-based system. While medical information technology applications do not necessarily eliminate all errors – in fact they introduce some new ones – they do substantially reduce these errors (Marks, 2004; Conn, 2005).

### **Intensive-Care Units (ICUs)**

Another major benefit of medical IT systems is found in the management and running of ICUs. For example, in late 2004, intensive care patients at Inova Alexandria Hospital were scheduled to be monitored around the clock by doctors and nurses at their bedside as well as through digital cameras, microphones, and special software from miles away (Salmon, 2004). This system will enable these distant caregivers to remotely monitor heart rates, blood pressure, respiratory rates, and other vital signs of critically ill patients even more closely than the on-site duty staff can and so provide guidance to that duty staff. An IT-based ICU system, where one doctor and nurse can keep a 24-hour watch over as many as 200 critically-ill patients at once, can boost chronically short-staffed on-site care. In addition, studies have reported as much as a 50 percent drop in ICU mortality and 17% shorter stays since the first such system was set up at Virginia's Sentara Healthcare a few years ago (Salmon, 2004; Allen, 2004).

### **Telemedicine/Telesurgery**

One early IT development area has been telemedicine. For example, the U.S. military in Iraq set up a field hospital unit connected by computer systems to well-staffed hospital unit located elsewhere. This new technology enables treating injured people in remote location using local staff guided by expert professionals located elsewhere (Hasson, 2004). Kapiolani Medical Center for Women & Children in Hawaii has begun broadcasting live surgeries to physicians around the world. This telesurgery technology allows specialists worldwide to observe and consult with Kapiolani surgeons during emergency and other procedures. It also involves not having to move critically ill patients needing surgery, which is a major cost reduction factor and can help avoid additional medical problems caused by traveling. In addition, it enables an auditorium of medical students to observe live surgeries.

### **Healthcare Facilities And Their Financing**

Hospitals need sufficient finances to obtain and operate these new facilities, as well as to hire and maintain expert professional staff at all levels and put into place the IT digital framework to service everyone. A variety of financial factors affect a hospital's ability to do this. For example, a hospital is dependent on insurance company payments for a substantial portion of their income. A patient's ability to pay also has an impact; and there are limits to the number of lawsuits a hospital can pursue to recover delinquent accounts and such lawsuits are time consuming and expensive. In addition, many communities expect or require hospitals to provide services for the poor.

IT solutions can be very helpful in the financial area. They enable more accurate billing of patients, faster collection of accounts payable, and easier coordination with insurance companies

and government agencies, as well as better tracking of and control of staff usage (Paulik, 2004). In a very significant way, it has led to major reduction in cost-per-patient services, enabled improved health care service delivery, and reduced unnecessary loss of life.

### **Other It Related Systems**

Integrated IT systems enable other individual patient healthcare service improvements. The following happened at Allegheny General Hospital in Pittsburgh: Nurse Candice Bena thought a 76 year old patient needed a new intravenous line but couldn't get the radiology department to install one immediately (Wysocki, 2004). Fearing the patient would develop an infection, the nurse contacted the Chairman of Medicine directly eventually. The Chairman immediately electronically contacted the Head of the Radiology department, who within two hours installed the new IV line himself. The result of such problem identification and process analysis was a 90% drop in the number of infections after just 90 days of using the system. As an additional bonus, the new system saved almost \$500,000 a year in ICU costs.

### **The Benefits Can Be Substantial And Impressive**

In addition to these benefits already discussed, Cincinnati Children's Hospital Center, for example, which won the 2003 Nicholas E. Davies EMR (Electronic Medical Record) Recognition Award of Excellence after implementing an integrated clinical information system (ICIS) to provide clinical decision support tools including Siemens Medical Solutions (INVISION®). The results were elimination of transcription errors, a 50% reduction in medication errors, a 52% improvement in medication turnaround times, a 24% reduction in verbal orders for controlled substances, and 100% compliance with pain assessment documentation requirements defined by state regulatory agencies (Siemens, 2005).

Delnor Community Hospital also showed impressive results with HeartMath's customized technology Freeze-Framer®. After the first year, the overall employee turnover was reduced from 28% to 20.9% which led to \$800,000 in annual savings, Medicare length of stay decreased by 9%, equaling a \$1.4 million savings annually, customer satisfaction improved from the 73<sup>rd</sup> percentile to the 93<sup>rd</sup> percentile, and the hospital was ranked first in employee satisfaction based on a Sperduto and Associates study. During the second year the results were maintained with turnover down to 14% and the hospital was ranked second in employee satisfaction (HeartMath, 2005).

Other benefits included reducing patient waiting times, slashing wheelchair inventories, preparing operating rooms faster and moving patients through a hospital stay or doctor visit more quickly, seamlessly and error free, creating major cost reductions along the way in addition to improving patient healthcare – and in many instances actually reducing the death rate.

### **Implementation Problems**

Although substantial gains from introducing and using medical IT systems are documented, major problems have been encountered. For example, outside physicians at many hospitals have resisted and in some instances even scuttled new medical IT systems (Turner, 2004). It is far easier to use a pen to write a prescription order or tell a nurse what to do than it is to have to learn a whole new system, no matter how fast or easy it may eventually be to use. The training needed to ease entry of the new systems takes many forms, depending on the staff involved. As

Rob Turner points out, patience and persistence is the primary requirement, combined with a keen sense of the individual needs in specific hospital situations (Turner, 2004). For example, at a university hospital where most of the physicians are on staff, and so more controlled by hospital management, the transition has been easier than at hospitals where the majority of physicians are outsiders and so more independent.

There are also group training tools which can aid in implementation (Bandarouk, 2005). As might be expected, for example, the different characteristics of users centralized within an existing medical department (such as an ICU) and those of distant (decentralized) users of any new system had a major impact on the managerial support tools needed to make the implementation successful. The successful management support tools differed in several areas: time allocated (more for the decentralized group); feedback and learning opportunities (different channels and leadership styles used for each group), and autonomy and responsibility (differs by individual as well as group).

A second key problem area is the high cost of such systems. The essence of making such systems work is the integrated computer systems and databases which provide the data/information and facilitate the processing of it. This veritable digital hub involves a substantial financial investment to develop. Again, in spite of the documentable savings, time is needed to study the application of other hospitals' experiences to one's own hospital. And once an appropriate transformation plan is developed, raising the money and convincing others of the investment's value is still a long hard road to travel (Turner, 2004; Bandarouk, 2005).

Given the varying situation-specific needs and financial constraints, effective planning and implementation require identifying individual situation requirements in conjunction with determining the specific components of the planned medical IT system, as well as the order in which the IT transformation steps will take – based for example on analyses similar to the ones given in the above framework (Figure 1). This is, in a sense, defining the “migration path” to be followed and the basic management principles, from planning and leadership to measurement, guiding this migration (Amatayakul and Lazarus, 2004; Skinner, 2003).

## **FUTURE TRENDS**

The growing interest in medical IT systems is not limited to the United States. In the United Kingdom, the National Health Service (NHS) signed 10-year contracts worth close to \$10 billion in 2004 to provide electronic patient records, e-booking, e-prescribing and electronic ordering of tests, in arguably the world's biggest civil IT procurement – one that will cover all 50 million patients in England, and one million staff. The program should also see digital images replace X-ray film, making remote consultation about a patient's condition possible. Even if all goes smoothly, it will take until 2008 at the earliest for the system to be operational. But the first NHS hospital to become virtually paperless – University College Hospital in central London – should complete this transformation in 2006. Other examples of countries that have been successful in implementing IT systems in hospitals are Germany, Sweden, and Thailand (Becker, 2004). Several U.S. hospitals have already made this transition, and many, if not most, are expected to follow once financing has been arranged. What is described here, then, is an international phenomenon that will revolutionize hospital medical delivery practices worldwide, which in turn will effect to Healthcare industry in the U.S..

Since predictions are that IT spending in healthcare will reach \$47.5 billion by the end of 2006, many firms are entering the field. General Electric Medical Systems and Siemens Medical Systems (INVISION®) are two major corporations which have medical IT development divisions. Computer giants such as IBM, SAP, Hewlett-Packard, and Dell, as well as niche software specialists such as Cerner of Kansas, VISICU of Baltimore, Eclipsis of Florida, HeartMath of Boulder Creek California, MercuryMD, Infocrossing, Inc., and the merged Picis and Ibex, Inc. have also entered the field to gain a foothold in what is expected to be a very large market (Clark, 2004; Editorial Staff, 2005A, B; Editorial Staff, 2004; Editors, 2005).

## **CONCLUSION**

While it is important to review industry practices, the ultimate decision then is a situational one. Individual hospitals have their own special needs. For example, Jamaica Hospital and the Jewish Home and Hospital were each very distinct in the services they provided and the kind of clients they served; as a result the IT systems they developed were different in many ways. Kapiolani Medical Center in Hawaii was uniquely situated to develop its telesurgery program. At University hospitals, their close relationship with their physicians on staff on occasion enabled them to move more quickly into automated prescription processing.

External circumstances can also have an impact, as seen in Massachusetts, where the state government support was expected to encourage and facilitate medical IT systems development.

In almost all instances, available finances will have an impact on the nature and pace of medical IT systems development, as will the leadership skills of hospital managers in overcoming resistance to change encountered at almost all operational levels.

In light of these problems, currently less than 2% of all American hospitals have fully implemented electronic medical records. At this time, however, 40 hospitals have portions of such a system and many more are considering introducing such systems. This slow development pace is in spite of the fact that experience shows that these systems can save lives and dramatically affect improvement of healthcare services delivery at hospitals. Hopefully, studies such as this one, as well as government programs and incentives, will help broaden and accelerate the growing trend towards continuing medical IT systems development worldwide.

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# **THE RELATIONSHIP BETWEEN HEALTHCARE PROFESSIONALS AND CLINICAL DECISION SUPPORT SYSTEM; CHEVALIERS WITH SWORD**

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## **ABSTRACT**

*Although compared to other industries the utilization of Information Technology (IT) has increased slowly in many healthcare organizations, a variety of IT systems in the forms of clinical information systems, electronic patient records have gradually become established in the healthcare industry. IT has been enhanced as a means to advance patient care but it is impractical to imagine that if a new clinical information system is adopted by a healthcare organization all organizational members would definitely like to apply the system. As healthcare professionals play an important role in the healthcare sector, there is no doubt that introduction of new medical IT should be coupled with healthcare professionals' acceptance, so that the IT can be used properly. The applications of clinical IT systems are regarded as a key element in raising the quality of medical care services. However, factors affecting the healthcare professionals' adoption behaviour regarding clinical IT systems are still not completely clear. By taking the professional characteristics of healthcare professionals into account, especially their professional autonomy, a new modified model has been developed to better address the issues of accepting new technology in the health care context. In this study (as a conceptual research), the concept of healthcare professional's interactivity perception has been proposed as the main factor in the proposed model concerning healthcare professionals' clinical IT adoption behaviour.*

## **INTRODUCTION AND BACKGROUND**

Organizations are becoming bigger and more complex everyday and at the same time information technology (IT) has undertaken a very vital role within the organizations (Dewett and Jones, 2001). A broad range of IT applications has mentioned in the literature. For instance, technological advances are offering the support which is necessary to facilitate the tasks which individuals carry out every day (Guriting & Ndubisi, 2006; Ratnasingam et al., 2005; Srinivasan, 2004). Also, currently the prevalent effect of technology is driving a number of businesses to

come across new ways of delivering services to customers (Reid et al., 2008). The last few years have been witness for a rapid development of information and communication technologies in medical practice. According to Istepanian (1999), the number of established telemedicine programs have grown all over the world. But according to Bates et al. (2001), healthcare industry still hasn't been as active as other information-intensive industries in terms of utilizing IT. As the share of health care in GDP is highly increasing, the health care industry is trying to utilize IT to enhance health care services. As the cost of health care keeps on increasing, the health care industry concentrates on the application of IT more than before. The target of this action is to utilize IT as the prevalent means of reconstructing health care for the 21st century (Flower,2004). As said by Andrews (2009), medical care practices are undergoing massive changes by different types of technology.

According to Pain et al. (2008), by integrating latest technology into practices, companies can improve competitiveness in their business. By looking at healthcare industry it can be said that medical care practice is one of the deep-rooted professions and IT has proliferated in professional setting to support highly specialized tasks (Chau and Hu, 2002).Also healthcare practice is considered as an individualized profession, relatively independent and entrepreneurial (Holsinger and Beaton, 2006).

As mentioned by Mathieson, (1991) and chang et al (2007), although a technology carries potentially technical merits, if it remains unused, it cannot be effective for organizations. However, despite a number of studies in health sector, healthcare professionals have not fully adopted the clinical IT (Tung et al., 2008; Yi et al, 2006; Chismar & Wiley-Patton, 2003; Dearne, 2003; Murray, 2002; Wenn et al., 2002, Western 2001). According to Walter and Lopez (2008), only with greater acceptance of healthcare professionals, new technology can play a fundamental role in advancing health care delivery.

Based on a body of literature, the key issue in the successful adoption of a new IT has been identified by researchers as user acceptance (Davis, 1989 & 1993; Davis and Bagozzi, 1989; Kottemann and Davis; 1991; Igarria, 1993; Igarria, Guimaraes, and Davis, 1995). A variety of IT adoption models have been developed with the aim of explicating and predicting user acceptance of a new IT. (Davis, 1989 & 1993; Davis and Bagozzi, 1989; Igarria, 1993; Kottemann and Davis; 1991; lee, Lee, and Kim, 1995).The models are wide-ranging and applicable for different users. From an empirical perspective, IT adoption models have been tested empirically by using students in academic contexts, knowledge workers from different industries, customers and etc. as samples (Adams et al., 1992; Igarria, 1993; Szajna, 1996; Gefen et al., 2000; Puaro and Storey, 2008).

Hu and colleagues have studied healthcare professionals' IT acceptance in the field of telemedicine (Hu et al., 1999; Chau and Hu, 2002, Hu et al., 2002). Their findings reveal that the healthcare professionals' behavior toward a new IT is dissimilar to other IT users studied in the IT adoption literature. Chau and Hu (2002) have attributed the differences to professional characteristics of healthcare professionals like specialized training, autonomous practices, and professional work settings. The results of a research done by Paul and McDaniel (2004) on the subject of telemedicine adoption have provided evidence to suggest that healthcare professionals' behave differently toward new IT compared to other users. In their study trust was

found as the most important factor affecting adoption of telemedicine rather than usefulness and ease of use. So, there are still other variables which may affect healthcare professionals' acceptance

In this study, we have integrated theories of intention and IT adoption, the distinctive characteristics of healthcare professionals and interactivity theory. By integrating these three components, we propose a modified model explaining factors affecting healthcare professionals' intention to use clinical IT. The main contributions of this research are:

1. Expanding the current understanding on IT adoption behaviour in professional context.
2. Improving overall IT adoption rate among health care professionals.

## **DEVELOPMENT OF A THEORETICAL FRAMEWORK**

### **Theories of intention and IT adoption**

Based on the increasing significance of different types of IT systems in organizations, managers are supposed to find, introduce and support new technology and advanced IT to their organizations with the purpose of facilitating organizational functions (Basselier, Benbasat, and Reich, 2003; Brown, Chervany, and Reinicke, 2007). Although management support is essential for new introduced IT, another concern emerges at the time of IT introduction in organizations. The following challenge would be the reaction of employees who are faced by the new change. Because the technology that introduced by organizations may not be necessarily accepted by all employees. If introduction of a new IT in organizations is followed by acceptance of the users, the systems can be fruitful and improve productivity (Venkatesh , 2003) . As the users accept the new IT, they become more willing to making changes in their existing work routines. Also they are more likely to take on and incorporate a new IT into the flow of their everyday work practices (Walter and Lopez, 2008).

According to King and He (2006), in recent years there has been an increasing interest in the identification of factors that cause people to accept and take advantage of systems developed and implemented by others. With reference to individual intention to accept new technology, several studies have been conducted. The consequences of the studies have resulted in the development of eight theoretical models. The eight competitive models are: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), a combined theory of planned behavior/technology acceptance model (C-TAM-TPB), Model of PC utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). Each of the models explains the organization's individual readiness to accept new information systems and technology (Davis and Bagozzi, 1992).

IT acceptance models have been mainly put forward on the basis of behavioral intention models readily available in social science, such as theory of reasoned action (TRA) (Fishbein and Ajzen ,1975), theory of planned behavior (TPB) (Ajzen, 1988), and diffusion of innovation models (Rogers, 1995). By taking social psychology literature into account, it becomes evident that TRA is a well-developed model that is able to predict and explain behavioral intentions in numerous fields only when users can make decisions with deliberate intention.(Fishbein and Ajzen ,1975). According to the findings of Ajzen (1988), TPB (TRA's extension) gives reasons for behaviors even when users don't have volitional control. Based on the arguments of Davis, Bagozzi (1989) and Mathieson (1991), these models have been criticized for presenting no operative beliefs that

are salient to IT users concerning IT usage. Therefore, they supposed that the beliefs that are important for the users of IT should be included in theory of reasoned action or theory of planned behavior to get a better explanation of behavioral intention to use IT.

Davis adapted the technology acceptance model (TAM) from the theory of reasoned action (TRA) in 1989 to mainly clarify the potential user's behavioral intention to use a technological innovation. Based on a wide variety of literature on IT adoption behavior, among the various models that have been developed, the technology acceptance model (TAM) turns out to be the most widely used models in information systems researches. As indicated by Wang et al. (2003), the TAM's popularity is because of its parsimony, simplicity, understandability and empirical support.

The original TAM consists of three constructs which are operationally defined in many studies on IT acceptance models. The first variable namely perceived ease of use is defined as the extent to which a person believes that using a particular system would be effortless (Davis, 1989) The second one namely perceived usefulness is labeled as the degree to which a person believes that by using a particular system he can improve his job performance (Davis, 1989). With reference to Triandis (1977), three dimensions determine behavior, they are: intention, facilitating conditions, and habit. Among these components, intention is more valued in IT adoption models. Intention is considered as the individual's motivation on the subject of performance of a given behavior. Behavioral intention has been identified by a large number of studies like Venkatesh and Davis (1996), as a better predictor of system usage. In the field of social science, intention to use new IT is defined as user readiness to actual behavior and the use of new IT. Also it should be mentioned that this model has been extended a lot over years. Based on the TAM, users are reluctant to support those types of IT that interferes with their traditional work routines, unless they perceive that new IT is doable and easy to use as well as it can be regarded as a tool to get promoted in the organizations.

TAM was adapted to IS contexts, and was devised to predict information technology acceptance and usage on the job. Unlike TRA, the final conceptual formation of TAM leaves the attitude construct out in order to better explain behavioral intention. TAM2 as an extension of TAM, takes subjective norm as an additional antecedent of intention in mandatory settings (Venkatesh and Davis, 2000).

### **IT acceptance in healthcare profession**

TAM has been widely tailored to a wide range of technologies, cultures and users. Some studies have used TAM and its modified models in the field of health care to explain healthcare professional's IT adoption behavior. For instance, Aggelidis and Chatzoglou (2009) emphasized that when it comes to comparison of IT users, the personnel of health care institution are different from other users in light of their special perceptions toward the use of technology. According to Lowenhaupt (2004), physicians are very slow in terms of accepting clinical information systems. Based on a body of literature, healthcare professionals are not willing to integrate new IT with their day-to day work activities if they perceive new IT as interfering with their traditional work routine (Anderson, 1997; Anderson and Aydin, 1997). Hu et al. (2002) have studied in the context of telemedicine and proposed the difference of healthcare professionals from other types of IT users with respect to IT adoption behavior. Based on their

findings, healthcare professionals are more pragmatic and realistic. Moreover they place more weight on perceived usefulness. As noted by Anderson (1997), healthcare professionals are unwilling to support and use an IT that prevent them from continuing their long-established practice patterns.

According to Chau and Hu (2002), a set of characteristics makes healthcare professionals different in IT adoption compared to user populations studied in the literature. Nevertheless, far too little attention has been paid to examining whether and how such differences affect healthcare professional's acceptance of a new IT (Walter and Lopez, 2008).

### **The professional characteristics of healthcare professionals**

Investing in clinical IT can receive benefits only when these systems are used by healthcare professionals. Therefore, healthcare professional adoption has long been regarded as the goal that is sought after for its great significance in support of these systems. Nevertheless, the literature says that healthcare professionals' adoption of clinical information systems is known to be different from other IT users and they respond to IT differently (Paul and McDaniel, 2004).

Professionals (such as healthcare professionals) have some distinct and professional characteristics and derived from these unique characteristics they are considered different from other non-professionals. In this study, the special characteristics of healthcare professionals are put at the center of attention. As indicated by Brennan and Coles (2003), healthcare professional's professionalism has long been based on a defined set of values. The most important feature is considered as healthcare professional autonomy and the other ones are patient sovereignty, healthcare professional confidentiality, and the habits of learning. With reference to the findings of an exploratory study conducted by Chau and Hu (2002), some special characteristics are believed to be held by healthcare professionals. Three proposed characteristics in this study are:

- (a). Specialized training that reveals their mastery over medical knowledge which has been obtained during a lengthy period. As stated by Watts (2008), they devote a considerable portion of their youth preparing for the profession. Their body of knowledge is directly associated with the lives of patients. In this profession even a slightest mistake can be fatal. Therefore, the heightened emphasis has been placed on specialized training of healthcare professionals.
- (b). The second characteristic is professional autonomy. The healthcare professionals proclaim that they are in the best position to drive, organize, and regulate their own practice. They are judged mainly through a peer review process in which professionals evaluate each other. As mentioned by Zuger (2004), professional autonomy is clearly the most important value. This provided healthcare professionals with a sense of pride, and accomplishment.
- (c). With reference to Watts (2008), and Montague et al. (2009), the third characteristic is professional work arrangements where healthcare professionals become health care providers, hospitals became health care facilities, and patient acts as both the product and the client in such a system. Based on dominating over medical knowledge, three occupational groups are available in a healthcare organization like a hospital. The healthcare professionals that include all the specialty doctors involve treating patients. The para-professional group, such as physician assistants, possesses only partial professional competence and involve in assisting the healthcare

professionals in performing their healthcare practices. And the last group is non-professionals who are just trained to take on clerical and office work to run a hospital's administrative affairs.

According to Abbott (1988), being members of a profession is certainly conducive to professional autonomy. Drawing on a recent study by Walter and Lopez (2008), it seems that professional autonomy is viewed as a precious privilege in the hands of professionals so that they don't like to lose it in their workplace. Professionals have power over non-professional and paraprofessionals and can control the tasks carried out by them (Freidson, 1988). It should be added that the advantage of having control over subordinate groups is more pronounced in those organizations with existing hierarchies among various working groups. A hospital is viewed as an organization in which different work-related groups (nurses, physician assistants ...) possess different levels of medical knowledge and healthcare professionals are placed at the top of the hierarchy. In this study the most important special characteristics of healthcare professionals, namely professional autonomy is considered as a construct that can affect healthcare professional's IT adoption behavior.

### **The different types of clinical IT in the professional context**

With reference to the rich body of medical literature, there are two main types of clinical IT that used in medical care practice. These systems are as follows:

(a). The first one is Electronic Medical Report (EMR) systems which are computer systems that allow a healthcare professional to create, store, and retrieve patient charts on a computer. So, these systems facilitate the rapid retrieval of information related to patients' problem lists, allergies, and socio-demographic data. Concisely, EMR is regarded as one health information technology (HIT) product that is able to enhance health care practice through increasing the quality and efficiency of results (Burt and Hing, 2005; Shortliffe, 1999; Thompson and Brailer, 2004; Tierney 1997).

(b). The second one is Clinical Decision Support (CDS) systems which are computer systems that deliver professional advice. These systems are referred to as knowledge-based systems that use patient data and series of reasoning techniques to generate diagnostic and treatment options and care planning (Walter and Lopez, 2008). Pain et al. (2003), defined CDS as a system that helps healthcare professionals by providing some medical options with correct dosage and minimum possible side effects as well as it makes more knowledge available for them to decide the best options. This study focuses on CDS and tries to find out its potential effects on healthcare professional's professional autonomy.

### **The effect of clinical IT on healthcare professional's behavior**

As mentioned previously, professional autonomy is very valuable for healthcare professionals. Furthermore, healthcare professionals maintain factors that protect their professional autonomy and react toward the elements may invalidate their professional autonomy and traditional work practice (Walter and Lopez, 2008). Not only healthcare professional's IT adoption behavior is influenced by their special characteristics, but also their behavior is affected by organizational context as well as features and characteristics of clinical IT systems that could change their long-established work activities (Hu et al. 1999; Chu and Hu, 2002).

According to Varonen et al. (2008) and Sittig et al. (2006), the culture of medicine practice has always given emphasis to individual physician autonomy. Marinating the autonomy causes that system changes are not always well-received by healthcare professionals and becomes one of the biggest challenges for CDS implementation. Also, concerns about overreliance on the device (CDS), makes healthcare professionals be worried on losing their autonomy

Moreover, feature and nature of instructions and guidelines that given by IT to healthcare professionals in terms of problem-solving process can change their work routines and may be considered as an element that invalidate their professional autonomy (Borkowski and Allen, 2003). These rules, procedures and recommendations designed and embedded in IT can weaken their claim on possession of special competence in problem solving and invalidate their decision making skills in terms of deciding what to do for treatment of their patients. As stated by Harrison et al. (2002), healthcare professionals feel uncomfortable when they face regulations and instructions generated by a clinical decision system when advising them what to do. Because they believe that they are able to treat their patients based on their specialized knowledge, experience, skills and competence. According to Lowenhaupt (2004), healthcare professionals become more anxious when someone or something (such as a computer system) shows he/it has more knowledge than them regarding what to be done with their patients. Therefore, healthcare professionals perceive clinical IT (especially CDS which changes their work practice massively) as threatening to their professional autonomy.

### **Healthcare professionals' perceived level of interactivity**

As mentioned earlier, the antecedent of healthcare professionals' perceived threat to professional autonomy is the rules, instructions and diagnostic options provided by the clinical IT. One view toward any new computerized system is that IT can reduce dependence on specific personnel (Bonora and Revang, 1991; Nonakaa and Takeuchi, 1995). In medical context new IT can violate the healthcare professionals' professional autonomy and this can have an adverse effect on acceptance behaviour.

One feature of clinical information systems that influences perceived control is their level of interactivity. Perceived interaction is defined as the level of interaction that a user perceives as experiencing with the computerized system, and the extent to which the system is perceived to be responsive as well as sensitive to the user's needs. Three levels of interactivity can be perceived from a medical technology (Kleiner, 2006). At the first level, healthcare professionals use the technology as a means to generate data so the experts can make a diagnostic decision. So at this level of interaction the medical IT can be considered as an enabler. At the second level, the technology is more complicated and acts as a partner with the professionals. At this level both healthcare professionals and technology have the same weight. At the third level, the role of healthcare professionals is summarized in being supervisors over the technology. At the third level the technology takes on decision making process and recommended course of action and the operators just control the process. So, different level of interactivity with IT system is conducive to different perception toward using that system. For instance, healthcare professionals may perceive low level of interactivity with the CDS in comparison with the EMR. Theory of interactivity explains how the phenomenon operates in society. Interactivity studies apply to both the technologies and the user relationships with technology. McMillan (2002) has referred to product interactivity as a type of user-to-system interaction. In this study, level of

healthcare professionals' interactivity with new IT- based system is viewed as the antecedent of healthcare professional's perceived threat to autonomy. Perceived level of interactivity is largely based on the belief that the interactive nature of the clinical system can assist in creating cooperation between the healthcare professionals and the IT system. If healthcare professionals perceive that the nature of new clinical system is interactive, they perceive more control and in turn their perceived threat to professional autonomy will be reduced. Therefore, the more interactivity level with IT can give healthcare professionals a sense of involvement in decision making on care planning.

Perceived level of interactivity with CDS is divided into three parts; interactive features of CDS itself, being responsive to customized needs of healthcare professionals and the last one is the interaction between healthcare professionals and CDS. A question related to autonomy is how much control healthcare professionals have over how they respond to the CDS. This aspect of control is tied to whether it is mandatory for them to accept the CDS suggestion, whether they can easily do not take it into account, or whether it takes significant effort to override the advice (Barner, 2009). Previous theories of CDS gave more emphasis to CDS output and limited healthcare professionals' control, but the new methodology of using CDS states that healthcare professionals can filter, review and finally select the useful and relevant suggestions and override others. With the use of this method a balance between healthcare professionals' desire for autonomy and the CDS suggestions for improving patient safety or decreasing practice costs, is made.

To sum up, the main goal of CDS is to interact with healthcare professionals and assist them in providing care planning and diagnosis analysis. In this human-machine interaction, both the healthcare professional's knowledge and the CDS function are required to better analyze the patients' data rather than relying on either human or CDS to make it on their own. In the interactive relationship between CDS and health care professionals, healthcare professionals input the required information and CDS makes a set of suggestions, advice and diagnostic options for the healthcare professionals and they go over the output and select useful one and remove not relevant suggestions. In this manner, a CDS doesn't make decisions for healthcare professionals telling them what to do. Also, the process of interaction with CDS can be perceived more interactive when the possibility of adapting and customizing the system is possible in case of a patient. So, in this way healthcare professionals perceived CDS as an enabler or partner in which the decisions are not directly made by CDS.

Some studies have shown that healthcare professionals are unwilling to use computer systems for two main reasons; first for the fear of the systems and second for the fear of bringing change in their core care practices (Anderson, 1999; AcNielsen, 1998; Colliver, 2001; Baldwin, 2002). Gagnon et al., (2003) have explained that the behaviour of healthcare professionals to accept a new technology (like telemedicine) can be affected by their comparatively low computer literacy, which rooted in their established work routines, and the high professional autonomy they possess.

### **Computer self-efficacy**

Social cognitive theory implies two main cognitive factors affecting individuals' behavior: self-efficacy and outcome expectations (Compeau and Higgins, 1999). One application of social cognitive theory that developed by Bandura (1982), is to the context of IT usage. Based on the

social cognitive theory, the perceptions held by people about their efficacy affect their outcome expectation. Therefore a person with high self-efficacy is more likely to envision success picture. Different applications of the positive relationship between self-efficacy and outcome expectation are in the context of using computer, knowledge sharing and internet usage (Compeau and Higgins, 1999; Hsu et al., 2004). By definition, self-efficacy refers to the belief that a person has about his capability to do a particular job (Bandura, 1997). Conner and Armitage (1998), defined self-efficacy as an individual's confidence to conduct the behavior in question. With high level of self-efficacy a person believes he can handle the behavior easily.

More specific, computer self-efficacy defined as the confidence in one's ability to work with a computer or any specific programs. (Compeau and Higgins, 1995). Computer self-efficacy has been recognized to influence computer use, through its effect on the emotional state of the user by relieving his/her computer anxiety (Marakas et al., 1998).

Pain et al. (2003), state that the reason for the low acceptance of computer decision support systems is the fault of the doctors in applying the system correctly. As stated by Gagnon et al. (2003), physicians' decision making to adopt a new technology (such as telemedicine) can be problematic and subject to challenge because of their relatively low computer literacy which rooted in their established work routines, and the high professional autonomy they possess. In other words, computer literacy plays as a powerful weapon in computer-human interaction that can help healthcare professionals interact with clinical information systems. Although healthcare professionals are professional in their work and there is no doubt in having command over medical knowledge, computer literacy can play an important role in their interaction within computer-mediated contexts. By relying on computer self-efficacy, healthcare professionals better know the codes and ways to input patients' data and how the CDS can be applied.

Healthcare professionals may not be susceptible of using an IT which invalidates their professional autonomy, yet this fear may be moderated by their computer self-efficacy. Although healthcare professionals are professional in their work, computer literacy shouldn't be ignored in the interaction within computer-mediated contexts.

## **CONCEPTUAL FRAMEWORK**

### **Perceived threat to professional autonomy vs. intention to use IT**

As shown in Fig. 1, intention to use new technology is the dependent variable which refers to individual intention or readiness to accept a new technology (Davis, 1989). According to Walter and Lopez (2008), perceived threat to professional autonomy is defined as "the degree to which a person believes that using a particular system would decrease his or her control over the conditions, processes, procedures, or content of his or her work". Therefore, the first proposition is drawn as follows:

*Proposition 1. There is a negative relationship between healthcare professionals' perceived threat to professional autonomy and their intention to use a new CDS.*

### **Perceived usefulness and intention to use IT**

One of the strongest predictors of intention that embedded in TAM is perceived usefulness that labeled as "the degree to which a person believes that using a particular system would enhance

his or her job performance” (Davis, 1989). So, as far as clinical IT is perceived as a useful system, healthcare professionals are willing to use it. Therefore, the proposition is as follows:

*Proposition2. There is a positive relationship between healthcare professionals’ perceived usefulness and their intention to use a new CDS.*

Also, the proposed framework shows that healthcare professionals may not use a new technology which encroaches on their professional autonomy, even though the new technology is perceived useful. So, this effect is proposed in healthcare context as follows:

*Proposition3. There is a negative relationship between healthcare professionals’ perceived threat to professional autonomy and their perceived usefulness.*

Moreover, perceived threat to professional autonomy is proposed to affect intention to use an IT through perceived usefulness. Therefore, the next proposition is drawn as follows:

*Proposition4. Perceived usefulness partially mediates the relationship between perceived threat to professional autonomy and intention to use a new CDS.*

#### **The moderating role of computer self-efficacy**

Computer self-efficacy defined as “an individual judgment of one’s capability to use a computer” (Compeau and Higgins, 1995, p.192). Computer literacy can alleviate the anxiety in the interaction between computer and human as well as it helps users interact with the systems. Therefore, when healthcare professionals believe in their computer knowledge, skills and capability in performing medical IT, they perceive more control over interacting with the IT system. As a result their threat perceived from the procedures given by IT would be moderated and they become more inclined to use the medical IT. So, the other proposition is:

*Proposition5. Healthcare professionals’ computer self-efficacy moderates the relationship between their perceived threat to professional autonomy and intention to use a new CDS.*

#### **Perceived ease of use and perceived usefulness**

Perceived ease of use is considered as another main construct explaining user’s IT adoption behavior in TAM, defined as the extent to which a person believes that using a particular system would be effortless (Davis, 1989). Chau et al. (2002) have indicated that in medical context, healthcare professionals give more emphasis to usefulness of new IT rather than how much it is easy to function. So, we propose that effort expectancy doesn’t have direct effects on their intention to use new CDS and can only influence the healthcare professionals’ perceived usefulness. As a result, the proposition is presented as follows:

*Proposition6. There is a positive relationship between healthcare professionals’ perceived ease of use and their perception about the usefulness of the new CDS.*

### Interactivity perception vs. perceived threat to professional autonomy

Based on the interactivity theory which explains human – computer perceived interaction; a high level of interactivity can be demonstrated in simultaneous, reactive and continuous exchange of information (Zack, 1993) that assists in users’ tasks.

A higher perceived level of interactivity with CDS would cause high degree of control that healthcare professionals perceive during an interaction with the system. It consequently results in the less threat perceived to their professional autonomy and in turn they become more likely to use the new CDS. This path indicates that as healthcare professionals control over the health care process and care planning becomes low, due to the function of the new CDS, they become less likely to use the system. So, the propositions are presented as follows:

*Proposition7. There is a negative relationship between healthcare professionals’ interactivity perception and their perceived threat to professional autonomy.*

*Proposition8. Perceived threat to professional autonomy mediates the relationship between healthcare professionals’ interactivity perception with CDS and their intention to use the new system.*

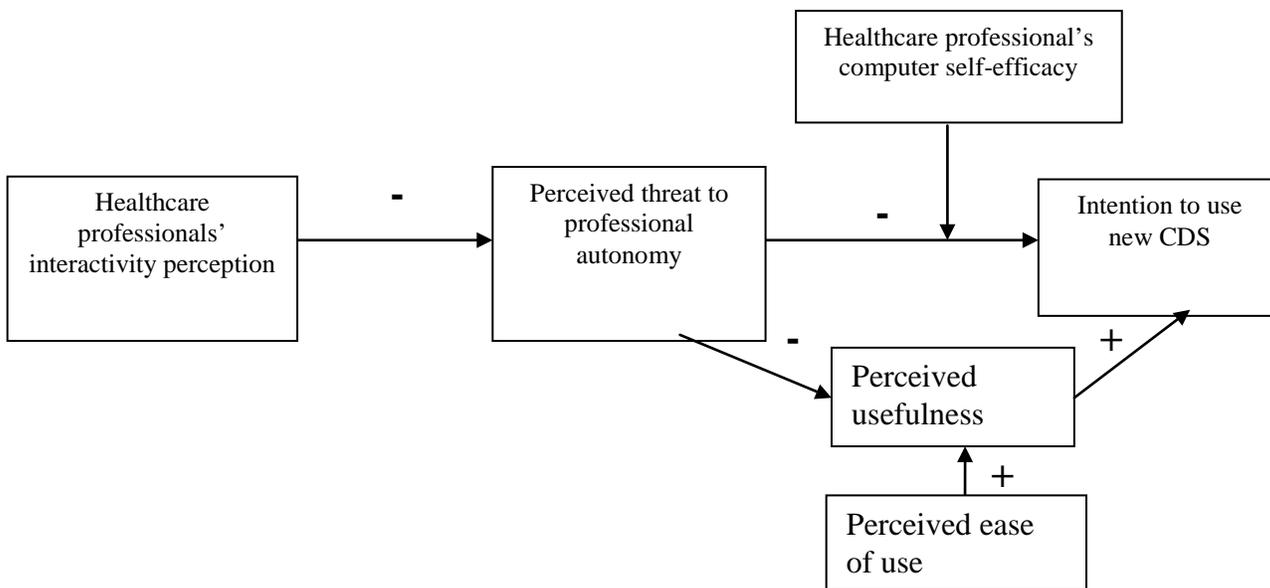


Fig.1 Conceptual framework

### IMPLICATIONS OF THE STUDY

#### Theoretical

One of the most important issues in healthcare professionals’ IT acceptance is the negative reaction they show toward the threats exerted by IT systems to invalidate their professional autonomy. The purpose of this research, as a conceptual research, is to find a way to improve healthcare professionals’ IT adoption. Past studies concentrated more on performance expectancy as the most significant factor affecting healthcare professionals’ IT acceptance. This

study ( as a conceptual study) proposes that greater level of interactivity with CDS may cause healthcare professionals become more likely to make use of guidelines, suggestions and advice given by a CDS in order to change their traditional work activities and improve their job performance. From a theoretical view, the study contributes to IT adoption theories explaining user's intention to accept new technology. In this study perceived threat to professional autonomy is regarded as the most important characteristics of healthcare professionals and it has been synthesized in the TAM with the aim of finding a modified model for healthcare professionals' IT acceptance behaviour. Therefore, the research adds to the body of knowledge and extends the understanding in the field of IT adoption in the medical context by considering new factors and theories. Also the study would propose a number of implications for IT practitioners.

### **Practical**

The functional contribution of the research is to help health care management consider the professional characteristics of healthcare professionals whenever they want to introduce new technology. Also, managers can pay attention to healthcare professionals' interactivity level with CDS to alleviate the negative effects on their autonomy and finally to get better IT acceptance rate. From a managerial standpoint, this study may contribute to propose the factors that might be encouraged and cultivated by a hospital's manager and the factors that might be mitigated to increase behavioral intention to accept new CDS among healthcare professionals. Only when CDS systems are accepted by healthcare professionals, managers can improve the achievable gains of the systems (Walter and Lopez, 2008). Otherwise, Introducing new CDS if is not followed by the utilization of the system can resemble "a chevalier without sword".

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# REACTIONS TO THE 2008 ECONOMIC CRISIS AND THE THEORY OF PLANNED BEHAVIOR

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## **ABSTRACT**

*One of the largest economic crises faced by this generation in the United States had many adults re-thinking their employment and investment strategies. By the early fall of 2008, many Americans saw their financial and real estate portfolios shrink significantly, while others feared that their savings were in jeopardy. All of this psychic pain provided a unique quasi-experiment for attempts to learn about the effects of perceptions on investing and saving behavior. Understanding the psychological factors that determine people's intent to change jobs or move investments in different economic environments is important for understanding and eventually predicting people's economic behavior. This study examines a number of factors identified in the Theory of Planned Behavior to understand what motivates peoples' intentions regarding these behaviors in a time of historical significance. We find evidence that norms drive peoples' intent to change jobs and investment strategies. Attitude is also a significant predictor of intent to change jobs. Overall, the Theory of Planned Behavior model appears to explain a substantial portion of the variance in intent to reallocate money.*

## **INTRODUCTION**

By the early fall of 2008, all mainstream US news media began warning that problems experienced in financial institutions were having a detrimental effect on Wall Street and were threatening the stability of at least some banks. They reported on high level, urgent meetings of the Secretary of the Treasury and the Chairman of the Federal Reserve System with the heads of federal agencies and investment banks. In that environment, many middle income Americans saw the value of their financial portfolios decrease significantly, and others feared that their savings were in jeopardy. All of this psychic pain provided a unique quasi-experiment for attempts to learn about the effects of perceptions on investing and saving behavior.

Peoples' intentions and actions, in aggregate can shift economic markets, and not always in a good way. A deeper analysis is needed to understand what factors influence intentions and actions. The theory of planned behavior asserts that people think first (intend) and then act. This theory has been successfully applied to predicting actions in a wide variety of decisions and

outcomes, including losing weight (Ajzen, 1991) and computer resource center usage by business students (Taylor and Todd, 1995). In the theory of planned behavior, attitudes, perceived behavioral control, self-efficacy, and behavioral norms are all dependent variables of intent to act, which in turn is a dependent variable to actual behavior. In this paper, we examine its usefulness for predicting how people intend to react (with respect to their employment and investment strategies) to a perceived national economic crisis. In a meta-study of the link between intent and action, Sheppard, et al. (1988) found the link between these two variables to be both significant and robust in size. The rest of the paper is organized as follows: relevant literature concerning the theory of planned behavior is reviewed. Next the research model is presented, the methodology is described, and the results are analyzed. Finally, the findings are discussed, along with implications for economists and future avenues for research are presented.

