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Stem Cell Based Regenerative Medicine: Is Russia Taking the Lead?

A Case Study from St. Petersburg

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Abstract

The recent scientific breakthroughs in genetics have lead to a thriving stem cell industry transforming the way medicine is practiced. This article discusses these developments and presents a case study of Russian research institute in St. Petersburg which is doing state of the art stem cell trials providing successful treatment of blood vessel disease and bone fractures. The potential impact of stem cell technology on regenerative medicine is discussed, the potential convergence of nanoparticle science and its contribution to stem cell research is discussed, and the dynamics of the stem cell industry is presented.

Keywords: Stem Cells, Nanoparticles, Regenerative Medicine, Russia

1. Introduction

In the later parts of 20th century breakthroughs in medical sciences fundamentally changed the science of medicine by the discovery of the human genome. The Human Genome Project was lead by Dr. James D. Watson at the U.S. National Institute of Health who lead an international effort to discover the constitution of the human genome. The project started in 1990, the first findings were published in 2000 (ScienceDaily, 2000), and the complete sequence of the human genome was published in 2003. The human genome has the potential to create a whole range of industries with explosive growth potential for global businesses as they have an opportunity to get a solid competitive position at the early stage of the industry's life cycle (Porter, 1980) and exploit the "blue oceans" (Kim and Maugorgne, 2005) created by this scientific discovery. Moreover nations may gain comparative advantage by creating a favorable business conditions for these new medical industries (Porter, 1990).

The solution to the human genome riddle leads to the potential to manipulate the genetic makeup of humans to eliminate wide range of genetic diseases. For an example research has been done on the treatment of diabetes, asthma, migraine, schizophrenia and many other diseases (Kim, 2002). The range of diseases treated and prevented by genetic manipulation will increase rapidly in the 21st century (Rowley & Martin, 2009). Furthermore the understanding of genetics may make it possible to manipulate the generic make up of the disease itself and make it less threatening or harmless to people. One such promising development is in the manipulation of the genes of the malaria parasites *Plasmodium vivax*, the leading cause of malaria in people outside Africa and the more difficult malaria parasite *Plasmodium falciparum* together these parasites kill and afflict nearly 500 million people annually (Economist, October, 9, 2008).

The Human Genome Project opened up the plausible creation of super-humans through manipulation of their genes and this development may adversely impact developing nations that do not have the technology to do this. However for every threat there is a corresponding opportunity so global business can leapfrog the historical development of medical sciences by instituting beneficial investment climate for genetic research and focusing research and development efforts and investment in the exciting field of genetic engineering, which is one the most promising areas in stem cell regenerative medicine.

This article reviews the convergence of genetics, stem cell science, and nanoparticle technology, discusses the dynamics of the stem cell industry's potential for explosive growth potential, and Russia's plausible lead in the field. The article

presents a qualitative case study of breakthrough stem cell trials conducted in St. Petersburg, Russia. Qualitative case studies facilitate the intensive investigation of phenomena as the researcher does an in-dept investigation and spends extensive resources to understand it (Stake, 2005; Saunders et. al., 2003; Thomas 1994; Pettigrew, 1992). Qualitative case studies have been used by business researchers to describe development and processes in business organizations. Penrose (1960) studied a single firm- the Hercules Engine Company, to formulate a theory of the competitive advantage of organizations, and Chandler (1962) studied the historical development of several organizations in new and rapidly growing industries that had radical impact on world society. Moreover the case study research method has been applied to the new industries as researchers have noted it suitable to situation where there is a need for an intensive study of contemporary events and experimental controls and manipulations of independent and dependent variables is not feasible (Benbasat, Goldstein, & Mead, 1987; Browne, 2005; Siggelkow, 2007). As the stem cell therapy industry is at its embryonic stage, the stem cell therapy in St. Petersburg case provided a potential instrumental- and critical case (Stake, 2005) which would be used to test and demonstrate phenomena as advocated by Yin (2003) and done by Brower (1999) who discussed the business development potential of the stem cell science, and Hambor (2008) who discussed the designing and manufacturing of stem cells on a large scale in a modern production facility for the purpose of testing drugs specific to particular organs. Additionally Platt (1988) states that single cases may be used to form general propositions and Easton (1998) and Yin (2003) argue although single cases will not describe populations its findings are transferable to other cases.