## **LITERATURE REVIEW**

Neoclassical economic theory assumes “bounded rationality,” meaning that individuals almost always weigh their opportunity costs and choose an action that will increase their utility. Only occasionally will individuals make impulse decisions. Fishbein and Ajzen’s (1975) theory of reasoned action predicts that subjective norms and attitudes are good predictors of intent, which in turn predicts behavior. Sheppard et al. (1988) analyzed 86 Theory of Reasoned Action studies, finding an average correlation of over 0.53 between intention and behavior. Relying on this work, the correlation between intent and action is acknowledged, but not tested, here. The theory of reasoned action evolved into the theory of planned behavior, which adds self-efficacy as a cause of intent (Ajzen, 1985 and Ajzen, 1991). This paper compares the relationships of one traditional dependent variable, intent to act, during a global financial crisis according to the theory of planned behavior, as adapted for the specifics of this financial crisis. Additionally, we control for standard demographic variables, which we expect to have no significant effect.

## **HYPOTHESES AND MODEL DESIGN**

### **Intent to Change Jobs and Intent to Move Money**

Intent is the extent to which a person is willing to exert an effort in order to perform a specified behavior (e.g. changing jobs). This paper measures intent to react to the national financial crisis by changing income streams (voluntary employment change) and investment allocation. Respondents were asked for example, on a 5-point scale how true (1= very untrue and 5=very true) was the following statement: “...I intend to move my financial assets from financial markets to cash or “... I intend to move my financial assets from financial markets into banks.

### Primary Dependent Variables

Perceived behavioral control is the amount of effect that people believe they have on their financial circumstances. A person may want to change jobs, but feel that there are no comparable jobs available. Stated as a hypothesis, perceived behavioral control is expected to have a significant, positive effect on both intents, or:

$$\begin{aligned} H_1: \text{Int Job} &= B_0 + B_1 * \text{PBC} \\ H_2: \text{Int Invest} &= B_0 + B_1 * \text{PBC} \end{aligned}$$

Where Int Job is the intent to change jobs, Int Invest is the intent to change one's investment portfolio to a more conservative mix of savings and other insured investments, and PBC is perceived behavioral control over one's financial situation.

Ajzen (1991) found that awareness of other people's opinions produced changes in respondents' intents. Subjective norms are defined here as "the awareness of peers' changing asset allocations (jobs)." Applied to this study, the general construct of subjective norms will be tested to see if significant others' opinions and purported actions affect peoples' intent to change jobs or reallocate investments. The two measures are: "As a result of current changes in the economy my relatives are moving their financial assets from financial markets into banks" and "As a result of the current changes in the economy my relatives are moving their financial assets from financial markets into cash." The response options are on a 5-point scale, with 1 being "very untrue" and 5 being "very true." Consistent with the theory of planned behavior, it is anticipated that the relationship between subjective norms and both intents is positive and significant:

$$\begin{aligned} H_3: \text{Int Job} &= B_0 + B_1 * \text{NORM} \\ H_4: \text{Int Invest} &= B_0 + B_1 * \text{NORM} \end{aligned}$$

Where NORM measures subjective norms, which is how the respondents' friends and family are reacting to the crisis in terms of moving jobs and making their portfolio more conservative.

Ajzen (1991) tested the effect of self-efficacy, which is the amount of confidence one has in his/her own abilities. Consistent with the theory of planned behavior, it is anticipated that the relationship between self-efficacy and both intents is positive and significant:

$$\begin{aligned} H_5: \text{Int Job} &= B_0 + B_1 * \text{SE} \\ H_6: \text{Int Invest} &= B_0 + B_1 * \text{SE} \end{aligned}$$

Here, self-efficacy is the confidence one has in his/her own ability to change jobs or to make his/her portfolio mix to more conservative savings accounts.

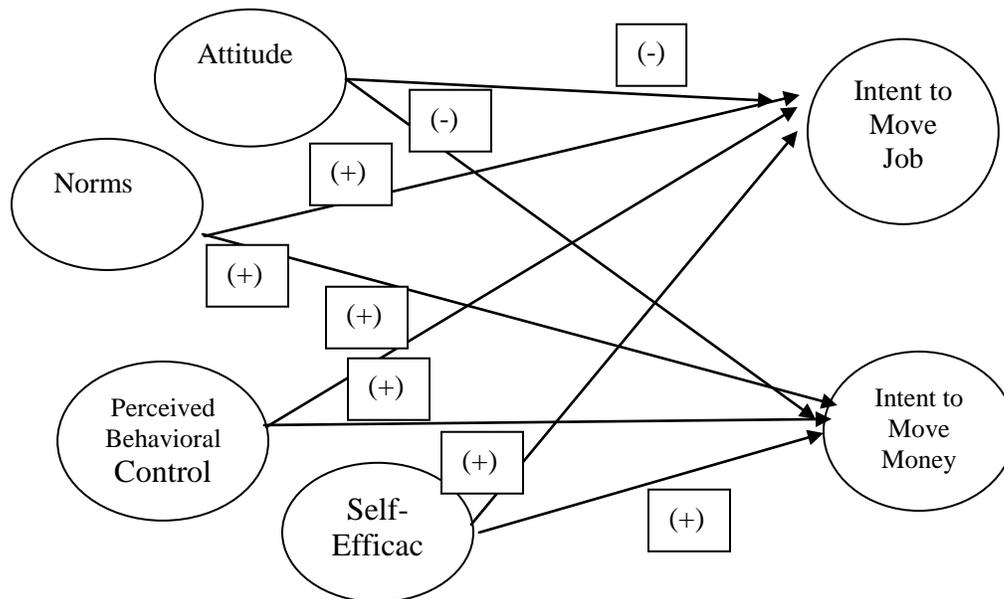
Ajzen (1991) also tested the effect of affective attitude on intent, finding a significant positive relationship. Attitude can be generally defined as "how favorably or unfavorably the examined behavior is viewed." Attitude is operationalized as participants' responses to survey questions on how secure they felt (on a 5-point scale) about three aspects of their finances: savings accounts, investment funds (stocks and bonds) and incomes from their jobs. Respondents were asked to indicate, for example, how true (1= very untrue and 5=very true) was the following statement: "I

feel that my savings in a bank is secure.” It is anticipated that the relationship between attitude about the economy and both intents is negative and significant:

$$H_7: \text{Int Job} = B_0 - B_1 * \text{ATT}$$

$$H_8: \text{Int Invest} = B_0 - B_1 * \text{ATT}$$

**Figure 1 – Research Model**



Control variables (including age, gender, household income, racial identity, religiosity and experience) were also tested, with no significant results expected. The model can be expressed pictorially, as shown in Figure 1.

**Sample and Data Collection**

Approximately 458 members of a South Texas university’s students, faculty members, and administrators/staff participated in this survey. Respondents from each of the categories were selected both purposively and on the basis of convenience. For example, those professors teaching classes of over 60 students were more likely to be solicited for permission to administer the questionnaires in their classes than those with smaller classes. Results for students did not vary significantly from the results of faculty and staff, indicating the fitness of students as subjects. Care was taken to ensure that participating students came from different class standings (freshmen, to graduate) and that faculty and staff from every college in the university were represented. Overall, the sample reflects the general demographic distribution of the university. Unlike students’ questionnaires, however, faculty members, staff and administrators’ questionnaires and Informed Consent Forms were mailed with separate return, self-addressed envelopes.

To explore any possible bias resulting from the use of students, bivariate correlations between demographic data and the independent variables (perceived behavioral control, norms, self-efficacy and attitude) and dependent variables (intent to change job, intent to reallocate investments) were calculated. There were no significant correlations, except as noted in the results section. Based on these results, it appears that demographic factors are generally not

significant in explaining intent; therefore, the use of student subjects, whose demographic data may not be reflective of the general population, can provide useful information.

The survey instrument itself was extensive and collected information beyond that pertaining to the Theory of Planned behavior and control variables. Only information pertaining to those constructs was extracted and analyzed here. The survey is shown in Appendix A. Note that some questions are reverse-scaled to protect against positive response bias. Written instructions were included with the instrument to the participants, to assure the confidentiality of participants and stress the voluntary nature of participation.

The strength of the model and the scales used to measure their underlying latent constructs, shown in Figure 1, were assessed by applying partial least squares (PLS) analysis. PLS addresses both the effectiveness of the model and the reliability of the underlying measures simultaneously and has many additional advantages, such as relaxed error and distribution assumptions (Wold, 1982).

## **RESULTS**

The age of the participants ranged from 16 to 71, with a median age of 23. Fifty-nine percent were female. Respondents included those with very little perceived experience to those with more extensive experience. The average participant rated herself as having experience of 3.0 on a 5-point scale. Approximately 71 percent of the respondents live in households with monthly income of at least \$2,000, and the average monthly income was \$4,818, similar to that of the national average.

In order to assess the construct validity of each measurement item, factor loadings are calculated. A factor loading of 0.70 or greater is considered to be a substantial correlation between the indicator and the latent variable (Chin, 1998). Barclay et al. (1995) recommend a loading of .707 or higher but he notes that it is not uncommon for items in newly developed scales to fail to meet the .707 level of reliability. Because PLS minimizes the error variance for the whole model, newly developed scale items will generally be weighted less.

The self-efficacy factors did not hold together well, and those items that did not load well with others in the group were corresponding weighted very low. Items for the other factors, with only five exceptions, have factor loadings of 0.70 or greater. All but one of these exceptions was greater than 0.60 (see Table 1).

**Table 1 – Primary Measurement Model Variables using Primary Least Squares**

The	Factor	Indicator/ Question #	Factor Loading	Weight
	Intent – Reallocate Assets	71	0.8223	0.4987
	Intent – Reallocate Assets	72	0.9114	0.6883
	Intent - Move Job	73	0.8667	0.6014
	Intent – Move Job	74	0.1645	-0.0237
	Intent – Move Job	75	0.8586	0.5809
	Perceived Behavioral Control	76	0.7382	0.5844
	Perceived Behavioral Control	77	0.8315	0.3199
	Perceived Behavioral Control	78	0.7732	0.4238
	Self-efficacy	Own Business	0.3674	0.0946
	Self-efficacy	Partner	0.9846	0.9898
	Self-efficacy	Independent	0.0561	-0.1663
	Norms	66	0.6042	0.3220
	Norms	67	0.6315	0.3581
	Norms	68	0.7574	0.3107
	Norms	69	0.6986	0.2594
	Norms	70	0.8189	0.3813
	Attitude	63	0.7671	0.3849
	Attitude	64	0.6312	0.2104
	Attitude	65	0.8587	0.7355

results of the confirmatory factor analysis suggest that the measurement items within each scale are highly correlated with the underlying latent variable. Additionally, half or more of the average variance for each factor is explained, with the exception of the self-efficacy construct. This indicates that the measurement items in these scales exhibit convergent validity, in that they are highly correlated to each other due to a single underlying construct. The average variance explained by the indicators is summarized in Table 2.

**Table 2 – Common Variance Explained and Composite Reliability Measures**

Construct	Average Variance Explained	Composite Reliability
Intent – Reallocate Assets	0.753	0.859
Intent - Move Job	0.505	0.706
Perceived Behavioral Control	0.611	0.825
Self-efficacy	0.369	0.512
Norms	0.499	0.831
Attitude	0.575	0.776

To test the reliability of each of the scales, a composite reliability is also presented in Table 2. Except for the self-efficacy construct, each of the reliability statistics generally approaches or exceeds the 0.80 recommended by Nunnally and Bernstein (1994).

The correlations among the latent variables are shown in Table 3, with the numbers presented in the diagonal depicting the square root of the average common variance extracted by the measurement items within the scale (the average inter-item correlation). The correlations among the latent variables are smaller than the square root of the common variance extracted within each scale, demonstrating divergent validity (items within a scale are more significantly related to one another than to items in other scales). Based on the preceding results, the measurements exhibit reasonable validity and reliability.

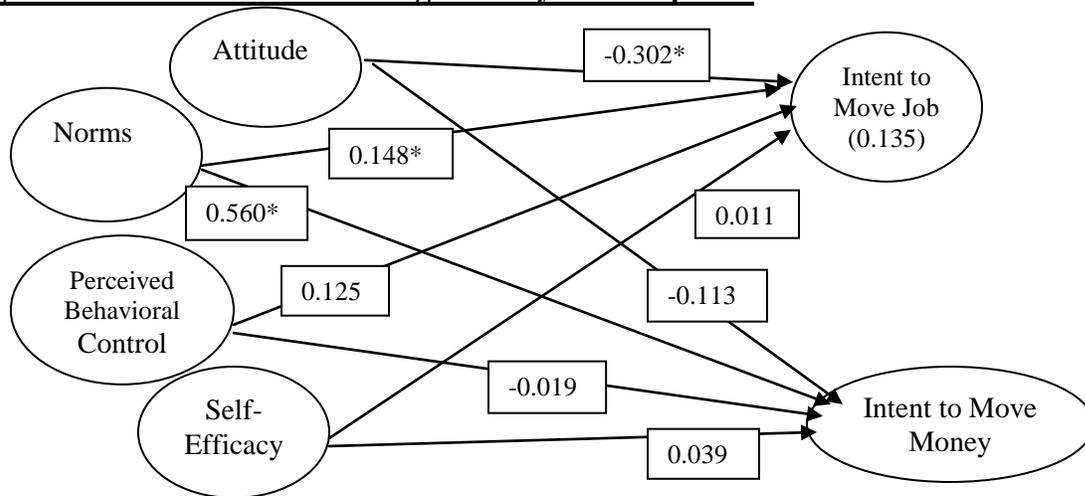
**Table 3 – Correlations among Latent Variables**

Construct	Intent to Reallocate Assets	Intent to Move Job	Perceived Behavioral Control	Self-efficacy	Norms	Attitudes
Intent – Reallocate Assets	0.868					
Intent - Move Job	0.190	0.711				
Perceived Behavioral Control	-0.080	0.071	0.782			
Self-efficacy	0.124	0.023	0.020	0.607		
Norms	0.592	0.203	-0.081	0.162	0.706	
Attitude	-0.231	-0.315	0.140	0.049	-0.210	0.758

\*The numbers presented in the diagonal depicting the square root of the average common variance extracted by the measurement items within the scale.

The path coefficients to the indicators from the latent variables (epistemic correlations) are presented in Figure 2. Three path coefficients are significant at  $\alpha \leq 0.05$  and of the correct sign, supporting hypotheses 3 (Norm to Intent to Move Jobs), 4 (Norm to Intent to Reallocate Assets) and 7 (Attitude to Intent to Move Jobs). All other paths (hypotheses 1, 2, 5, 6 and 8) were insignificant.

**Figure 2 – Structural Model Using Primary Least Squares**



\* Significant at  $\alpha \leq 0.05$ .

## DISCUSSION

A path coefficient greater than 0.20 is defined as meaningful by Chin (1998). Analyses of the results show that norms are a large, significant determinant of whether people intend to reallocate their assets.

Attitude is the significant determinant of whether people intend to move jobs. Norms influence whether one intends to change jobs, but not as much as attitude. The theory of planned behavior appears to be only moderately useful in predicting job turnover in times of financial crisis.

The amount of variance in the endogenous variables explained by the model is represented by the squared multiple correlations of 0.135 for intent to move jobs and 0.364 for intent to reallocate assets. The model appears to explain a substantial portion of the variance in intent to reallocate money. To determine the usefulness of the research model in Figure 2, the results of this model are compared to those from a simple model, in which norms are the only antecedents to intent to move money in to safer investment vehicles. In the simple model, the path from norms to intent to move money is significant ( $\alpha \leq 0.005$ ), the explained variance in the attitude variable is 0.351 and the path size is 0.592. The addition of other independent variables do not add much explanatory power to the model, indicating that in predicting whether people will move out of the stock market and into conservative bank accounts, people are most heavily influenced by peer behavior. They make their investment decisions by following the crowd. Over one-third of people’s investment decisions in a crisis come from referencing the behavior of family and friends, a result that lends credence to the powerful intrusion of social psychology on the otherwise rational man (*homo economicus*). Indeed, a blended, behavioral economics approach is gathering favor in policy-setting circles (Spiegel, 2009). To test whether the participants are influential on their family and friends rather than the other way around, the model was revised to show causality in the opposite direction and re-tested. The result was significantly worse. It appears that at least with respect to norms, people are following the crowd, not leading it, consistent with the theory of planned behavior, and encouraging a deeper look at collective economic behavior through a social psychology lens.

## **FURTHER RESEARCH**

The effect of norms on individuals' decisions to move money dominates the findings in this paper. This information is useful and simultaneously consistent with behavioral economic theory and contrary to economic theory portraying each individual investor as a "rational man." Much of the recent behavioral economic theory centers on how individuals behave. From these findings, social psychology theory might deserve a second, harder look. Why do people follow the crowd? Economically, how to *crowds* behave?

Further, if people are following the crowd when making decisions, how should policy makers respond? Should popular opinion alone rule, and if so, should we (how can we) influence the popular opinion in times of economic crisis?

## **LIMITATIONS**

The self-efficacy construct was measured essentially with a single item scale, in that the being a partner in a business modeled well with the theory of planned behavior, but the other measures of independence did not. It is preferable that measurement scales contain multiple, cohesive items. Future research with improved self-efficacy measures might lead to interesting and significant findings.

Finally, actual behavior was not included in the study. This is not a substantial problem, as previous studies in the behavioral intentions research stream have supported a strong relationship between intention and actual behavior.

## **CONCLUSION**

In predicting people's intent to change jobs, our model was weak, but with some significant findings: We find evidence that norms and attitude toward conservative financial investment strategies drive peoples' intent to change jobs. In predicting people's intent to move their money to conservative investments, like bank accounts, the model is much more robust, with over 36% of the intent explained by the model. Norms are significant and strongly positive. People intended to react to the global financial crisis the same way their peers did, indicating a strong social aspect to individuals' plans to handle their personal finances. This finding is important, adding to the growing literature that people are social, not strictly rational investors.

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**APPENDIX**

*Today's date* \_\_\_\_\_

Read each item and, as honestly as you can, answer the question: “How characteristic or true is this of me?” Circle the appropriate number, using the following scale:

**1 = very untrue    2 = untrue    3 = neutral    4 = true    5 = very true    DK = don't know**

Please answer *all* the following questions.

1. I believe that getting together with one's friends to party is one of life's important pleasures.	1	2	3	4	5
2. Familiar childhood sights, sounds, and smells often bring back a flood of wonderful memories.	1	2	3	4	5
3. Fate determines much in my life.	1	2	3	4	5
4. I often think of what I should have done differently in my life.	1	2	3	4	5
5. My decisions are mostly influenced by people and things around me.	1	2	3	4	5
6. I believe that a person's day should be planned ahead each morning.	1	2	3	4	5
7. It gives me pleasure to think about my past.	1	2	3	4	5
8. I do things impulsively.	1	2	3	4	5
9. If things don't get done on time, I don't worry about it.	1	2	3	4	5
10. When I want to achieve something, I set goals and consider specific means for reaching those goals.	1	2	3	4	5
11. On balance, there is much more good to recall than bad in my past.	1	2	3	4	5
12. When listening to my favorite music, I often lose all track of time.	1	2	3	4	5
13. Meeting tomorrow's deadlines and doing other necessary work come before tonight's play.	1	2	3	4	5
14. Since whatever will be will be, it doesn't really matter what I do.	1	2	3	4	5
15. I enjoy stories about how things used to be in the “good old times.”	1	2	3	4	5
16. Painful past experiences keep being replayed in my mind.	1	2	3	4	5
17. I try to live my life as fully as possible, one day at a time.	1	2	3	4	5
18. It upsets me to be late for appointments.	1	2	3	4	5
19. Ideally, I would live each day as if it were my last.	1	2	3	4	5
20. Happy memories of good times spring readily to mind.	1	2	3	4	5
21. I meet my obligations to friends and authorities on time.	1	2	3	4	5
22. I've taken my share of abuse and rejection in the past.	1	2	3	4	5

23. I make decisions on the spur of the moment.	1	2	3	4	5
24. I take each day as it is rather than try to plan it out.	1	2	3	4	5
25. The past has too many unpleasant memories that I prefer not to think about.	1	2	3	4	5
26. It is important to put excitement in my life.	1	2	3	4	5
27. I've made mistakes in the past that I wish I could undo.	1	2	3	4	5
28. I feel it's more important to enjoy what you're doing than to get work done on time.	1	2	3	4	5
29. I get nostalgic about my childhood.	1	2	3	4	5

Read each item and, as honestly as you can, answer the question: "How characteristic or true is this of me?" Circle the appropriate number, using the following scale:

**1 = very untrue    2 = untrue    3 = neutral    4 = true    5 = very true    DK = don't know**

Please answer *all* the following questions.

30. Before making a decision, I weigh the costs against the benefits.	1	2	3	4	5
31. Taking risks keeps my life from becoming boring.	1	2	3	4	5
32. It's more important for me to enjoy life's journey than to focus only on the destination.	1	2	3	4	5
33. Things rarely work out as I expected.	1	2	3	4	5
34. It's hard for me to forget unpleasant images of my youth.	1	2	3	4	5
35. It takes joy out of the process and flow of my activities if I have to think about goals, outcomes, and products.	1	2	3	4	5
36. Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.	1	2	3	4	5
37. You can't really plan for the future because things change so much.	1	2	3	4	5
38. My life path is controlled by forces I cannot influence.	1	2	3	4	5
39. It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.	1	2	3	4	5
40. I complete projects on time by making steady progress.	1	2	3	4	5
41. I find myself tuning out when family members talk about the way things used to be.	1	2	3	4	5
42. I take risks to put excitement in my life.	1	2	3	4	5
43. I make lists of things to do.	1	2	3	4	5
44. I often follow my heart more than my head.	1	2	3	4	5
45. I am able to resist temptations when I know that there is work to be	1	2	3	4	5

done.					
46. I find myself getting swept up in the excitement of the moment.	1	2	3	4	5
47. Life today is too complicated; I would prefer the simpler life of the past.	1	2	3	4	5
48. I prefer friends who are spontaneous rather than predictable.	1	2	3	4	5
49. I like family rituals and traditions that are regularly repeated.	1	2	3	4	5
50. I think about the bad things that have happened to me in the past.	1	2	3	4	5
51. I keep working at difficult, uninteresting tasks if they will help me get ahead.	1	2	3	4	5
52. Spending what I earn on pleasures today is better than saving for tomorrow's security.	1	2	3	4	5
53. Often luck pays off better than hard work.	1	2	3	4	5
54. I think about the good things that I have missed out on in my life.	1	2	3	4	5
55. I like my close relationships to be passionate.	1	2	3	4	5
56. There will always be time to catch up on my work.	1	2	3	4	5

Read each item and, as honestly as you can, answer the question: "How characteristic or true is this of me?" Circle the appropriate number, using the following scale:

**1 = very untrue    2 = untrue    3 = neutral    4 = true    5 = very true    DK = don't know**

Please answer *all* the following questions.

57. In <b>Fall 2007</b> I felt that my savings in a bank were secure.	1	2	3	4	5	DK
58. In <b>Fall 2007</b> I felt that my investment funds (stocks & bonds) were secure.	1	2	3	4	5	DK
59. In <b>Fall 2007</b> I felt that my job (source of income) was secure.	1	2	3	4	5	DK
60. In <b>August 2008</b> I felt that my savings in a bank were secure	1	2	3	4	5	DK
61. In <b>August 2008</b> I felt that my investment funds (stocks & bonds) were secure.	1	2	3	4	5	DK
62. In <b>August 2008</b> I felt that my job (source of income) was secure.	1	2	3	4	5	DK
63. <b>Today</b> I feel that my savings in a bank is secure.	1	2	3	4	5	DK
64. <b>Today</b> I feel that my investment funds (stocks & bonds) are secure.	1	2	3	4	5	DK
65. <b>Today</b> I feel that my job (source of income) was secure.	1	2	3	4	5	DK
66. As a result of changes in the economy many of my relatives are moving their financial assets from financial markets into banks.	1	2	3	4	5	DK

67. As a result of changes in the economy many of my relatives are moving their financial assets from financial assets into cash.	1 2 3 4 5 DK
68. As a result of changes in the economy many of my relatives are looking for a new job	1 2 3 4 5 DK
69. As a result of changes in the economy many of my relatives are retiring.	1 2 3 4 5 DK
70. As a result of changes in the economy many of my relatives are training for a new job.	1 2 3 4 5 DK
71. As a result of changes in the economy many of my relatives are - _____ (please specify and state extent to which it true.	1 2 3 4 5 DK
72. As a result of how I feel now, I intend to move my financial assets from financial markets into banks.	1 2 3 4 5 DK
73. As a result of how I feel now, I intend to move my financial assets from financial assets into cash.	1 2 3 4 5 DK
74. As a result of how I feel now, I intend to look for a new job.	1 2 3 4 5 DK
75. As a result of how I feel now, I intend to retire.	1 2 3 4 5 DK
76. As a result of how I feel now, I intend to train for a new job.	1 2 3 4 5 DK
77. As a result of how I feel now, I intend to _____ (please specify and state extent to which it. is true.)	1 2 3 4 5 DK
78. I have the power to improve my current financial situation.	1 2 3 4 5 DK
79. I understand what is going on in the economy	1 2 3 4 5 DK
80. I understand what is going on in the financial markets	1 2 3 4 5 DK

**DEMOGRAPHICS: Please circle the number that corresponds to the category that best describes you:**

**Sex:** 1. Male      2. Female      **Age at last birthday** \_\_\_\_\_      **Zip code** \_\_\_\_\_

**I own my own business.** 1. Yes      2. No

**I'm a partner in a business.** 1. Yes      2. No

**I do independent consulting work.** 1. Yes      2. No

**I work in** \_\_\_\_\_ **industry**

**Currently taking college classes?** 1. Yes      2. No **Your major (college students only)**

\_\_\_\_\_

**Current household monthly income (approximately)** \_\_\_\_\_

**Approximate dollar value of your financial assets (savings, investments etc.)?**

- |                     |                       |                       |
|---------------------|-----------------------|-----------------------|
| 1. less than 25,000 | 8. 175,000-199,999    | 15. 350,000 - 374,999 |
| 2. 25,000-49,999    | 9. 200,000-224,999    | 16. 375,000 – 399,999 |
| 3. 50,000- 74,999   | 10. 225,000- 249,999  | 17. 400,000 – 424,999 |
| 4. 75,000- 99,999   | 11. 250,000 - 274,999 | 18. 425,000 – 449,999 |
| 5. 100,000- 124,999 | 12. 275,000 – 299,999 | 19. 450,000 – 474,999 |
| 6. 125,000-149,999  | 13. 300,000 – 324,999 | 20. 475,000 – 499,999 |
| 7. 150,000-174,999  | 14. 325,000 – 349,999 | 21. 500,000 +         |

**IN PERCENTAGES, how your financial assets are distributed among the following (must add up to 100%).**

1. Checking accounts \_\_\_\_\_ 2. Savings accounts \_\_\_\_\_  
3. Stocks/bonds/mutual funds \_\_\_\_\_ 4. Retirement/pension funds \_\_\_\_\_  
5. Other \_\_\_\_\_ (please specify \_\_\_\_\_)

**IN PERCENTAGES, how your real assets are distributed among the following (must add up to 100%).**

1. Home \_\_\_\_\_ 2. Vehicles \_\_\_\_\_ 3. Other real estate \_\_\_\_\_  
4. Personal property (furniture, tools electronics, jewelry, etc.) \_\_\_\_\_  
5. Other \_\_\_\_\_ (please specify: \_\_\_\_\_)

**Highest level of educational attainment:** 1. Less than high school 2. High school/GED

3. Some college 4. Bachelors degree 5. Masters degree 6. Above Masters degree

**What is the subject area is your highest degree (college graduates only)? \_\_\_\_\_**



# **THE EFFECT OF NEW INTERNATIONAL ACCOUNTING STANDARDS ON FIRMS FROM INDIA AND US**

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## **ABSTRACT**

*Companies that participate in the “Global Economy” must develop accounting systems that provide the internal information required by managers to run the organization and external information needed by lenders, shareholders, and government officials in all countries in which the companies operate. Accounting systems deal with the monetary structures of countries, which are derived from local laws, socio-economic conditions, cultural standards and traditions.*

*Economic globalization highlights the need for common bases of understanding of financial structure. As different countries try to open up their industries and their capital markets to foreign investment, multiple GAAPs create problems of consistent reporting to potential investors. To reduce the negative effects of these differences, the International Financial Reporting Standards Board has proposed a set of common financial reporting standards (IFRS). “Converging” to a common set of reporting standards will cause short-term problems which, hopefully, will lead to long-term net benefits. Supporters of this effort hope that widespread adoption of these common reporting standards will increase investors’ confidence and reduce barriers to the flow of investment capital.*

*This paper uses a computer program specifically developed to show how financial data can be translated from one system to another. Using this software, the paper shows how the proposed convergence to an internationally accepted set of common financial reporting standards can reduce the cost of doing business with international partners and reduce the risk of investing in international operations.*

## **INTRODUCTION AND BACKGROUND**

Accounting systems deal with the monetary structures of countries, which are derived from local laws, socio-economic conditions, cultural standards and traditions. Accommodations to cultural, legal, and socio-economic factors give accounting systems unique structures. In spite of the common framework of principles, countries integrate specific aspects of culture, socio-economic framework and legal structure into unique sets of Generally Accepted Accounting Principles or GAAPs.

Accounting standards and practices reflect the influence of legal, cultural, political and economic factors. Because these factors vary by country, the underlying goals and philosophy of national accounting systems vary dramatically (Griffin, 2009).

In common law countries like the United States and United Kingdom, accounting procedures evolve from decisions of independent standard-setting boards. Accountants in common law countries follow generally accepted accounting principles (GAAP) that provide a “true and fair” value of a firm’s performance based on standards promulgated by standard-setting boards. Operating within the boundaries of GAAP, accountants can exercise professional discretion in reporting a “true and fair” depiction of a firm’s performance (Griffin, 2009).

In countries which rely on code law, national accounting practices are likely to be codified rather than based on the collective wisdom of professional accounting groups. In France, for example, firms must adhere to a national chart of accounts. This accounting system dates back to the seventeenth century and reflects a long tradition of strong government control over the economy (Griffin, 2009).

In countries where accounting practices are determined by national laws, the government plays the major role in monitoring accounting practices. Common law countries rely to a greater extent on private litigation to enforce the accuracy and honesty of accounting practices.

A country’s accounting system may also reflect its cultural background. Large companies in France must publish a “social balance sheet” detailing compensation of their workforces. Strong anti-inflation biases are embedded in German accounting practices as a reaction to the hyperinflation of the early 1920s (Griffin, 2009).

Accounting system structure is heavily influenced by economic and political systems also. In centrally planned economies, accounting systems are designed to provide information which shows how state funds are used and whether state-mandated production quotas are being met.

## **EFFECT OF ECONOMIC GLOBALIZATION**

Companies that participate in the “Global Economy” must develop accounting systems that provide the internal information required by managers to run the organization and external information needed by lenders, shareholders, and government officials in all countries in which the companies operate.

Economic globalization highlights the need for common bases of understanding of financial structure. As different countries try to open up their industries and their capital markets to foreign investment, multiple GAAPs create problems of consistent reporting to potential investors. To reduce the negative effects of these differences, organizations like the International Financial Reporting Standards Board has proposed a set of common financial reporting standards (IFRS). Supporters of this effort hope that widespread adoption of these common reporting standards will increase investors’ confidence and reduce barriers to the flow of investment capital. “Converging” to a common set of reporting standards will cause short-term problems which, hopefully, will lead to long-term net benefits.

Currencies, dates and other units of measure differ significantly from one country to the next. In the U.S., the last day of 2009 would be written as December 31, 2009 and a million currency units would be written as \$1,000,000.00. In India, the last day of 2009 might be written as 31 दिसम्बर 2009, and a million currency units might be ₹ 10,00,000.00. Because of the differences in currencies and languages, companies have to make choices as to how their statements will be presented.

### **METHODS FOR COMPANIES TO DEAL WITH GLOBAL ACCOUNTING ISSUES**

Companies whose operations or financing become globalized may not be able to ignore differences between reporting requirements at home and different reporting practices in countries where they have significant numbers of customers or investors. According to Sorensen (2007), methods for dealing with different reporting requirements include:

- Do nothing extra for foreign countries
- Convenience Translations
- Convenience Statements
- Limited Restatements
- Reconciliation to foreign country's GAAP
- Secondary Statements

Many companies provide the same reports to foreign users that they provide to domestic users. This “**Do Nothing Extra**” approach is reasonable for companies that are not particularly interested in attracting foreign investors. Such companies do not see enough additional benefits to justify the cost of taking any additional action to attract foreign investors.

**Convenience translations** represent the minimal effort on the part of companies to respond to foreign users. In a convenience translation, the preparer translates the language of the financial statements to the language of the foreign country, but the accounting principles and currency are still those of the preparer's country. In international accounting literature, the term **Convenience Statement** means that reports are prepared in a foreign user's language and currency, but the accounting principles remain those of the home country.

In addition to translating language and currency, **Limited Restatements** provide supplementary disclosures to reconcile financial statements to the user's GAAP. **Reconciliation to Foreign GAAP** is similar to limited restatement, but includes more complete restatements of financial information to accommodate regulations of the countries where securities are listed. Preparation of **Secondary Statements** means translating the home country annual report into a foreign country's language, currency, and accounting principles.

Translating home country annual report into a foreign country's language, currency, and accounting principles can be very expensive. Companies wishing to list stock on several different exchanges worldwide can use **Universal Secondary Statements** rather than **Country-Specific Secondary Statements**. In universal secondary statements, a company could use its own currency or a major international currency such as the euro or the U.S. dollar. The language of such statements would be English and the format would be in accordance with International Financial Reporting Standards.

## TOOLS FOR TEACHING ACCOUNTING SYSTEMS IN A GLOBAL ENVIRONMENT

Most business schools in the United States teach accounting courses with the assistance of one or more accounting packages. Peachtree Accounting and Microsoft Dynamics (formerly Microsoft Accounting) are examples of accounting systems frequently used to teach accounting. Enterprise Resource Planning (ERP) systems have tools for selecting appropriate currencies and formats, but ERP systems introduce many new sets of problems including high license fees, complicated installations and very high maintenance costs. Some schools have added a third option for teaching accounting in a global environment. The third option is software specifically designed to demonstrate differences between different accounting systems.

Figure 1 Main Selection screen

The screenshot shows a software window titled "Clear Lake Accounting Display program : Main Form". It contains a "Data Source Selection Form" with the following fields and values:

- Select Data Source:** "Select Company" dropdown menu is set to "InfoSys". "Data Units" dropdown menu is set to "rupies(000s)".
- Select Report Type:** "Report Type" dropdown menu is set to "Income". "Language" dropdown menu is set to "en-IN".
- Select Report Date:** Text field contains "12/31/2008".

A "Save These Values" button is located at the bottom right of the form.

At the University of Houston – Clear Lake, a software package called Clear Lake Accounting is being developed to help in teaching various accounting classes. One feature of Clear Lake Accounting is the ability to integrate data from different sources and present that data in different formats.

The package Clear Lake Accounting allows the user to combine different methods for converting currencies with different templates for display financial reports. Figure 1 above shows a portion of the Clear Lake Accounting which allows the user to select data for the Indian software company Infosys.

Before reaching this screen, the user would have selected the mode of data entry as Text file, spreadsheet, XML file or Database.

Clear Lake Accounting can access data from text files, spreadsheets, XML files, or databases. In displaying financial reports, the user of this system can translate currencies and present reports in various languages and formats. Translation of currencies can be done in a very simple manner, using one exchange rate for all values to be translated, or it can be done using program scripting to translate different accounts with rates from different time periods. Program scripts are also used to combine sub-accounts into aggregate accounts. Templates are used to determine the output formats of various reports. Portions of this program were specifically designed to be used to compare features of different accounting systems throughout the world.

Figure 2, below, shows the result of combining the selected data with a template for an income statement under Indian GAAP. In this example, the language is English and the currency units are rupees.

Income Statement for InfoSys	
for period ending 12/31/2008	
hi-IN rupies (000s)	
राजस्व - उत्पाद बिक्री	2,33,150
राजस्व - सेवा	
माल बिक के मूल्य	-1,34,950
बिक्री से कुल लाभ	98,200
राजस्व - अन्य	9,350
वेतन और वेतन	-17,550
विपणन व्यय	-11,950
अन्य आपरेंटिंग व्यय	-4,300
संचालन लाभ	73,750
व्याज व्यय	0
व्यय - अन्य	0
आय कर से पहले लाभ	73,750
आय कर	-9,700
कर के बाद शुद्ध लाभ	64,050
बकाया शेयर	570
प्रति शेयर आय	112.37

Figure 2 Income statement for Infosys in Hindi and Indian GAAP

The Clear Lake Accounting Package includes provisions for simple currency conversions where only one conversion rate is applied to all currency data. Figure 3, below, shows the process of converting rupees into U.S. dollars using a single conversion rate.

Clear Lake Accounting Display program : Main Form

Data Sources Processes Display Options Output Options

Data Source Selection Form

Report Selection Form

Simple Conversions Form

Data Source: InfoSys Data Units: rupies (000s)

Convert Units Only

New Source Name: InfoSys New Data Units: U.S. \$ (000s)

Exchange Rate : old Source: 1

Exchange Rate : NEW Source: .02

Convert Units

Figure 3 Conversion Screen

Income Statement for InfoSys	
for period ending 12/31/2008	
en-IN U.S. \$ (000s)	
Revenue - Product Sales	4,663
less :	
Cost of Goods Sold	-2,699
Other Costs of Sales	0
Net Profit from Sales	1,964
less :	
Salaries and Wages	-351
Marketing Expense	-239
Other Operating Expense	0
Operating Profit	1,374
Other Revenue	187
less :	
Interest Expense	-86
Other Expense	0
Profit Before Income Tax	1,475
less :	
Income Taxes	-194
Net Profit (After Taxes)	1,281
Outstanding Shares	570
Earnings per Share	2.25

Figure 4 Convenience statement in English

Figure 4, above, shows a “convenience statement”, a version of the Infosys income statement in English, after converting the currency to U.S. dollars. . This simple conversion process can be used to prepare “Convenience” statements, but may not serve the needs of foreign investors because the GAAP of the home country is maintained.

Simply converting language and currency units will not be sufficient to attract investment funds from the U.S. capital markets. Any company hoping to attract U.S. capital should provide audited statements showing compliance with U.S. GAAP. This could be very expensive. While a large company such as Infosys can afford to provide such a restatement of its financial position, most companies cannot afford such luxuries.

Even for large companies such as Infosys, there are limits to the expense which can be justified in order to provide secondary financial statements. Capital markets in Japan, China and the European Union offer excellent opportunities for companies which can afford to provide financial information in an effective manner, but providing secondary financial statements in multiple languages to satisfy the requirements of multiple GAAPs would be prohibitive for even large firms.

As an added difficulty, companies which have a major portion of their operations in a country which uses a different currency would have to account for gains and losses due to fluctuations in the value of that currency relative to the home currency of the company. This means that foreign exchange transaction risks and foreign currency translation risks would have to be considered in preparing financial statements (Sorensen, 2007).

According to the rules proposed by the International Financial Standards Board, transaction risks would be accounted for on consolidated income statements and translation risks would not be accounted for on the current income statement, but would be recognized as an adjustment to owners’ equity. The difference would occur because different items would be translated using exchange rates from different time periods.

Type	Value	( as of ) Date	Items
Current	020	12/31/2008	all (default)
Historic	0184	07/22/2004	13
Historic	0233	03/17/2006	16
Average	0196	06/30/2008	51.52, 53.54, 55
Average			
Other	0210	09/14/2008	74
Other			

For instance, sales of merchandise, operating expenses and current liabilities would be converted at the current (reporting) date while long-term investments and long-term liabilities would be converted at historic rates. Converting items at different rates (due to different time periods) introduces translation adjustments.

These adjustments are reported as part of the “Other Comprehensive Income” category which is added to increases in retained earnings in

Figure 5 Complex Conversion Process determining Stockholder Equity. Figure 5, above, shows a complex process of converting rupees into U.S. dollars for several different categories of accounts.

Figure 6, below, shows the results of calculating Stockholder Equity which includes Currency Translation Adjustment as part of Other Comprehensive Income.

The screenshot shows a software interface with several overlapping windows. The top window is titled 'Clear Lake Accounting Display program : Main Form' and contains tabs for 'Data Sources', 'Processes', 'Display Options', and 'Output Options'. Below these are three smaller windows: 'Data Source Selection Form', 'Report Selection Form', and 'Complex Conversions Form'. The 'Complex Conversions Form' window is active and displays the following parameters: Company: InfoSys, Date: 12/31/2008, Lang-format: en-IN, and data Units: U.S. \$ (000s). The 'InfoSys : Equity' window is the largest and displays the following statement:

Stockholder Equity Statement for InfoSys	
as of 12/31/2008	
en-IN	U.S. \$ (000s)
<b>Equity</b>	
Common Stock	64
Other Stock	672
<b>Retained Earnings</b>	
Beginning of year	2,337
From Current Income	1,281
<b>Other Comprehensive Income</b>	-456
<b>Other Components of Equity</b>	-114
-----	-----
<b>Total Stockholders Equity</b>	<b>3,784</b>

Figure 6, a version of the Infosys Equity statement converted with IFRS rules.

## CONCLUSIONS

Utilizing an almost universally accepted set of international standards, even small companies could reach capital markets which previously had been unavailable to them. It is extremely important that companies act in a timely manner to take advantage of new opportunities as they become available. This means that companies which want to take advantage of newly emerging global opportunities must be ready and able to use international standards as soon as they become accepted.

Effective and wide-spread use of international standards will not occur unless educators begin immediately to provide materials which demonstrate the effects of international financial reporting standards. Upgraded accounting packages and ERP software will provide some of the tools needed to train tomorrow's business leaders. Other tools must be developed by those who are teaching accounting and finance courses today.

The tools used to teach accounting and finance courses must specifically include devices which show the effects of foreign exchange transaction risk, foreign currency translation risk, and specific effects to financial statements of currency translations made over different time periods.