The article develops as follows: next the potential impact of stem cell technology on regenerative medicine is discussed. Second is the example of successful trials of treating degenerative blood vessel diseases and bone fracture with stem cells. Third, the potential convergence of nanoparticle science and its contribution to stem cell research is discussed. Forth, the dynamics of the stem cell industry is presented. Finally, the conclusions are drawn.

2. Stem Cell Technology's Potential Impact on Medicine

Stem cell technology's impact on longevity and health is likely to transcend our conception of medicine and the treatment of degenerative diseases. Stem cell research is one of the most promising areas of biotechnology and promises to lead to a whole new approach in dealing with and treating diseases. Stem cell research opens up the option of treating diseases with regenerative stem cells that have the ability to take on the makeup of damaged cells in the body and replace them. The process is continuous throughout the life of the patient.

Stem cells are a unique form of cells that are unspecialized and are able to take on the characteristics of other cells such as kidney- or bone cells. Thus stem cells have the ability to be the basic repair blocks of the body and they have opened up a whole new area in medicine called regenerative medicine. Stem cells come of two main types: embryonic stem cells and adult stem cells. In 1998, Thomson (1998) and his colleagues at the University of Wisconsin-Madison discovered how to isolate human embryo stem cells and how to grow them in the laboratory. Since the main focus of the research has been on learning how stem cells are able to renew themselves and be undifferentiated for many years and what causes the stem cells to transfer into specialized cells such as heart cells. A critical element in the use of stem cell based therapies in treatment of diseases such as Parkinson's and Alzheimer's diseases, spinal cord injury, stroke, burns, heart disease, diabetes, osteoarthritis, and rheumatoid arthritis, is the discovery of the 'signal' that encourages stem cells to transfer from being undifferentiated to become the targeted cure cell. Palona et al. (2006) and her team of researchers at the University of Nagasaki discovered an effective process to manipulate the signaling in thyroid cancer cells and opened up the plausibility of treating thyroid cancer by turning off the signals which encouraged the thyroid cancer cells to multiply and do harm to the patient. This discovery opens up the plausibility of signaling stem cells to transform into the targeted organ or tissue to repair it. According to the Repair Stem Cell Institute, stem cell therapies were available for the treatment of more than 200 diseases in 2009 as shown in the list in table 1 in the appendix.

3. Russian Leadership in Stem Cell Therapy

As Director of Research in the Stem Cell Bank "POKROVSKI" and Center for Cell and Gene Therapy based in Saint Petersburg State Medical Institution, one of the authors was responsible for developing isolation and culture systems for human bone marrow stem cells and played a major role in several clinical trials. In these trials, stem cells were taken from the patient, manipulated, and used to treat humans with diseased arteries in the legs and severe leg bone fractures. Twenty one patients with artery diseases called: arteriosclerosis obliterans (ASO) or thromboangitis obliterans (TSO, also known as Buerger's disease) and nine patients with non-healing fractures of long tubular bones were treated. The patients who entered the trials had not responded to conventional medical therapies.

The method used to treat the patients was as follows: 750 ml of bone marrow was aspirated from the posterior iliac bone crest under general anesthesia and anticoagulated with heparin. Mononuclear cells were concentrated to 25-30 mL by volume reduction technique with the kit CS- 490.1 and Sepax main processing unit from Biosafe (Eysins, Switzerland). The initial and final products were subject to total CD 34+ cell counts using a Beckman Coulter from Cytomics (FC 500, USA) for viability and sterility controls. The mononuclear cells were injected into the gastrocnemius muscle of the ischemic leg within less than two hours after isolation and concentration. About 50 injections of 0.7 mL of mononuclear

cells each were made. The depth of injections was a bit different (1-2 cm deep into the gastrocnemius muscle) and varied according to the thickness of subcutaneous fat. The patients were examined each week for the first month and then ones per month for the next 5 months. Digital subtraction angiography was performed before and 24 weeks after the procedure in a standardized manner to obtain identical imaging conditions.