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# **IS THE WINDOW OF OPPORTUNITY STILL OPEN? THE UNUSUALLY ATTRACTIVE WEALTH TRANSFERS CREATED BY RECOVERING MARKETS AND HISTORICALLY LOW INTEREST RATES**

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## ***ABSTRACT***

*During the past two years, the U.S. economy has experienced unprecedented difficulties in their markets. Fears of a prolonged economic downturn caused market volatility to soar to historic levels and left asset values severely depressed. In the face of the financial crisis, investors fled to the safety of government bonds, which had an interesting side effect—it directly reduced wealth transfer hurdles, which are set by statute at a slight premium to prevailing market rates. Federal gift tax hurdle rates for many planning techniques have fallen dramatically since the alarms of the financial crisis first began to sound. The combination of recovering markets and low interest rates has created conditions that are unusually favorable for wealth transfer. In this paper, we quantify the probability and likely magnitude of success of two strategies: charitable lead annuity trusts (CLATs) and intra-family loans.*

*There are two interest rates which influence wealth transfer strategies: the applicable federal rate (AFR) and the 7520 rate. The AFR, which is published monthly by the IRS, is the lowest rate that can be charged on a loan without negative tax consequences. There are three AFR rates depending on the length of the loan: short-term, for loans up to three years; mid-term, for loans of three to nine years; and long-term, for loans more than nine years. The 7520 rate, the hurdle rate for valuing interests in trusts, has averaged approximately 6.6%. The current rate is 3.2% (as of March 2010) This lower rate has created a particularly attractive environment for wealth transfer. The success of a CLAT is closely linked to the 7520 rate and the term of the trust.*

# LOAD VS. NO-LOAD MUTUAL FUND PERFORMANCE IN EXTREME MARKET STATES: A CASE FOR ACTIVE MANAGEMENT

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## **ABSTRACT**

*In this paper I examine mutual fund performance separately for good and bad market states to test whether mutual funds perform differently depending upon market conditions. Previous research has provided conflicting reports of performance. One line of research reports better performance during recessionary periods, but another shows that investment flows are more sensitive to the performance of the extreme top tier of funds. I find support for both theories in that actively managed mutual funds outperform index funds on a risk adjusted bases at both high and low market extremes. I also separately analyze performance assuming individual funds are part of a larger, more complete portfolio. Results for the portfolios of funds are very similar to those of the individual funds.*

## **INTRODUCTION**

Beginning with Jensen (1968), research has questioned the value added by the active management of mutual funds. Despite evidence that actively managed mutual funds tend to underperform passive investments, investors continue to pour money into actively managed funds, and the number of funds available continues to grow. By the end of 2007, over \$12 trillion was invested in more than 10,000 different mutual funds (2008 ICI Fact Book), with the majority under active management.

Most studies imply that investors are better off investing in a passive index fund rather than an actively managed fund. However, there are other factors to consider when studying actual individual investor performance. First, studies that examine the holdings of actively managed funds reveal that investment managers do make value enhancing decisions concerning the trades of portfolio assets (Taylor and Yoder (1994), Grinblatt and Titman (1994), and Wermers 2000). It appears that managers possess a special set of skills or resources that allows them to make “better than market” buy and sell decisions. However, on average, the value created is not generally great enough to offset the fees charged (Guber (1996) Wermers (2000)). This implies that either skilled managers do not actually add value, or that the correct measures of value are not being tested.

Performance may also be dependent upon the current state of the investing environment. Research along these lines has produced two main findings that potentially conflict. First, actively managed funds tend to perform better during recessionary periods (Kosowski (2006), Glode (2007)). Investment advisors may claim that the diversity and professional stock selection

available through actively managed funds provides investors a degree of protection against a falling market. However, it has also been shown that mutual fund asset flows are more sensitive to performance when fund return is higher: more money moves into top performing funds than moves out of poorly performing funds (Ippalito (1992), Chevalier and Ellison (1997), and Sirri and Tufano (1998)). This presents a dilemma to fund managers: do investors desire a portfolio which protects against down markets or one which capitalizes on strong markets. While testing investor intentions is beyond the scope of this paper, I examine fund performance during both good and bad market states.

A third significant issue addressed here is that the majority of articles examine performance on a fund by fund basis. This assumes that investors are looking for only one fund for investment. In reality, investors generally invest in several funds, and the median number of funds held by an individual investor is four (2008 ICI Fact Book). In this paper, I examine performance both on an individual fund basis, and by forming diversified 4-fund portfolios to examine whether a combination of actively managed funds exhibits different characteristics than individual funds held in isolation.

As a result, this paper makes three specific contributions to the existing literature: 1) fund performance is examined in good and bad market states separately; 2) actively managed and index fund are compared directly during each state; and 3) the performance of a diversified 4-fund portfolio is tested against index funds.

## **HYPOTHESIS DEVELOPMENT**

Mutual funds are designed to optimize an investor's return, meaning maximum return commensurate with the risk assumed (Bogle 1970). All mutual funds have the advantages of record keeping, low transaction costs, and diversification, and actively managed funds have the additional feature (and potential advantage) of professional stock selection. The question addressed here is whether actively managed funds best fulfill the charge of return optimization. For investors desiring exposure to the stock market, the issue is not whether to purchase mutual funds, but rather which types of funds to purchase. Literature implies that investors will be better off with an index fund due to generally lower fees and similar or better performance than actively managed funds. I re-examine this idea using data from mutual funds from 2003 through 2007. The first hypothesis is:

*H1: The risk adjusted returns of actively managed funds and index funds are different in good and bad market states.*

While risk adjusted returns have been analyzed often, to my knowledge this is the first study to directly compare the risk-adjusted performance of active vs. index funds while segmenting the market into good and bad states. This is important because investors' expectations of fund performance may be conditional upon market states. It has been shown that investment managers have skill in stock selection, but either the expenses associated with achieving and maintaining that skill are greater than the value added, or we may not be measuring what managers are actually attempting to accomplish.

I assume that investors expect to earn at least the average stock market return each year. By definition, in good states investors are earning an above average positive return, so they should be satisfied. In bad states, however, returns are below average and therefore below expectations. My proposal is that investors may value performance more during bad states, and managers therefore structure portfolios that mitigate losses during these bad states at the expense of sacrificing higher returns during good states.

Further, since investors typically hold a collection of funds, it will be useful to examine performance not just on a fund by fund basis, but also on how an average portfolio of funds may perform. This leads to the next hypothesis:

*H2: The risk adjusted return of a diversified portfolio of active funds is different from that of a portfolio of index funds in good and bad states of the market.*

Portfolio managers use their unique set of skills to attempt to add value in their particular style of investment. While no one particular style consistently outperforms, an individual invested in the best ideas of different styles at all times may be better off on a risk adjusted basis over both the long- and short-term, regardless of which style outperforms in a particular year. This corresponds with the idea that fund managers have stock selection ability, but no timing ability.

## **DATA AND METHODOLOGY**

### **Data**

Data is compiled from the CRSP survivor-bias free mutual fund database for the period of January 2003 through December 2007. I also use Morningstar Principia as of December 2007 for fund category information. I examine the monthly net returns inclusive of management fees of domestic equity funds, excluding sector funds. To be included in the sample, a fund must have monthly return data in CRSP for the 60 months of the sample period and must also be reported in Morningstar as either a large-cap or small-cap fund. Morningstar categories provide for an examination of specific combinations of investment styles and market capitalizations, and is popular among professional advisors and investors. I exclude funds categorized by Morningstar as mid-cap funds due to the low correlation of returns to common mid-cap indices, such as the S&P MidCap 400. Of the 2,936 funds which meet the selection criteria, 234 (6.9%) are index funds. The distribution of funds across categories of style and size is illustrated in Table 1. The number of index funds vs. managed funds varies considerably within each style category as index funds tend to be in blend, while active are more evenly distributed across the three style categories. The proportions across size categories vary to a much lesser degree, with active funds composed of a slightly greater proportion of small-cap relative to index funds.

**Table 1: Summary of Funds by Style and Category**

	All Funds		Index Funds		Active Funds	
	Number	% of total	Number	% of Total	Number	% of Total
Large-Cap						
Growth:	744	25.34%	16	6.84%	728	26.94%
Large Cap Blend:	821	27.96%	157	67.09%	664	24.57%
Large Cap Value:	588	20.03%	7	2.99%	581	21.50%
<b>Total Large Cap</b>	<b>2153</b>	<b>73.33%</b>	<b>180</b>	<b>76.92%</b>	<b>1973</b>	<b>73.02%</b>
Small Cap						
Growth:	345	11.75%	5	2.14%	340	12.58%
Small Cap Blend:	267	9.09%	43	18.38%	224	8.29%
Small Cap Value:	171	5.82%	6	2.56%	165	6.11%
<b>Total Small Cap</b>	<b>783</b>	<b>26.67%</b>	<b>54</b>	<b>23.08%</b>	<b>729</b>	<b>26.98%</b>
<b>Totals:</b>	2936		234	7.97%	2702	92.03%

Data required for the pricing models includes the market return and the risk free rate of return. I use three measures of market return: the CRSP total market value weighted index, the S&P 500 total return, and the S&P SmallCap 600 total return. Both S&P indices are downloaded directly from the S&P website. The factor mimicking portfolios for size, book to market and momentum are collected from Kenneth French's website (<http://mba.tuck.dartmouth.edu/pages/faculty/ken.french>)

### Methodology

Hypotheses are tested using both Jensen's original model of asset pricing based on the CAPM, as well as Carhart's 4-factor model. I examine returns on a monthly basis over the sample period of January 1, 2003 through December 31, 2007.

Jensen's model:

$$R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + e_{it}$$

Where

$R_{it}$  = the return of fund i at time t

$R_{Ft}$  = the risk free rate of return

$\alpha_i$  = the risk adjusted excess return of fund i

$R_{Mt}$  = the return of benchmark indices, as described below

Model 1: market return = CRSP value-weighted index

Model 2: market return = matched S&P 500 / S&P 600 SmallCap indices

Carhart 4-factor model:

$$R_{it} - R_{Ft} = \alpha_i + \beta^1_i [R_{Mt} - R_{Ft}] + \beta^2_i (SMB_t) + \beta^3_i (HML_t) + \beta^4_i (MOM_t) + e_{it}$$

Where

SMB = the difference in return in a small cap portfolio and a large cap portfolio

HML = the difference in return in a high book to market value portfolio and a low book to market value portfolio

MOM = the difference in return in a momentum based portfolio and a contrarian based portfolio

Both Jensen and Carhart model regressions are run individually for all funds, resulting in coefficients for risk factors for each fund, and equally weighted coefficient means are reported. I use the two indices above as the market portfolio in running three models separately. In model 1, the index used is the value weighted total market return reported in CRSP. However, since this index is composed of all NYSE, Amex, and NASDAQ stocks, it may not accurately match the composition of the funds in this study. Gruber (1996) matches index funds against the particular index each is attempting to mimic in order to determine excess return. I apply this basic methodology here by using the S&P 500 index as the market return for large cap active and index funds, and the S&P SmallCap 600 as the market return for small cap funds. (I also attempted this same methodology while retaining mid-cap funds and adding the S&P MidCap 400 index.  $R^2$  values were much lower and tracking error of the mid-cap funds appears much greater. This may be due to differences in definition of mid cap stock by S&P and Morningstar.) Each fund is then regressed against the index from its own category.

## RESULTS

To test the hypothesis that risk-adjusted returns for active and index funds are different, I include all funds from the sample. Regressions using both the Jensen and Carhart models determine the excess return and risk factor loadings of each fund. A separate regression is run for each fund in the sample, and the mean coefficients are reported in Table 2. Results from the Jensen and Carhart models are similar, with the 4-factor models increasing  $R^2$  by 2 to 7 percentage points in each model. In model 1, the Carhart intercepts of index and active funds of -55 and -145 basis

**Table 2: Overall Results for All Funds**

Model/ Variable	Model 1: CRSP value weighted index				Model 2: S&P Large Small Combined			
	Index funds		Active funds		Index funds		Active funds	
	Mean	p value	Mean	p value	Mean	p value	Mean	p value
Jensen								
alpha - month	-0.0016	<.0001	-0.0014	<.0001	-0.0004	<.0001	0.0000	0.412
alpha - annual	-0.0196		-0.0172		-0.0052		-0.0004	
RM-RF	1.0442	<.0001	1.0645	<.0001	1.0269	<.0001	1.0176	<.0001
$R^2$	0.9243		0.8241		0.9715		0.8427	
Carhart								
alpha - month	-0.0005	<.0001	-0.0012	<.0001	-0.0002	<.0001	0.0001	0.077
annual - annual	-0.0055		-0.0145		-0.0029		0.0008	
RM-RF	1.0190	<.0001	0.9970	<.0001	1.0048	<.0001	0.9815	<.0001
SMB	0.2517	<.0001	0.1555	<.0001	0.0565	<.0001	0.1127	<.0001
HML	0.0006	0.966	-0.0144	0.014	-0.0413	0.002	-0.0434	<.0001
Mom	0.0249	<.0001	0.0214	<.0001	-0.0041	0.244	0.0238	<.0001
$R^2$	0.9836		0.9024		0.9862		0.8979	
Funds	234		2702		234		2702	

points respectively closely match their mean expense ratios of 59 and 134 basis points. These results closely match those of Carhart (1997), Gruber (1996), and Glode (2007). Mean beta is very near 1 for both groups, but the small-cap factor is larger for index funds.

In model 2, the mean alpha of index funds is negative again at -29 basis points while the intercept of active funds is virtually 0. Alphas improve for both index and active funds for model 2 over model 1 because small cap stocks produced higher returns over the period, but there are more large cap funds than small cap. Model 2 compares large cap funds only to the large cap index, which also changes the loadings on the SMB factor. The SMB coefficient for active funds is nearly double that of index funds (0.1127 vs. 0.0565) matching Gruber's (1996) finding that active funds tend to hold more smaller stocks.

To examine returns under different investment states, the 60 monthly returns for the CRSP total market value weighted index for the period are divided into quintiles. The months in lowest quintile make up state 1, the next quintile is state 2, and so on. Regressions are run on each fund using data from the first 30 months of the sample period to determine the risk factor loadings. Those loadings are then used to determine expected return for each month of the second 30 months of the sample period (24 and 36 month estimation periods were also used, and results were very similar). Actual return less expected return equals excess return. I then examine excess return of both active and index funds across the range of states. Table 3 reveals a

**Table 3: Excess Return by Market Return Quintile**

Market State Quintile (1 is low)	Monthly Observations	Model 1 CRSP			Model 2 SP Match		
		Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value
Active							
1	16212	0.0020	0.0245	<.0001	0.0013	0.0154	<.0001
2	16212	-0.0004	-0.0045	<.0001	0.0010	0.0121	<.0001
3	16212	0.0007	0.0079	<.0001	0.0007	0.0087	<.0001
4	16212	-0.0001	-0.0012	0.270	0.0027	0.0332	<.0001
5	16212	0.0008	0.0096	<.0001	0.0043	0.0523	<.0001
Index funds							
1	1404	0.0002	0.0027	0.049	-0.0001	-0.0012	0.500
2	1404	-0.0004	-0.0047	0.007	0.0008	0.0096	<.0001
3	1404	0.0003	0.0038	0.022	0.0002	0.0024	0.040
4	1404	-0.0013	-0.0156	<.0001	0.0014	0.0169	<.0001
5	1404	-0.0024	-0.0288	<.0001	0.0007	0.0084	<.0001
active – index							
1		0.0018	0.0218	<.0001	0.0014	0.0169	<.0001
2		0.0000	0.0002	0.930	0.0002	0.0024	0.352
3		0.0003	0.0036	0.239	0.0005	0.0060	0.093
4		0.0012	0.0145	<.0001	0.0013	0.0157	<.0001
5		0.0032	0.0391	<.0001	0.0036	0.0441	<.0001

consistent pattern in differences less expected return equals excess return. I then examine excess return of both active and between the mean excess return of active and index funds. Models 1 and 2 show that active funds significantly outperform index funds at both market extremes, with active funds outperforming by 1.69% to 2.18% on a risk adjusted basis during the worst market state, and 3.91% to 4.41% under the best market conditions. This in contrast to Kowsowski (2006), who finds positive excess returns for active funds only during recessionary periods using quarterly data. However, he groups together all funds with the same CRSP objective into a value weighted portfolio and uses NBER recession periods as bad states and expansion periods as good states. Examining the composition of the differences reveals that model 1 reports significant negative returns for the index funds during good market states, which may suggest that there is a breakdown in the model or during market extremes, and that the total market index may not be the best fit for the range of states defined here. This may again be the result of small cap stocks out performing large cap during the period. Model 2 corrects for this, and the differences in active and index funds reported there are driven by over-performance of active funds during both extremely good and bad states. This suggests that fund managers add value by avoiding steep losses in the down markets, while also producing positive risk adjusted excess returns during good markets. This results may not be detected in examining all states together.

Since investors do not hold funds in isolation, 1000 diversified 4-fund portfolios are constructed by randomly selecting one fund from each of the following Morningstar categories: large-cap growth, large-cap value, small-cap growth, and small-cap value. Due to a lower number of funds in the small cap categories, selection without replacement is not possible. In order to minimize funds being selected in multiple portfolios, the random selection process is completed in 10 cycles, selecting 100 funds from each category during each cycle. As a result, a fund can be included in no more than 10 different portfolios. Returns are weighted to roughly match the distribution of funds in each style and size category, with a 37.5% weighting in both large cap categories, and a 12.5% weighting in both small cap categories. The risk adjusted return for each fund is calculated using by combining the indices in model 2 into one performance measure: an index made up of S&P 500 with a 75% weight and S&P 600 SmallCap with a 25% weight. Factor loadings are calculated as previously outlined using both the Jensen and Carhart models, treating each portfolio as a single fund. (Results using the CRSP valued weighted index and the S&P 500 are very similar to those reported). The comparison sample is constructed using the same basic methodology with the index fund group. Due to a smaller number of funds, I form 250 portfolios, each containing 1 large-cap blend index fund (75% return weighting) and one small-cap blend (25% return weighting). This sample is used to examine differences in performance between diversified portfolios of four active funds and a simple 2-fund index portfolio.

Table 4 reports the pattern of returns for the active and index portfolios across market states. As with individual funds, the active portfolios appear to outperform the index portfolios during extreme market conditions, at 1.81% annually during poor markets and 3.29% during the best. Again, the index portfolios performance is more consistent across market states, as expected, so the differences result from over-performance of the active funds.

**Table 4: Portfolio Excess Return by Market Quintile**

Market State Quintile (1 is low)	Monthly Observations	Jensen Annual			Carhart Annual		
		Mean Excess Return	Mean excess return	p value	Mean Excess Return	Mean excess return	p value
1	7500	0.0017	0.0201	<.0001	0.0014	0.0164	<.0001
2	7500	-0.0003	-0.0039	0.0002	0.0009	0.0111	<.0001
3	7500	-0.0006	-0.0073	<.0001	0.0004	0.0049	<.0001
4	7500	0.0009	0.0104	<.0001	0.0021	0.0250	<.0001
5	7500	0.0004	0.0050	<.0001	0.0025	0.0302	<.0001
4-fund Active Portfolios							
1	6000	0.0019	0.0228	<.0001	0.0017	0.0201	<.0001
2	6000	-0.0005	-0.0060	<.0001	0.0009	0.0107	<.0001
3	6000	-0.0007	-0.0080	<.0001	0.0005	0.0055	<.0001
4	6000	0.0008	0.0099	<.0001	0.0023	0.0278	<.0001
5	6000	0.0006	0.0069	<.0001	0.0030	0.0370	<.0001
2-fund Index Portfolios							
1	1500	0.0008	0.0095	<.0001	0.0002	0.0019	0.025
2	1500	0.0004	0.0043	0.001	0.0011	0.0127	<.0001
3	1500	-0.0004	-0.0043	<.0001	0.0002	0.0028	0.001
4	1500	0.0010	0.0125	<.0001	0.0011	0.0135	<.0001
5	1500	-0.0002	-0.0026	0.0107	0.0003	0.0034	<.0001
Difference: Active less Index							
1		0.0011	0.0133	<.0001	0.0015	0.0181	<.0001
2		-0.0009	-0.0103	<.0001	-0.0002	-0.0020	0.182
3		-0.0003	-0.0038	0.006	0.0002	0.0024	0.178
4		-0.0002	-0.0026	0.156	0.0012	0.0145	<.0001
5		0.0008	0.0096	<.0001	0.0027	0.0329	<.0001

While the returns presented are risk-adjusted, standard deviation of return is also an important factor in investing. To examine the relation of risk and return for both groups of funds across market states, I calculate Sharpe ratios for each portfolio for the final 30 months of the sample period. For each portfolio, I divide monthly return in excess of the risk free rate by the standard deviation of monthly return. I then multiply the monthly ratio by the square root of 12 to determine an annualized result. Overall, the Sharpe ratio is slightly better for active portfolios at 0.64 vs. 0.61 for index portfolios. I also calculate the measure for each state and report the results in Table 5. Ratios for the states are rather extreme due to the pooling of good and bad returns separately. While the ratio is negative for both groups in the lower two states, active funds tends to provide a better risk-return trade-off. In the upper two states, risk increases to a greater degree than return for the active funds over index funds. While this may appear to be a negative factor for active funds on the surface, an increasing standard deviation in good markets could result from very high returns. The results do not contradict the notion of better performance for active funds during both good and bad market states.

**Table 5 : Sharpe Ratio Comparisons**

State	Active	Index	Active - Index	p value
all	0.6427	0.608	0.0347	<.0001
1 & 2	-3.999	-4.15	0.1507	<.0001
3	5.2702	5.7612	-0.4910	<.0001
4 &5	8.4628	8.8279	-0.3650	<.0001
N	1000	250		

## SUMMARY AND CONCLUSIONS

This paper compares the performance of actively managed mutual funds and index funds during good and bad states of investing from 2003 through 2007. After segmenting the period into quintiles based on overall market return, I find that individual active fund returns exceed index funds by 1.69% and 4.41% on an annualized basis in the highest and lowest quintiles, respectively.

Previous studies have found potentially contradictory results. Kosowski (2006) finds that risk adjusted returns are negative during expansion periods, but positive during recessionary periods, suggesting that fund managers add value more during poor market conditions. However, Chevalier and Ellison (1997) and others find a positive relation between past returns and flows, and the intensity is much greater for the top performers. In this paper, using monthly data and market states defined by actual market return, I provide evidence to support both ideas: actively managed funds tend to overperform during both good and bad market extremes. The results of comparing portfolios of active and index funds closely match the finding from the individual funds.

These findings may provide insight into when investors are most concerned about their investments. During average market conditions, investors are content with their performance. During the extreme highs and lows, the financial markets may receive more attention both from the media and from investors. Fund managers may focus their efforts during these times in order to boost returns and keep or attract new investors. These ideas are the topics for further study.

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# **A SURVEY OF UNDERGRADUATE PERSONAL FINANCE COURES AT AACSB INSTITUTIONS**

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## ***ABSTRACT***

*This paper surveys the offerings of the personal finance course at AACSB accredited colleges and universities. Popular press has provided numerous examples that demonstrate the need for a personal finance course in a college setting. State legislative bodies, educational boards, congressional hearings, and the private sector have made recent calls to provide courses to educate young adults about personal financial planning. Many state legislative bodies are considering the possibility of providing such courses as early as high school. This paper examines if and at what level AACSB accredited schools offer a personal finance course and if the course is required or optional. Comparisons are made as to the size of the schools and educational mission. The motivation is to determine if business schools are meeting this public need for personal financial education.*

## **INTRODUCTION**

Numerous studies have highlighted the financial illiteracy of American adults, high school students, and college students, and thus the need for financial education. The purpose of this study is to determine the extent to which AACSB accredited colleges and universities are teaching money management skills through the offering of personal finance, personal financial planning, or a similarly titled course. Data reported to the AACSB at its Web site by each university were used to run correlations between various data points and the offering of a personal finance course.

Even though there is a growing number of states that require personal financial education at the high school level, as will be shown in the next section, many studies reveal that college students generally perform poorly on tests of financial literacy. Possibilities include high school age students have not yet reached a maturity level necessary to fully grasp the subject, or the students don't really take the subject seriously. Other reasons to focus personal finance courses at the college level include the following:

- studies show that college students who are at risk financially are more likely to fail;
- courses at the college level tend to provide more in-depth coverage;
- college students are more likely to engage in financial transactions such as paying cell phone bills, dealing with financial aid, etc;
- non-traditional students are more likely to take a personal finance course at the college level than go back to a high school program.

## **LITERATURE REVIEW**

The financial illiteracy of American consumers has received much publicity in recent years. For example, Harris Interactive in its 2009 Consumer Financial Literacy Survey prepared for the National Foundation for Credit Counseling found the following:

- 32 percent of adults have no savings,
- 64 percent have not requested a copy of a free credit report in the past year,
- 33 percent save none of their annual household income for retirement,
- 58 percent do not keep close track of their spending,
- 26 percent do not pay all their bills on time.

A ten-year study of United States employees at 300 companies by Financial Finesse, a financial education firm, revealed that 43 percent spent more than they made monthly and 62 percent did not have an emergency fund. On a financial wellness scale with 10 indicating optimal financial wellness, the employees scored 2.6 on investing, 4.2 on retirement planning, 4.6 on debt management, 5.5 on basic money management, and 4.7 on tax planning. (Kang 2009)

Is the current generation of young people more financially fit than their adult counterparts? Most research indicates they are not. Avard (2005) administered a 20 multiple choice test dealing with basic financial issues to 407 Texas A&M University freshmen enrolled in a College Reading and Writing class. The highest score was 80 percent (achieved by one student) and the lowest score was 0 (earned by six students). The average on the test was 34.8 percent and the median was 32.5 percent. Cude (2006) conducted an online survey to which 1400 Louisiana State University and 491 University of Georgia undergraduate students responded. Survey participants ranged from freshmen to seniors, but 33.4 percent were seniors. Two-thirds indicated their GPA was B or higher. Around two-thirds of the participants were female. Respondents to the survey scored an average of 2.2 on a 5 point Likert scale (the scale was 1 = always, 2 = usually, 3 = sometimes, 4 = seldom, and 5= never.) The survey revealed that students avoided writing bad checks (the mean was 1.27) and tended to pay bills on time (1.35). On the other hand, most students did not save (3.28), budget (3.14), or balance their checkbook (3.03).

In contrast to the Avard and Cude studies, the JumpStart Coalition, in its first national survey of the financial literacy of college students in 2008, found that the average score on a financial literacy test by college students was 62 percent compared to 48 percent for high school seniors. The failure rate for college seniors was 27 percent while it was 74 percent for high school seniors. The study found that financial literacy improved with years of higher education (the mean score rose from 59.3 percent for freshmen to 64.8 percent for seniors). Mandell (2009), in his analysis of the JumpStart survey, hypothesized that the improvement was accounted for by

the fact that students become better at researching and solving problems as they progress through college.

A somewhat shocking finding of the JumpStart college survey was that students with majors in science, social science, and engineering had mean scores of 64, 64, and 63.2 percent respectively, while business and economics majors had a mean of 62.4 percent. Another surprising outcome was that college students who had a personal finance course in high school had a mean score of 59.3 percent, below the 61.9 percent mean for all college student participants. However, college students who had participated in a stock market game in high school achieved a mean of 65.6 percent. Students who had a personal finance course in college had a mean of 60.1 percent, better than students who had taken a course in high school, but still below the mean for all participants. The means for college students who had a course in economics, finance, or accounting were 63.2, 64.6, and 65.4, respectively.

Fox and Pazdernik (2004) administered an investments test to 1,039 Ohio State University alumni and found that students who had taken a college personal finance course scored over one point higher (scores ranged from 0 to 10) than those who had taken a personal finance course in high school. The comprehensiveness of a college personal finance course, and the fact that college students are more likely to be dealing with financial issues were cited as possible reasons for the better performance. Fox and Pazdernik indicated that students who had taken personal finance courses did not save more than those who had not, but those who owned stock early in life or had stocks as of the time of the study had higher saving rates. They concluded their study by remarking, “Right now, most financial education classes are aimed at high school students. While we should improve these courses, we also need to be aware of the benefits of teaching personal finance in college and other settings, such as the workplace, where we can reach engaged adult learners.”

Fox and Grabmeier (2007) argue that college personal finance classes would be more effective than high school courses for the following reasons. “College classes are longer and more comprehensive.” The lessons of a personal finance class can be more readily applied by college students. “College students may be paying rent, tuition, cell phone bills, and dealing with financial aid issues” so they presumably have a better conceptual framework in which to learn financial concepts than do high school students.

To what extent are high school students being taught personal finance? The National Council for Economic Education found in its 2009 Report Card—Survey of the States that 44 states (compared to 21 in 1998) now include personal finance to some extent in their educational standards. These standards are required to be implemented in 34 states, 20 more than in 1998. Personal finance (or personal finance as part of an economics course) is now a graduation requirement in 13 states, up from one in 1998. According to that report card, almost 31 percent of the population of the United States is concentrated in the 13 states.

In an *Education Week* article, Hurst (2005) reported that the then President of the National Council on Education (Robert F. Duvall) argues that to be completely successful, a full integration of economic and personal finance education into the (high) school curriculum is necessary.

Even though states have stepped up pressure through legislation to provide some personal financial education in the high schools, studies like Cude et. al. (2006) find that “some college students are financially at risk, and thus there continues to be need for on-campus financial education.” The Cude et.al study specifically included students from colleges in Georgia because the state of Georgia requires personal finance as a requirement for graduation from high school.

Tennyson and Nguyen (2001) found that the existence of a state curriculum mandate is not related to students’ test scores on average. They did find however, that “mean student scores in states that mandate a specific course were significantly higher than in states that have no personal finance mandate.” Their study also indicated that test scores were significantly related to future educational plans, parents’ education, and other social factors.

At the university level, the current recession has created renewed interest in money management. Cook (2009) estimates that online personal finance classes are now offered by around 300 universities (some of these courses are free). A group of 250 universities world-wide through the OpenCourseWare Consortium are offering 180 business courses (including personal finance). The University of California-Irvine and the Massachusetts Institute of Technology are two institutions which participate in the consortium. Free online access is offered to syllabi, study materials, lecture notes, and exams.

Of course, traditional personal finance courses are more common than online classes, and many are thriving. For example, Di Meglio (2007) indicates that the Olin School of Business at Washington University in St. Louis began offering personal finance about ten years ago and has seen its enrollment grow from 80 to 200 students per semester. Over the last ten years enrollment in the sophomore level non-business personal finance course offered at the Kelly School of Business at Indiana University has grown from 25 to 225 students per semester. From personal experience, one of the authors of this paper can remember a semester when he had three students in his personal finance course. Now four sections consisting of around 30 students per section are offered each fall and spring semester, with an online summer section. The turning point for the course came several years ago when it was made a part of what is called the “sophomore menu.” Faced with taking Intellectual Traditions, Personal finance, or Social Science Survey from the sophomore menu, most students have opted for Personal finance.

Some universities are targeting groups of students for financial education. For example, Syracuse University started a Money Awareness Program in 2008 for students who are heavily indebted (Supiano, 2009). Since the average Syracuse University graduate with loan debt amasses over \$28,500 of debt, the university provides grants of \$5,000 to \$7,000 per semester to qualifying students. The grants replace loans students have received. In 2009 grants were awarded to 77 students. To receive a grant, students must attend financial literacy training every semester until graduation.

Another reason for providing a personal finance course at the college level is the idea of retention. Adams (2005) argues that when students are asked why they are leaving your institution, “the number 1 answer will be ‘financial reasons’.” She argues that it is much cheaper to keep students than it is to recruit them.

## METHODOLOGY

We utilized a logistic regression model to determine which of the attributes reported on the AACSB Web site best predicted whether or not the school would offer a personal finance course. Logistic regression provides a better estimator than other statistical techniques when the dependent and independent variables are non metric, or dichotomous, as is the case with this data.

## MODEL

$$\text{OFFER}_i = \alpha_0 + \alpha_1 \text{AcrdStat}_i + \alpha_2 \text{InstCtrl}_i + \alpha_3 \text{UG}_i + \alpha_4 \text{MGen}_i + \alpha_5 \text{MSpec}_i + \alpha_6 \text{Doc}_i + \alpha_7 \text{OpBudg}_i + \alpha_8 \text{OrGen}_i + \alpha_9 \text{OrSch}_i + \alpha_{10} \text{FTFac}_i + \mu_i$$

Where:

OFFER <sub><i>i</i></sub>	=	coded as 1 if school <i>i</i> offered the course and zero otherwise
AcrdStat	=	the level of accreditation for school <i>i</i> where the value is one for business only accreditation and 0 for business and accounting accreditation
InstCtrl	=	coded as 1 when school <i>i</i> is public and zero for private
UG	=	coded as 1 when school <i>i</i> provides an undergraduate program and zero otherwise
MGen	=	coded as 1 if school <i>i</i> provides a generalized masters program and zero otherwise
MSpec	=	coded as 1 if school <i>i</i> provides a specialized masters program and zero otherwise
Doc	=	coded as 1 if school <i>i</i> provides a doctorate program and zero otherwise
OpBudg	=	the reported operating budget in dollars
OrGen	=	coded as 1 for the combinations that reported a high emphasis on teaching, and 0 for all other emphases
OrSch	=	coded as 1 where the highest emphasis was learning and pedagogical research and 0 for all others
FTFac	=	the number of reported full time faculty

We hypothesize that private schools would be more likely to offer a course in personal finance because they have less pressure than public schools to have standardized programs due to state mandated requirements. We also hypothesize that those schools reporting a general orientation with a high emphasis on teaching would be more likely to offer a personal finance course than would those schools with more emphasis on intellectual contributions.

## DATA COLLECTION

This paper sampled all 463 US AACSB schools listed on the AACSB Web site as of June, 2008. The list separated business schools into two classifications, USA business only (299 schools) and USA business and accounting (164 schools). The AACSB Web site also provided a link to each school's Web site. We visited each school's Web site to determine whether or not the school offered a personal finance course and whether or not the course was required. We also recorded at what level the course was offered, i.e. freshman, sophomore, etc.

In addition to collecting information from each school's Web site, we collected self-reported data from the AACSB Web site for each school. These data include descriptors such as accreditation status, business only or business and accounting, general and scholarly orientation, degrees

offered, operating budget, Carnegie classification, full-time enrollment, and number of full-time faculty. Five schools did not provide some relevant data. As a result, we excluded those schools from the list, which left a usable sample size of 458 schools.

## **RESULTS**

The results of the logistic regression model are reported in Table 1. The model explained 21.3% of the variance in the data. A Chi-square measure of 79.667 indicates the model is significant at any level of significance. The overall percentage of correct hits is 66.2%. Cpro statistic = 62.5%, which indicates that this model predicts better than average

The most significant predicting variable is InstCtrl (public or private universities). The results contradict our expectations. We expected to find that private schools would be more likely to offer the introductory personal finance course. The results indicate that public schools are more likely to offer the course. Our sample includes 234 private schools and 224 public schools. Only 21% of the private schools offered the course while 42% of the public schools offered it. Overall, 31 percent of the 458 schools offered the course. Not surprisingly, the number of full-time faculty does provide significant predictability in offering the course. We can only offer an opinion that the larger the faculty size, the more the variety of course offerings, i.e. the greater the number of faculty, the more likely that core courses are covered and there is room to provide elective courses.

Interestingly, none of the other variables were that significant. We certainly expected that the size of the operating budget and whether the school was undergraduate only would provide more explanation in predicting whether the school would offer the course.

**Table 1**  
Model (1) Regression Results (Test of H1 – H6)

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Panel A: Model (1)

$$\text{OFFER}_{it} = \alpha_0 + \alpha_1 \text{AcrdStat}_{it} + \alpha_2 \text{InstCtrl}_{it} + \alpha_3 \text{UG}_{it} + \alpha_4 \text{MGen}_{it} + \alpha_5 \text{MSpec}_{it} + \alpha_2 \text{Doc}_{it} + \alpha_2 \text{OpBudget}_{it} + \alpha_3 \text{OrientGen}_{it} + \alpha_4 \text{OrientSch}_{it} + \alpha_5 \text{FTFac}_{it} + \mu_{it}$$


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Explanatory Variable	Coefficient	S.E.	Sig.
Constant	0.990	0.739	0.180
AcrdStat	0.220	0.251	0.381
InstCtrl	0.778	0.237	0.001
UG	-20.043	8319.007	0.998
MGen	0.397	0.368	0.281
MSpec	0.55	0.265	0.836
Doc	0.463	0.332	0.163
OpBudget	0.000	0.000	0.015
OrientGen	-0.508	0.269	0.060
OrientSch	-0.034	0.607	0.955
FTFac	0.014	0.006	0.018

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## CONCLUSIONS

Although much progress has been made in improving the financial literacy of Americans, much remains to be done. With the heightened interest in money management resulting from the current recession, now appears to be a great time to make available new educational programs and courses.

Given that state mandates are subject to a legislative process without accreditation bodies, it is more likely that colleges and universities would offer a more standardized course in personal finance (at least in terms of content covered.)

Even though approximately 31 percent of the business schools in this study offer a personal finance course of some type, hopefully even more will do so as time passes. The literature seems to indicate that the maturity of college students and the fact that they have begun to deal with some financial issues are likely to provide them with greater motivation than high school students. Because of these factors, the offering of personal finance during the senior year of college might be beneficial. To make the course more worthwhile, the literature suggests that professors use a research and problem solving focus rather than simply conveying facts. Participation in activities which provide students with hands-on experience, such as a stock market simulation, appears to increase student learning. Innovative programs such as the Money Awareness Program at Syracuse University could be introduced to teach financial literacy and ease the money stresses faced by college students. Such programs not only provide education, but are likely to result in higher student retention.

For universities choosing to join the fight against financial illiteracy, there are many organizations which provide valuable resources. For example, to help students avoid making poor financial decisions which will haunt them in the future, the National Endowment for Financial Education has made CashCourse, a financial education course, available to university financial aid and student service offices nationwide. The American Institute of Certified Public Accountants through its 360 Degrees of Financial Literacy Web site and its Feed the Pig Program is helping consumers make sound financial decisions no matter what their stage of life. The Investor Education Fund provides information about various aspects of financial planning and investing at its Web site, Get Smart about Money. Visa has developed financial soccer and financial football video games to help young and old learn about money management in an enjoyable manner. It also maintains a Web site called Practical Money with many resources for learning about money management, as well as help for educators. The United States Literacy and Education Commission strives to provide “financial education resources to all Americans.” Its Web site is called mymoney.

A comparison of the offering of personal finance courses by non-AACSB accredited schools with AACSB accredited schools would be an interesting subject for future research.

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# EIGHT STEPS TO ENTREPRENEURIAL EXCELLENCE

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## Abstract

*This article discusses the process of creating wealth through the creation of a distinctive entity that solves problems for others at a profit. This process can be broken down into eight steps, as follows:*

- *Know yourself—strengths, weaknesses, likes, dislikes*
- *Select an industry and learn as much as you can about it*
- *Pick the right opportunity*
- *Develop an outstanding marketing plan*
- *Control finances, particularly cash flow*
- *Handle legal, administrative, personnel, and organizational matters effectively and efficiently*
- *Grow the business profitably to create value*
- *Harvest the value with an appropriate exit plan*

*This paper addresses each of those steps, and the overall process of creating wealth that they support.*

“Entrepreneurs and CEOs accomplish more because they are always thinking. Success is not only about financial success; it is about a lifestyle—people doing what they want to do.”

--Joe Mancuso, founder of seven businesses and the Center for Entrepreneurial Management

The term “entrepreneur” has a wide range of meanings. On the one hand, an entrepreneur is someone of very high intelligence and aptitude who pioneers change and generally profits in the process. On the other hand, common usage often considers anyone who works for himself to be an entrepreneur. The authors would consider the first example to be a true entrepreneurial venturer (EV) and the second to be a typical small business owner/operator (SBO). While they have much in common, the EV differs from the SBO in several key ways:

- Wealth creation – the SBO seeks to generate an income stream that replaces a salary or wage, while the EV seeks to build an enterprise that has value considerably in excess of its annual income stream
- Timing –the SBO seeks to generate a stream of net income over a lifetime, but the typical EV is looking to build the enterprise and cash out within a short period of time, typically 5-10 years
- Risk tolerance – the EV should have a higher risk tolerance than the SBO; the classic entrepreneurial opportunity is a high-risk, high-reward situation; the risk scares off those who lack the entrepreneurial motivation, enabling greater rewards for those who take the chance
- Creativity/Innovation – the EV applies creativity and innovation to solve a problem for someone else, and does so profitably

This suggests that an entrepreneur can be defined as one who applies intellectual capital (IC) creatively and innovatively to solve a problem for someone else, earning a profit and creating wealth in the process. One of the authors has postulated the following formula for entrepreneurial wealth creation:<sup>1</sup>

$$\text{Wealth Creation} = \text{IC} + \text{team building} + \text{marketing system} + \text{other systems} + \text{managing financial capital}$$

IC allows the entrepreneur to create a business that has greater value than the sum of its physical parts. IC represents your capacity to solve problems—the sum of all your abilities, intelligence, imagination, motivation, talents, personal preferences, lifestyle choices, and experiences. Starting a business, growing it profitably, and selling it for more than you put into it is one way to convert IC into wealth. The conversion process is one of simply solving someone else's problem profitably. Business is really a value exchange—money in exchange for solving a problem. Converting intellectual capital to value requires an understanding of how to create an organization that solves problems profitably. Starting a business is one thing. Building an enterprise that can one day be sold for more than the entrepreneur invested—more than the value of its tangible assets—is another. Building such an enterprise means building a team of players organized to deliver a product or service at a profit. The challenge is that at the beginning of an enterprise, the entrepreneur has to do many of the functions alone—there is no legal staff, accounting staff, or marketing staff. So, it is important to make an objective self-appraisal. In starting a business, a sound strategy is to identify the information or skills needed, conduct a self-appraisal to determine which ones you have, and develop an improvement plan to (1) obtain as many as possible before you start, and (2) rely on outside professional assistance for the remainder.

The entrepreneurial life cycle is generally described as proceeding through the following phases:

- A. Recognizing problems, and generating ideas to solve them creatively and innovatively
- B. Identifying and evaluating opportunities, and selecting the right opportunity
- C. Establishing the enterprise
- D. Growing the enterprise and creating value
- E. Harvesting the value upon exit

This paper discusses an eight-step process for creating wealth by moving through the above phases to create a distinctive entity that solves problems for others at a profit. The eight steps are based primarily on "real world" experience. These steps and their relationship to the phases above can be seen in the following chart:

EIGHT STEPS	ENTREPRENEURIAL PHASE
1. Know yourself	A. Problem recognition/idea generation
2. Select an industry and learn it	
3. Pick the right opportunity	B. Identifying and evaluating opportunities
4. Develop an outstanding marketing plan	C. Establishing the enterprise
5. Control finances, particularly cash flow	
6. Handle legal, administrative, personnel, and organizational matters effectively and efficiently	
7. Grow the business profitably to create value	D. Growing the enterprise
8. Harvest the value with an appropriate exit plan	E. Harvesting the value

Phases A through C, and corresponding steps 1 through 6, concern both the SBO and the EV, and are the primary focus of most university courses in entrepreneurship. Phases D and E (steps 7 and 8) are generally of much more concern to the EV than to the SBO.

Some entrepreneurs execute the processes to create wealth intuitively and never write anything down. Others write formal plans that they can study. There are three major reasons for writing down the plan and results:

1. You can show your thoughts to other successful entrepreneurs and friends for their reaction.
2. Your written plan becomes a map to success.
3. You develop an important "history book" of success, which is valuable as a future reference both to you and to a prospective buyer.

The conversion of IC into wealth is the result of the process explained in this paper. This paper discusses each of the eight steps, in turn. It is intended as a "how-to" instructional guide, advising the prospective entrepreneur how to proceed, and as such is written largely in the second person.

## **STEP ONE: KNOW YOURSELF—STRENGTHS, WEAKNESS, LIKES, DISLIKES, LIFESTYLE CHOICES, GOALS AND OBJECTIVES**

A common trait of successful people is that they know themselves - extremely well. They know their strengths, their weakness, their likes and dislikes, their lifestyle preferences, and their goals and objectives. Pretending to be someone that you are not will not make any money for you.

There are a number of tools to assist you as a prospective entrepreneur in this process. Any edition of the *What Color is Your Parachute* series of career guides includes multiple excellent questionnaires and exercises to assist in this process.<sup>ii</sup> One of the authors has also developed an approach that can be useful in getting to know yourself better—and in planning future self-improvement.<sup>iii</sup> The task of acquiring knowledge about yourself is never complete. Done properly, it is an essential tool to help you focus on

- Improving areas of weakness, while
- Leveraging areas of strength.

Another important purpose of the self-evaluation process is to determine just how well suited you are for entrepreneurship. The Small Business Administration (SBA) has identified several questions that should be asked:<sup>iv</sup>

- Are you a self-starter?
- How well do you get along with different personalities?
- How good are you at making decisions?
- Do you have the physical and emotional stamina to run a business?
- How well do you plan and organize?
- Is your drive strong enough?
- How will the business affect your family?

On the positive side, for the right person, starting a business can provide the following advantages:<sup>v</sup>

- You will be your own boss.
- Hard work and long hours directly benefit you, rather than increasing profits for someone else.
- Earning and growth potential are far greater.
- A new venture is as exciting as it is risky.
- Running a business provides endless challenge and opportunities for learning.

Many people believe that in order to be an entrepreneur, you must be born that way. In reality, almost anyone can learn to succeed as an entrepreneur. There are some characteristics that most successful entrepreneurs have in common, and the aspiring entrepreneur would do well to study and emulate them. The SBA has identified the following common traits of successful entrepreneurs:<sup>vi</sup>

Persistence	Calculated risk taker	Personal initiative
Desire for immediate feedback	Creative	Ability to consolidate resources
Inquisitiveness	Innovative	Strong management and organizational skills
Strong drive to achieve	Vision	
High energy level	Commitment	Competitive
Goal-oriented behavior	Problem solving skills	Change agent
Independent	Tolerance for ambiguity	Tolerance for failure
Demanding	Strong integrity	Desire to work hard
Self-confident	Highly reliable	Luck

Successful entrepreneur and author Phil Holland narrows this list down to three characteristics:<sup>vii</sup>

- Guts
- Brains
- Capital

Other factors that may be helpful the aspiring entrepreneur include a role model to influence them early on and parents who were entrepreneurs.

Your self-analysis should include a resume of your "formal" qualifications, a detailed chronicle of life and work experiences, and a detailed self-assessment of your skills, training and knowledge of general business. Successful entrepreneurs know themselves extremely well and they know what they don't know.

The final piece of the self-analysis puzzle consists of a plan to improve or develop the knowledge, skills, and attributes necessary to succeed, and to determine where and how you can best use the knowledge and skills of others to supplement your own. One place that you must be able to rely on yourself is industry knowledge.

## **STEP TWO: FIND AN INDUSTRY THAT MATCHES YOUR SKILLS AND INTERESTS AND LEARN IT**

An entrepreneur does not have to be an expert in accounting, finance, marketing, computer systems, law, or any of a number of other areas. What the entrepreneur has to know are the industry and the type of business that he or she going to be in.

In order to offer a superior product or service, it helps to have experience in that industry. Although there are certainly exceptions, generally people do best when they "leverage" their experience. The term "leveraging your experience" means that you look for a business where you have both an extensive knowledge of the industry and the right type of personality to succeed in that business. Even if you can't find a business where you can leverage your knowledge of that industry and your personal skills, you may be able to find a business that focuses on your strengths. Failure is more certain for those who jump into a business which they know nothing about. The natural tendency is to "try something new". Success in business demands that you produce a product or service and market that product or service more effectively than you

competition. If not, people will buy from your competitor. It is important to build on your past experiences rather than walk away from your expertise. So, how does the aspiring entrepreneur develop knowledge about an industry? Holland suggests:<sup>viii</sup>

- Go to work for someone in the same business.
- Attend all classes you need.
- Read "How To" books.
- Ask questions and seek advice.

Creativity and innovation are extremely important in this step and the next one. Creativity is being able to create new ideas and ways to solve problems that provide opportunities. Innovation involves applying creative ideas to solving business problems. Innovation may take the form of new invention or process improvements for existing ideas of products. Peter Drucker has identified four indicators of impending change in the structure of an industry, the points at which creative and innovative solutions are most valuable and marketable.<sup>ix</sup>

- The most reliable and easily spotted indicator is rapid growth of an industry
- By the time a rapidly growing industry has doubled in size, the way it perceives and serves its market has likely become inappropriate.
- The convergence of technologies that were previously seen as distinctly separate will predictably lead to sudden changes in an industry.
- An industry is ripe for basic structural change if the way it does business is changing rapidly.

Some points to keep in mind about creativity and innovation include:

- Inspiration comes from relaxation.  
Great ideas come when the brain is relaxed. When you are under pressure, your brain seems to shut out your subconscious mind, which is the source of new ideas. Sometimes the best ideas come from being in a relaxed setting, on vacation, sitting in your hammock in your back yard. Stress sometimes locks up your intuition and imagination. On the other hand, simply waiting for an idea may not work either. The key is to tell yourself that you will observe, listen, and be highly sensitive to new ideas. It may be helpful to commit yourself to seeing how to convert a hobby or interest into a business or to maximize the skills and knowledge you already possess to start a business. Talk to yourself in a relaxed tone. The key is to unlock ideas from within.
- It is not necessary to "invent" to start a new business  
Some people think it is necessary to come up with a completely new, never tried before product. In reality, there are many people who became very wealthy by simply taking a common business and adding their own personality to it.

The wider your exposure, the greater the number of ideas you will have. There are many ways to learn more about business opportunities, including the following:

- Travel.
- Read.

- Talk to prospective customers
- Talk to people in the same line of business that you think you might have an interest in.
- Talk with friends.
- Join clubs or organizations of people starting their own business.
- Visit the Chamber of Commerce.
- Write a list of every business that you might consider going into
- Consult industry or trade associations

Of course, the best opportunity to learn an industry is actually to work in it.

### **STEP THREE: PICK THE RIGHT OPPORTUNITY**

Having a great idea that solves a problem is not enough. You must be able to provide the product or service profitably in order to turn into a business. Selecting the right opportunity to do so is critical to success. The SBA reports that roughly 50% of small businesses fail within the first five years.<sup>xi</sup> Michael Ames has identified eight reasons for small business failure<sup>xi</sup>, and Gustav Berle has added two more.<sup>xii</sup> These boil down to variations of the two primary reasons for failure – picking the wrong business or lacking proper cash/financial management:

PRIMARY REASON	AMES	BERLE
Picking the wrong business	Lack of experience	Competition
	Poor location	Low sales
	Unexpected growth	
Lacking proper cash/financial management	Insufficient capital (money)	
	Poor inventory management	
	Over-investment in fixed assets	
	Poor credit arrangements	
	Personal use of business funds	

Holland suggests a step-by-step approach to business selection.<sup>xiii</sup>

- Decide if you really want to be in business
- Decide what business and where
- Decide whether to start out full-time or moonlight

Since operating the wrong business is the most frequent mistake that start-up entrepreneurs make, Holland provides a checklist for evaluating a proposed business, or the business you are currently in:<sup>xiv</sup>

- If you have not yet selected a business, take your time and wait for the right business.
- Don't tackle a business that may be too challenging
- Try to identify a business that has long-term economic potential. Choose a business that will grow in today's market as well as tomorrow's.

- A big mistake can be the error of omission in failing to see an opportunity right in front of you
- As a general rule, specialists do better than non-specialists
- Look for a business that focuses on a “consumer monopoly” with pricing power and long-term predictable growth prospects.
- Avoid “commodity” businesses where you must compete entirely on price and you must have the lowest cost to survive.
- Most service businesses have pricing power, so that you do not need to have the lowest cost.
- Do not bet on a business you don’t know when you can bet on a business you do know.
- Consider a “hollow corporation” by contracting out production to a low-cost supplier.
- If your business is based on an invention or patent, (1) determine whether there are any issued patents similar to your idea, (2) be cautious about dealing with firms that demand up-front fees to market an invention, and (3) make sure you have a product to test, to show, and to solicit feedback.

Holland also identifies some things to avoid in picking a business:<sup>xv</sup>

- Impatience
- Overconfidence
- Unrealistic expectations

Holland suggests an activity for those who have not decided on a business.<sup>xvi</sup>

- Write down an activity you like to do.
- List businesses related to that activity.
- Score the various businesses based upon:
  - Will it fill an expanding need for which there is no substitute?
  - Is it something I love to do?
  - Can I be so good at a specialized, targeted need that customers will think there is no close substitute?
  - Can I learn the business by working for someone else first?
  - Is this a product or service that I can test first?
  - Could I operate as a hollow corporation, without a factory and with a minimum number of employees?
  - Should I consider a partner who has complementary skills or who could help me finance the business?

The result of applying this approach will be a matrix that looks in part like the following:

	Option 1	Option 2	Option 3
Will I fill an expanding need?	6	3	10
Can I do something I want to do?	8	5	10
Can I specialize?	7	8	10
...			

Sum the evaluation numbers for each option. You may not necessarily choose the option with the highest score, but the process is a useful tool to organize your thinking.

Once the business opportunity has been selected, you must establish the enterprise. This begins with developing a business plan. The most commonly accepted purpose of the business plan is to assist the entrepreneur in obtaining financing. Other reasons for developing a solid business plan include:<sup>xvii</sup>

- The act of writing the plan will force you to think through the key elements of your business
- Trusted and experienced outsiders can review your plan and help you identify weaknesses, missed opportunities, unsupportable assumptions, and overly optimistic projections.
- Using a solid business plan as a blueprint for running your business can increase your likelihood of success.
- The plan's financial projections can be used as a basis for budgeting.

Former venture capitalist and angel investor Christine Comaford-Lynch has identified ten places where prospective entrepreneurs go wrong in developing business plans:<sup>xviii</sup>

AREA	WHAT SHOULD HAPPEN	WHAT GOES WRONG
Company overview	A few concise and compelling sentences describing your company's purpose/goal	Company's purpose/objective is vague, common, or not compelling.
Pain	Identify the specific market pain you will reduce or remove.	Failing to include this topic to convince readers unfamiliar with your product or service.
Solution	Explain as concisely as possible what your plan is and how it works.	Not fully explaining your solution and exactly how it works.
Company information	At least have a skeletal team supplemented with advisers.	Presenting too small a team; list as many key players as possible.
Financial information	Describe your funding history and a five-year forecast.	Providing pie-in-the sky financials.
Product	Explain the status of your product.	Not helping the reader understand how you are going to get a full-fledged product.
Defensibility	Explain how you will protect your market position or intellectual property.	Not demonstrating that you have considered these topics and have thoughtful answers.
Competition	Name your present and future competitors.	Saying you have no competitors—you do.
Business model	Show how you will make money and grow your business.	Not explaining exactly how the business will make money, when, and what new revenue sources will come on line.

AREA	WHAT SHOULD HAPPEN	WHAT GOES WRONG
Key milestones	Show the deals/achievements that are accelerating/will accelerate the company's growth, and the specific stage of each of them.	Not explaining what you have accomplished in a time frame, and what you plan to achieve with a time frame

The next three steps deal with developing and executing the business plan.

#### **STEP FOUR: IMPLEMENT AN EXCEPTIONAL MARKETING SYSTEM**

Starting a business is only one aspect of being an entrepreneur. A business will not survive without customers. The most important part of any business is having a marketing strategy and a system that implements that strategy. While most businesses do not write down their formal marketing strategies, successful businesses know all elements of a formal marketing plan and have a clear vision of what they are doing. Putting together the elements of a marketing plan increases your effectiveness and reduces your cost. Putting it in writing and retaining it reinforces your experience and provides a valuable asset for you to consult in the future or for a prospective buyer who will pay more for the company to get it.

The realities of marketing for a new business include the following:

- You don't have big money to throw into advertising,
- Advertising is actually only one part of the marketing-communication process and it is the most expensive strategy one can use,
- You should really select the type of customer you want because a customer that can't afford to pay for the goods or services is a customer who will bankrupt the firm! There are certain fundamentals about marketing that are unique to start up businesses:
- There is no existing customer base to earn "referrals" so "word of mouth" is not an acceptable strategy,
- Customers are very reluctant to do business with a new firm because they are worried about performance, and
- Price is not the real decision criteria for purchasing decisions from new companies but quality is.

A true marketing strategy and a marketing system's purpose is to reduce the costs of acquiring customers, create employees who can be responsible for bringing in business, and create a database of extremely valuable information to improve the firm's product or services.

Building a world-class marketing system involves four sequential phases:

- Gather market intelligence
- Analyze the intelligence and develop the target market
- Develop a strategy to market to the target(s)
- Implement the strategy through appropriate marketing tactics

The difference between a small business and an entrepreneurial firm is that the entrepreneurial firm has a system to identify and communicate with potential new customers that any qualified

employee can implement. Entrepreneurs realize that the real value of a business firm lies in its systems—particularly its marketing system. Think about it this way – is there anything that is more important or more troubling to people starting their own business than getting customers? Now, if you have with a documented, step-by-step marketing system that gets those customers, people will pay much more to acquire your business than one that simply says, "Oh, we sit here waiting for customers to walk through the door."

### **STEP FIVE: CONTROL FINANCES, MOST IMPORTANTLY CASH FLOW**

As noted above, the two most important reasons for failure of new enterprises are (1) entering the wrong business or opportunity (Step 3), and (2) failure to maintain adequate cash flow. No matter what your business, cash is the fuel that will drive it. You must ensure that you have sufficient cash flow at every step in the entrepreneurial process if you expect to succeed.

To plan your financial needs, Andi Axman suggests a few basic questions:<sup>xix</sup>

- How much money do you need?
- When are you going to repay it?
- Can you afford the cost of the money?

Sources of financing include:

- Owner financing
  - Personal savings
- Debt financing
  - Friends and family
  - Home mortgages
  - Credit cards
  - Suppliers
  - Landlords
  - Commercial mortgages
  - Specialized lenders (industry, computers, phone systems, etc.)
  - Leasing companies
- Equity financing
  - Friends and family
  - Venture capital

Startup enterprises typically lack all or most of the criteria that investors use to pick big winners:<sup>xx</sup>

- Scale
- Proprietary advantages
- Well-defined plans
- Well-regarded founders

Investors or creditors who might provide funding for your enterprise are looking primarily for three things, according to Axman:<sup>xxi</sup>

- Stability
- Income
- Debt management

The steps to this point have focused mainly upon those things which must be done in order to create a successful business. An enterprise which successfully completes the first five steps has excellent prospects of success, unless some event occurs to knock it off stride. The next step addresses keeping that successful business from stumbling inadvertently into a situation which ultimately causes it to fail.

**STEP SIX: MANAGE LEGAL, ADMINISTRATIVE, PERSONNEL, AND ORGANIZATIONAL ISSUES EFFICIENTLY AND EFFECTIVELY**

Initially, starting a business may be a very individual effort. Even at that very early stage, it is not possible for most people to be super-experts in all the basic disciplines of business (accounting, marketing, finance, etc.). That's why there are accountants, lawyers, sales professionals, etc. What is important is to be very sure of what you know and what you don't. Otherwise, you will not seek the advice you need.

Once legal matters could be considered an afterthought. Today, with increasing litigation, it is important to build a strong legal strategy. This includes:

- 1 - Understanding what local, state and federal laws there are regulating your business.
- 2 - Understanding insurance and how to shift your risk of being in business to the insurance company.
- 3 - Understanding your personal liability and how different forms of doing business can minimize your risk.
- 4 - Getting the most amount of information you can without having to hire an attorney at the earliest stages of your business.

Significant legal issues include:

- Choice of form of business (proprietorship, general/limited partnership, corporation—C/S/public, limited liability company)
- Required licenses and permits
- Protection of intellectual property
- Negotiation of leases and contracts

Administrative issues that must be addressed include:

- Location and leasing
- Computers and communication
- Insurance
- Policies and procedures

Personnel issues that have to be addressed include:

- Hiring of employees
- Classification of employees versus independent contractors
- Training employees
- Evaluating and promoting employees
- Compensation and payroll management
- Disciplining and terminating employees
- Compliance with applicable regulations

At the point you begin to take on employees, it probably makes sense to retain an outside payroll/human resources consultant. When you reach the point of providing insurance and other benefits, it probably makes sense to look into employee leasing providers.

If you have completed these steps, you should have a viable business enterprise up and running. This is the point at which the actions of the EV diverge from those of the SBO. An SBO who has followed the first six steps can operate the business comfortably and live well for a long time. On the other hand, once the EV has the enterprise up and running, his or her primary interest shifts toward growing the value of the business until he or she can harvest that value by exiting for the maximum amount.

### **STEP SEVEN: CREATE VALUE BY GROWING THE ENTERPRISE PROFITABLY**

Successful entrepreneurs understand how businesses are evaluated and what gives a business a value beyond the worth of the tangible assets. A strategy to maximize the value of your enterprise begins with understanding what makes a business sell for more than the mere price of its equipment, building and other tangible assets. Just as a scoreboard helps us determine who is winning the football game, so an understanding of just how businesses are valued will help us determine how value is created. There are three basic approaches to valuing a business:

- **Asset-based valuation**  
This is essentially the basic accounting formula, (Equity = Assets – Liabilities), in one of three basic variations.
  - Book value, which may or may not be adjusted as appropriate to reflect economic reality (valuing a stable business enterprise)
  - Replacement value (determining whether to start a new business from scratch or buy an existing business).
  - Exit value (valuing a business that is being discontinued and sold; this may be liquidation value for a business that is in bankruptcy or has not been able to attract buyers).
- **Discounted present value of future net cash flows**  
This method considers the present value of future free cash flows, plus the residual terminal value of the firm, as in the following formula:<sup>xxii</sup>

$$PV = \sum_{t=1}^N \frac{(FCF_t)}{(1+K)^t} + \frac{RVN}{(1+K)^N}$$

Where $K$	=	Cost of capital
$FCF_t$	=	Free cash flow in year $t$
$N$	=	Number of years
$RVN$	=	Residual value in year $N$

Free cash flow is equal to Operating Income, plus depreciation and other noncash charges, less Interest, Taxes on operating income, Increase in net working capital, Capital expenditures (replacement and growth), and Principal repayments. Valuation under this method depends upon assumptions regarding future growth and profitability (which impacts the value of  $FCF_t$  for each year) and risk (which impacts the cost of capital,  $K$ ).

This approach is perhaps a bit daunting for those who are not financial experts. Its complexity arises because it requires a large number of what may be individually small assumptions about growth and risk. Fortunately, there is a more easily understood approach based upon a small number of large assumptions (typically one judgmental factor). The following approach is most often used in the business world because it is relatively straightforward, and there is typically much industry information upon which to base the judgmental factor.

- Market capitalization approach

Market capitalization can take several forms as follows:

- Earnings capitalization

$$\text{Enterprise value} = \text{Net income} \div \text{Capitalization rate}$$

Under this method, the appropriate capitalization rate is essentially the target return on investment (ROI), considering risk and uncertainty. Higher risk means a higher the capitalization rate, and a lower resulting valuation.

- Market-comparable valuation

Mathematically this approach is similar to the earnings capitalization valuation except that income is capitalized by multiplying it by price to earnings ratio instead of dividing by a capitalization rate. The most familiar form is the standard financial ratio:

$$\text{Stock price} = \text{Earnings per share (EPS)} \times \text{Price/earnings (P/E) ratio}$$

This can be restated for the enterprise in total:

$$\text{Enterprise value} = \text{Net income (NI)} \times \text{P/E ratio}$$

- Multiple of Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA)

$$\text{Enterprise value} = \text{EBITDA} \times \text{Multiplier}$$

This is frequently used in valuing smaller companies, where cash flow is more of a consideration, and EBITDA is usually a better surrogate for cash flow than net income.

In each of these formulations, the P/E ratio or other multiplier is developed based upon comparable values for the same or similar industries, adjusted up or down based upon judgmental evaluations of risk and future growth and profitability.

Note that the asset-based valuation process considers only physical capital (PC). The other approaches also assign a value to the enterprise's IC. The relationship of the two can be shown formulaically as:

$$\text{Enterprise Value} = \text{Physical capital (PC)} + \text{Intellectual capital (IC)}$$

Since PC is essentially constant, it follows that increasing the value of an enterprise requires increasing the IC component. So the issue for the entrepreneur seeking to increase enterprise value is how best to enhance the value of IC. To understand how to do this, start by taking a look at the generic market-comparable valuation formula,

$$\text{Value} = \text{Income stream} \times \text{Multiplier}$$

In this formulation, the entrepreneur seeking to add value would look to increase either the income stream or the multiplier. This would be equivalent, in the earnings capitalization approach, of either increasing the income stream or decreasing the capitalization rate. Note that both the SBO and the classic EV will seek to increase the earnings stream. What separates the EV from the SBO is that the EV will also seek to increase the multiplier (decrease the capitalization rate), which will normally not be a concern of the SBO. In fact, most SBO's will be loathe to spend money (reducing free cash flow) to develop things (e.g., a new computerized inventory management system) which might increase the multiplier, whereas the true EV will spend this money readily to add value to the enterprise as a whole.

The approaches to creating value may be summarized as follows:

- Increase the earnings stream
  - Increase sales volumes
  - Increase gross margin
  - Reduce general and administrative expenses
- Increase the multiplier
  - Increase upside potential
  - Reduce or mitigate risk and uncertainty

This represents something of a shift in thinking for the typical entrepreneur, who got started because he or she was something of a risk taker. Moving from taking risks to reducing them or mitigating them is a process that must be navigated very carefully. Having effective systems in

place to handle the risk and reward areas facilitates minimizing risks without abandoning the entrepreneurial edge.

## **STEP EIGHT: HARVEST THE VALUE THROUGH AN APPROPRIATE EXIT STRATEGY**

This is perhaps the most difficult aspect of the entire entrepreneurial process. It is easy getting into a business. It is much harder getting out. The whole point in starting a business is to create wealth. That wealth consists of

- The income you earn from operating the business.
- The profit you earn by selling the business, or part of it, for more than the value of its assets.

Your ultimate exit may take any of several forms:

- Sale to an interested buyer
- “Going public” through an initial purchase offering (IPO)
- Transfer to your children or other intended heirs at the time of your death or retirement
- Liquidation or bankruptcy of an unsuccessful business

One tactic of successful entrepreneurs is to figure out who will buy them out before they start the business, and work to tailor the enterprise in such a way as to be most attractive to that particular buyer. Steven Cash Nickerson, who has founded 11 companies and sold eight of them, in describing his experience with one of them, Workforce Strategies, says, “My plan from the start was to sell it. Always start with the exit in mind; otherwise you work for 40 years and become a penny stacker.”<sup>xxiii</sup> Really successful entrepreneurs don't even begin to start their business until they have a clear picture of potential buyers for their business.

You also need a clear idea of what constitutes failure, and when you should pull the plug and bail out of a failing venture. Do not throw good money after bad.

Other critical success factors include:

- Document, document, document. If you start a business and record your failures and successes of each strategy, you will have a valuable map of experience that your buyer will want to have in addition to the business. Proper documentation builds the value of a business.
- Know when to quit. There is a saying in business, “Don't throw good money after bad.” To avoid making the mistake of funding a losing operation, it is important to have some financial benchmarks on when you will quit.

## **CONCLUSION**

The entrepreneur's objective in starting a business is to create wealth. Part of that wealth is created in the form of annual net income while operating the business, a source which the entrepreneur shares with the typical small business operator. The other part of that wealth, typically unique to the entrepreneur, is realized when the entrepreneur executes his or her exit

plan. Following the eight steps outlined herein will not guarantee success—or wealth—but it will give you a much better chance of achieving your objective.

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# **EXPORT INTERMEDIARY NETWORKING BEHAVIOR AND INTERNATIONAL OPPORTUNITY RECOGNITION IN SMES**

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## **ABSTRACT**

*Identify international opportunities is the heart of IE (International Entrepreneurship) and is the major success factors in IE studies, while according to OECD (2008), is the most important barrier for SMEs internationalization. This is because of entrepreneurial limitation, lacking the market power, knowledge and resources to international opportunity recognition. Yet little is known about the methods used by entrepreneurs for opportunity recognition (Ellis, 2008). We approach this problem by adopting a network perspective on export intermediaries. The contribution of this paper is that it proposes SMEs the relationships with export intermediaries can go beyond their cognitive limitations and resource limitation and thus facilitate the discovery of new opportunities. A quantitative method in this study seeks; a) to investigate the importance of International Trade Intermediary (ITI) networks by providing needed resources to notice and act on opportunities for entrepreneurs' firms; b) to investigate the importance of ITI networks to compensate the entrepreneur's cognitive limitation and act on opportunities for entrepreneur's firm; c) to determine the relationship between international opportunity recognition by export intermediaries and export performance in SMEs. Questionnaire will be distributed to 400 SMEs in Malaysia. A set of structured questionnaires will forward to participants via e-mail. Data collection will reveal the effect of export intermediaries networking on opportunity recognition and SMEs export performance and also the role of experience and knowledge on opportunity recognition.*

# INNOVATION AND ENTREPRENEURSHIP IN THE HYPERCOMPETITIVE BUSINESS ENVIRONMENT OF THE TWENTY-FIRST CENTURY – THE NIGERIAN ASPIRATION

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## **ABSTRACT**

*The main objective for this paper was to answer the question, “How can entrepreneurship innovation in Nigeria be encouraged or insured in the hypercompetitive business environment of the twenty-first century?” Two theoretical perspectives, the serendipity theory of entrepreneurship and the social emeddedness perspectives were employed to guide the study in the researchers’ efforts to search for sources of entrepreneurial innovation. It was found that a competition and innovation policy is the primary instrument for triggering and assuring innovation in entrepreneurship. The related policy components were identified and built into a model for explaining and predicting entrepreneurial innovation. Policy implications were highlighted and future research directions suggested.*

## **The Problem and Objective**

Entrepreneurship has assumed a central place in development policy in the contemporary world as nations attempt to nurture it as a way to grapple with the *new unemployment* and consequent *new poverty* in the era of neoliberal economic management (Brown, 2003; Lazzarato, 2009).

According to the Central Bank of Nigeria (2005), Nigeria lost development for two decades (1981-2000) with negative-to-slow growth – and it has been epileptic even until now. Worse still, economic growth does not impact positively on the ordinary citizens, as suggested in the worsening unemployment and poverty in the land. Implicit in recent policy discourse in Nigeria is an aspiration to nurture entrepreneurship to take the country to be one of the top twenty economies in 2020 codenamed “Vision 20 – 2020”. It is also realized that the globalization of national economies has revved up competition and thus, the need for entrepreneurial innovation for survival.

Thus, the present researchers raised the key research question, namely, “How can entrepreneurial innovation in Nigeria be encouraged or assured in the hypercompetitive business environment of the twenty-first century?” The main objective in this paper,

therefore, is to find a path to establish a way to nurture entrepreneurial innovation in Nigeria.

After this general introduction, the rest of the paper is structured as follows. The literature search is made for conventional wisdom with respect to policy discourse on entrepreneurial innovation. Next, we try to identify, select, and give attention to a number of variables that we think would be critical to a successful entrepreneurial innovation policy. Subsequently, we build these latent constructs into a hypothesized input model for relating entrepreneurial innovation to socio-economic development. We conclude the paper in the subsequent section.

### **Theoretical Framework**

Our frame of reference for this study consists of serendipity theory of entrepreneurship and social embeddedness perspective.

According to Dew (2009), a theory of entrepreneurship would be incomplete without the incorporation of the concept of serendipity. It is at the intersection of three important domains – search, prior knowledge, and contingency. In brief, a knowledgeable entrepreneur who searches for opportunity can more likely than one that is not in evaluating and identifying contingent business opportunities, as fortune favours *the prepared mind*. Thus, we argue that sagacity can be developed to enhance innovation because if knowledge is developed and enhanced, then systematic search and opportunity identification or innovation can be enhanced in consequence.

Complementing serendipity is the social (network) embeddedness theory. It is based on the idea of the contextualization of economic activities in social space, milieu, or setting (Yang, 2004). That is, the general business environment provides the context for entrepreneurship and the founding or emergence of the entrepreneurial firm (Brandl and Bullinger, 2009). Thus, we also argue that an enabling university system can shape, equip, or prepare students to become entrepreneurs.

### **Competition & Innovation in the Global Economy**

Competitive and innovation pressures, information and communication technology, and the liberalization and deregulation of national economies are linked phenomena. For example, the Internet, as constituted by the World Wide Web (www), with networked computers (linked by servers and modems) allows firms to achieve boundrylessness for accessing markets unencumbered by spatio-temporal limitations of the environment.

As such continuous innovation is crucial for attaining a series of temporary (rather than sustainable) competitive advantages for survival in this new globalized and deregulated marketplace. But what is innovation and how can it be nurtured among entrepreneurs? These issues are taken up in the subsequent sections of this paper.

### **Innovation and Entrepreneurial Performance**

Innovation is central to entrepreneurship and much of entrepreneurship theory indicates this centrality. For example, the Schumpeterian entrepreneur, according to Parboteeah (2000), is one who changes the rules of competition by “creative destruction”.

Pearce and Carland (1996) found that firms with high entrepreneurial intensity had higher performance than firms with low entrepreneurial intensity. *Entrepreneurial intensity* is evidenced by innovative activities, such as the creation of *new products*, implementation of cost effective processes, the generation of *new ideas*; and very frequent changes or improvements in products, services, and processes. But what is the source of the (entrepreneurial) innovation?

One source of innovation is intuition. Intuition is based upon “judgment in lieu of logical business decisions”. Linked concepts include “quantum knowing” (Shelton and Darling 2001); Langer’s theory of mindful decision-making (Langer, as ultimately cited in Shelton and Darling, 2001); and “weak signal management” (Baker, 1996).

Another source of innovation is *team or group effort*. Linked concepts include “constructive controversy” (Tjosvold and Yu, 2007), “creative synthesis” or “bisociation” from conflicted ideas (Fillis, 2001) which has the potential for exploring and generating of ideas approximating a *collectively exhaustive* set of decision alternatives. We also argue that these efforts can facilitate innovation by providing a framework for questioning beliefs, mental models, and even cherished ideas (iconoclasm), which can change beliefs, ideas, systems, and ultimately lead to innovation (see Macdonald et al., 2007).

### **The State & Entrepreneurial Innovation**

The conception of developing entrepreneurs involves a deliberate process of encouraging, nurturing, and building entrepreneurship talent. Here, the state has the overall policy responsibility.

### **Policy Formulation**

The role of the state in the development of entrepreneurial innovation is in the area of creating an *enabling policy framework* (see Intarakumnerd, 2005), as advocated under social liberalism, which urges the state to take a parametric stance on economic development. The stance involves, among others, the provision of infrastructure services and development of human capital.

The first of two such policy regimes is the introduction of entrepreneurship development course in the university system in Nigeria. The course will be taken by all undergraduates in Nigerian universities. The other is a policy to make PhD the minimum teaching qualification in Nigerian universities.

### **Infrastructure Provision**

Infrastructures, according to the African Development Bank (2007: 158-161) consist of “the complex of physical structures and networks within which economic (academic) activities are carried out”. Infrastructures for the university system include lecture theatres, offices, equipment, libraries (particularly, the universal library) and such.

Besides those specific to universities, infrastructures, generally, such as roads and telecommunications network enable entrepreneurs to access resources and markets unhindered by spatial and temporal boundaries. It is a veritable instrument for global

networking among firms. Research confirms that entrepreneurship is significantly related to access to road networks and Internet connections (Low et al., 2005).

The state of infrastructures in the Nigerian university system is to say the least, embarrassing. In fact, ASUU has a running battle with the Federal Government of Nigeria (FGN), among other reasons, on account of inadequate and decadent infrastructure for decades and it was one of the major reasons over which the Union went on strike from June to November, 2009.

### **The Universities and Entrepreneurial Innovation**

Several scholarly researches have established the association between the presence of universities and the development of regions where such universities are located (Gielen et al., 2003; Nagle, 2007). This appears to be possible because the universities can and do develop entrepreneurial skills and competencies.

### **Academic Human Capital Formation**

We argue that the academic human capital formation (AHCF) is a prerequisite to the development of entrepreneurial innovation. It involves the development of high quality academics in sufficient quantity in the universities. We take our bearing from the *organizational learning* (the learning university) concept. Organizational learning, according to Fiol and Lyle (as cited in Dixon et al., 2007), represents the process of improving actions through better knowledge and understanding. The organization learns through its members.

The individual learning agents for the Nigerian university system are the faculty members. They are crucial to curriculum innovation, design, interpretation, and implementation. Interpretation involves translating abstract contents into operational terms and putting the curriculum to work. This appears to be the philosophy behind the policy on PhD as the minimum teaching qualification in Nigerian universities.

### **Entrepreneurial Capital Formation**

Principally, this consists of researching in, debating, and teaching, entrepreneurship, which can develop entrepreneurship. The main tool for achieving these efforts is the academic discourse. The value of discourse lies in distilling abstract ideas into concrete recipes by specifying variables, instruments, researchable issues, *defining characteristics of entrepreneurs* and similar, such that entrepreneurship ideals become teachable and learnable and the characteristics deliberately shaped in students (Brandl and Bullinger, 2009).

The results of this discourse would constitute the contents of entrepreneurship education and built into the university academic programme (curriculum). What are the defining characteristics of the entrepreneur which need to be taught and acquired and should be built into the university academic programme?

Except innovation and goal-orientation, the other factors are hotly disputed (Akeredolu-Ale, 1975: 21; Jackson et al., 2001; Spencer et al., 2008; Brandl and Bullinger, 2009). This controversy is desirable and should continue. What is further required is the ability of universities to acquire *learning capabilities* for continuously shaping entrepreneurship

discourse and achieving curriculum dynamism. This is akin to the primacy which Romer (as cited in Peters and Besley, 2008) accorded to “meta-ideas”, which are ideas for supporting the production and transmission of other ideas.

### **Emergence of Entrepreneurs**

We also recognize that the general business environment has a shaping effect on entrepreneurship.

Thus we agree with Leadbeater and Oakley (as cited in Peters and Besley, 2008) who maintain that it is a mistake to overstate public policy as a driver of entrepreneurship and innovation; the more potent forces include: (i) *technological change* and knowledge creation, which open opportunities for entrepreneurs; (ii) *cultural change*, which makes it more acceptable to take risk, work for self and start a business; and (iii) *economic change*, which makes working for large corporations less appealing and working for oneself more appealing.

We favour the exploration of both routes to entrepreneurship.

### **Performance Outcomes**

#### **Entrepreneurial Innovation**

We argue that the elements discussed in the preceding sections can lead to entrepreneurial innovation. Drawing on Loasby (2007), a flow of innovations is possible from the academic knowledge which the university imparts to its students. This is possible and likely in view of the operation of the principle of “structural incompleteness” in organizations and self-organizing systems because of the theoretically large number of selective connections the brain can make.

When so much theoretical and experiential knowledge has been accumulated, and given a problem, the brain of the individual entrepreneur, as an indefatigable self-organizing system, can draw from this vast stock of knowledge to form selective synaptic connections and patterns in relation to the problem, creatively. This is not necessarily a logical or rational process (Loasby, 2007).

We argue that entrepreneurial innovation is an antecedent to economic (GDP) growth and development. The nexus of the relationships among the variables discussed so far may be schematized in the hypothesized latent model that follows.

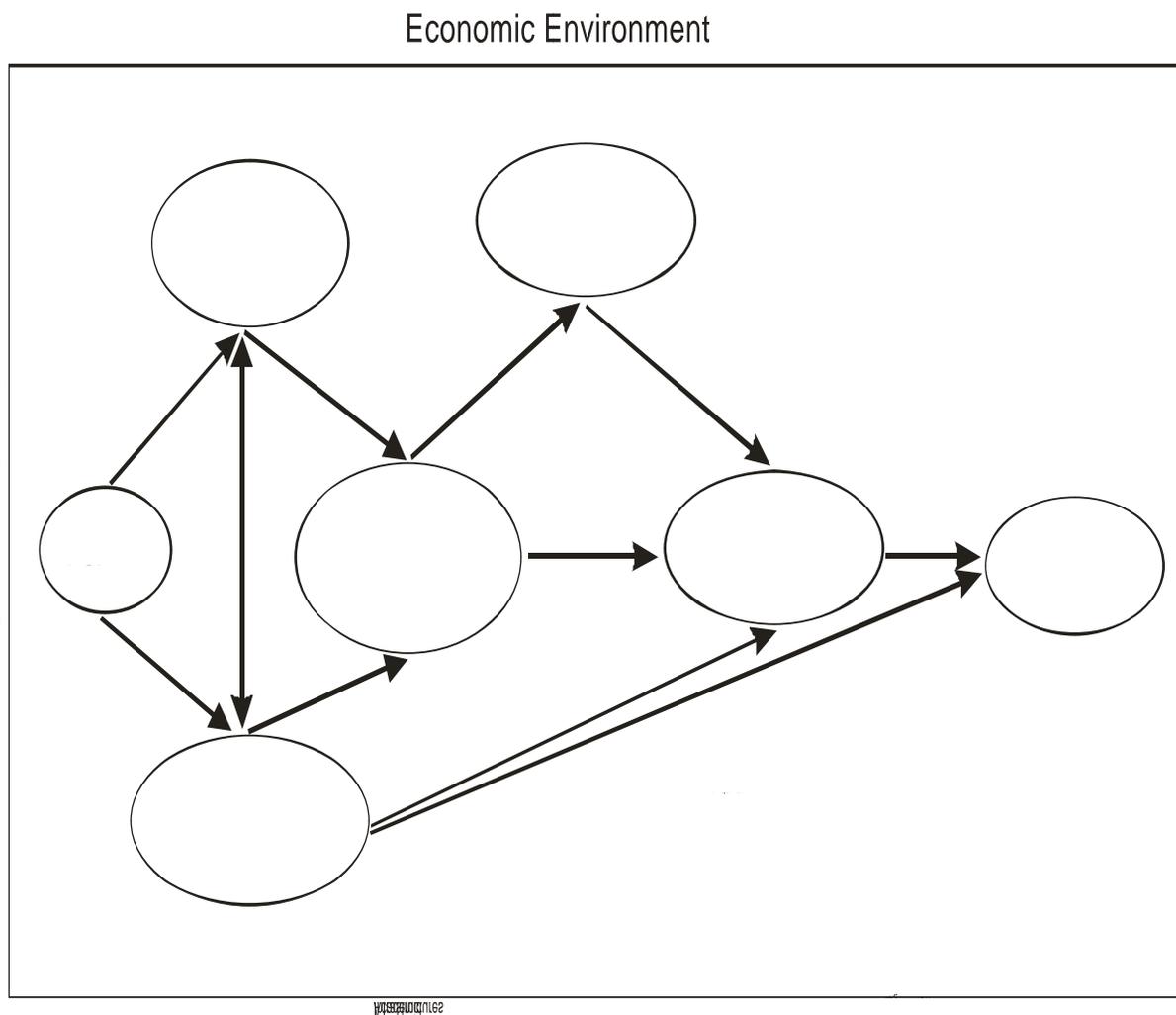
### Components of Ideal or Integrated Entrepreneurial Innovation Policy

Major Construct	Indicator Variable or policy components
Entrepreneurship development policy	(i) University-wide, nation-wide entrepreneurship development course
Infrastructure provision	(ii) PhD degree as minimum teaching qualification in Nigerian universities (a) Academic infrastructures Lecture theatres, e-libraries, office complexes. (b) General infrastructures
Academic human capital formation (AHCF)	(i) Production of PhDs (ii) Discourse activities (teaching, researching, publications, conferences, workshops, seminars) (iii) Curriculum dynamism
Entrepreneurship intensity and dynamism	(i) Development of entrepreneurship (ii) Emergence of entrepreneurship
Group decision-making (Team innovation effort )	(a) Idea exploration and generation (or opportunity identification/recognition)  (i) Constructive controversy (ii) Bisociation (iii) Brainstorming (iv) Creative synthesis (v) Serendipity (intersection of sagacity, search, contingency)  (b) Team structure  (i) Demographic structure Homogeneity or heterogeneity/diversity (ii) Cognitive structure Homogeneity or heterogeneity/diversity
Entrepreneurial development policy outcome	Performance outcome (a) Entrepreneurial innovation  (i) New products and services (ii) New processes (iii) New ideas (iv) Creative destruction (rule-breaking behaviour) (v) New markets (vi) New ways of organizing  (b) GDP growth

(c) Firm growth (in sales, profit, and employment)

(d) Reductions in unemployment, poverty, and social inequality which translate to improvement in human condition

Source: Researchers idealized Entrepreneurship Development Policy elements



Framework for Ideal Entrepreneurial Innovation Policy

Source: Authors' schema

The linkage among the latent constructs in the theoretical framework for the ideal entrepreneurship innovation policy is as follows: The environment is the *source of information* for formulating policy. Here, the policy is competitive, innovation-driven entrepreneurship. Its implementation entails the provision of academic infrastructures that facilitate teaching and researching activities and the production of PhDs. As Willis (cited in Thiem, 2008) points out, academic knowledge is limited and contestable, giving rise to continuous research and interminable debate; constantly evaluated and reconstructed. Ongoing research and debate (discourse) leads to building of new theories and identifying new variables and constructs. These are used for teaching and furthering empirical research. The knowledge is built into entrepreneurship academic programme and taught to students who eventually become entrepreneurs. Owner-managers and members of their management teams and board use their acquired skills to *innovate* and grow their firms, which result in economic (GDP) growth and employment, poverty, and social inequality reductions.

Of a necessity, the university must be entrepreneurial because it cannot give what it does not have. This is where academic or knowledge entrepreneurship comes in. It involves cultivating entrepreneurial behaviour – proactive, aggressive, autonomous, risk-taking behaviour, and forever experimenting; being “flexible and alert” to developments such as new knowledge and incorporating them into the university curriculum and maintaining curriculum dynamism.

## CONCLUSION

The present study made a theoretical contribution to the development of entrepreneurship in the Nigerian context by suggesting the elements of a good entrepreneurship development policy. These elements or latent constructs were built into a hypothesized model providing a *coherent policy framework* for developing and deploying entrepreneurship for the socio-economic development of Nigeria in the twenty-first century.

We argued that a good policy is a strategic decision, a successful implementation of which requires a bundle of integrated activities with associated knowledge, skills, and competencies. A policy is also the proposed solution to an identified problem or solution searching for potential problems. As our model suggests, entrepreneurship education is antecedent to the development of dynamic entrepreneurs. As such, it is not enough to make a ‘good’ policy and just hope that it will produce the desired results.

This attitude is evident in the current policy regime on entrepreneurship development in Nigeria. The ASUU has been waging a running battle with the Federal Government of Nigeria over the core issue of revamping the university system to enable it provide sound education. The unwillingness or lack of commitment on the part of the state to address this issue has resulted in frequent and prolonged closure of universities. As such, the university system has been embroiled in turbulence, which is inimical to the development of entrepreneurs.

As our model further suggests, the entrepreneurship development policy is an integrated policy constituted by the latent policy variables, each of which represents a micropolicy – and these are linked in a synergistic way. As such, it cannot be helpful to make selective and haphazard implementation of the policy elements. An integrated policy requires an integrated implementation for integrated success. This is just not an exercise in alliteration. The

introduction of university-wide entrepreneurship policy and harassing lecturers to take a PhD degree in three years represent a selective and haphazard implementation of entrepreneurship policy.

The present researchers are aware of the dialectical understanding that *no problem is finally and definitively solved*, which means that all models and theories exist by sufferance of the things they have excluded (see Shackle [1972] as cited by Loasby, 2007). Consequently, this model itself is kept open and positioned for continuous refinement in the theory development effort. As such, future researchers may wish to test and refine the model.

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# A CASE FOR CUSTOMER BASED BRAND EQUITY CONCEPTUALIZATION WITHIN MOTIVATIONAL PERSPECTIVE

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## **ABSTRACT**

*Extant conceptualizations of customer based brand equity (CBBE) explain the formation of brand equity based on consumers' cognition and behavior are built on the foundations of associative network theory. This paper identifies that theoretically a stable point estimate of CBBE cannot be derivable using this foundation. Primary objective of this paper is to prove this hypothesis using an experimental design. There after, a case is made for re-looking at CBBE within motivational perspective. Accordingly, the need for motivational perspective is outlined and a new definition of CBBE is proposed.*

## **INTRODUCTION**

Strategic importance of branding is duly recognized in marketing literature. A strong brand is described as a platform for new products, an entry barrier, bulwark against shifts in consumer behavior (Farquhar, 1990), source of (sustainable) competitive advantage (Aaker, 1991), a precursor of success of future marketing activities (Keller, 1993) a source of future profits (Crimmins, 2000), a key organizational asset, the primary capital (Guzman et al, 2006) and as an instrument of competitive superiority (Kepferer, 2000). Value added by a brand to the product is termed as brand equity (Farquhar, 1990). A strong brand is one which possesses high brand equity (Kepferer, 2000, Aaker, 1996). To this extent, it has been empirically proven that high brand equity could result in higher consumer preferences and purchase intentions (Cobb-Walgreen et al, 1995), high brand loyalty intentions (Johnson, Herrmann et al, 2006) and higher stock returns (Aaker and Jacobson, 1994). Hence brand equity formation, measurement and management deserves key focus both at theoretical and managerial domains

Brand equity has been the subject of academic inquiry since past decade (Atilgan et al., 2005). Brand equity was initially conceptualized as “added value” which the brand endows the product (Leuthesser, 1988). This “added value” could be discussed from the perspective of the firm or consumer (Farquhar, 1990). From firm’s perspective, value added by the brand is discussed under brand valuation (Wood, 2000) where as from consumers’ perspective, value added is discussed under customer based brand equity construct (CBBE) (Keller, 1993). It is suggested that financial perspective of brand equity is only an outcome of consumer perspective of brand equity since customer based brand equity is the driving force for incremental financial gains to the firm (Lassar et al., 1995) which in turn determines brand value. In spite of diverse research on CBBE there exists no consensus with respect to conceptualization and operationalization of this construct (Punj and Hillyer, 2004). Given the importance attributed to CBBE, it is necessary

to conceptualize and operationalize brand equity in manner worthy of pragmatic managerial applicability.

### **CONCEPTUALIZATION OF CBBE**

Aaker (1991, p.15) defined customer based brand equity as “a set of brand assets and brand liabilities linked to a brand, its name and symbol, that add or subtract the value provided by a product or service to a firm and/or to that firm’s customers”. This conceptualization is based on both cognitive and behavioral underpinnings. his definition is regarded as most comprehensive definition of customer based brand equity (Motameni and Shahrokhi, 1998). Aaker (1996) conceptualized brand equity as consisting of 4 dimensions namely brand awareness, brand associations, perceived quality, and brand loyalty. Aaker’s (1996) operationalization of brand equity has been widely used in universal customer based brand equity scale developments (Yo and Donthu, 2001; Washburn and Plank, 2002; Pappu et al, 2005). No theoretical rationale is offered as to how brand associations are formed and elicited. Keller's (1993) framework offers more insight in this regard.

Keller’s (1993, p.2) conceptualization of customer based brand equity is based upon cognitive psychological underpinnings. Accordingly, customer based brand equity is defined as “differential effect of brand knowledge on consumer response to marketing of a brand” and differential response is measured as “consumer’s reactions to an element of marketing mix, in comparison with reaction to the same marketing mix element attributed to the fictitiously named or unnamed version of product or service”. Brand knowledge (image) is conceptualized as brand node in human memory to which variety of associations are linked. Term “node” is consistent with associative network theory (ANT) while referring to a packet of information (Anderson, 1983). According to this theory, human memory consists of nodes and links connecting these nodes. Upon encountering an internal or external cue, a node gets activated and the activation spreads to connecting node and so on as long as sufficient threshold level for a node to become activated is maintained. As each node becomes activated, information contained in the node is recalled by the subject.

### **CRITIQUE OF ANT BASED CBBE CONCEPTUALIZATION**

It is lately suggested that the links between brand nodes are asymmetric in strength (Romaniuk and Sharp, 2004). For example, given the cue “HP”, a consumer might recall a “printer”, but given the cue “printer”, consumer might not immediately recall “HP”. It is also realized that cues that activate brand nodes engender from both internal and external sources and many of them might not necessarily suggest a brand but could increase the probability of a particular brand / set of brands being considered for choice (Romaniuk and Sharp, 2004). For example, being in film theater might engender the consumer to eat/ drink something “refreshing” and the consumer might consider a cola drink, popcorn bag and chocolate bar to be equally refreshing. The cue here is activated from external environment and doesn’t suggest a brand or industry defined product category. Thus, it may be conceived that different cues could result in different “sets” of options (product categories, brands) which the consumer might consider (Holden and Lutz, 1992). Hence it can be postulated that as brand node and subsequent brand association(s) elicitation (brand knowledge) is variable with reference to chosen cognitive path of activation (because of asymmetric links between brand nodes) and the cue(s) encountered by the customer. This qualifies (brand) associative network to be a fuzzy structure (Barsalou, 1983). Extending

this argument within the Keller's (1993) framework, it may be inferred that consumer's evaluation of brand equity might significantly differ for the same brand in two contrasting contexts if the same brand node is evoked by two different cues leading to different cognitive paths of activations. Hence, a statistical point estimate of CBBE might not be derivable based upon this foundation.

Keller (1993) conceptualized brand knowledge as consisting of brand node, to which variety of associations are linked. Above theoretical evidences suggest that brand knowledge is a dynamic construct as retrieval and processing of associations is cue specific. In such case, CBBE, which is the differential effect of brand knowledge should also vary according to the "context" in which brand is retrieved from the memory. This paper attempts to prove this hypothesis using an experimental design approach.

## RESEARCH METHODOLOGY

### Data Collection

MBA students of a reputed business school in south- central India were considered for the study. Study spans across three product categories. Each product category comprises of two brands. Each brand has to be evaluated in two different contexts. One questionnaire dealt only with one product category, thus three independent questionnaires were framed to capture responses on three product categories. No two product categories were evaluated by a single respondent. Hence, each respondent evaluated two brands pertaining to same product category in two hypothetical contexts. A total of one hundred and fifty questionnaires were distributed equally among three product categories. One hundred and five valid responses were obtained.

For product category pens, contexts were: intending to purchase pen for class room use, intending to purchase a pen as a gift to a friend. For product category courier services, contexts were: intending to avail courier service for delivering vacation photographs, intending to avail a courier service to post an application for job with deadline nearing. For product category laptops, contexts were: intending to purchase a laptop predominantly to use MS Office based applications, intending to purchase a laptop essentially for sophisticated gaming and movie watching.

### Research Design

Product Category	Brand	Context	
Pens	Reynolds	Class use	Gifting
	Parker		
Courier Services	India Post	Standard Delivery	Expedite Delivery
	Blue Dart		
Laptops	Acer	Data Analysis and Reporting (DA & R)	Multimedia
	Viao		

Table1

### Questionnaire Design

Respondents' familiarity of the brands was assessed on a 7 point semantic differential scale anchored at ends as highly unfamiliar and highly familiar. To assess customer based brand equity, overall brand equity scale proposed by Yo and Donthu (2001) was used in the study. Respondent had to evaluate the scale for each brand in two different contexts.

### RESULTS

To assess familiarity of the respondents with respect to brands used in the study, a single tail t-test with null hypothesis as familiarity score for brand considered is less than 4. Significance at one percent for all the brands was achieved. This suggests that respondents were quite familiar with brands used in the study.

**Respondents' familiarity with the brands used in the study**

	Mean Familiarity	Std. Error	t	df	Sig. (1-tailed)
Reynolds	6.54	0.185	13.752	34	0
Parker	6.4	0.197	12.154	34	0
India Post	6.13	0.201	10.605	30	0
Blue Dart	5.52	0.304	4.993	30	0
Acer	5.15	0.299	3.837	33	0
Viao	5.71	0.237	7.196	33	0

Table 2

A paired t-test was performed to test for difference in CBBE measure across contexts for each brand. Significance at one percent was achieved for all the brands considered in the study.

**Paired t-statistic for CBBE measure across contexts**

Product Category	Brand	Context [Mean CBBE (st dev)]		n	Statistic [paired t (sig)]
		Class use	Gifting		
Pens	Reynolds	2.96 (.91)	1.97 (.87)	39	5.39 (0)
	Parker	2.52 (1.0)	4.40 (.74)		-10.575 (0)
Courier Services		Standard delivery	Expedite delivery	32	3.13 (.004) -3.47 (.002)
	India Post	3.79 (.843)	3.05 (1.44)		
	Blue Dart	2.91 (.95)	3.64 (1.159)		
Laptops		DA & R	Multimedia	34	4.76 (0) -3.46 (.002)
	Acer	2.98 (.73)	2.32 (.72)		
	Viao	3.32 (1.05)	3.95 (.84)		

Table 3

These results clearly suggest a significant difference in the evaluation of same brand in two different contexts. Therefore, building upon the definition of Farquhar (1990), it is proposed that though brand equity can be favorably conceptualized as value added by a brand to product; in a consumer context, it can be demonstrated that, amount of value added by the brand might vary according to purchase situation. In such a case, two pertinent questions of marketing interest emerge:

- Generally in which situations does the brand adds more value?
- Does the manner in which brand adds value differ amongst different consumers?

These concerns were put forth earlier too. Schreuer (2000) opines "...marketing must be in a position to create branding that is based on delivering critical elements of value, and must design marketing communications and customer experiences to reinforce that value." It is assumed that answers to above questions can be partially sought by shifting the frame of reference from cognitive psychology perspective to motivational perspective.

### **Engendering a Motivational Perspective of Cbbe**

Jenkins (1966) explicated motives as reasons behind an agent's action. Kagan (1972) defined motive as individual's cognitive representation of future goal with no necessary relation to either action or affect and goal as a (future) state which enables the individual (read as consumer) to feel better. In the context of consumer behavior, motives can be operationalized as reasons behind consumer's purchase and / or consumer's (positive or negative) evaluation of a brand as motives direct criteria used in evaluating brands (Assael, 1984). Motive when activated leads to motivation (Kagan, 1972). It is suggested that greater the correspondence between the consumer perception of the brand on his/her motives, the greater is the likelihood that the consumer will prefer that brand over others (Mahatoo, 1989). A similar view has been espoused in "the theory of buyer behavior" by Howard and Sheth (1969). According to this theory, a consumer consumes brand to fulfill his (product related) motives and motives when fulfilled by the brand leads to customer satisfaction. The same view is again endorsed by Bagozzi and Dholakia (1999) as they state consumers purchase products / brands which enable to achieve their end state goals. Based on theory of goal systems (Kruglanski et al, 2002), it can be proposed that in a choice task consumer prefers that brand which has greatest ability to maximize the subjective utility of a motive or set of (competing) motives. In other words consumers will prefer that brand which closely fulfills those motives which they consider important and it is supposed that this preference is also reflected in CBBE measurement.

### **An Alternative Explanation for Research Phenomenon Using Motivational Perspective**

Given the operational definition of motive as reason behind purchase, the contexts which were discussed earlier can now be rephrased as motives. This research has then attempted to understand whether consumers' evaluation of brand differs according to motives. Significance in t- test (table 3) proved that consumers evaluate brands differently in different motivated conditions. Hence existing scales of CBBE might not be generalizable as evaluation of CBBE varies according to salience of motive.

**Paired t-statistic for CBBE measure across brands**

Product Category	Motive (Context)	Brand [Mean CBBE (st dev)]		n	Statistic [Paired t (sig)]
		Reynolds	Parker		
Pens					
	Regular use (Class use)	2.96 (.91)	2.52 (1.0)	39	2.01 (.052)
	Gifting	1.97 (.87)	4.40 (.74)		-14.223 (0.00)
Courier Services		<b>India Post</b>	<b>Blue Dart</b>		
	General delivery (Standard delivery)	3.79 (.843)	2.91 (.95)	32	3.42 (.002)
	Speed & safe delivery (Expedite delivery)	3.05 (1.44)	3.64(1.16)		-1.375 (.179)
Laptops		<b>Acer</b>	<b>Viao</b>		
	Productivity (DA & R)	2.98 (.73)	3.32 (1.05)	34	-1.469 (.151)
	Entertainment (Multimedia)	2.32 (.72)	3.95 (.84)		-7.648(.000)

Table 4

In the current study, in each context, one motive is primed as prominent driver of choice or “made salient”, and consumers evaluation of brand, as supposed, differed across different these contexts. As observed from table 4, an attempt has been made to analyze CBBE across different brands for same motive and in three out of six cases, consumers perceived one brand to significantly out perform other with respect to given motive. Results, thus prove the underlying importance of motive in consumers' assessment and evaluation of brand.

## DISCUSSION

In this experimental setup, only one motive is made salient in each situation to demonstrate the effect of each motive upon CBBE. However, in a real purchase situations, consumer is confronted with multiple competing motives while evaluating a brand where few motives are made salient by external conditions (extrinsically salient motives) and few motives are made salient habitually without any external cue (intrinsically salient motives). Intrinsically salient product related motives can be thought of as enduring goals which are immediately brought into mind with respect to product category. For example a consumer who is inherently weight conscious may be generally motivated to purchase only those processed foods which are low in calories. “Calorie consciousness”, hence, can be termed as intrinsically salient motive related to product category processed food. In a particular case of celebration, the same consumer might consume tasty food which is high in calories. This behavior is not enduring but apparent only because of imposition of external situation of celebration. In this case, consumer is motivated by taste. “Taste”, here is extrinsically salient processed food related motive be as it can be related to cue from external surroundings which has modified the behavior. Based upon this discussion, it can be proposed that consumer preference can be modeled as a function of extrinsically and intrinsically salient product related motives.

Preference has to be demarcated from CBBE. Preference can be bound within a context and hence can vary across contexts but CBBE is theoretically expected to be stable over time because

goal of the management is to sustain and improve brand equity long term (Aaker, 1991, Keller 1993). This goal cannot be monitored/ accomplished if CBBE is deemed unstable. An attempt has been made in this paper to prove that existing CBBE measures vary across contexts/ motives and are therefore deemed inappropriate for managerial use. In preceding section, it is proposed that motives direct evaluation / choice of brand and that consumers pursue only those brands which fulfill their salient motives. Accordingly, it is proposed that CBBE is “a measure of degree of correspondence between consumer’s intrinsically salient product related motives and perceived potential performance of the brand upon those motives.” Intrinsically salient product related motives are emphasized because these motives are enduring over time and in absence of external constraints, consumer's choice is based upon intrinsically salient product related motives (Ratneshwar et al, 2001).

An operationalization based upon this definition has clear advantages over existing measurement schemes. It is stable over time and hence CBBE can be monitored over time without attributing increment or decrement of CBBE to contextual situations. All those related and unrelated product categories which addresses similar (set of) intrinsically salient motives could be considered as competition for existing product category. For example, even though milk shake and cool drink seem as if they belong to unrelated product categories, if it is observed that target customers substitute either of them when they are thirsty (motive 1) or exhausted (motive 2), and these motives being identified as intrinsically salient in determining choice for both the product categories, then cool drink brands should start considering milk shake brands as relevant competition and vice-verse. Further, by ascertaining how consumers weigh different motives in determining brand choice, it becomes possible to heuristically segment consumers with respect to given product category.

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# FACTORS PREDICTING THE EFFECTIVENESS OF ENDORSEMENT PUBLIC SERVICE ANNOUNCEMENT

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## **ABSTRACT**

*Prior studies had investigated the relationship between endorser and advertising effects. However, the existing literature mainly focuses on commercial advertising, but lacks for discussions of public service announcement. Regarding the different purposes of these two types of advertisements, the purpose of commercial advertising is to influence customer's purchase intention, but the purpose of public service announcement is to influence audiences perception about the public issues. Because of their purposes are different, so we cannot assume that theories applicable to commercial advertising is also applicable to public service announcement. In addition, we propose that endorser's social image neglected in the existing studies should also be investigated. Therefore, this study will explore the influences of endorser's factors (expertness, attractiveness, and social image) on audience's behavior intention in public service announcement.*

*An experimental study is conducted to examine the influences of endorser's factors (expertness, attractiveness, and social image) on audience's behavior intention in public service announcement. This study should be able to provide a theoretical explanation for the relationship between endorser's factors and audience's behavior intention in public service announcement. The implication of this study will also be discussed.*

## **INTRODUCTION**

Celebrity endorsements have become prevalent in advertisements (Agrawal and Kamakura 1995). In addition to the intuitive arguments that rationalize the practice, academic researchers have mounted empirical evidence to demonstrate the benefits of product endorsements. Atkin and Block (1983) and Petty, et al. (1983) found that endorsers produced more positive attitude towards advertising and greater purchase intentions than a non-celebrity endorser. The reason behind the popularity of celebrity advertising is the advertisers' belief that messages delivered by well-known personalities achieve a high degree of attention and recall for some consumers (Ohanian 1991).

Classified advertising can be divided into commercial and non-commercial. Commercial advertising and public service advertising difference is that the main purpose of public advertising is not the business itself of the self-interest, but in social responsibility and public interest as the starting point of the campaign carried out; and "commercial advertising" is that while the advertising content Company's products and services not directly related, but it is a main enterprise for advertising, corporate aim of promoting the businesses, products and services, knowledge, understanding, and thus generate goodwill advertising (Shen-Syun Huang,

1997). Previous research examining the effectiveness of celebrity endorsements has focused primarily on personal attributes of celebrity that enhance his or her persuasiveness (see Erdogan, 1999, for review). Past research documents have shown that the character factors that influence advertising effectiveness more datum in the commercial advertising, but relatively few regarding in the public welfare advertising.

While they have been used in the past, it appears that overall, little is understood about the effectiveness of celebrity endorsement in public service announcement. Over the past research, endorsers widely used in commercial advertising, the kind of advertising use is mainly to change the customer purchase intentions. Evans (1978) stressed that public service announcement can affect behavioral intention with respect to changes in subjective norms and that “when designing message content, it would be propitious to stress subjective norms.” Atkin, Garramone, and Anderson (1986) note that such public service announcement have used a variety of tactics including drivers to drink less, encouraging drivers to avoid driving, or communicating the importance of interpersonal relationships.

In this study was added to four scales for measuring celebrity endorsers.expertise, attractiveness and endorser of social image. The purpose will explore the relationship between three independent variables and behavioral intention in public service announcement.

## **LITERATURE REVIEW**

### **Public Service Announcement**

Public service announcement is designed to give unbiased information on some public problem and is in the public interest (Evans, 1978). Public service announcement are broadcasted by media outlets in the public interest at no cost to nonprofit organizations. It helps educate, inform, and motivate various publics on a variety of topic and issues. Mark and Cynthia (2007) indicate that good Public service announcement is ones that are empathetic, “meaning they build trust with their audience or sense of caring about the problem”. There are four sources of public service announcement (1) private firms that use them as a form of institutional advertising, (2) associations that promote a specific cause, (3) local, state, and national governments, and (4) the advertising council, a non-profit organization support by media, advertising agencies, advertiser organizations, and private firms(Alyse and Kent 2002).

### **The Source Credibility Model**

The popularity of celebrity advertising is the advertiser’s belief that messages delivered by well-known personalities achieve a high degree of attention and recall for some consumers. Source credibility has shown that in most situations a highly credible source is more effective than a less credible source (Sternthal, Philips,and Dholakia,1978). Highly credible source also have been found to produce more positive attitude changes toward the positive advocated and to induce more behavioral changes than have less credible source (Craig and McCroskey, 1987; Woodside and Davenport, 1974).

Source credibility is a term commonly used to imply a communicator’s positive characteristics that affect the receiver .s acceptance of a message. The model content that the effectiveness of a message depends on perceived level of expertise and trustworthiness in a celebrity endorser. (Dholakia and Sternthal,1977 Hovland et al. 1953 Hovland and Weiss 1951

Ohanian,1991 Solomon,1996). Information from a credible source can influence belief, opinions, attitudes, and/or behaviour through a process call internalization, which occurs when receivers accept a source influence in terms of their personal attitude and value structures.

Expertise is the second dimension of source credibility as defined by Hovland, Janis, and Kelley (1953).The importance of this perceived expertise lies in the fact that it can affect consumer .s perceptions of celebrity endorser trust. It refers to the product of the endorser, experience or skills possessed by celebrity endorser.

### **The Source Attractiveness Model**

Advertisers have chosen celebrity endorsers on basis of their attractiveness to gain from dual effect of celebrity status and physical appeal (Singer, 1983).The source attractiveness model contend that the effectiveness of message depends on similarity familiarity and liking for a celebrity endorse (McGuire, 1985). Similarity refers to the perceived resemblance between the endorser and the receiver of the audience. Familiarity is knowledge of the source through exposure. Likability refers to affection for the endorser based on physical appearance, behavior or other personal traits (Belch and Belch, 2007).

A generalized application to advertising has been suggested that physical attractiveness' of a communicator determines the effectiveness of persuasive communication through a process called identification. It defined both in term of facial and physical attractiveness (Baker and Churchill,1977 Caballero and Solomon,1984 Patzer,1977 Kahle & Homer,1980), with physical attractiveness operationalized in term of model attractiveness (attractive-unattractiveness) (Baker and Churchill,1977 Kahle & Homer,1980), chicness(Mill and Aronson, 1965), sexiness (Steadman, 1969) or sexualness and likeability (Maddux and Rogers,1980).

Joseph (1982) concluded that attractive (versus unattractive) communicators are consistently liked more and have a positive impact on product with which they are associated; increasing the communicator's attractiveness enhances positive attitude change. A well-known quotation from Aristotle (Ohanian, 1991) "Beauty is a greater recommendation than any letter of introduction." is suitable in this context for the sake of appreciating the effectiveness of attractiveness since most Western societies place a high premium on physical attractiveness.

### **Endorser's Social Image**

Practitioners hope their target audience's positive feelings toward a chosen celebrity will transfer to the endorsed brand or will otherwise enhance the brand's standing. The value of the celebrity endorsement comes through the building of an associative link between a brand and a celebrity. However, the establishment of such a link is not without risk (Till and Shimp, 1995). Negative social image about the celebrity activates the celebrity node, which then activates the brand node to some degree and allows reduced evaluation of the celebrity to transfer to the brand. A sufficiently strong associative link between the celebrity and the brand, negative social image about the celebrity will lower brand evaluation (Till and Shimp, 1998).

Consider the possibility of negative publicity regarding a celebrity endorser. If the brand is strongly associated with the celebrity then the occurrence of the negative social image about the celebrity will also activate in memory, to some degree, the endorsed brand. This joint activation of brand and celebrity provides a path over which one's diminished evaluation of

the celebrity has an opportunity to transfer to the brand. The key to this process is the simultaneous activation of the brand and celebrity nodes. Negative social image about the celebrity activates the celebrity node, which then activates the brand node to some degree, which allows for the transfer of the reduced evaluation of the celebrity to the brand (Till, 1996). Therefore, there is always a risk that negative publicity about a celebrity can tarnish the endorsed brand.

## RESEARCH METHODOLOGY

The main examination conducted for this thesis was an experimental study in advertising effect of public service advertisement. The purpose will explore the relationship between factors in commercial advertising and behavioral intention in public service announcement.

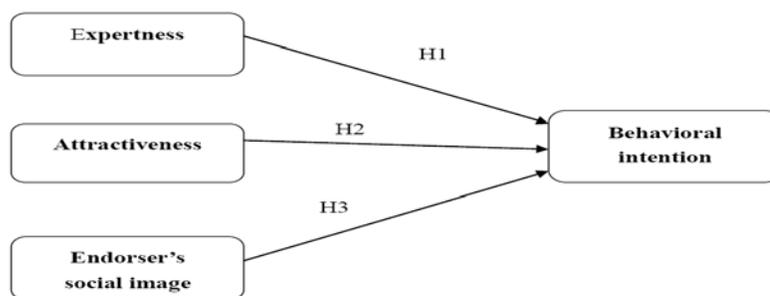


Figure 1 The framework

conceptual

## Research Hypotheses

Previous research examining the effectiveness of endorsers has focused primarily on personal attributes of the endorser that enhance his or her persuasiveness (see Erdogan, 1999, for a review). Audiences are more likely to pay attention to a public service announcement that features an endorser, this may not translate into a more effective message. Previous research suggests that endorsers who are perceived as attractive, or who have some expertise with the product or issue that is being promoted, perceived as more credible, and presumably are more effective.

Source credibility can be defined as “a communicator’s positive characteristics that affect the receiver”. Subjects exposed to a source perceived to be of high expertise exhibit more agreement with the source’s recommendation than those exposed to a source with low expertise.

*Hypothesis 1: Audiences perceived high endorser’s expertise will have a higher accepting message behavior intention than those perceived low endorser’s expertise.*

Some researchers have emphasized the importance of source attractiveness in determining liking for the endorser and thereby increasing endorsement effectiveness (e.g. Friedman and Friedman, 1979). To the extent that attractiveness is an important determinant of endorsement effectiveness (Kahle and Homer, 1985 Till and Busler, 1985).

*Hypothesis 2: Audiences perceived high endorser’s attractiveness will have a higher accepting message behavior intention than those perceived low endorser’s attractiveness.*

Public service announcement often use celebrity endorsement, but the endorser suddenly infamous events, which harm the public service announcement's public trust, and the negative effects message. Public service announcement of endorser must have more positive image, more high reliability characteristics of responsibility, so choose "celebrity endorsement" in the same time, particular attention to his/her image of the assessment and personality assessment.

*Hypothesis 3: Audiences perceived high endorser's social image will have a higher accepting message behavior intention than those perceived low endorser's social image .*

## **RESEARCH DESIGN**

### **Participant**

We use cervical smear screening as an example. The government encourages that women over thirty years do cervical smear screening every year and they do not charge it. Therefore, we select the women who over thirty years; And the population is from the obstetrics and gynecology hospital in Kaohsiung.

### **Measure**

Variables are concerned in this study: expertness, attractiveness, endorser of social and behavioral intention, which are described in the following.

### **Variable**

*Expertness* Two full page, full color poster type advertisements were created as the stimulus material in experiment. We select a female obstetrics and gynecology doctor and common homemaker. Respondents were asked to rate the endorsers in terms of their expertise for endorsing the cervical smear screening. Scale items for expertise were taken from the Ohanian (1990) scale. The classification seven-point Likert-type items, (1= strongly disagree, 7= strongly agree).

*Attractiveness* Two full page, full color poster type advertisements were created as the stimulus material in experiment. We select a young and beautiful girl and common women. These two endorsers were chosen as attractive and unattractive endorsers for main experiment. Respondents were also asked to rate the endorsers in terms of their attractive for endorsing the cervical smear screening. Scale items for attractive were taken from the Ohanian (1990) scale. The classification seven-point Likert-type items, (1= strongly disagree, 7= strongly agree).

*Social image of endorser* Two full page, full color poster type advertisements were created as the stimulus material in experiment. We select a female singer but she is not actually. Two pictures are the same and added to background. The positive social image's background is "Well-known singer and songwriter. Have a son and a daughter. Her social images gave the competent homemaker and the happy family for the general public .She was an endorser for the Anti-Smoking Activist Program and for the book had raised children in remote mountainous areas and for the World Vision". The negative social image's background is "Well-known singer and songwriter. Have a son and a daughter. Her social images gave the competent homemaker and the happy family for the general public .She was an endorser for the Anti-Smoking Activist Program and for the book had raised children in remote mountainous

areas and for the World Vision. Recently, she has a date with a young man in hotel and photographed by paparazzi.” Respondents were also asked to rate the endorsers in terms of their social image for endorsing. The classification seven-point Likert-type items, (1= strongly disagree, 7= strongly agree).

*Behavioral intention* Advertising evaluation, in terms of audience behavior, this means that the audience will search, evaluate and change behavior after they see the picture. In this study, scale items for behavior intention were taken from Szczepanski (2006) scale. Subjects indicate how well each item describes them on a seven-point Likert scale (1= strongly unlike to do, 7= strongly like to do).

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## **DISTRIBUTION CHANNELS RELATIONSHIPS: INFLUENCER - INFLUENCEE**

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### **ABSTRACT**

*This study aims to examine the manufacturer's use of different types of persuasive communication to influence its dealers and impact of influence strategies on the influencer-influencee relationship. Multi-item influence strategies scale used by (Boyle et al., 1992), was adopted, and, paired t-test, Computing Pearson Correlation and Linear Regression model used to analyse the collected data from the dealers of a truck manufacturer in Iran. The results reveal that the indirect influence strategies are employed more than direct influence strategies by truck manufacturers in Iran. The information exchange is not positively related to recommendation. And, also the usage of all six types of influence strategies does not have positive impact on influencer-influencee relationship. This study was conducted in channels of distribution for truck manufacturers, and can not be applied for other industries. Also, only one side of influencer-influencee dyad was considered. This is the first empirical study to examine the usage of different influence strategies of a truck manufacturer in Iran toward its dealers.*

### **INTRODUCTION**

For several years marketing scientists have recognized that marketing exchange relationships are increasingly important more likely to be long-term than short-term (Dwyer, Schurr, and Oh, 1987; Heide and John, 1992). The identification of the importance of establishing and maintaining long-term relationships has led both marketing theorists and practitioners to focus on an emerging framework termed relationship marketing. Morgan and Hunt (1994) define relationship marketing as "all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges."

The area of marketing which is related to exchange relationships is channels of distribution. When applied to distribution systems, relationship marketing has concentrated primarily on the structure of channel relationships which describes the degree of integration among channel members (Dwyer, Schurr and Oh, 1987; Boyle et al. 1992; Robicheaux and Coleman, 1994). There is general agreement among channel scholars regarding the importance of the development and maintenance of long-term exchange relationships. But most of them didn't mention much about the factors or reasons which do have impact on the long-term relationships, the factors like use of influence strategies which is related to direct and indirect influence strategies.

The first objective of this study is to compare the usage of direct and indirect influence strategies by Iranian truck manufacturers. Second, to find out any possibility of positive relationship among the indirect influence strategies (information exchange and recommendation), when used by truck manufacturers toward their dealers in Iran. And the third one is that during the employing of all six influence strategies (promise, request, legal plea, threat, information exchange and recommendation), will these strategies have positive impact on manufacturer-dealer relationship.

The effectiveness of a supply chain depends to a large extent on the relationships among its members. But often one company in a chain may attempt to influence other members in order to achieve its own goals and promote its own interests, (Munson et al., 1999).

Influencer is used to refer to the firm using power and the term influencee is used to denote the firm which is the subject of this use of power. Influence in turn refers to the degree of effect on another firm's behaviour which results from the use of power, (Wilkinson, 1996).

The firm's power and its choice of high or low pressure influence strategies, an interesting question arises, what relationships would one expect between a manufacturer's power and its choice of influence strategies within a manufacturer-dealer dyad in a developing country, (Kale, 1986), like Iran. There are some factors in sellers' markets in some countries like Iran, lack of good infrastructure in many parts of a country results in widespread production and distribution bottlenecks and limits the availability of many goods and services.

## **LITERATURE REVIEW**

### **Influence Strategies**

Frazier and Summers (1984), thus developed a taxonomy of influence strategies based on the social psychological literature. These strategies can be divided into two main categories.

The first describes strategies that attempt to influence a dealer through changing perceptions regarding the intended behaviours, i.e. causing the dealer to see the intended behaviour as in its own best interest. The influence strategies that are based on changing perceptions are:

A) Indirect influence strategies:

- (1) Recommendation Strategy
- (2) Information exchange Strategy

B) Direct influence strategies:

- (3) Threat Strategy
- (4) Legal plea Strategy
- (5) Promise Strategy
- (6) Request Strategy

A second way of classifying these influence strategies is on a coercion-noncoercion scale (Frazier and Summers, 1986).

*Coercion Strategies:* Promise, legal plea and request.

*Noncoercion Strategies:* Information exchange, recommendation and request.

The means by which power is applied to achieve influence has been termed influence strategies, the alternative means of communication that can be used by a firm's boundary personnel in their

influence attempts with associated members (El-Ansary and Stern, 1972; Frazier and Summers, 1984). Channels cannot operate as integrated wholes without effective co-operation and coordination between their members, (Wilkinson, 1996). As channel members have to consider each other's efforts to accomplish their goals, each firm will have an interest in influencing the direction of the relationship through the use of its power (Reve and Stern, 1979). Achieved influence on the target firm's beliefs and/or behavior thus occurs when the source firm is successful in its influence attempt (Celly and Frazier, 1996). Frazier and Kale (1989), argue that in certain developing country markets, for instance, although manufacturers will have more power than distributors they will have little reason to exercise their power.

In a study of the automobile distribution channel in the United States, Frazier and Summers (1984, 1986) found that manufacturers relied most on information exchange and requests in their interactions with dealers. Recommendations, threats, legal pleas, and promises were used much less frequently. The use of the different influence strategies affects the relationship between manufacturers and dealers (Frazier, 1999; Frazier and Summers, 1986). These influence strategies can be grouped into two categories based on whether the manufacturer tries to bring about the intended behaviour change in the dealer by directly specifying what it wishes from the dealer or influencing the dealer in an indirect manner (Frazier and Summers, 1984).

The use of the different influence strategies affects conflict and satisfaction within the channel (Frazier, 1999; Frazier and Summers, 1986). A franchisor asking franchisees to undertake certain actions, some of which franchisees might not agree with, will cause tension and frustration among franchisees, this tension and frustration will breed conflict in the relationship (Frazier and Rody, 1991). Not all types of influence, however, cause conflict. An influence attempt is more likely to be resented by manufacturer if it is perceived as heavy handed (Coughlan et al., 2001). According to (Bandyopadhyay Soumava, 2004), indirect influence strategy use was found to be greater compared to direct influence strategy use in India. The suppliers in India used recommendations more than they did information exchange when they had to choose between the two types of indirect influence strategies. Also he found suppliers in India appear to believe that offering a reward in exchange for compliance would be effective in making the dealers act according to their desires.

The (Kale, 1986), has argued the more powerful suppliers in a sellers' market are perceived to rely on threats, promises, and legalistic pleas to influence their dealers. Less powerful suppliers are perceived to use low pressure means of influence such as information exchange, request, and recommendations.

## **HYPOTHESIS DEVELOPMENT**

### **Direct Versus Indirect Influence Strategies**

Prior to the eight years war between Iran and Iraq, the economy of Iran was a seller's market. The power structures in channels of distribution in a seller's market meant that manufacturers were more likely to use direct influence strategies (promises, requests, legal pleas and threats), but market conditions are quite different now with more competition and dealers being able to choose from among other manufacturers. It means that manufacturers, under the present conditions will use of indirect influence strategies (information exchange and recommendation) and often give up the use of direct influence strategies. The above discussion leads to the following hypothesis:

*H1: Iranian truck manufacturers use indirect influence strategies more frequently compared to direct influence strategies.*

### **Information Exchange Strategy**

In the information exchange strategy, manufacturer supplies information to the dealer without requesting or specifying any specific action from the dealer (Boyle et al., 1992). Essentially, this strategy refers to the general discussion the manufacturer might have with dealers regarding the best way for them to run their business without requiring any specific actions from dealers.

### **Recommendation Strategy**

In the recommendations strategy the manufacturer states that the dealer's business will benefit if the dealer takes specific actions that the manufacturer is recommending (Boyle et al., 1992). This strategy is similar to information exchange, but unlike in information exchange here the manufacturer indicates that the dealer will benefit if the dealer follows the manufacturer's recommendations regarding some specific actions (Frazier and Summers, 1984). The recommendations strategy does not focus directly on the specific behaviors of the dealer that the manufacturer wants to alter. Instead, the manufacturer tries to either directly or indirectly cause the dealer to view the intended behavior as being in the dealer's best interest (Frazier and Summers, 1984). Now the following hypothesis is formulated:

*H2: There is a positive relationship among information exchange and recommendation strategies in Iran.*

### **Influence Strategies and Relationships**

The need to understand interfirm influence processes in channel relationships arises from two conditions. First, trading firms depend on each other for effective and efficient transfer of products, information, and ownership (Stern and E1-Ansary, 1988). Influence is important for coordinating roles. Second, by their very nature of specialization, channel participants have varied outlooks, routines, goals, and values.

Thus, parties who agree to coordinate rarely exhibit identical functional philosophies. Where interdependency moves parties to seek coordinative efforts, the relationship is strained by incongruent goals and each firm's desire for autonomy. This precarious point is where communication processes of bargaining and influence emerge (Schelling, 1960).

To motivate dealers and ensure their long-term cooperation, manufacturers need to use influence strategies that keep dealers cooperative. The above discussion leads to following hypothesis:

*H3: There is a positive impact of all influence strategies on manufacturer-dealer relationship in Iran.*

## **RESEARCH METHODOLOGY**

### **Sampling**

The population was contained of dealers of truck manufacturer in Iran automobile industry. The survey was conducted to study the nature of truck manufacturer toward its dealers. Among the Irankhodro Diesel Company and Saipa Diesel Company in Iran, the Saipa Diesel Company was selected. The Saipa Diesel Company is having 60 dealers which they are involved with both sale

and after sale services, the questionnaires were sent to all 60 dealers, 30 usable responses were returned by Iranian truck dealers.

### **Direct and Indirect Influence Strategies**

The multi-item influence strategy scale used by Boyle et al. (1992) was adopted. The manufacturer's representatives used each of the six influence strategies in their interaction with the dealer on a 5-point Likert scale (1=never, 5=always).

### **Analysis of Data**

The statistical test to test hypothesis H1 is presented in Table 1. This hypothesis was tested by a paired t-test to compare the use of respective strategies. The hypothesis H1 employed to compare the indirect and direct influence strategies usage. The mean value of indirect influence strategies use (3.9) was highly significant than mean value of direct influence strategies (2.9168), ( $p$  value=0,  $p<0.05$ ), therefore, hypothesis H1 was accepted.

Hypothesis H2 was tested by Computing Pearson Correlation, among the use of information and recommendation, the result is shown in Table 2. The (mean value  $r=0.004$ ,  $p$  value=0.982), therefore, the H2 was not accepted.

Hypothesis H3 was tested by estimating a Linear Regression model with manufacturer-dealer relationship as dependent variable and the six influence strategies as independent variables. The results are appeared in Table 3. The overall regression model for hypothesis H3 was not significant ( $F=1.77$ ,  $p$  value=0.151), and also promise strategy (coefficient=0.0836,  $p$  value=0.439,  $p>0.05$ ), threat strategy (coefficient= -0.1411,  $p$  value=0.392,  $p>0.05$ ), legal plea strategy (coefficient=0.0430,  $p$  value=0.719,  $p>0.05$ ), request strategy (coefficient=0.0110,  $p$  value=0.931,  $p>0.05$ ) , information exchange strategy (coefficient= -0.1172,  $p$  value=0.307,  $p>0.05$ ) and recommendation strategy (coefficient=0.14396,  $p$  value=0.068,  $p>0.05$ ), did not have significant effects on manufacturer-dealer relationship, hence H3 was not accepted.

### **Discussion and Managerial Contribution**

As suggested in hypothesis H1, indirect influence strategy use was found to be greater compared to direct influence strategy use in Iran's truck manufacturers; This shows due to globalization and competition among industries or manufacturers the power is balanced within channels of distribution and the conditions of market are different and market of Iran can not be considered as seller's market, so the manufacturers have to choose indirect influence strategy in stead of direct influence strategy in most instances. It is found that truck manufacturers in Iran do not consider both indirect influence strategies (information exchange and recommendation) equally effective and important, that means with increase in information exchange there will not be increase in the level of usage of recommendation and vice versa. In this study also found that when truck manufacturers in Iran use both direct influence strategies (promise, request, legal plea and threat) and indirect influence strategies (information exchange and recommendation), there can not be positive effect or impact on relationship between truck manufacturer and dealer. When the suppliers or manufacturers of any other countries enter market of Iran, they should pay full attention that the same influence strategies which are applied in their domestic markets can not be applied in Iranian market.

### Study Limitations

The findings reported in this research must be tempered to some extent by the limitations of the study. First, the data were gathered only from dealers. This may have resulted in some response bias as dealers may not have been willing to talk candidly about their relationships with manufacturers. A clearer understanding of channel relationships would entail collecting data from both manufacturers and dealers, taking a true dyadic perspective. The findings may not be applicable for passenger cars/Two wheeler Industry for which a separate study can be undertaken; this too indicates the necessity for caution before generalizing the results.

### CONCLUSION

The main purpose of this study was to describe the process that channel members use to build and maintain long-term, ongoing relationships. The development and successful implementation of a sound communication program, especially toward dealers with high potential for growth, is an essential component of a market entry strategy in developing countries such Iran. In summary, long-term relationships are based on the interest and concern for each other's goals and objectives, along with the reciprocal process of fairness and honesty. The future of a mutually beneficial working relationship is not based solely on financial performance but also on the contributions of both parties through co-operative behaviour and trusting relations.

Table 1.

	Variables	Mean	St. Deviation	Significant P-value
<b>H1:</b>	Indirect Influence Strategy	3.9	0.3051	0
	Direct Influence Strategy	2.9168	0.2481	

Table 2.

<b>H2:</b>	Between Information Exchange Strategy and Recommendation Strategy ( $r=0.004$ ), ( $p \text{ value}=0.982$ )
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Table 3.

**Regression Analysis:** Manufacture-dealer versus Promise, threat, legal plea, request, information exchange and recommendation strategies.

The regression equation is: Manufacture-dealer = 3.39 + 0.084 Promise - 0.141 Threat + 0.043 Legal plea + 0.011 Request - 0.117 Information exchange + 0.144 Recommendation

Predictor	Coef.	SE Coef.	T	P
Constant	3.3899	0.6458	5.25	0.000
Promise	0.0836	0.1062	0.79	0.439
Threat	-0.1411	0.1618	-0.87	0.392
Legal plea	0.0430	0.1180	0.36	0.719

Request	0.0110	0.1257	0.09	0.931
Information	-0.1172	0.1122	-1.04	0.307
Recommendation	0.14396	0.07521	1.91	0.068

S = 0.1746    R-Sq = 31.5%    R-Sq (adj.) = 13.7%

### Analysis of Variance

Source	DF	SS	MS	F	P
Regression	6	0.32305	0.05384	1.77	0.151
Residual Error	23	0.70125	0.03049		
Total	29	1.02431			

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# EXAMINING THE EFFECTS OF CONSUMER PERSONALITY AND PRODUCT IMAGE FIT ON CONSUMER'S PRODUCT PREFERENCE

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## ABSTRACT

*Product design has gradually become the consumer necessary transmission value and the significance messenger, but no longer only solves the function question activity. Regarding the trend of product design, the users' needs and preferences are primary concerns in product development within a highly competitive market. Recent studies have tended to focus on the aesthetic aspect of product design. However, the existing product design literature lacks for discussions of the congruence of product images and consumer personalities. We argue that the product image most likely to attract a given consumer because of the good match between the product image and the consumer's personality, or the personality he thought he had. Therefore, the purpose of this study is to investigate the link between product images and consumer personalities, and thereby influences consumer's product preference. An experimental study is conducted to examine the congruence of product images and consumer personalities. The results of this study may help designers to grasp consumers' needs and preferences and design a variety of product images precisely.*

## INTRODUCTION

The current trend in product design has shifted from functionalism to product semantics (Krippendorff, 1995). According to this trend, the users' needs and preferences are primary concerns in product development within a highly competitive market. There is a growing recognition that product design is emerging as a key marketing element (Wallendorf 1980; Kotler and Rath 1984; Holbrook and Zirlin 1985). Design, which refers to the organization of elements of an object, and aesthetics are inherently linked since the design or physical form of a product encompasses aesthetic aspects of the product (e.g., shape, color and image, etc.).

This is not surprising since this is a central concern of design and most person—product relationships begin with the perception of a product's appearance (Izzi and Caplan, 1972). Martineau (1958) said the product image which attracts a consumer is the image which expresses what the consumer thinks he is or what he wants to be.

Many research studies have identified different product images, very few have identified the consumer personalities attracted to different product images.

The above asserted that the product image most likely to attract a given consumer because of the good match between the product image and the consumer's personality, or the personality he thought he had? However, there is no empirical study to investigate this idea. Thus, this study will explore the relationship between different consumer personalities and product images, and show that their discrepant relationships influence consumer's product preferences strongly. Through this study will assist designer in grasping consumer's psychology and designing a variety of product images precisely.

## **LITERATURE REVIEW**

### **Personality**

As far back as 1937, Allport collected more than 50 definitions of personality as well as offering one of his own: "Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment". Interest in the relationship of personality variables and consumer behavior has existed since the importance of marketing was first recognized. To predict an individual in the study of consumer behavior, scholars researched many personality character theories to analyze the concepts of personality, for example The Big Five, Type A/B personality, Sixteen Personality Factor and Internals/Externals personality.

### **Type A Behavior Pattern (TABP)**

The Type A behavior pattern (TABP), an established risk factor for coronary heart disease (CHD), is defined theoretically as a chronic struggle to achieve a series of poorly defined goals within the shortest period of time possible (Friedman & Rosenman, 1974). The Type A behavior pattern (TABP) is an important person factor in the person-environment fit model because TABP means how person considers when she/he confronts a challenge (Ivancevich et al., 1982). The most widely used self-report measure of the Type A behavior pattern is the Jenkins Activity Survey (JAS) (Matteson & Ivancevich, 1980). The test has four major components: the Type A scale and Factor S (Speed and Impatience), Factor J (Job Involvement), and Factor H (Hard-Driving and Competitive).

### **Image Concept**

Finn (1985) views an image as the collection of symbolic associations with the product. It is a most powerful influence in the way people perceives things, and

should be a crucial concept in shaping our marketing, advertising, and communications efforts. The various conceptualizations of image are presented as they have appeared in the consumer behavior and marketing literature.

### **Product Images**

The product image plays an important role in users' preference and choice of the product (Chuang et al., 2001). Bloch said: "A good design attracts consumers to a product, communicates to them, and adds value to the product by increasing the quality of the usage experiences associated with it" (KA Hsiao et.al, 2006). According to results of Hsiao et. al.'s (2006) research, it referred to the product images of sofa had been kept two kinds of image words, hard/male/rational and soft/female/emotional.

### **Self-Concept**

Self-concept can be viewed as the sum total of an individual's ideas, thoughts and feelings about themselves in relation to other objects in a socially determined frame of reference (Onkvisit and Shaw, 1987; 1994). It is an individual's perception of one's own abilities, limitations, appearance and characteristics, including one's own personality. A person's self-concept is developed over time, and is based on how one thinks of one's self, as well as how other people think of the person and react to them. Self-concept is thus a set of knowledge and beliefs about one's self that is stored in memory. As such, it can be activated and recalled to influence purchase decisions. Previous studies have shown that, with regard to the symbolic meaning of products, self-concept is an important factor in directing consumer preference.

### **Consumer Response**

There are three types of responses in consumer behavior. Cognitive response refers to the judgments that the user or consumer makes about the product based on the information perceived by the senses. Affect response has been described as part of 'the consumer's psychological response to the semiotic content of the product. Marketers frequently use the terms approach or avoid distinguishing between the behavior responses of an interested and disinterested consumer.

### **Consumer Preference**

Consumer preference can be formed in different ways. In some cases, buyers directly compare alternatives across various attributes and choose the one they most prefer. In other situations, consumers evaluate each option separately and then pick the one that is judged most favorably. Robert (1982) stated the antecedents of preferences may involve cognitive and affective components in a variety of combinations. In some cases the cognitive component may be dominant, in some the cognitive and affective factors may interact with each other, and in other cases the affective factors may be dominant and primary.

### **MODEL DEVELOPMENT**

Based on the self-congruence theory, we argue that the product image most likely to attract a given consumer because of the good match between the product image and the consumer's personality, or the personality he thought he had. Thus, there may be linkage (i.e., congruence) between product image and consumer personality. Owing to products have too much images and persons have too many personalities, there is no way to discuss the whole constitution of product images and personalities. Hence, we find two kinds of image words, hard /male/rational and soft/female/emotional, from numerous images as far as possible and test.

***Hypothesis 1a:** : The type A consumers attracted by hard image of products will have higher congruence than those attracted by soft image of products.*

***Hypothesis 1b:** : The type B consumers attracted by soft image of products will have higher congruence than those attracted by hard image of products.*

Several scholars considered the role of product or package appearance in consumer product evaluation or choice (Bloch, 1995; Garber et al., 2000). Therefore, the product with the image that is most similar to the consumer's personality will be the one purchased or desired while products with dissimilar images will be rejected. This congruity, in turn, affects the consumer's product preference and purchase intention. Thus, the hypothesis in the following:

***Hypothesis 2:** Congruence of consumer personality and product image has a positive influence on consumer's product preference.*

## **METHOD**

### **Participants and Research Design**

An experimental study is conducted to examine the congruence of product images and consumer personalities. The experiment in a 2 (product images: hard/male/rational vs. soft/female/emotional.)  $\times$  2 (consumer personalities: Type A personality vs. Type B personality) factorial design is developed.

Owing to our product, we will choose Hyper-market and furniture shop, such as IKEA and HOLA. People who consider buying or decide to purchase the sofa are subjects in this study.

## **MEASURE**

### **Consumer Personality/Product Image Congruency**

Product-personality congruence questionnaire was developed by Govers (2005) to measure product image-personality congruence. In the actual experiment, participants are asked with 4 items to measure individual personality-product images congruence. The classification scale ranged from 1 to 5 (1= very disagree, 5= very agree).

### **Consumer Personality**

The Type A scale, which was developed and validated by Begley (1985) to measure the Type A behavior pattern, and the Type A scale consists of 21 items. Subjects indicate how well each item describes them on a 5-point Likert scale (1= disagree completely, 5= agree completely).

### **Consumer's Product Preference**

Product evaluation, in terms of consumer behavior, this means that the congruent effect influences pre-purchase behavior (Gover, 2004). Product evaluation included product value, attraction and so on, and subjects indicate how well each item describes them on a 5-point Likert scale (1= disagree completely, 5= agree completely).

## **MANIPULATION**

### **Product Images**

We select two pictures of sofa, and the two kinds of extreme image words are placed side the picture.

### **Control Variable**

Age

Preferences could change as time goes by. Young people perhaps prefer images to differ greatly from old people. Hence, consumers' age would be considered a factor in this study. It was measured by three stages, that is young, the middle-aged and old age people (Yang & Allenby, 2003).

#### **DATA ANALYSIS METHOD**

We will use the method, ANOVA to test the relationship between consumer personality and product image (that is H1a and H1b). Then, we will perform a linear regression in which the dependent variable consumer preference is predicted based on the independent variable product image-personality congruence.

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# GROUP AND INDIVIDUAL INNOVATIVE WORK BEHAVIOR FOR MAKING PRODUCT INNOVATIONS IN THAILAND: THE MULTI-LEVEL CAUSAL FACTORS ANALYSIS

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## **ABSTRACT**

*The author wants to explore how the organizational multilevel factors have impacts on Innovative Work Behavior (IWB) as a group and an individual. The independent variables are separated into two levels of investigation. There are group level factors; Team Climate Inventory (TCI) and Diversity of Knowledge and Skills (DKS) in Work Group and Organizational Supportiveness (OS). Concerning eastern cultures, especially that of Thailand, the researcher selects the individual level factors such as Social Network (SN), Open-Mindedness (OM) and Originality-Style (OR) For this study. The subjects are work groups in product development unit, also all the members of each group, in the private companies which are the partners of National Innovation Agency (NIA) of Thailand. The results of this study will expand the knowledge of Innovative Work Behavior in Asia and useful for any organizations that want to promote innovation in their companies.*

## **INTRODUCTION**

Since China is opening himself to the world trade, Thailand realized that he can not use low cost of labor as a competition key anymore. World Economic Forum (WEF) and International Institute for Management Development (IMD) indicated that one of the national competitive advantage indicators is innovation (Piromsawat et al. 2008; paper in Thai language). In 2002, the National Innovation Agency has founded by the government of Thailand for supporting Thailand business to making innovation products and services. How innovation can help organization to doing business, the answers have shown in many research papers such as the research project by Seeloum (Seeloum. 2002). This study investigated the relationship between Innovation and business performances in multi-organizations in medical industry in Thailand. The results of the research shown that organizational innovation can boost the organizational performances such as sales growth and Return On Investment (ROI). Although innovation has promoted in Thailand, but the researches about this topic is

very rare. Normally, the studies about innovation in Thailand have focus on organizational factors and entrepreneurship, but behavior of employees, that is very important key for building innovation in organization, has omitted.

For best understanding in individual behavior in organization, Robbins (2005: 30-31) has presented the Basic Organizational Behavior Model which he believing it can explain complex behavior with a set of factors in 3 levels; individual, group and organization Especially in IWB, West and Farr noted that “there been scant attention paid to innovation at the individual and group levels” (1989:17). With concerning about this fact, the author has considered Innovative Work Behavior (IWB) in both group and individual level. In individual level, 3 factors influencing IWB such as Open-mindedness, originality style, and social network, have selected based on Thailand context. For group level, Team Climate Inventory (TCI), Diversity of Knowledge and Skills (DKS) and Perceived in Organizational Supportiveness (POS) are noticeable factors supporting group Innovative Work Behavior. The aims of this paper are to briefly review the reasonable causal factors affecting group and individual IWB and concept of multi-level perspective through research design planning. Starting from this point, the author begins an overview of IWB.

### **INNOVATIVE WORK BEHAVIOR**

West and Farr (1989) defined innovation as “the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit role performance, the group, the organization or the wider society” (p. 16). Innovation is starting from generate ideas and has to run along the multistage process until the idea has produced as a prototype or model of the innovation (Kanter. 1988:191). Based on these perspective, IWB is defined here as the behaving of individuals or persons in generating, promoting and pushing ideas that novel and useful within a work role, for their group or organization’s benefits. With this definition, levels of innovative in new product as output of the process, should be tested for confirming group innovation.

Following Scott and Bruce (1994), the innovation is viewed as a multistage process, with different activities and different individual behavior in each stage (p. 2). IWB in the workplace is complex behavior consisting of a set of 3 different behavioral tasks that are idea generation, idea promotion, and idea realization (Janssen. 2000: 288). During the first task of IWB, individual innovation begins with problem recognition and the generation of ideas or solutions. The next task, persons have to seek sponsorship for their ideas and attempts to build a coalition of supporters for it. And

finally, individuals produce a prototype for complete the ideas. Innovation in organization will occur when individuals and teams have cooperation. Kanter stressed the link between individuals and their teams. Individuals initiate the new ideas and then work through teams to bring Idea to innovation (1983: 35). And effective work group can occur when it has a right combination of personalities, diversity, also the cooperative process behaviors. Anderson et al (2004) have reviewed the facilitators of innovation in tree level of analysis; individual, group, and organization, in selected research papers published between 1997 and 2002. Their study presented the overview of the main facilitators of innovation at individual level such as personality, motivation, cognitive ability, job characteristics, and mood states. At work group level the factors supporting the innovation are team structure, team climate, team member characteristics, team processes, and leadership style. Knowledge from that paper encourage the author to selected the facilitators of innovation in both individual and group levels that appropriate to Thai context, matching the factors have gotten from the interview of 2 R&D managers and 2 employees in Thai well-known innovative organization. The selected factors affecting IWB have explained below.

#### **FACILITATORS OF INNOVATION AT INDIVIDUAL LEVEL OF ANALYSIS**

For human resource management benefits, the selected factor effecting individual IWB in this article should facilitate the HR unit in recruiting process. Personal character, style and personality factors have chosen in the propositions. The dominate facilitator in IWB in individual level is creativity, which many researchers are confused between it and innovation. West et al (2004) give suggestion to make clearly understanding between them. They explain that “creativity is the development of Ideas, while innovation is the development and application of ideas in practice” (p. 271). So creativity is a part of innovation and calling it to be a first stage of innovation process. In innovative product making, not only creative idea is an instrument, problem solving is often used in the process also (Van der Lugt and Buijs.1998). Kirton presented his idea about creative problem-solving style, calling the Adaptor – Innovator (Kirton.1978). Aspects of the notion of adaption-innovation are superficially similar to the convergent-divergent thinking, presented by Guilford. In Kirton perspective, he separated characteristics between adaptor and innovator person in aspects of creativity style, problem-solving style, and decision making style. One of components indicated innovative person is originality style: the person’s ability to proliferate a large quality of novel idea. Monoz-Doyague et al (1987) founded the relationship between Kirton’s originality style and emplyee creativity.

Also the study of Ettlie and O'Keefe (1982) has presented the relationship between Kirton's Adaptive-Innovative Inventory (KAI) and IWB among 123 graduated students. *The author gives the first proposition that is the Originality Style (OS) will facilitate individual IWB.*

The second factor supporting individual IWB is Social Network (SN). This factor is interesting in Thai context. With investigating in Cultural Dimensions, directly in Individualism, Hofstede shown that Thai people normally respect highly in their groups or social (2009). This evident reflects the important role of social network for Thai employees for working effectively in their team. Many research papers have shown the affecting of social network to IWB, such as Obsfeld's investigation (2005). With the participants, who are 152 engineering in automobile factories in Detroit, Obsfeld founded the relationship between densities in social network with innovation participation in work place. Same as the study by Smith (2006), founding open social network has related to creative product significantly at .05. These results are explained by several theorists, which propose that the communication of ideas and information should enhance creativity (Amabile. 1988; Kanter. 1988). Social network are directly relevant to two important social factors that are interpersonal communication and interpersonal interaction (Perrey-Smith & Shalley. 2003). The author address social network as the formal or informal linkage between persons or individual to group. People who have more networks have opportunity to exchange their knowledge that supporting them smarter, learning faster and better cooperation (Dulworth. 2006). The second stage of innovation building, supportiveness from relevant persons can push the radical idea to be real. So, the initiating coordinated action is necessary to implement innovation. In the communication process of social networking, the person who has abilities to linkage other persons and networks altogether is "network centrality" (Smith. 2006: 88). Ahuja (2000) explored that direct and indirect ties of network in firm both have a positive impact of innovation, although the impact of indirect ties is moderated by the number of a firm's direct ties. *The author has a second proposition that high individual IWB person will has more density of netwOrKs and abilities to linkage the networks also.*

One of characteristics of innovative pErson is Open-Mind%dnness (OM), likes Amabile introduced her study by□interviewing R&D scientists who mentioned their creative characteristics via their stories (1988). 17 percentAges of Creati6e□scientists are persons whO have a social skill: being a good listener, goOd rapport with others, good team player, and being Broad-minded or open to others' ideas (p. 29). Along with Weiss's view point about the ways to be creative person, open mind should keep

on because a big ideas are growing from a little ones knowledge sharing (2006). For Gardner, to be open-mindedness is to be neutral or undecided about some matter to which consideration has been given (1996). Hare and McLaughlin (1998) stated that “the open-mindedness reflects a concern for truth, and a readiness to alter one’s views in the light of evidence and argument are convincing, despite initial hesitations and resentments” (p. 290). From this meaning, Open-Mindedness reflect the aspects of person who can be open to new information, new experiences, and new environments, the opposite side is closed-mindedness cognitive style and dogmatism (Shearman & Levine. 2006: 275). Open-Mindedness has affect communication because Open-Mindedness individuals can stand for information that is inconsistent with their belief systems. Different from Dogmatic peoples who react to inconsistent information by minimizing or ignoring it. The research paper doing by Riquelme (2000) presented the relevance between open minded and creative strategic plan. The results indicate that open minded orientation affected the creativity in a strategic plan in a positive way. In some research papers have study the relationship between creativity and open-mindedness opposite factors. Such as the exploration by Dollinger (2007), the conservatism persons, like Dogmatic people, have low in creativity significantly. *The third proposition in this article is individual Open-Mindedness has more individual IWB.*

### **FACILITATORS OF INNOVATION AT GROUP LEVEL OF ANALYSIS**

While Kanter stated in his book, *The Change Master*, individuals initiate or generate ideas then bring ideas to innovation through team (1983), research has been conducted at the individual and organizational level of analysis, than at the level of the workgroup (Anderson et al.2004: 149). West et al. (2004) gave an input-process-output model of team innovation which suggested the group composition as diversity in skill and demography, and rewards for innovation represent the organizational context as the inputs factors. For Process of the model, team climate for innovation takes role as bridging across teams, an innovation is output of the model. The author is interesting in team climate for innovation and reviewing literature for finding out the effects of this factor to group IWB. Team climate for innovation leads Anderson and West (1996) to design the measurement calling Team Climate Inventory (TCI) for testing climate in work group. TCI define as shared perceptions of individuals about the atmosphere in their group. Anderson and West (1996) developed a four-factor theory of climate for work group innovation; the four factors are Vision, Participative safety, Task orientation, and Support for innovation. West (1990) gives the meaning of Vision “is an idea of a valued outcome which represents a higher order goal and a motivating force at work” (p. 310). Vision has four component parts there are clarity,

visionary nature, attainability, and sharedness. Work group which has high degree of vision, the members in the group also have the commitment to group goals. Moreover group should have the vision that understandable, reachable, and acceptable by each member. For participative safety, it is a psychological received by members in group about their motivation and reinforcement in involvement in decision-making in group without threatening. When individuals interact with others in team and feel the atmosphere around them that safety to introduce the ideas, they will feel this team can be trustfulness. Within groups, the task orientation factor is evidenced by stress on individual and team commitment to excellence in task performance along with a climate with supports the adoption of improvements to established policies, procedures, and methods (Anderson & West. 1998: 240). The support for innovation is the last component of TCI which describe the cooperation between member, sufficient resources and times available in work group. West and Wallace (1991) found the relationship between Participative safety, team collaboration and group commitment with innovation in work team in 43 health professions and occupational groups. In the study by Zhou and George (2001), they found that the job dissatisfied employee can be a creativity person in work place if they have supportiveness from coworkers. Also Agrell and Gustafson (1994) doing the research to investigate the innovation in 17 work groups, they found TCI, particularly Participative safety and Vision, related to group innovation. TCI is not only affecting to IWB in group but also in individual level. Towards social facilitation theory, the individuals who have interaction with other members in group, they tend to having more enthusiasm for working in their group. In innovative group, members are working altogether with collaboration that encouraging individuals to have more innovative work behavior. *The author gives two propositions for investigating TCI effect on IWB. Firstly, work group that perceived high TCI will have IWB highly also. And the individual level, group IWB can have direct effect to innovative work behavior if TCI is strongly in this work group.*

Groups composed of people with differing professional backgrounds, knowledge, skills and abilities, will be more innovative that those whose members are similar, because they shared useful difference perspectives on issues to the group (Paulus. 2000). More complex, varied, and creativity product needs people, who have different points of view, in group because when people interact with others, they will share their knowledge that expand leaning boundary and group can combine ideas from various domains to be a new one. West et al (2004) suggested the ways to developing innovative team, one of them is selecting people with diverse skills and demographic backgrounds. The result of a survey among 157 middle-management team members

had shown that individual differentiation to be positively associated with creative behavior (Janssen & Huang, 2008), the first stage of IWB. Goncalo and Staw (2006) compared level of creativity between groups having member similarly and diversity member, result indicated creativity highly in groups having differentiation among members. However, diversity of knowledge and skills in group is not affecting to innovation making in positive results only, Shaw and Barret-Power (1998: 1307) argued that “Sometimes the effect of diversity seems positive, at other times negative, and in other situations, there seems to be no effect at all”. From this perspective, Janssen and Huang (2008) advised group to building norms of group which supporting members to have a good attitude about individuals’ diversity. *The evidences are leading author to present the sixth proposition that is Diversity of Knowledge and Skills in work group has a positive effect to group IWB, especially when TCI is highly in group.*

Ronald Mitsch, former Executive Vice President, Industrial and Consumer Sector and Corporate Services of 3M the leading innovative company, advised the culture of innovation established by the company takes important role for innovation making (1995). Despite of employees’ perceiving in creative atmosphere, organizational supportiveness for innovation is unsuccessful. Recent contextual theories of organizational creativity and innovations such as model of creativity and innovations by Amabile showing three board organizational factors are Organizational motivation to innovation, Resources and Management practices (Amabile et al. 1996). Inspired by this model, the author present Organization Supportiveness perceived by groups’ member that has three components: Organizational recognition, Sufficient resources supportiveness, and Supervisory encouragement. Organizational recognition perspective represented as the perception that group contributions to the corporate are acknowledged (Koys & DeCotiis. 1991). This is the psychological rewards, link intrinsic motivation, that corporate provides to work groups when they have achievement on their useful and creative product. From research study making by Janssen (2000), reveals the positive relationship between job demands and individuals IWB when employees perceived effort-reward fairness rather than under-reward unfairness. This investigation happened among 170 non-management employees from a Dutch industrial organization in the food sector. The phenomenon in Janssen’s research can explained by social exchange theory refers to “relationships that entail unspecified future obligations, did not specify the exact nature or future return for contributions, is based on individuals’ trusting that the exchange parties will fairly discharge their obligations in the long run...” (Janssen. 2000: 289). One of the most tangible supports for innovation, promoted by organization, is whether employees’

attempts to introduce useful ideas and implementations to organization are rewarded (West et al. 2004).

Amabile defined Sufficient resources as “Access to appropriate resources, including funds, materials, facilities, and information” (1997: 48). According to Two-Factor theory or Motivation-Hygiene theory, proposed by Frederick Herzberg, refer to “intrinsic factors are related to job satisfaction, while extrinsic factors are associated with dissatisfaction” (Robbins. 2005: 173). Resources provided by the organization categorized as extrinsic factors or Hygiene factors. If manager does not bring appropriate conditions to their employees, dissatisfaction will occur. Some researches presented the relationship between resource and innovation making or group IWB in negative way. Such as the longitudinal study has done by West and Anderson (1996), examined relationships between group and organizational factors and team innovation in top management teams in 27 hospitals, the results indicated that hospital budget, as resource, has negative effect to overall innovation significantly. Amabile (1997) revealed her study in three phases over 12-year period, with over 12,000 individual employees from 26 different companies, comparing high and low creativity projects shown moderate effect of Sufficient Resources and high effects of Organizational recognition and Supervisory encouragement in high creativity projects.

Following Amabile’s research, Supervisory encouragement is one of the most important keys for supporting innovation in organization. Supervisory encouragement defined as employee’s perception towards direct supervisor who served as a good role model (Amabile. 1997), and gave autonomy in work to subordinates, also had willingness to let them learn from their mistakes without threaten of reprisal (Koys & DeCotiis. 1991). Using leader-member exchange (LMX) theory, supervisors are the most prominent representatives of management actions, policies, and procedures, subordinates tend to generalize their perceptions of supervisors to their organization at large (Kozlowski & Doherty. 1989). In search of Scott and Bruce (1994) in the respondents who are engineers, scientists, and technicians employees in R&D units of a major U.S. industrial company, shown positive relationship between Organizational supportiveness as recognition, and Leader-member exchange to individual IWB, but negative effect happens between resource supply and individual IWB. These results emphasize the meaning of resources in organization to support innovation work group should indicated the appropriated or enough resources but not too much to having them. Because resources supportiveness is Hygiene factor which must-have, but is not motivated employees to have work performance more high level. *For the seventh proposition in this article represented that groups or individuals who have perceived*

*Organizational Supportiveness highly, they will have high IWB in both levels of analysis.*

### **MULTI-LEVEL ANALYSIS IN ORGANIZATIONAL RESEARCH**

According to the Basic Organizational Behavior Model that explained the factors in organizations in three-level of analysis (Robbins. 2005). DeNisi (2000) gave some statements and one of them is “Variables at higher levels of analysis... serve as constraints on the performance of individuals and teams” (p. 123). These perspectives lead researchers to understand the effects of upper level on lower level units. Kozlowski and Klein (2000) explicated the importance of multilevel perspective in organizational science as the tool that enable a more integrated understanding of phenomena that unfold across levels in organizations. Fundamentally, higher level units may influence lower level units in two ways. Firstly, higher level units may have direct effects on lower level units and secondly, higher level units may shape or moderate relationships and process in lower level units (Kozlowski and Klein. 2000). Naturally, when researchers observed organizational phenomenon as hierarchical structure systems, data should be regarded as multistage or cluster samples with a number of hierarchical levels. “The hierarchical structure of the data creates problem, because the standard assumption of independent and identically distributed observations is generally not valid” (Hox & Mass. 2001: 158). Hox and Mass presented the robust method for unequal groups, small sample sizes at both the individual and the group level (2001). From their study, they recommended researchers should obtain data from at least 100 groups in group level to avoid inadmissible solutions for unbalance data. For reliable study, the author plans the research design which participants are all employees in work groups in product development units in Thai private organizations that are NIA partner. The innovative products of each subject group have evaluated as outputs of the innovation work behavior in both groups and individuals.

### **CONCLUSION**

Individual and group innovative work behaviors are important for an organization because they stimulate creation of innovations. Thai government has paid attention to promoting private sectors to build competitive advantages by creating innovations. However, study of innovative work behavior has not yet been conducted in Thailand. Literature review has therefore been prepared and it is found that individual and group innovative work behaviors should be studied together using multi-level analysis. For individual innovative work behavior, factor called originality style is highly correlated with creative personality because it reflects innovative thinking ability in various

ways. Moreover, open-mindedness indicates innovativeness and creativity, especially when an individual works in group and has to listen to different opinions. The last factor is social network as cultural dimension of Thailand, according to Hofstede's study, reflects collectivism, relying on others for supports and exchange of new ideas to realize new products.

For group innovative behavior, a widely studied factor is team climate inventory, presented by West, which indicates creation of product innovation through group support and cooperation. In addition, knowledge and skills diversity can extend a variety of knowledge and skills to and encourage exchange of ideas among group members. Similar ideas limit group knowledge and skills while perceived organizational supportiveness including leader supportiveness, sufficient resources supportiveness and organizational recognition is a significant variable that pushes work group to create product innovation.

Product innovation in Thailand is mostly created by work group in which group members share common behavior in creating innovation. Multi-level analysis provides knowledge of cross level of work group affecting individual innovative work behavior in order for an organization to better manage innovative behavior. This article presents research design using participants in both groups and members in product development units of Thai companies. Data will be collected from all members to find out group and individual innovative behavior as well as evaluation of innovativeness of the group by unit supervisors and specialists from NIA with expectation to expand knowledge to organizational studies in Thailand and Asia perspective.

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# **DETERMINANTS OF VALUE AND PRODUCTIVITY IN A COMPLEX LABOR MARKET: HOW SABERMETRICS AND STATISTICAL INNOVATION CHANGED THE BUSINESS OF PROFESSIONAL BASEBALL**

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## **ABSTRACT**

*Professional baseball as an industry mirrors many organizations in today's business world in terms of its need to objectively evaluate the performance of its workers (players). Baseball relies on these evaluations in order to establish essential aspects of the game such as strategizing, scouting talent, drafting amateur players, negotiating, signing/resigning free-agents, calling-up minor leaguers, trading players, and releasing players. In addition, owners and team executives are constantly trying to answer the same fundamental questions: Are we getting the production we are paying for? Does player performance decline with increased job security? To what extent does money motivate players? What is a player's replacement value? In professional baseball, the performance of a player varies from game to game and from season to season. Due to this randomness of productivity, it is impossible to absolutely know the value of a player's inputs relative to his outcomes. Therefore, a player's productivity as it relates to determinants of value must be assessed by using reliable measurements of performance indicative of his expected contributions. With skyrocketing player salaries and the ever-diminishing realization of competitive balance, the success of an organization hinges on its ability to make correct personnel decisions in terms signing and resigning players. This study examines two different methods of assessing Major League Baseball player performance as it relates to evaluating productivity, and illustrates how statistical innovation is changing 165 years of traditional baseball wisdom and ultimately, the business of professional baseball.*

# SPATIAL DIVERSIFICATION: THE CONCEPT AND ITS APPLICATION TO INVESTMENT PORTFOLIOS

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## **ABSTRACT**

*The concept of spatial diversification will be introduced and the use of the spatial analysis capabilities of geographic information systems to map, study and derive a series of quantifiable measures of the degree of clustering versus spread of locations associated with various investments will be presented. The benefits and detrimental aspects of having a spatially diversified set of investments will be discussed. Finally, the investment portfolio of the largest real estate investment trust (REIT) to fail in the current economic downturn will be examined and analyzed with respect to the degree to which a lack of spatial diversification may have contributed to its failure. The practical applicability of using any of several measures of spatial diversification as a tool for evaluating the risk associated with specific investment decisions and the issue of which types of investments the concept/method is most applicable will also be recounted.*

## **INTRODUCTION**

The concept of spatial diversification is that an investment portfolio whose component investments are located in spatially disparate locations will be more diversified and hence less likely to suffer declines in a down market than an investment portfolio that is more tightly clustered in terms of the locations of its component investments. While in theory this might appear to be a reasonable argument it is important to both test the theory and also determine exactly how and when spatial diversification might be determined. In order to use the spatial analysis and mapping tools of geographic information systems (GIS) to determine spatial diversification it is beneficial to delve into a specific example. This paper will examine the spatial distribution of the large shopping mall developer General Growth Properties.

**Types of Investments Susceptible to Analysis of Spatial Diversification.** Choosing an investment portfolio upon which to test the concept of spatial diversification is a challenge. One must choose investments where spatial locations can be specifically and accurately determined, where those locations are fixed over a considerable period of time, where there are a reasonable number of locations involved and where the location of an

investment is an important factor in determining the return that the investments are likely to yield. Some investment portfolios do not lend themselves to a spatial analysis. For example investments in U.S. Treasury securities cannot be located beyond the entire United States, investments in stock of a multinational corporation like Coca-Cola which does business in millions of locations and has major capital investments in over 180 countries do not lend themselves to analysis using spatial considerations (Coca-Cola, 2010). Also a business that is not tied to a location such as the entertainment industry or oil field services firms are a poor choice for delving into the concept of spatial diversification. A firm or portfolio that involves many disparate types of investments such as the California Public Employees Retirement Fund is also a poor choice since there are just too many investments to map or analyze spatially. An example of an ideal business to analyze spatially is a shopping center development firm and/or investment fund and particularly a shopping mall REIT like GGP. In this type of investment the physical location of the real estate is fixed, the location of the shopping mall can be easily determined and mapped (to within a few meters of the center of the largest building on the mall pad) and the location is very important to the success or failure of the business. The investments are also very large so the duration of the investment is likely to be long and the number of properties involved limited. Since the cost of developing, expanding or acquiring a shopping mall is large even the largest firms in the industry have only a few hundred malls which makes the rather tedious process of geocoding (putting the location of the mall into the GIS as a new layer of data that can then be analyzed) is manageable (Price, 2008). Once the shopping malls have been geocoded and placed into a GIS a variety of spatial analysis tools can be used to analyze the clustering of mall locations, the proximity of malls to each other and the location of malls in relation to the demographics and physical infrastructure at that locality and in the surrounding State, MSA, Zip code zone, census tract or spatially determined trade area.

**Choice of GGP.** Starting with the premise that analysis of firms investing in the development of shopping centers was a good potential basis for developing and testing a model of spatial diversification, the authors began to examine some of the firms involved in this industry, some like Trammell Crow (Trammell Crow, 2010) and Weingarten Realty Investors (Weingarten, 2010) also invested in many other categories of commercial real estate, others like the United Investors Realty Group (UIRG, 2009) are regional in character (investing only in Arizona, Florida and Texas) and hence in their very investment premise were somewhat clustered (albeit Texas is a physically a large state). However, one firm rapidly emerged as an excellent initial case study of the applicability and limitations of the concept of spatial diversification. That firm was General Growth Properties (GGP). This Chicago, Illinois headquartered firm was founded in 1954 with its first mall development being the Town and Country Center in Cedar Rapids, Iowa. By 2008 it had become the second largest shopping mall developer in the world. GGP has one outstanding characteristic that led to its selection. It is in bankruptcy. The filing took place on April 17, 2009 (GGP, 2009). At that time GGP stock was trading at 48 cents a share and was delisted from the New York Stock Exchange. GGP stock reached an all time high of \$44.23 per share on March 16, 2008. In March 2010 it was relisted on the NYSE and is now trading around \$15 per share down

two thirds from its 2008 high. Although beleaguered, Simon Group a rival REIT is considering acquiring the ailing firm (Wall Street Journal, 2010).

If the idea is to test the concept of spatial diversification as a means of reducing investment risk, than examination of the spatial distribution of the investments of a firm that has failed by the fairly objectable criteria of having to seek bankruptcy protection from creditors bent on the firms liquidation and dismemberment, seems to be as good choice. It might even be a better choice than study of a highly profitable firm, since those profits might be fleeting or illusory as in the case of Enron (Fox, 2003). This is particularly true in the case of GGP since it is the largest REIT to fail in the current economic downturn. Ironically, for a financial crisis and recession that has generally been attributed by economists to problems in real estate markets, relatively few REIT's have failed. But GGP is a big exception. The authors therefore propose to map the distribution of GGP investment properties and attempt on the basis of their locations to if not to prove that a lack of spatial diversification contributed to the decline of the firm, then to use this examination as a start to longer the process of fleshing out the concept of spatial diversification in order to examine spatial factors and limitations of the concept using the test case of a real real-estate firm that was open to investors and therefore has extensive annual reports and financial statements that are readily available to researchers..

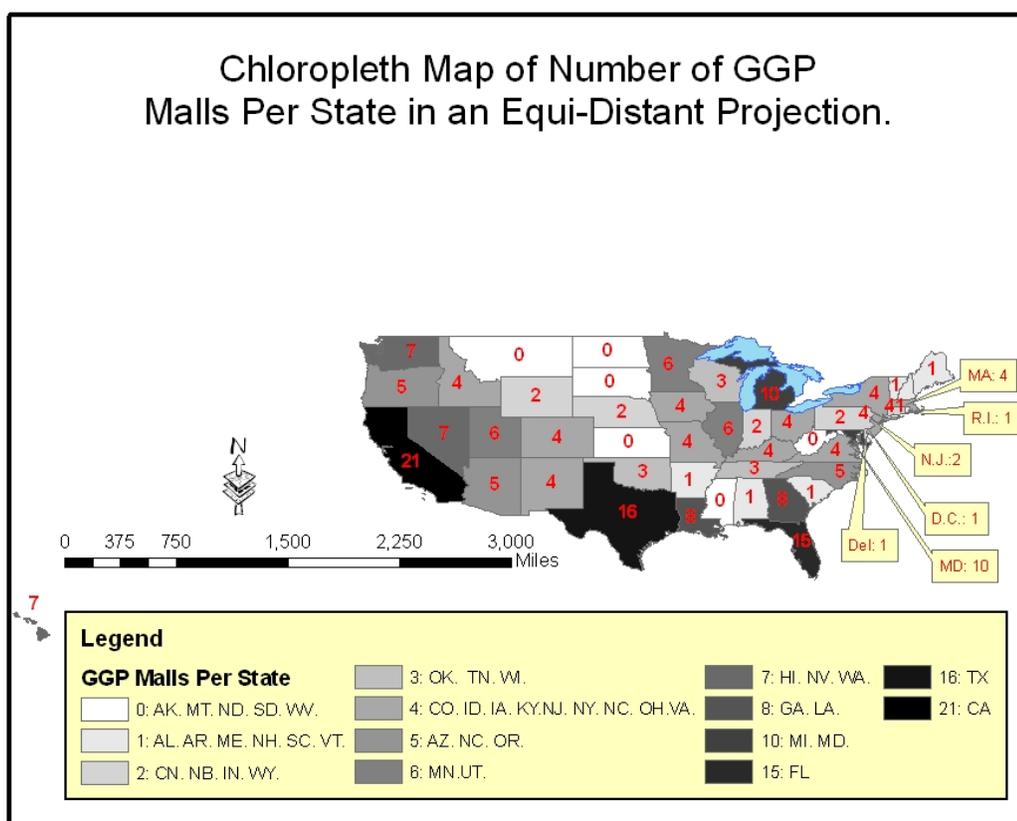


Figure 1. GGP shopping mall locations as of 2010. The map shows the number of malls in each state both with a number and a fill color. Given the small size of some Atlantic states call out boxes are used to show those states. Standard abbreviations for state names are used.

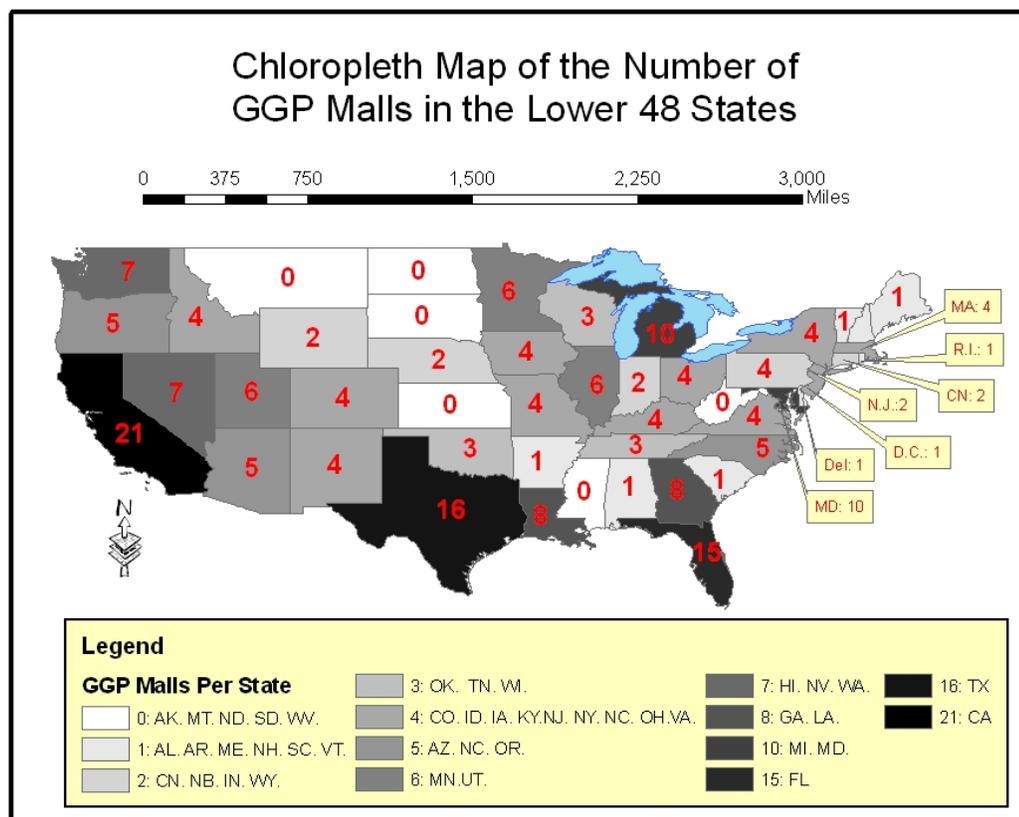


Figure 2. GGP shopping mall locations as of 2010 in the lower 48 states. The map shows the number of malls in each state both with a number and a fill color. Given the small size of some Atlantic states call out boxes are used to show those states. Standard abbreviations for state names are used.

**GGP's Investment Strategy.** Growth is (or rather was) GGP's mantra and middle name. The firm founded in 1954 aggressively grew in the 1990's and 2000's by acquisitions and new green field projects during the particularly during the mid to late 2000's. The firm concentrated on investments in figuratively and often literally hot markets in the Sun Belt such as California Nevada, Florida, Hawaii, Arizona, and Louisiana. The firm also invested heavily in the rust belt areas of Michigan and in Maryland, In addition, the firm invested in many properties in Texas and California. These two states have ~10% and ~7% of total U.S. population and represent ~10% and 7% respectively of all GGP malls. Therefore on this simple basis one might conclude that GGP did not disproportionately invest in either Texas or California. When one adjusts for population of each state, the states that stand out in particular as over represented are Hawaii with 7 malls including the billion dollar Ala Moana Center (GGP's most valuable property), Nevada also with 7

malls (all located in Las Vegas), the 15 malls in Florida, the 10 malls in Michigan and the 10 malls in Maryland. Some small population states such as Idaho with 4 malls and Wyoming (lowest population state in the U.S.) with 2 malls are less spectacular examples of disproportionate investments. Conversely, there are only 4 malls in each of Ohio, Pennsylvania and New York while Utah has 6 GGP malls. This is harder to understand than the lack of properties in Alaska, Montana, West Virginia, and North and South Dakota. Figure 1 shows the location of all of GGP's mall properties in the United States, while Figure 2 shows only those in the lower 48 to give added detail (it omits the 7 malls that GGP owns in Hawaii). In addition, to investing in dispersed locations throughout these states, GGP choose to place a very disproportionate amount of its investments in relatively few prestige properties in places like Las Vegas, Orlando, Florida, Towson, Maryland, The Woodlands, Texas and in Hawaii.

**Spatial Analysis of GGP Platinum Properties.** Of the 203 malls currently owned by GGP, 20 properties have been designated platinum properties (Figure 3). These are the malls which GGP has invested the most money into.

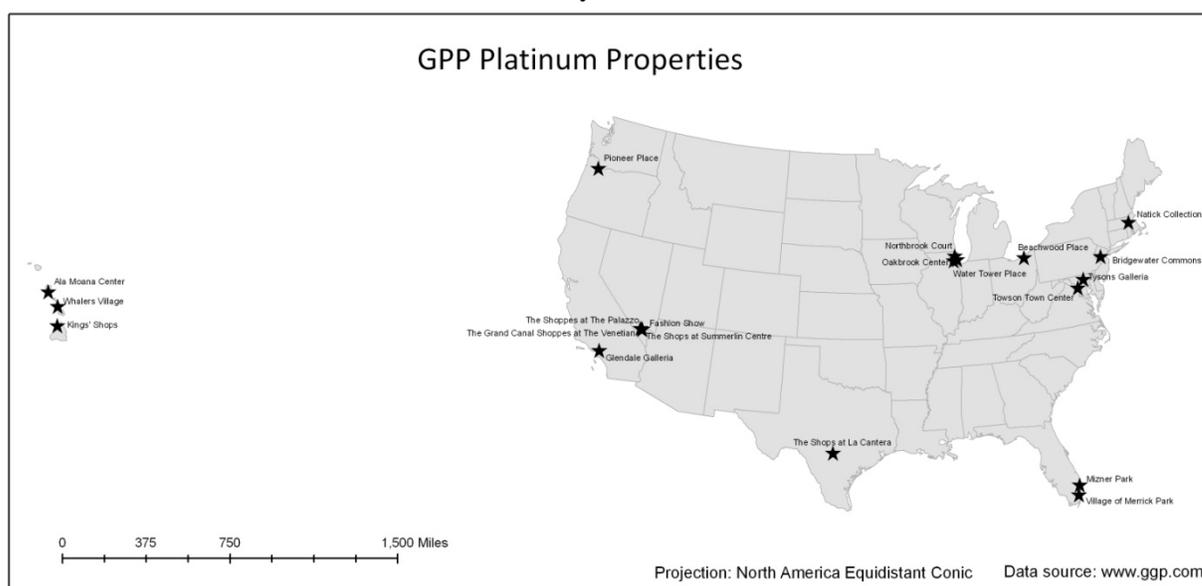


Figure 3. GGP platinum properties.

To facilitate further spatial analysis of GGP's investment, a GIS layer showing the locations of GGP's platinum shopping malls is necessary. This was done first by extracting the street addresses of all the shopping malls from GGP's website, then their longitude-latitude coordinates were obtained by converting street addresses through an online geocoding service, and last the coordinates were fed into ESRI's ArcGIS to generate a point layer in which each shopping mall is represented by a point (or a star as shown in Figure 3).

A quick glance of the distribution of these flagship properties reveals that they are even more clustered than the overall pattern of GGP malls. Of the 20 premium properties, 3 are in Hawaii and 4 in Las Vegas. However, a convincing conclusion regarding clustering vs. dispersion requires quantifiable measurements.

**Methods for Analysis of Spatial Diversification.** There are a variety of methods that can be used to examine the clustering or dispersion of spatial locations. These include density (also called heat) mapping which can determine “hot spots” that are locations with an above average concentration of some phenomena (in this case shopping malls (Bachi, 1993). Adjusting both for the spatial proximity or clustering of malls and the clustering of population that might patronize malls will help to better understand areas where there is an unjustified concentration of malls. When this is done for a state, Hawaii, Nevada, Michigan, Utah and Idaho stand out as states with a high density of malls but not a proportionately large population. One must then examine the clustering at a more detailed spatial scale. In Nevada all the malls are in Las Vegas, but so is 80% of Nevada’s population. In any case, the resident population is not the only source of shoppers. In a place like Las Vegas and Hawaii and in areas like Orlando, Florida and Branson, Missouri one should figure in the tourism (and in Nevada gaming) related traffic. In fact the drop in vacation travelers patronizing GGP’s five new and very pricy and recently developed malls in Nevada (in addition to the long standing Meadows and Boulevard malls) is undoubtedly a major factor in the firm’s financial plight.

In addition to a hot spot (also called a density analysis) one can use a GIS to measure distances between features like mall locations represented as points and stored as a layer of data in the GIS. One can measure the distance between each pair of malls (allowing for the curvature of the earth using an equidistant projection). When summed for all the pairs of malls a larger total distance would indicate a greater degree of separation and in the simplest case a greater degree of spatial diversification. The actual measure of distance can be a Euclidean (straight line) distance which is easiest to calculate. The distance can also be based on the shortest path over a road network (a so called Manhattan distance) (ESRI, 2007). The actual travel time can be used as well although some assumptions about mode of travel and speed limits need to be made in this case. The GGP case is illustrative of one issue with this approach which is that for some malls the mode of travel will differ. Normally this would not be too problematic but in GGP’s special case many of the most costly investments were in malls not generally accessible by motor vehicles but rather by persons who relied on air travel to reach the city in which the Mall was located from their homes. This is certainly true for the malls in Hawaii, also the ones in Las Vegas and Orlando. Therefore the best, but hardest to determine measure of distance between malls would be the time or even the cost that typical customers incurred in travel to and from the mall. Just determining the spatial distance between GGP’s properties would not determine if the spatial distribution was clustered or dispersed, but it would allow analysis of the degree of clustering of GGP’s properties versus that of other firms.

Another distance-based measure of spatial diversification explored by the authors can be called the total spatial deviation (from the centroid). Similar to the statistics of variance in which the data dispersion is measured by the deviation from the mean, a spatial deviation for a shopping mall can be defined as its distance from the geographical centroid of all the properties. If all the shopping malls are spatially dispersed, their total spatial deviation would be larger than that of a group of clustered shopping centers.

The simplest method to find the geographical centroid is through calculating the average coordinates of all the 20 platinum properties. ArcGIS Spatial Statistics Tools offer a similar algorithm to calculate the “mean center” which identifies the geographic center of a set of features. Figure 4 shows the location (indicated by the sign of a pushpin) of the centroid of GPP’s platinum properties.

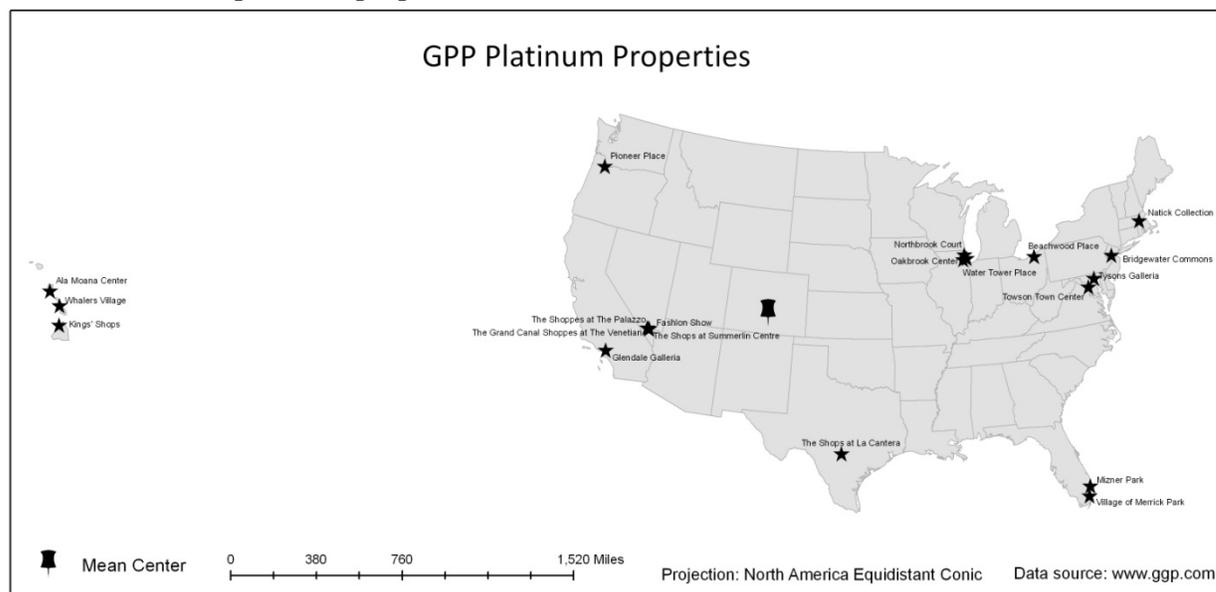


Figure 4. The mean center (centroid) of GPP’s Platinum Properties.

Weighted centroid can also be obtained by applying a certain measure of weight on each property. For example, Figure 5 shows a proportional symbol map of GPP’s platinum properties with the size of the symbol proportional to the property’s total leasable area. If the total leasable area at each shopping mall is factored in as a weight, Figure 6 illustrates the new weighted center – dragged a little to the east by the relatively bigger shopping malls in Chicago.

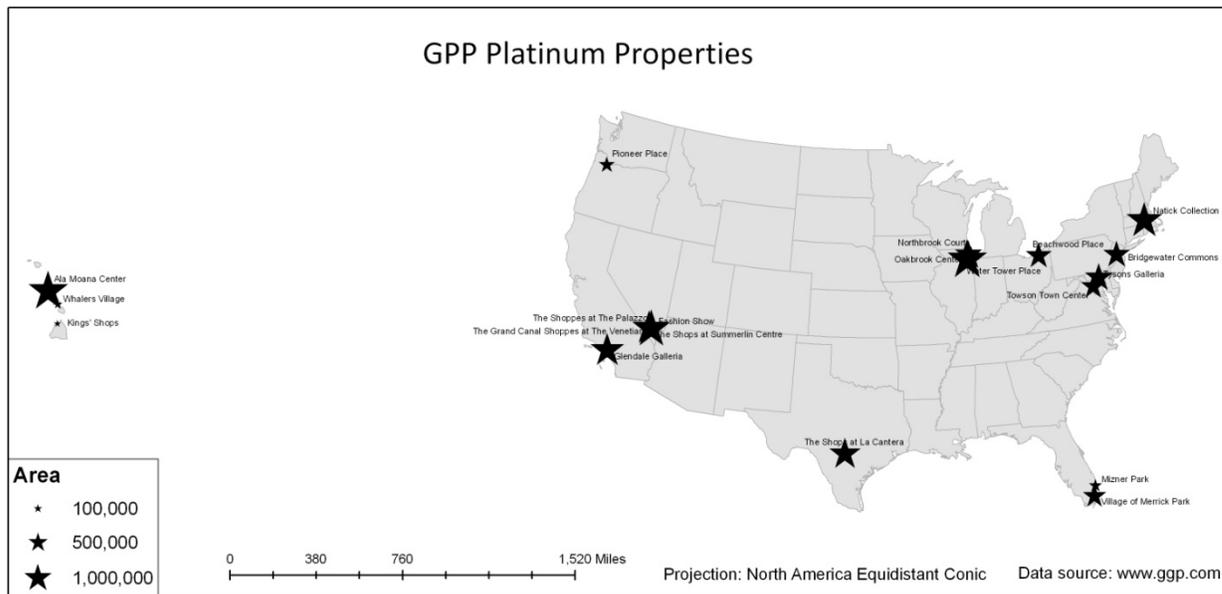


Figure 5. Total Leasable Area at GPP’s Platinum Properties. Symbol size is proportional to the total leasable area in square feet.

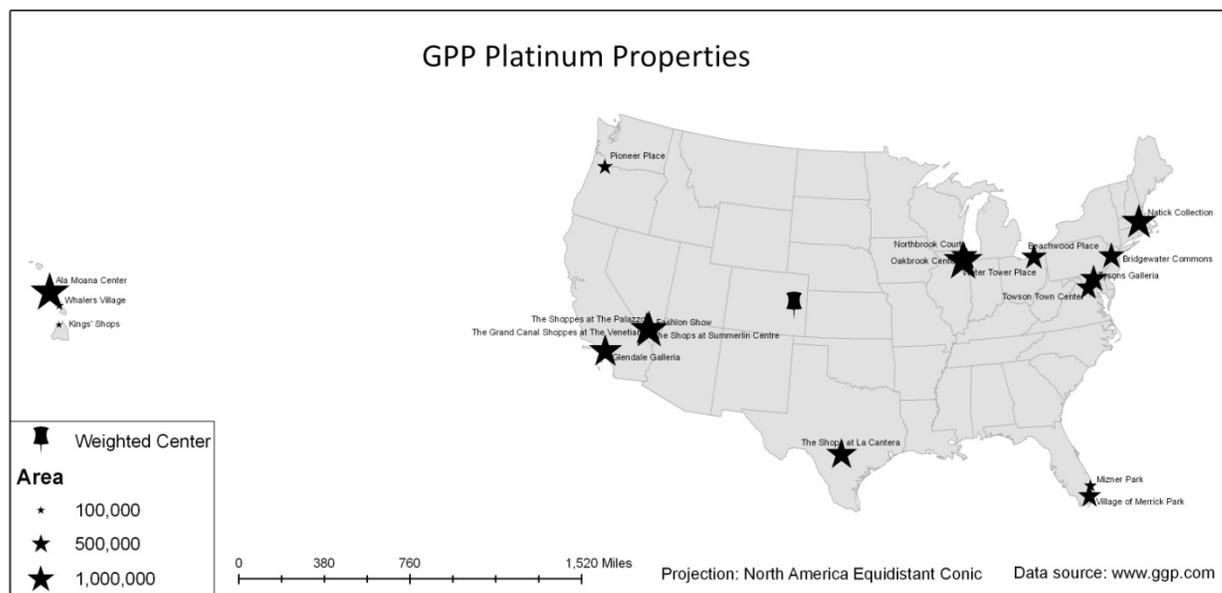
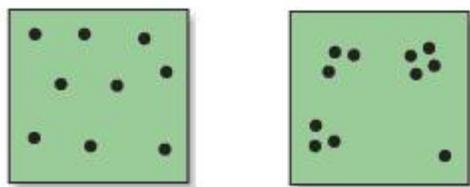


Figure 6. Weighted mean center (centroid) by total leasable area of GPP’s Platinum Properties.

Once the geographical centroid is located, the total spatial deviation of all the platinum properties can be easily calculated to assess spatial diversification.

While being easy to calculate and use, total spatial deviation has its own limitation. Its lack of robustness becomes salient when it fails to differentiate the following two scenarios:



These two distributions apparently have different cluster/dispersion pattern, yet their total spatial deviation can be very close.

To overcome this problem, another distance-based measure of spatial diversification named Average Nearest Neighbor Distance was investigated by the authors. The Average Nearest Neighbor Distance measures the distance between each feature and its nearest neighbor's location, and then averages all these nearest neighbor distances. Furthermore this actual average nearest neighbor distance is compared to a hypothetical average nearest neighbor distance under the assumption of random distribution. If the actual average distance is smaller, the distribution of the features being analyzed are considered clustered. If the average distance is greater than a hypothetical random distribution, the features are considered dispersed. The index is expressed as the ratio of the observed distance divided by the expected distance (expected distance is based on a hypothetical random distribution with the same number of features covering the same total area).

Table 1 lists the results from the Average Nearest Neighbor Distance analysis on GGP's platinum properties. The results show that the nearest neighbor ratio for GGP's platinum properties is 0.56 (less than one) with a p-value of 0.000195 (highly significant). This indicates that there is a clear clustering pattern among GGP's platinum shopping malls. This also echoes the impression from "at first the glance" observation of Figure 3.

Table 1. Average Nearest Neighbor Distance Results

Observed Mean Distance	245550.279509
Expected Mean Distance	434902.681458
Nearest Neighbor Ratio	0.564610
Z Score	-3.724986
p-value	0.000195

### Important Caveats.

Spatial analysis of an investment portfolio like GGP's requires several adjustments to the most simple spatially-based analysis. An important caveat to the analysis of travel distance between malls is that one or two outliers (or even 7 malls in Hawaii) may not make a set of investments spatially diversified. Adding a single mall in a far flung point of the compass (for GGP that would be opening a new mall in North Dakota for example) would add a large number of long travel lines between the new mall and existing properties although it would have somewhat less effect on the nearest neighbor based analysis, but that would not really impact the existing tight clustering in places like

Maryland (10 malls in a small State). The distance analysis and nearest neighbor analysis would cross state lines so while there may not be a lot of malls in any one State in New England but the States are small and the one mall in Maine the only larger state is located in southern Maine close to 8 other malls in this small region.

A more critical consideration is that not all investments are of equal magnitude and hence equal importance to the financial risk involved. GGP owns a shopping mall in Rocksprings, Wyoming (White Mountain Mall) that is more a glorified strip center (it has a small super market, a mid-sized sporting goods store and a few other shops and businesses in the pad). It also owns the Boulevard mall in Las Vegas and the Ala Moana center in Hawaii and the Towson Town Center in Maryland and Water Tower Place in Chicago, each mall is the most important in the State. In fact GGP owns the seven largest malls in the Hawaiian Islands. If one gives equal importance to purchase of a shopping mall in Rocksprings, Wyoming, an investment of less than 10 million dollars to development of the shopping mall GGP values at over \$1 billion in Honolulu, Hawaii, then the concept of spatial diversification cannot be tested. One must take into account that each one of the 5 malls GGP invested in Las Vegas cost many times more than the average or even the most expensive mall in most of the other states GGP is involved in. Thus one should weight the analysis of diversification not only by some measure of distance apart but also by the magnitude of the investment. Untangling the ascribed values for initial investment, buildings, improvements and depreciation in GGP's financial statements is a challenge although some properties are clearly far more valuable. In the initial analysis of the Platinum properties the authors have used the mall area to adjust the weighting on the analysis. Other potential weights would include square footage, leasing revenues or book value. When this is done the already unbalanced investment strategy of GGP begins to show signs of the calamity that befell it. The investments in the Hawaiian Islands also illustrate a limitation of a too simple minded application of distance as a factor in spatial diversification. The GGP malls in Hawaii are on Oahu, Maui and Hawaii, these islands are spaced hundreds of miles apart. But effectively one can ignore the ocean separating them in the analysis because in a sense their proximity is greater than the distance separating them might appear. With respect to factors involving the success of a shopping mall each is largely dependent on a similar set of tourists and local residents and in fact perhaps on the exact same tourist that visits more than one island.

**Beyond Distance.** While spreading investments into far separated markets might seem to reduce risk, the case of GGP also shows another important limitation on this simple assumption. GGP invested in resort area shopping malls in South Florida, and Orlando, in heavily tourism dependent areas like Las Vegas and in Hawaii. At first blush this might indicate spatial diversification. Hawaii is about as far from Florida as it is possible to get in the U.S. and Nevada is not really near any area except Southern California. The fallacy in this argument is that each area shares many characteristics in common that is dependence on more or less conspicuous and certainly discretionary consumption by resort goers and persons with vacation, time-share, retirement and second homes in these areas. These consumers make purchases from prestige shops in a high end mall that is dependent on their having discretionary income. The economic decline hurt these areas

more than most areas in the United States. GGP's strategic focus was on the areas hardest hit by the downturn: GGP concentrated the bulk of its investments into 7 markets, California, Nevada, Hawaii, Maryland, Michigan, Florida and Texas. How does this distribution of investments correlate with the areas that have fared well or poorly in the current economic downturn?

**5 out of 7 can be wrong.** Amazingly 5 of the 7 states which GGP concentrated its investments are the ones hardest hit by the recession. These roughly in order of severity of decline are Nevada, Michigan, Hawaii, California and Florida. Only Texas and Maryland are not among the states most affected by the recession. GGP's recent large investments were made in the city with the largest drop in real estate values and highest foreclosure rate: Las Vegas, Nevada. One of the better yardsticks of the downturn with regard to real estate related investments is foreclosure activity. GGP's single largest recent investments were in the city of Las Vegas the most economically distressed real-estate market in the nation. GGP also made multiple investments in states like Maryland where it did develop the Towson Town Center, a shopping mall in an area that is also doing better than average and some of the smaller malls (such as the mini-mall) in Wyoming is doing fairly well. This is not a coincidence but it is not the outcome of a conscious desire to invest in what would soon become hard hit markets. The 5 out of 7 match between GGP's major investments and failing real estate markets at the state level basically stems from the same source.

**The Search for Fast Growth.** GGP wanted to be in the hottest markets around the country, ones driven by rapidly raising real estate values, lots of conspicuous consumption financed by home equity lines of credit and flipping real-estate and ones where luxury vacations and resorts were the norm. This matched their focus on high end retailers, rapid growth in revenues and other financial and image related factors. It was fun to invest in Vegas and Hawaii and gullible investors were impressed by glitzy properties and rapid growth in value of buildings and land in hyper inflated local real-estate markets. Notable slow growing but sustainable markets such as Nebraska, Kansas, and other areas like the Mid Atlantic States were neglected because there was neither population growth nor exuberant tourism. Even in the Middle West the trend was followed with a mall in Branson, Missouri. The investment concentration in Michigan is a little harder to explain but it is clear that GGP did not anticipate a catastrophic downturn in the auto industry and related manufacturing that hit this state hard. In any case GGP did not invest nearly as much into these slower growing markets as it did into Nevada, Hawaii, Florida, and California.

## CONCLUSION

GGP's investment strategy was a colossal failure; the rapid growth it espoused was dependent on investment in risky markets. While these markets were spatially separated within the selected markets investment was clearly clustered and GGP was the dominant player in Hawaii and Nevada and Utah. These states along with Florida and California had a long and spectacular boom; they also perhaps predictably suffered an even sharper bust. Analysis of the spatial distribution of GGP's investments indicated that it was not diversified, not diversified in terms of close proximity of multiple high value malls in Las

Vegas and Hawaii and not diversified in terms of investments throughout the U.S. including in slower growing and less exotic or resort oriented areas. The effort to conduct a spatially based analysis of the GGP investment portfolio indicates that this method has promise, but it requires careful application and adjustment. Specifically, the analysis of locational clustering and distance needs to be weighted with the value of the investment. Also one needs to consider other factors besides distance and proximity since investments in far flung resort properties or investments in far flung automotive plants or any investment that is concentrated in a particular industry or depended on the spending habits of a particular narrow class of consumer no matter how far separated will be riskier than investments that are balanced. One needs to balance investments both by spatial separation and by differentiation into various industries in order to achieve true diversification.

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# THE RELATIONSHIPS BETWEEN TQM AND FINANCIAL PERFORMANCE: A CONCEPTUAL MODEL FOR VIETNAMESE MANUFACTURING COMPANIES

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## **ABSTRACT**

*Product/service quality is one of the key factors in determining the success or failure of firms. Nowadays, Vietnamese companies are integrating into the World market. To gain and sustain competitive advantages in this highly competitive market, it is thus crucial for Vietnamese firms to understand in-depth the relationships between TQM and firm financial performance. This paper attempts, based on an extensive review of relevant literature, to provide a conceptual model that integrates four important constructs in the context of manufacturing firms, such as TQM, competitive advantage, employee satisfaction, and firm financial performance.*

## **INTRODUCTION**

Total Quality Management (TQM) is a management philosophy for organizations to improve their product (service) quality and customer satisfaction. TQM has played an important role in applying organizations' management practices. Quality can be viewed as one of the most important factors in gaining competitive advantage for organizations. That is why companies worldwide, large and small, manufacturing and service, have applied the principles of total quality (Zhang, 2000).

There have been a number of studies in TQM. However, few studies have focused on the topic under the financial perspective. Most of the studies only look at the aspects of quality system or issues relating to technical elements of products. Some researchers argued that there is a relationship between quality and financial performance. In addition, prior research on quality has been implemented in organizations from developed countries in the West or in Japan, and not much attention paid to organizations in newly emerging countries, such as Vietnam.

Vietnam is becoming one of the fastest growing economies in the World. The success of Vietnam comes from its economic renovation policy implemented in 1986. This policy was expected to turn Vietnam into a market economy from a closed, centrally planned economy. However, Vietnamese companies are still confronting with a variety of challenges coming from their integration into the regional and world economies, such as stiff competition and customers' high requirements. Thus, producing products/services with high quality which is able to be competitive in the local and global marketplace is a prerequisite for Vietnamese companies. In other words, Vietnamese companies need to

build systems of quality management, and TQM application is one of the best approaches. Thus, many companies in Vietnam have been carrying out TQM to enhance their position in the marketplace and to achieve their long-run success in a tough competitive and unstable environment.

Therefore, the objective of this research is, based on relevant literature reviews, to provide a conceptual model that integrates TQM, competitive advantage, employee satisfaction, and firm financial performance in the context of Vietnamese manufacturing companies. More specifically, the present study attempts to (1) identify the salient TQM dimensions; (2) examine the relationship between TQM and competitive advantage; (3) investigate the relationship between TQM and employee satisfaction; (4) examine the relationship between TQM and firm financial performance; (5) investigate the relationship between competitive advantage and firm financial performance; (6) and investigate the relationship between employee satisfaction and firm financial performance.

## **BACKGROUND**

### ***Quality and TQM concepts***

Actually, a number of quality concepts have been introduced by TQM experts and researchers in the literature. According to Deming (1982), quality management should be based on 14 principles including design of product, specification of the service offered and improving the quality of the working environment. His philosophy on quality improvement, analysis and statistics are applied by Japanese businesses. Juran (1992) emphasizes the phrase “fitness for use” to define the meaning of quality. He also went further to indicate necessary steps for quality improvement.

Crosby (1979) prescribed 14 steps for quality improvement and initiated the concept of “zero defects”. Saraph *et al.* (1989) have condensed eight TQM-related factors. Kanji (1996) constructed a pyramid model based on his belief that in order to increase customer satisfaction, companies have to concentrate on all aspects of their operations such as the importance of leadership and employee involvement in quality improvement.

Dean and Bowen (1994) have reviewed the TQM literature and found that important components of TQM are customer focus, continual improvements, and team work. Each of these components will be carried out via a number of practices, such as gathering customer items of information and analyzing processes by applying specific techniques. Raffio (1993) indicated the importance of employee involvement and management commitment of TQM philosophy. Hill and Wilkinson (1995) viewed TQM as a customer penetrating strategy to enhance quality for gaining competitive advantage.

Powell (1995) views TQM as a cultural change which is supported by ingredients from Deming (1982), Juran (1992), Crosby (1979) and the American Baldrige Award, and introduces 12 characteristics of TQM, such as committed management, adopting and communicating about TQM, closer customer relations, closer provider relations, benchmarking, increased training, open organization, employee empowerment, zero failure mentality, flexible production, process improvements, process measuring.

The British Quality Association (BQA) offers three alternative definitions of TQM (Wilkinson et al. 1998). The first focuses on the so called “soft” qualitative characteristics, found in the work of US consultants such as customer orientation, culture of excellence, removal of performance barriers, team work, training and employee participation. From this perspective, TQM is seen as consistent with open management styles, delegated responsibility and increased autonomy to staff. The second BQA definition emphasizes the production aspects such as systematic measurement and control of work, setting standards of performance and using statistical procedures to assess quality. This is the “hard” production/operations management type of view, which arguably involves less discretion for employees. The third definition is a mixture of “hard” and “soft”, comprising three features: an obsession with quality; the need for a scientific approach; and the view that all employees are to be involved in this process.

### ***TQM in the Vietnamese context***

In order to be successful to integrate into the international markets, Vietnamese companies have to produce high quality goods. TQM has been applied in developed countries such as Japan and the US. However, it is still a new concept in Vietnam, although a number of Vietnamese companies have started carrying out TQM philosophy to produce high quality goods aimed at gaining their competitive position satisfying both local and foreign consumers’ requirements (Dinh et al., 2005).

The TQM philosophy has been implemented by Vietnamese companies under a variety of operations such as ISO 9000, ISO 14000, 5S, HACCP, GMP, and the Vietnam Quality Awards (Nguyen, 2004). Among which ISO 9000 is the most popular. ISO 9000 was introduced in Vietnam in 1996. Since July 2004, there were 1895 certificates, in which 1275 certificates were ISO 9000:2000, 495 certificates of ISO 9000:1994, 61 certificates of ISO 14000 and 64 certificates related to other quality systems such as GMP, HACCP, OHSAS, SA 8000, SQF 2000, and QS 9000 (Vietnam Productivity Center, 2004).

ISO certificates have been promulgated in 18 manufacturing sectors (i.e., arts and crafts, printing, seafood, petro-chemistry, packing, wood, shoe, rubber, transportation instruments, plastics, consumer goods, glass-ceramic, chemical, pharmacy, textile-garment, mechanical-metallurgy, electric-electronic, and food-agriculture), six trading/service sectors (i.e., construction, trading, transportation, information, engineering, and other services), and recently extended to other sectors such as administration, health, training and education (Vietnam Productivity Center, 2007).

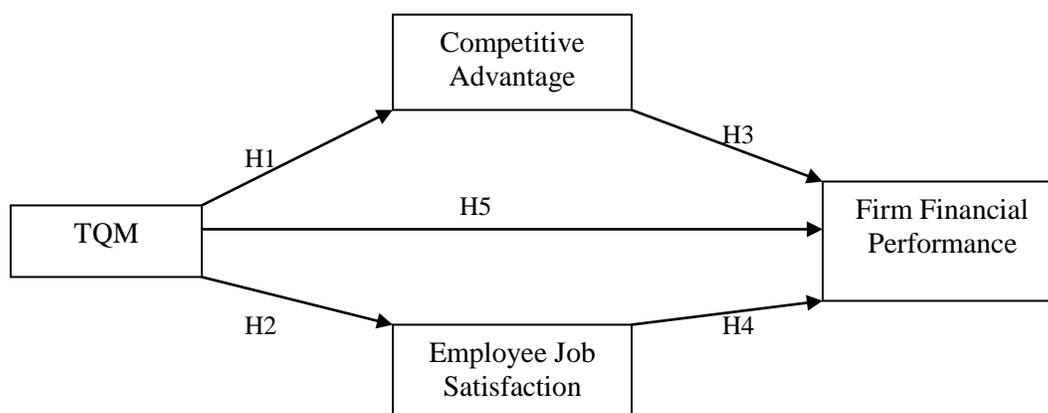
It is evident that an increasing number of Vietnamese companies (after Vietnam became a formal member of the World Trade Organization at the beginning of 2007) has been realizing that TQM philosophy can bring about competitive advantages for them in order to enhance their market, financial and strategic position, both domestically and internationally. Put it another way, these companies are viewing TQM as a valuable tool to improve quality, reduce cost, increase productivity, gain competitive advantage and employee job satisfaction, and earn better financial performance.

## CONCEPTUAL MODEL

The successful implementation of TQM can bring about high quality products and services, reduced costs, more satisfied customers and employees, and better financial performance (Garvin, 1988; Hendriks and Singhal, 1997; Phillips *et al.*, 1983; Walton, 1986). Buzzell and Wiersema (1981) implemented a research concentrating on the relationship between advertising, price, and product quality and market share. The results from their study indicated that there was a strongest relationship between product quality and market share. Companies with better product quality increased their market share five or six times more than companies with lower product quality. In addition, a reputation for high quality also decreases the elasticity of demand. Companies manufacturing high quality products can achieve higher profit margins.

Many companies are required to pursue TQM due to stiff competition in order to survive and succeed in business environments (Hawkes and Adams, 1995). Oliver and Wilkinson (1989) gave evidence that almost all of the major British manufacturing companies and all Japanese-owned firms were either implementing some version of TQM or considering it. To meet the challenges of the new global environment, many companies in Vietnam have also started considering quality as an integral part of their business plans. Without quality, few companies can remain competitive in the constantly changing global and local market-place.

**Figure 1:** Conceptual model.



### *TQM and competitive advantage*

Powell (1995) and Savolainen (2000) argued that TQM can make contribution to performance improvement by developing assets that are specific, creating socially complex relationships that are rooted in the history and culture of the company, and producing tacit knowledge. These activities are in line with the resource-based view, which can generate sustainable competitive advantages for companies (Barney, 1991; Grant, 1991).

According to Winter (1994), TQM can create a favorable environment that encourage learning behavior in the organization. Powell (1995) argues that it is very difficult for other companies to fully replicate TQM implemented by the company, because it creates certain isolating mechanisms that hinder the other companies from reproduction. In line with Powell (1995), Savolainen (2000) also contends that a commitment to TQM can bring about an inimitable competitive advantage because of formation of routines and guidelines by the company making it difficult if not impossible for competitors to mobilize resources to successfully reproduce the same strategy. Therefore, TQM has become an important competitive tool under the resource-based view. In the same vein, Rose and Ito (1996) indicate that knowledge creation based on TQM-oriented activities can create distinctive competencies for organizations. Thus, in this study, the first hypothesis is set up as follows:

**H1:** TQM is positively related to competitive advantage in manufacturing firms

***TQM and employee job satisfaction***

One of the primary components of TQM is customer satisfaction. Customer satisfaction can be measured by an organization's ability to meet and exceed its customers' expectations. This requires the organization to keep intimate contact with customers via customer relationships (Hauser and Clausing, 1998). In addition, customer satisfaction is often based on the interactions between front-line employees and customers. This can be done by empowered and highly motivated employees who are satisfied with their jobs as a result of their empowerment, involvement, and perception of the emphasis that the organizational culture places on quality. Schlesinger and Heskett (1991) and Schlesinger and Zomitsky (1991) recognized that employees' service quality perception positively relates to both job satisfaction and employee self-perceived service capability. Also, Fulford and Enz (1995) found employee perception of empowerment to have an impact on employee loyalty, concern for others (including customers), and satisfaction. The implication of this finding is that enhancing employee service capability through empowerment contributes to employee job satisfaction, job commitment, pride of workmanship, and what Anderson *et al.* (1994) called employee fulfillment or the degree to which employees feel that the organization continually satisfies their needs.

**H2:** TQM is positively related to employee job satisfaction in manufacturing firms.

***Competitive advantage and firm financial performance***

*Competitive advantage* has been very often mentioned in most business books and journals. According to Ansoff (1965), competitive advantage can be defined as the properties of individual product/markets that can bring about a strong competitive position for companies. Uytterhoeven *et al.* (1973) and Hofer and Schendel (1978) defined competitive advantages as a special formula based on which a firm utilize its skills and resources to an individual product or market. Porter (1985) argued that a competitive advantage refers to organizational factors enabling a firm to outperform its competitors, that remaining competitive advantage must be the focus of a firm's competitive strategy, and that value creation is the way to achieve it.

*Competitive advantage grows fundamentally out of value a firm is able to create for their buyer that exceeds the firm's cost of creating it. Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price (Porter, 1985, p. 3).*

Under the resource-based view, competitive advantage comes from superior resources (Barney, 1991; Wernerfelt, 1984). Collis and Montgomery (1995) go further to state that “Competitive advantage, whatever its source, ultimately can be attributed to the ownership of a valuable resource that enables the company to perform activities better or more cheaply than its competitors”. In addition, according to argument by King (2007) firm sustain competitive advantage is likely to create better financial performance than its competitors’. This argument is strongly supported by Zhang (2000) that TQM implementation can bring about competitive advantages for the firm, which in turn leads to better financial performance. Thus, the following hypothesis is established:

**H3:** Competitive advantage is positively related to financial performance in manufacturing firms.

#### ***Employee job satisfaction and firm financial performance***

Employee job satisfaction is viewed in modern management theory as one of the most critical drivers of quality, customer satisfaction and productivity. A variety of studies, theoretically and empirically, have concentrated on the effects of employee job satisfaction on company performance. In the literature of TQM, many authors contended that satisfied employees have high motivation to work effectively and to form a professional attitude towards their work (e.g., Eskildsen and Dahlgaard, 2000). They also have more responsibility for continuous quality improvement efforts that can be likely to lead to customer satisfaction.

Employees have to be focused by internal marketing (Gremler *et al.*, 1994). The product/service delivery chain that creates value to customers needs to be a system consisting of closely interrelated and mutually supportive subsystems. In such a system, its subsystems have to work effectively together in order to continuously satisfy its employees as internal customers. A variety of studies in the service industry have found evidence for a positive relationship between employee job satisfaction, customer satisfaction and firm performance. One of the successful systems is the “service-profit chain” (Heskett *et al.*, 1997) that consists of relationships among employee job satisfaction, customer satisfaction and loyalty, and firm performance.

**H4:** Employee job satisfaction is positively related to financial performance in manufacturing firms.

#### ***TQM and firm financial performance***

TQM is considered a management philosophy integrating all departments and functions at all levels of the organization aimed at continuously improving the quality of goods and

services delivered to its customers (Aldakhilallah and Parente, 2002). Furthermore, TQM can be viewed as an effective weapon for firms to gain and retain competitive advantage by concentrating on the maintenance and continuous quality improvement of closely correlated components in the firms in attempts to meet or exceed customer expectations (Pheng and Teo, 2004). Thus, it is obvious that for the past few decades, numerous companies have been using TQM to seek and achieve competitive advantages and better performance throughout the World markets (Love *et al.*, 2000).

In the literature of TQM, a number of survey studies have recently focused on the relationships between the TQM important components and firm financial performance. Studies such as Ahire *et al.* (1996), Flynn *et al.* (1994), Grandzol (1998), Parzinger and Nath (2000) and Powell (1995) have shown that firm financial performance was positively related to top management commitment and employee empowerment. However, other studies for example Wilson and Collier (2000) have found that leadership commitment was not positively related to financial performance, and Li (1997) indicated that this factor was not positively correlated with service quality performance. Although conflicting results can be observed in various studies in the literature of TQM with respect to relationships between the TQM components and firm performance (Longo and Cox, 2000), the following hypothesis is set up in this study:

**H5:** TQM is positively related to financial performance in manufacturing firms.

## CONCLUSION

Producing products/services with high quality is considered one of the primary drivers for determining the success of firms in general and firm financial performance in particular. TQM has been applied in developed countries such as Japan and the US. However, it is still a new concept in Vietnam, although a number of Vietnamese companies have started carrying out TQM philosophy to produce high quality goods aimed at gaining their competitive position satisfying both local and foreign consumers' requirements.

Nowadays, Vietnamese companies are integrating into the World market. To gain and sustain competitive advantages in this highly competitive market, it is thus crucial for Vietnamese firms to understand in-depth the relationships between TQM and firm financial performance. This paper attempts, based on an extensive review of relevant literature, to provide a conceptual model that integrates four important constructs in the context of manufacturing firms in Vietnam, such as TQM, competitive advantage, employee satisfaction, and firm financial performance.

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# THE FINANCIAL CRISIS OF 2009: ECONOMICS, POLITICS, AND ETHICS

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## **ABSTRACT**

*The current financial crisis has affected every nation. In the US, deficit spending has increased to the extent that national debt is exceeding historic standards. To achieve both short term and long term policy goals of the US, government will need to place new emphasis on balancing competing goals to keep the debt within manageable limits. An approach to that problem is presented.*

## **INTRODUCTION**

Nations around the world are in recession, in part due to the US subprime mortgage bubble of 2003-2006 that burst in 2007. In 2008 the worldwide banking system faced monumental challenges, and central banks and governments stepped in to assist in rebuilding capital and confidence.

In 2009 the US has a new presidential administration with strong views on making major shifts in policy. Topics of current policy discussion are listed below. In the political system these issues will be debated and possibly resolved to some extent. It is clear, however, that needs exceed resources, so ethics judgments are needed to set priorities and achieve the most benefits possible.

The US has numerous needs, and as usual needs exceed the resources immediately available. So policymakers are faced with making choices and using debt. This fiscal dilemma is complex because of the potential effect on future generations if massive debt is accumulated. Ethics should be an important consideration as we make these choices.

The needs often mentioned are:

- Banking/financial reform
- Defense, intelligence and national security
- Education – science and engineering
- Healthcare insurance and Medicare/Medicaid reform
- Homeland security and borders, natural disaster response
- Infrastructure, Electric Power Grid, Roads
- Labor union policy
- National debt, interest rates and federal interest expense
- Social Security reform

## Tax policy to promote economic growth

The severe recession has worsened the plight of many individuals, notably the unemployed or underemployed, and the US unemployment rate is approaching 10%. The 2008-2009 recession has contributed to losses, and in many instances, closing of firms. This distress has added to the political pressure for change in government policy in the areas mentioned above. Ethics principles are central to this policy debate, as our ethics principles should guide our policy choices. They can help us achieve not only our short term goals, but also guide us toward our long term goals of equity, fairness, and the future viability of the national economy.

In each of these policy areas, ethics can help us frame the debate and lay out the alternatives. In each policy area there is a clear need that most people would accept as important. Effective policy analysis requires us to integrate ethical standards along with principles of public finance to reconcile what we need with what we can afford. Although we have shorter term goals in these policy areas, we must also apply ethical considerations to our long term goals of fiscal solvency, debt burden on future generations, ability to service debt, and the effect of policy changes on the productive capacity of the economy to continue to deliver growth, jobs, and stability.

### **THE ORIGINAL PROBLEM**

In 1993 government policy toward homeownership shifted. Using the Community Reinvestment Act and Fannie Mae and Freddie Mac, policy was directed toward making it easier for many people to buy homes. The homeownership rate increased dramatically from the long term average of 64% to 69% during 1995 – 2005. Some of these transactions involved subprime mortgages. Once interest rates started rising in 2005, house prices began to fall and mortgage delinquencies began to rise, leading to a worldwide financial crisis of liquidity and recession. Subsequent policy actions to stabilize the banking system have coincided with desired policy changes by the current administration in the areas of healthcare, climate change, and others. Each of these policy initiatives has large financial implications.

### **STEPS TOWARD A RECONCILIATION OF NEEDS AND RESOURCES**

It should be recognized that we cannot afford to satisfy all of the nation's current needs with current resources. Sound ethical policy requires us to prioritize our needs and allocate resources where they will do the most good. In terms of using debt, we must consider current needs in terms of the impact on future generations and their needs.

Step 1: In each policy area, we should decompose the needs into four tiers of urgency, each item of which would include a cost/benefit analysis, including an assessment of jobs created.

Tier 1: Urgent needs that must be accomplished immediately

Tier 2: Very important needs that should be planned immediately and funded soon

Tier 3: Valid needs that should be considered for planning over the next five years

Tier 4: Needs that are beneficial and merit more public discussion and analysis

Step 2: Within each desired policy area, various parts of the anticipated policy actions should be assigned to a Tier. Independent analysis, including the Office of Management and Budget (OMB), the Congressional Budget Office (CBO), as well as non-government policy research should be considered in classifying these policy actions to Tiers.

Step 3: Once all parts of policy needs are assigned to Tiers, we can estimate the budget requirements they represent. Then a very important judgment must be made as to the use of debt that will encumber future generations. Ethical standards should guide us to live within our means as much as possible, and to leave our earth and our economy in a better condition for our children than we found it.

#### Unethical Behaviors

Fail to put America first  
 Failure of prioritize all projects  
 Understating the cost of a project  
 Overstating the savings of a project  
 Supporting a project for political gain  
 Opposing a project for political gain  
 Earmarks

#### Ethical Behaviors

World War II mentality  
 Multi-tiered priorities  
 Verifiable cost/benefit analysis  
 Verifiable cost/benefit analysis  
 Non-partisan voting  
 Non-partisan voting  
 Eliminate earmarks

### CONCLUSION

The integration of priorities, ethics, and objectivity must be achieved to solve the multifaceted nature of the fiscal dilemma. First, agreement must be reached on the priority or ranking of each of the competing policy agendas. Next a minimum required level of achievement must be established for each policy goal (Tier 1). The cost of each minimum required level would then be included in the Federal budget. The next step in the process would be to negotiate any additional level of effort and funding in each policy area, after the established minimums are budgeted. These additional efforts must be compatible with attainable budget targets. The final factor is the need for objectivity by all players at all levels. The champions of each policy area must balance their policy goal with the longer term fiscal effects for the good of the nation. Ideally these established minimums in each policy area will provide only the lowest level of effort required of an ethical nation, and the funding needed to achieve these minimum policy goals will be low enough to achieve unanimous consent that they are justifiable. To do less would be to fail to take the ethical high road.

Table 1  
Policy Areas of Concern

Healthcare services or health insurance reform
Is healthcare a right or a privilege?
Should insurance be mandatory?
Subsidized coverage for low income people, and at what income level?
Which services to be included – abortion, plastic surgery...
Re-regulation of the financial system – role of the Federal Reserve
Creation of a super-regulator?
Expansion of Federal Reserve role?
Glass-Steagall separation of banking and investment banking?
Social Security solvency
Insolvent in 2020 without action
Benefit cuts or tax increases?
SS as supplementary income or safety net?
Medicare solvency
Insolvent in 2018 without action
Arbitrary cuts in payments by government
Government control of services and procedures
Medicaid solvency
Insolvent by 2016 without action
Who should qualify for coverage?
Illegal aliens present in the US?
Tax policy – progressively and level of tax forgiveness
Share the wealth or soak the rich?
Top half of income earners pay 97% of personal income tax
Proposed top marginal tax rate from 36% to 55%?
National debt – projected and debt service implications
Debt doubled in last 2 years
Debt projected to reach \$20 trillion by 2020
Foreign purchase of US bonds is required to keep interest rates low
Outlook for future economic growth and employment
Rising debt will limit ability of the economy to grow and create jobs
Rising debt service will take away from other spending priorities
Rising interest rates would make US firms less competitive in world markets
Labor union policy change and US international competitiveness
Card check proposed to ease formation of unions without a secret vote

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# COMPARING TWO EXCHANGE RATE REGIMES UNDER PURCHASING POWER DISPARITY

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## **ABSTRACT**

*The theoretical and empirical literatures do not give a clear answer about the superiority of flexible exchange rate regime over fixed exchange rate regime when purchasing power parity (PPP) condition fails to hold. The flexible exchange rate regime is generally shown to be superior, assuming PPP. This study is a fresh examination of the popular assertion that Flexible Exchange Rate regime outperforms other Exchange Rate regimes. We analyze the effect of the violation of purchasing power parity combined with deviations in output target and real exchange rate from their long-run equilibrium values on government's decision domain, which we call government's loss function, mostly derived from Barrow and Gordon (1983), and used to compare two exchange rate regimes under different PPP conditions. The study confirms that a flexible exchange rate system performs better if PPP holds. However, this implication may not be true when PPP doesn't hold, even if the cost of exchange rate change is zero. A major finding of this study, in sharp contrast to Obstfeld (1996), is that, if PPP does not hold, the flexible exchange rate system cannot be guaranteed to perform better unless two additional conditions are met: (a) output target is fully adjusted to its long-run equilibrium value; and (b) the long-run real exchange rate is lower than its long-run equilibrium value. If these conditions are not met, the result is ambiguous. Since these conditions may not always hold, the implication of this study is quite significant and offers the opportunity for future empirical research.*

## **INTRODUCTION**

Since the collapse of Breton Wood system, policy makers have been searching for a stable international monetary system that could promote international trade and

encourage long term investment. As a working solution to this issue, managed exchange rate system allowing deviations within a very narrow band have been adopted. One of the outcomes of such an attempt was the initiation of European Monetary System, an arrangement wherein the member countries, including most nations of the European Economic Community (EEC) were allowed to manage their currencies depending on economic fundamentals and shocks within a band around the current value called target zones (Krugman, 1991). The presumed benefit is that exchange rate stability is supposed to bring about price stability, which enhances trade and consequently economic prosperity. Implicit in this idea is the assumption that the purchasing power parity (henceforth referred to as PPP) always holds. If PPP holds, we have  $P = P^*E$ , where,  $P$  is the domestic price,  $P^*$  is the foreign (world) price, and  $E$  is the exchange rate. Stability in  $E$ , therefore, translates into stability in  $P$ .

Similarly, a fixed exchange rate is also viewed as the measure to equalize interest rates across borders as shown by the interest rate parity equation:  $R = R^* + \frac{E^e - E}{E}$ , where  $R$

and  $R^*$  are domestic and foreign rates of interest respectively,  $E$  is the current exchange rate, and  $E^e$  is the expected exchange rate. As a fixed exchange rate eliminates the differential between the current and expected exchange rates, it equalizes the interest rates across the trading countries. Since economic fundamentals do not change as rapidly as people's expectations, such an exchange rate system can ensure price stability, smooth flow of international trade and capital.

Obstfeld (1996) argues that the economic agents' expectation is influenced by government's resources, rather than its current action or commitment. Government's possible future action depends on relative size of losses under different policy regimes and, although a fixed exchange rate system can bring about price stability, the flexible exchange rate system is a more attractive alternative as long as the cost of the exchange rate adjustments is not very high. This argument depends on two assumptions: (i) PPP holds, and (ii) a fixed exchange rate system can successfully limit people's expectation. The PPP condition can, however, fail due to several reasons, such as deviations from the Law of One Price (LOP), the presence of non-traded goods, and the terms of trade effects of home bias in consumption. PPP puzzles, a common term for two anomalies of real exchange rates, indicate long-run PPP failures as well (Mussa 1986; Rogoff, 1996; Taylor, Peel, and Sarno, 2001). Recently, Hyrina and Serletis (2010) used Lo's modified R/S statistic and Hurst exponent to show that PPP did not hold under currency exchanges between four countries.

So what happens if these assumptions do not hold? Can a target zone system still sustain or does it need a continuous realignment, which is clearly a failure of the target zone system? It is pertinent to ask, "Is a flexible exchange rate system between two currencies always better even if purchasing power parity does not hold between the two countries?"

The relevant theoretical literature does not fully answer these questions whereas the empirical researches have provided mixed results. Flexible exchange rates were optimal, according to Obstfeld (1996) whether deviations from PPP are due to deviations from the LOP or due to the presence of non-traded goods. In contrast, Devereux and Engel (2003)

illustrated that fixed exchange rates are optimal even in the presence of country-specific shocks if PPP fails because of deviations from the LOP arising from sticky prices in local currency. These studies do not establish the superiority of one exchange rate regime over the other when PPP condition does not hold and output target and real exchange rate deviate from their long-run equilibrium values. This paper, therefore, is devoted to analyzing the effect of the violation of PPP along with the deviation of output target and real exchange rate from their long-run equilibrium values on government's decision domain, which we term government's loss function.

### THE MODEL

The model assumes a typical government loss function following Barrow and Gordon (1983) with some modifications. The loss function is of the following form:

$$L = (Y - KY^*)^2 + \beta (\Pi^2) + c(\varepsilon), \quad (1)$$

where,  $Y$  is the output level,  $Y^*$  is the targeted output level,  $\Pi$  is the rate of inflation,  $c(\varepsilon)$  is the cost of changing the exchange rate,  $\varepsilon$  is the exchange rate, and  $K$  and  $\beta$  are assigned weights. The first squared term in the loss function is the quadratic approximation of the welfare loss of being away from targeted output level. Therefore, the output deviation enters the government loss function because it causes unnecessary economizing on real balance, which generates costs of price change and even increases endogenous relative price uncertainty (Benabou, 1988). The second term in the equation is the rate of inflation. An unanticipated inflation is costly and socially undesirable because it increases relative price variability (CuKiermann, 1984). The third term is the cost of changing exchange rate. Excessive short-run fluctuations in exchange rates under a flexible exchange rate system may be costly in terms of higher frictional unemployment if they lead to over-frequent attempts at reallocating domestic resources among the various sectors of the economy.

The output function is represented by the augmented Phillips curve as follows:

$$Y_t = \bar{Y} + \alpha (\Pi_t - \Pi_t^e) + u_t, \quad (2)$$

where,  $Y_t$  is the output level,  $\bar{Y}$  is the long-run output level,  $\Pi_t$  and  $\Pi_t^e$  are actual and expected inflation rates respectively, and  $u_t$  is the output shock. Other assumptions of this model are as the following:

#### Assumptions:

Purchasing power parity condition:  $e_t - p_t + p_t^* = q_t$  (3)

Movement of real exchange rate:  $q_t - q_{t-1} = \lambda (\zeta - q_{t-1}) + v_t$  (4)

Aggregate demand function:  $m_t - p_t = h y_t - \gamma i_t + \mu_t$  (5)

Uncovered interest parity condition:  $i_t = i_t^* + (e_{t-1}^e - e_t)$  (6)

where,  $v_t \sim N(0, \sigma_v^2)$

$u_t \sim N(0, \sigma_u^2)$

$$\begin{aligned}\mu_t &\sim N(0, \sigma_\mu^2) \\ \varepsilon_t &= e_t - e_{t-1} \sim N(0, \sigma_\varepsilon^2) \\ K, \beta, \alpha, \lambda, h, \gamma &> 0\end{aligned}$$

The variables  $p_t$  and  $p_t^*$  are domestic and foreign price levels respectively;  $q_t$  is the real exchange rate;  $m_t$  is the nominal money supply;  $i_t$  and  $i_t^*$  are domestic and foreign interest rates respectively; and  $u_t$ ,  $v_t$ , and  $\mu_t$  are output, real exchange rate and demand shocks respectively. Similarly,  $\zeta$  is long-run equilibrium exchange rate. Based on the above assumptions, we derive respective loss functions under flexible and fixed exchange rate systems. The complete derivation is given in the appendix.

The Loss Functions:

$$L^{Flex} = \frac{\beta}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \quad (7)$$

$$L^{Fix} = \{\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t - \alpha vt\}^2 + \beta\{\lambda(\zeta + q_{t-1}) + v_t\}^2 \quad (8)$$

Taking unconditional expectation yields,

$$\begin{aligned}E(L^{Flex}) &= \frac{\beta}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha\varepsilon_t^e)^2 + \frac{\beta\alpha^2}{\alpha^2 + \beta} \lambda^2 (\zeta - q_{t-1})^2 + \frac{\beta}{\alpha^2 + \beta} \sigma_u^2 \\ &\quad + \frac{2\beta\alpha}{\alpha^2 + \beta} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha\varepsilon_t^e)\end{aligned} \quad (9)$$

$$E(L^{Fix}) = (\bar{Y} - KY^* - \alpha\varepsilon_t^e)^2 + \sigma_u^2 + \alpha^2 \sigma_v^2 + \beta\lambda^2 (\zeta + q_{t-1})^2 + \beta\sigma_v^2 \quad (10)$$

The term  $c(\varepsilon) = c(\varepsilon_t - \varepsilon_{t-1})$  is the cost due to the change in exchange rate. This cost enters only into the loss function under flexible exchange rate system because excessive short-run fluctuations may lead to higher frictional unemployment caused by over-frequent reallocation of domestic resources. In this set up, the monetary authority will be tempted to take resort to the flexible exchange rate system when the effect of  $u_t$  (output shock) and/or  $v_t$  (real exchange rate shock) is so high that  $E(L^{Flex}) + \bar{c}(\varepsilon) > E(L^{Fix})$  or so low that  $E(L^{Flex}) + \underline{c}(\varepsilon) < E(L^{Fix})$ , where  $\bar{c}(\varepsilon)$  is the highest value and  $\underline{c}(\varepsilon)$  is the lowest value of  $c(\varepsilon)$ . Suppose,  $c^*(\varepsilon)$  is such that,

$$E(L^{Flex}) + c^*(\varepsilon) = E(L^{Fix}) \quad (11)$$

Substituting equation (9) and (10) into (11) yields,

$$\begin{aligned}
& \frac{\beta}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 + \frac{\beta \alpha^2}{\alpha^2 + \beta} \lambda^2 (\zeta - q_{t-1})^2 + \frac{\beta}{\alpha^2 + \beta} \sigma_u^2 \\
& \quad + \frac{2\beta\alpha}{\alpha^2 + \beta} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha \varepsilon_t^e) + c^*(\varepsilon) \\
= & (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 + \sigma_u^2 + \alpha^2 \sigma_v^2 + \beta \lambda^2 (\zeta + q_{t-1})^2 + \beta \sigma_v^2 \\
\Rightarrow & -\frac{\alpha^2}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 - \frac{\beta^2}{\alpha^2 + \beta} \lambda^2 (\zeta - q_{t-1})^2 - \frac{\alpha^2}{\alpha^2 + \beta} \sigma_u^2 \\
& \quad + \frac{2\beta\alpha}{\alpha^2 + \beta} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha \varepsilon_t^e) + c^*(\varepsilon) = (\alpha^2 + \beta) \sigma_v^2 \\
\Rightarrow & \sigma_v^2 = -\frac{\alpha^2}{(\alpha^2 + \beta)^2} (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 - \frac{\beta^2}{(\alpha^2 + \beta)^2} \lambda^2 (\zeta - q_{t-1})^2 \\
& \quad - \frac{\alpha^2}{(\alpha^2 + \beta)^2} \sigma_u^2 + \frac{2\beta\alpha}{(\alpha^2 + \beta)^2} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha \varepsilon_t^e) + \frac{c^*(\varepsilon)}{\alpha^2 + \beta} \quad (12)
\end{aligned}$$

Rearranging equation (12) yields,

$$\begin{aligned}
c^*(\varepsilon) = & \frac{\alpha^2}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 + \frac{\beta^2}{\alpha^2 + \beta} \lambda^2 (\zeta - q_{t-1})^2 + \frac{\alpha^2}{\alpha^2 + \beta} \sigma_u^2 \\
& - \frac{2\beta\alpha}{\alpha^2 + \beta} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha \varepsilon_t^e) + (\alpha^2 + \beta) \sigma_v^2 \quad (13)
\end{aligned}$$

Since  $c^*(\varepsilon)$  is the critical value which equalizes  $E(L^{\text{Flex}})$  and  $E(L^{\text{Fix}})$ ,  $c^*(\varepsilon) > 0$  implies  $E(L^{\text{Flex}}) < E(L^{\text{Fix}})$ , while  $c^*(\varepsilon) < 0$  implies  $E(L^{\text{Flex}}) > E(L^{\text{Fix}})$ . Dynamic consistency requires that the government change the exchange rate whenever  $c^*(\varepsilon) > 0$ . That is, the fixed exchange rate system is sustainable as long as  $c^*(\varepsilon) \leq 0$ .

From equations (9) and (10), it is clear that the expected loss in both regimes is an increasing function of real exchange rate deviation (i.e.  $(\zeta - q_{t-1})$ ). The real exchange rate deviation, however, may cause more or less loss in flexible exchange rate system compared to that in fixed exchange rate system. Under PPP, the loss function under both regimes remains unaffected by real exchange rate deviation. So, if the cost of exchange

rate change is negligible, the loss under flexible exchange rate system will be less than that under fixed exchange rate system. However, this is no longer valid when PPP does not hold. To demonstrate, we subtract equation (9) from (10), which yields,

$$E(L^{\text{Fix}}) - E(L^{\text{Flex}}) = \frac{\alpha^2}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha \varepsilon_t^e)^2 + \frac{\beta^2}{\alpha^2 + \beta} \lambda^2 (\zeta - q_{t-1})^2 + \frac{\alpha^2}{\alpha^2 + \beta} \sigma_u^2 - \frac{2\beta\alpha}{\alpha^2 + \beta} \lambda (\zeta - q_{t-1}) (\bar{Y} - KY^* - \alpha \varepsilon_t^e) + (\alpha^2 + \beta) \sigma_v^2, \quad (14)$$

assuming the cost of exchange rate change to be negligible (i.e.  $c(\varepsilon) = 0$ ). From the observation of equation (14), it is obvious that there is no guarantee that  $E(L^{\text{Fix}}) - E(L^{\text{Flex}}) > 0$ , even if we assume that the cost of exchange rate change is zero unless two additional conditions are met. If output target is fully adjusted to the long run equilibrium output level i.e.  $\bar{Y} = KY^*$ , and the real exchange rate is lower than its long-run equilibrium value i.e.  $q_{t-1} < \zeta$ , then, from equation (14), it is clear that  $E(L^{\text{Fix}}) > E(L^{\text{Flex}})$ . That is the expected loss under a fixed exchange rate system outweighs the expected loss under a flexible exchange rate system if these two conditions are met.

If PPP holds, then  $q_{t-1} = 0$  and, therefore,  $\zeta = 0$ . Thus, the negative term on the right hand side of equation (14) drops out, and we have  $E(L^{\text{Fix}}) > E(L^{\text{Flex}})$ . The expected loss under a fixed exchange rate system, consequently, is always greater than that under a flexible exchange rate system when PPP holds. These results can be summarized in the form of the following propositions:

**Proposition 1:** Under purchasing power parity, a flexible exchange rate system always performs better.

**Proposition 2:** Under purchasing power disparity, a flexible exchange rate system performs better only if output target is adjusted to its long-run equilibrium value and the real exchange rate is lower than its long-run value. If these conditions do not hold under purchasing power disparity, then the superiority of a flexible exchange rate system cannot be claimed.

## CONCLUSION

Price stability is optimal for the long-term prosperity of an economy, and has received high importance in recent studies on macro-economic policy. Obstfeld (1996) argued that, no matter what the government's current action is, the economic agents' decision or expectation is influenced by government's resources rather than its current action or commitment. A government's potential future action depends on relative size of losses under different policy regimes. Obstfeld further maintains that, although a fixed exchange rate system can bring about price stability, the government always has an incentive to go for the flexible exchange rate system, as long as the cost of changing the exchange rate is not high.

We have shown, however, that this assertion is valid only under purchasing power parity condition. Even if the cost of the exchange rate is zero, the implications drawn by Obstfeld may be accurate if PPP doesn't hold. Under purchasing power disparity, a flexible exchange rate system can be assured to do better, but only if the output target is fully adjusted to its long-run equilibrium value and its long-run real exchange rate is lower than its long-run equilibrium value.

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## APPENDIX

### Derivation of the Loss Functions

Lagging equation (3) by one period and subtracting it from the original equation yields,

$$e_t - e_{t-1} - p_t + p_{t-1} + p_t^* - p_{t-1}^* = q_t - q_{t-1} \text{ or}$$

$$p_t - p_{t-1} = e_t - e_{t-1} + p_t^* - p_{t-1}^* - (q_t - q_{t-1})$$

$$\Pi_t = \varepsilon_t + p_t^* - p_{t-1}^* - (q_t - q_{t-1}),$$

where,  $\Pi_t = p_t - p_{t-1}$  (i.e. the rate of inflation) and  $\varepsilon_t = e_t - e_{t-1}$  (i.e. change in exchange rate). Assuming zero rate of inflation in foreign country (i.e.  $p_t^* - p_{t-1}^* = 0$ ) reduces the above equation to the following:

$$\Pi_t = \varepsilon_t - (q_t - q_{t-1}) \tag{a1}$$

Substituting equation (4) into above yields,

$$\Pi_t = \varepsilon_t - \lambda(\zeta - q_{t-1}) - v_t \tag{a2}$$

Taking conditional expectation of equation (a2) based on t period yields,

$$\begin{aligned} E_t \Pi_t &= E_t \varepsilon_t - E_t \lambda(\zeta - q_{t-1}) - E_t v_t \\ &= E_t \varepsilon_t - \lambda(\zeta - E_t q_{t-1}) - E_t v_t \text{ or} \end{aligned}$$

$$\Pi_t^e = \varepsilon_t^e - \lambda(\zeta - q_{t-1}) \tag{a3}$$

Because, at the beginning of period t,  $q_{t-1}$  is already realized and  $E_t q_{t-1} = q_{t-1}$ . Subtracting equation (a3) from (a2) yields,

$$\Pi_t - \Pi_t^e = \varepsilon_t - \lambda(\zeta - q_{t-1}) - v_t - [\varepsilon_t^e - \lambda(\zeta - q_{t-1})]$$

$$= \varepsilon_t - \varepsilon_t^e - v_t \quad (\text{a4})$$

Substituting equation (a4) into (2) yields,

$$Y_t = \bar{Y} + \alpha[\varepsilon_t - \varepsilon_t^e - v_t] + u_t \quad (\text{a5})$$

Substituting equation (a2) and (a5) into (1) and ignoring c(e) for the time being yields,

$$L = \{ \bar{Y} + \alpha(\varepsilon_t - \varepsilon_t^e - v_t) + u_t - KY^* \}^2 + \beta[\varepsilon_t - \lambda(\zeta - q_{t-1}) - v_t]^2 \quad (\text{a6})$$

The first order condition for the minimization of equation (a6) requires the following:

$$\frac{\partial L}{\partial \varepsilon_t} = 2\{ \bar{Y} + \alpha(\varepsilon_t - \varepsilon_t^e - v_t) + u_t - KY^* \} \alpha + 2\beta[\varepsilon_t - \lambda(\zeta - q_{t-1}) - v_t] = 0$$

This implies the followings respectively:

$$\Rightarrow \alpha \bar{Y} - \alpha KY^* + \alpha^2 \varepsilon_t - \alpha^2 \varepsilon_t^e - \alpha^2 v_t + \alpha u_t + \beta \varepsilon_t - \beta \lambda (\zeta - q_{t-1}) - \beta v_t = 0$$

$$\Rightarrow (\alpha^2 + \beta) \varepsilon_t = \alpha (KY^* - \bar{Y}) + \alpha^2 \varepsilon_t^e + (\alpha^2 + \beta) v_t - \alpha u_t + \beta \lambda (\zeta - q_{t-1})$$

$$\Rightarrow \varepsilon_t = \frac{\alpha}{\alpha^2 + \beta} (KY^* - \bar{Y}) + \frac{\alpha}{\alpha^2 + \beta} \varepsilon_t^e + v_t - \frac{\alpha}{\alpha^2 + \beta} u_t + \frac{\beta}{\alpha^2 + \beta} (\zeta - q_{t-1}) \quad (\text{a7})$$

This implies that, in a flexible exchange rate regime, the change in exchange rate totally absorbs real exchange rate shock and partially absorbs output shock. Substituting equation (a7) into (a6) yields,

$$\begin{aligned} L^{Flex} = & \{ \bar{Y} + \frac{\alpha^2}{\alpha^2 + \beta} (KY^* - \bar{Y}) + \frac{\alpha^3}{\alpha^2 + \beta} \varepsilon_t^e + \alpha v_t - \frac{\alpha^2}{\alpha^2 + \beta} u_t \\ & + \frac{\alpha\beta}{\alpha^2 + \beta} \lambda(\zeta - q_{t-1}) - \alpha \varepsilon_t^e - \alpha v_t + u_t - KY^* \}^2 + \beta \{ \frac{\alpha}{\alpha^2 + \beta} (KY^* - \bar{Y}) \\ & + \frac{\alpha^2}{\alpha^2 + \beta} \varepsilon_t^e + v_t - \frac{\alpha}{\alpha^2 + \beta} u_t + \frac{\beta}{\alpha^2 + \beta} \lambda(\zeta - q_{t-1}) - \lambda(\zeta - q_{t-1}) - v_t \}^2 \end{aligned}$$

Canceling similar terms with opposite signs and collecting terms yields,

$$\begin{aligned}
L^{Flex} &= \left\{ \frac{\beta}{\alpha^2 + \beta} \bar{Y} - \frac{\beta}{\alpha^2 + \beta} KY^* - \frac{\alpha\beta}{\alpha^2 + \beta} \varepsilon_t^e + \frac{\beta}{\alpha^2 + \beta} u_t + \frac{\alpha\beta}{\alpha^2 + \beta} \lambda(\zeta - q_{t-1}) \right\}^2 \\
&\quad + \beta \left\{ \frac{\alpha}{\alpha^2 + \beta} (KY^* - \bar{Y}) + \frac{\alpha^2}{\alpha^2 + \beta} \varepsilon_t^e - \frac{\alpha}{\alpha^2 + \beta} u_t - \frac{\alpha^2}{\alpha^2 + \beta} \lambda(\zeta - q_{t-1}) \right\}^2 \\
&= \left( \frac{\beta}{\alpha^2 + \beta} \right)^2 (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \\
&\quad + \beta \left( \frac{\alpha}{\alpha^2 + \beta} \right)^2 (KY^* - \bar{Y} + \alpha\varepsilon_t^e - u_t - \alpha\lambda(\zeta - q_{t-1}))^2 \\
&= \left( \frac{\beta}{\alpha^2 + \beta} \right)^2 (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \\
&\quad + \beta \left( \frac{\alpha}{\alpha^2 + \beta} \right)^2 (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \\
&= \frac{\beta^2 + \beta\alpha^2}{(\alpha^2 + \beta)^2} (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \\
&= \frac{\beta}{\alpha^2 + \beta} (\bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t + \alpha\lambda(\zeta - q_{t-1}))^2 \tag{a8}
\end{aligned}$$

If exchange rate is fixed it implies that  $\varepsilon_t = 0$  and  $c(\varepsilon) = 0$ . Substituting these relationships into equation (a8) yields,

$$\begin{aligned}
L^{Fix} &= \{ \bar{Y} - \alpha\varepsilon_t^e - \alpha v_t + u_t - KY^* \}^2 + \beta \{ -\lambda(\zeta - q_{t-1}) - v_t \}^2 \\
&= \{ \bar{Y} - KY^* - \alpha\varepsilon_t^e + u_t - \alpha v_t \}^2 + \beta \{ \lambda(\zeta + q_{t-1}) + v_t \}^2
\end{aligned}$$

# **BLACK ECONOMIC EMPOWERMENT AND SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA**

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## ***ABSTRACT***

*In a growing era of globalization, empowerment has become the buzzword in policy debates around the world, especially in developing countries faced with the challenges of slow economic growth and development. South Africa like many other developing countries is experiencing high levels of unemployment, poverty and inequality. This is a legacy of the apartheid era where the country's economy was detached from the rest of the world and there was segregation of indigenous people. Since returning to democratic rule, South Africa has pursued the policy of Black Economic Employment with the goal of providing economic transformation that brings about significant increase in the number of indigenous people in business as well as decrease income inequality. This paper evaluates the empowerment policy of the South African government, particularly that which relates to the Growth, Development and Redistribution (GEAR) strategy and assesses the impact of such a policy reform on small, micro and medium enterprises in South Africa.*

# INVESTORS CONFERENCE CALLS: A RICH NEW TOOL TO ENHANCE BUSINESS EDUCATION

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## **ABSTRACT**

*Publically available investor's conference calls are a rich new source of information for business students. These calls are normally conducted by U.S. firms that are listed on a major U.S. stock exchange and are held quarterly in conjunction with the publication of the firms Form 10-Q required by the U.S. Securities and Exchange Commission. In the calls principal officers of the firm explain operating results and take questions from investment professionals familiar with the firm. The calls provide a rich opportunity for students to listen to the officers of the firm explain the details of the firm's financial results, operations and strategy. In addition students can listen to the firms officers respond to the sharp questions from financial analysts who closely follow the firm. Investor's conference calls provide a rich new source of information for business students. This paper explains the availability and use of conference calls to improve business education.*

# THE IMPACT OF GLOBALIZATION AND FOR-PROFIT INSTITUTIONS ON HIGHER EDUCATION IN HONDURAS

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## **ABSTRACT**

*This paper examines globalization in Honduras and how it forced institutional change in higher education that broke the national autonomous university's monopoly. Entrepreneurship, in the form of for-profit higher education institutions, played a major role.*

## **INTRODUCTION**

Globalization has dramatically changed Central America over the past quarter century and internationalization has increased tertiary education alternatives. We examine the case of higher education in Honduras as the country transitioned from the cold-war era of rule by military junta to democracy and industrialization as a result of the Caribbean Basin Initiative that made it one of the largest importers of apparel into the US. As the country began to compete in the global economy, industry and political leaders understood that the higher education status quo was not producing the human capital required and they demanded change.

Altbach (2004) describes globalization as the “broad economic, technological, and scientific trends that directly affect higher education and are largely inevitable” (pg. 5). While internationalization “includes specific policies and programmes undertaken by governments, academic systems and institutions, and even individual departments or institutions to cope with or exploit globalization” (pg. 6). This movement started in the region decades ago and most of the isthmus’ legacy public universities adjusted. However, the 1957 constitutionally mandated exclusivity over tertiary education, accompanied by constitutionally guaranteed funding, allowed the National Autonomous University of Honduras to stifle attempts to expand tertiary offerings in the 1940s after the ministry of education opened a public institute for developing teachers and the United Fruit Company funded a private non-profit agricultural school, Zamorano. Although less successful in deterring tertiary alternatives in recent years, the unionized organization continues to forcefully resisted change regardless of the degree of public and political support for institutional reform.

## **RESISTANCE TO INTERNATIONALIZATION**

The National University system descended into pandemonium as the administration, faculty, staff, and students grappled with globalization, internationalization, and finally congressional

intervention to abrogate the institution's "autonomous" culture. Work stoppages and protest became the norm as stakeholders contentiously adjusted to the mandates of the government appointed Transition Committee to reform and restructure the university system. With the explicit goal of improving the quality of education, the committee stated that a fundamental, essential dimension is change in the people, as much in the individual as in the group is required (Reform, 2006). The confrontation continues to escalate; in December 2008 members of the university labor union took national criminal investigation agents hostage for several hours after they arrived to investigate property damage and physical assault allegations related to a staff protest where individuals forcibly entered administrative offices, restricted the movement of administrative workers, and destroyed computers (Arrest, 2008). As a result, officials arrested the university union president and three other union members on charges of unlawful imprisonment. The president of the university categorized the situation as ungovernable and recommended that Congress consider closing the institution for two years similar to actions taken in Mexico to reform the autonomous university system.

### **CONTENTIOUS GROWTH OF PRIVATE INSTITUTIONS**

Fueled by the disarray at the National University, the number of alternative institutions is growing. The first alternative institutions were for-profit and however some non-profit religious institutions founded universities and government agencies started institutions for police, military, and forestry careers. Despite being considerably more expensive, enrollment in alternative institutions is poised to surpass that of the National University. The National University now enrolls about 60% of the nation's 120,000 higher education students, but this is still less than 20% of the nation's college age population.

However, despite the National University's inability to meet the demand for higher education over the past 3 decades, the institution continues to try to thwart competing higher education initiatives whenever possible. The public-private contention recently reached a pinnacle. The National University declared that its constitutional mandate empowered it to annul the agreement signed by the Ministry of Health that allowed interns from the private non-profit Catholic University's recently formed medical school, the largest private nonprofit institution, to practice in public hospitals. The committee stated that private university students should not have access to any public resources.

Comprehensive tertiary education alternatives are a relatively recent phenomenon. Unlike many countries, the Ministry of Education does not oversee tertiary education and the 1957 Constitution established the National University of Honduras as an autonomous institution exempt from taxation and empowered it with the exclusive right to organize, direct, and develop higher education. It also guaranteed it 2% of the net government income.

While the National University did validate degrees from foreign institutions, unlike its peers on the isthmus, it successfully stifled the formation of alternative higher education institutions. Responding to private sector dissatisfaction with the quality of education and the administrative bureaucracy, the government commissioned two private for-profit comprehensive institutions in 1978, Universidad Tecnológica de Centro America in Tegucigalpa and the Universidad de San Pedro Sula, in the northern city known as the industrial capital. The 1982 Constitution increased the National University's guaranteed funding to 6%; however, the new constitution explicitly

stated that it must participate in the creation and functioning of private universities. Because, it took eight years to establish only two institutions, congress addressed the bureaucratic quagmire in 1989 and established clear steps for any public or private entity that wished to establish a center of higher learning. It resulted in the creation of four new specialized public institutions outside of the National university system and four new private institutions during the 1990s.

While the first two private institutions did increase the availability of higher education students still found limited course offerings and found that obtaining a degree often took 6 or more years. Founded in 1986 in San Pedro Sula, in the late 1990s the private for-profit Universidad Tecnológica de Honduras (UTH) constructed a new campus and pursued a new strategy. UTH relied almost exclusively on part-time faculty and ran three full 16 week semesters offering every course needed to complete every degree offered. The response was remarkable and UTH started opening campuses in the communities surrounding the city and also implemented a large distance learning program that included online classes using the Blackboard course management system. UTH. As UTH's enrollment grew, existing private institutions adopted similar strategies and applications to form new higher education institutions increased. Another significant event occurred when the US for-profit Laureate International purchase the Universidad Tecnológica de Centro America. The influx of capital resulted in significant expansion and Laureate brought with it innovation.

### **GLOBALIZATION AND EDUCATIONAL DEMAND**

Beginning in 1989, the benefits of the Caribbean Basin Initiative combined with the cessation of hostilities in Nicaragua and El Salvador sparked an economic boom in Honduras. Foreign direct investment in manufacturing created over 100,000 jobs in assembly-for-export factories known as *maquilas* and fueled the demand for higher education. The construction of maquilas caused San Pedro Sula to become one of the fastest growing cities in Latin America and high-income jobs in those factories required a university education.

While the university-aged population grew 27.5% from 1990 to 1999, enrolment increased 102% from 43,117 to 87,154. The economical, open enrollment National University system was unable to meet the demand in the north region with its small, underfunded, and understaffed campus. Administrative inefficiency and insufficient class offerings prevented students from completing their degrees in a timely manner. As a result, the recently authorized private universities saw enrollments explode in the 1990s and the demand enticed public and private entities to open new universities.

In 2007, tertiary enrollment equaled 19% of the university-aged population. There were 42,370 students at 13 for-profit and nonprofit private institutions and 29,930 at 5 specialized public institutions. Combined, this almost equaled the enrollment of 73,292 in the National University system. Demand should continue to increase; a 2008 CID-Gallup poll indicated that 75% of 15 to 24 year olds in Tegucigalpa and San Pedro Sula intend to pursue a university degree.

### **THE WAY FORWARD**

While the idea of a constitutionally mandated portion of the national budget for education and autonomy from political interference may sound appealing to many academics, in the case of Honduras it resulted in apathy and created an institution that has proven almost impossible to

change because there were no viable alternatives. As the enrollment statistics demonstrate, the introduction of entrepreneurship did alter the environment substantially. Although still resistant, with the enrollment in alternative higher education institutions poised to overtake enrollment in the National University system, the administration, faculty, and staff become increasingly aware that they are less relevant as the nation has alternatives to supply its doctors, attorneys, engineers, managers, teachers, and other professionals.

No institution, even one with a constitutionally mandated monopoly, can ignore the multifaceted repercussions of globalization (Altbach, 2004). The demise of the government owned telephone and electricity monopolies in Honduras demonstrates that it is fruitless for legacy institutions to resist internationalization. In the rest of the isthmus and around the world, public and private institutions coexist and collaborate. The National University must accept change because economic development depends on closing the knowledge gaps (Stiglitz, 2002; 2003). During the monopolistic rein of the National University various statistics indicate that as few as 2% of the population earned a university degree. The initiative taken by the for-profit institutions, and mimicked by the non-profits, provides clear evidence that young Hondurans will consume higher education, even if they have to pay significantly more than the cost of the National University. Despite the increased enrollments, graduation rates at all institutions are piteous and few professors hold advanced degrees; in the National University under there are under 100 doctoral degree holders out of a faculty of 3,500 (Thulstrup, 2007). As stakeholders in tertiary education, administrators and faculty at all institutions must overcome their differences and redirect their energies to focus on the mutual mission of educating Hondurans so they can overcome the chronic poverty and corruption that has plagued the country and inspired O'Henry to coin the term Banana Republic over 100 years ago.

Central America suffers from a lack of research institutions to produce that qualified faculty needed. The National University should embrace the assistance in delivering undergraduate education and leveraging its public funding, just over \$100 million in 2007, to collaborate with public institutions in neighboring countries. By consolidating resources and leveraging technology, these institutions could establish consortium graduate programs to reduce the duplication of effort and create strategic alliances with research institutions in industrialized nations. This would facilitate the transfer of knowledge and technology that could evolve them into research centric incubators of scholars capable of educating the citizenry and addressing the perplexing issues affecting the region.

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