After treatment and six months of observations for each patient, the following results were achieved. Nine of the 21 patients with ASO or TSO had complete remission of leg pain and 17 had improvement in skin ulcers. Most importantly, in many patients, the treatment stimulated durable formation of new blood vessels and amputation could be avoided. The fracture patients also experienced a positive effect following the stem cell therapy and new bone tissue could be observed within the fractures.

However, from the trial results in St. Petersburg, it was not possible to determine and prove if the observed formation of new blood vessels and the creation of new bone material were due to the effect of the injected stem cells and/or if the preexisting cells themselves were generating the new blood vessels or bone. In order to make progress in this field, there is a pressing need to develop a safe, non-invasive method to enable the stem cells to be tracked following transplantation to the patient. This is an important goal, not only because if achieved, it will help to understand the mechanisms whereby stem cells mediate their positive effects; but also, it is important from a safety perspective, as it will be necessary to determine if transplanted stem cells migrate to sites other than the target organ, a situation that could lead to detrimental side effects for the patient.

In order to address this tremendously important question, a technology for tracking the injected stem cells is needed in order to develop an effective a stem cell tracking system. The convergence of nanotechnology with stem cell science is a promising prospect for tracking stem cells in the body. Hence the potential of nanoparticles and their use in stem cell science is discussed next.

4. Convergence: Nanoparticles for Labeling Stem Cells

A critical prerequisite for the development of regenerative medicine based on stem cells science is the ability to track the injected stem cell in the body of the patient to observe if the injected stem cells actually migrate to the target organ or tissue needing repair. Various stem cell tracking technologies have been developed but, all of them have their limitations.

However the convergence of nanotechnology with regenerative medicine shows promising prospects as nanoparticles can be used to mark stem cells by inserting the nanoparticles into the stem cells facilitating the tracking of the stem cells as the nanoparticles can be detected by technologies such as Magnetic Resonance Imaging (MRI). To increase our understanding of the mechanisms involved, it is necessary to find a way to monitor the behavior of the stem cells following transplantation by developing a non-invasive method for tracking the stem cells that will not cause harm to the patient.

Over recent years, superparamagnetic iron oxide nanoparticles (SPIONs) have emerged as an attractive system for tracking stem cells in the body. The main advantage of SPIONs is that they enable stem cells to be tracked non-invasively using MRI (Guzman, 2007; Zhu, J. et al., 2006) and, some SPIONs, such as Feridex/Endorem, have now been approved for human use by the FDA. Most importantly SPIONs do not appear to have any or little adverse effects on stem cell viability or differentiation potential. Thus they appear harmless to the cells and the patient. However it is now recognized that SPIONs lose their ability to track stem cells by giving a signal of their location after a period of time. While cell division and migration accounts for some loss of signal, a major cause of poor label retention is degradation of the SPIONs within the cellular environment. To overcome these problems, there is a pressing need to devise improved methods for coating SPIONs to protect their magnetic core from natural deterioration in the body whilst retaining biocompatibility and signaling capability.

Researchers are in the process of developing a new stem cell tracking technology based on superparamagnetic iron oxide nanoparticles, or 'SPIONs'. The main advantage of SPIONs is that because of their nanoscale dimensions, they can be easily introduced into cells without detrimental side-effects, and their magnetic properties enable them to be imaged using MRI. Furthermore, because iron is a natural substance in the human body, being an essential component of the oxygen-carrying molecule- haemoglobin, it is unlikely to cause any harm to patients. However the SPIONs can be difficult to detect as they deteriorate in the body due to natural processes. We suggest using a novel technology to coat the SPIONs so that they are not degraded too quickly, enabling the stem cells to be tracked for extended periods inside the patient. To test the effectiveness of the technology, we propose stem cells will be labeled with SPIONs and transplanted into an organ culture system. The advantage of using this organ culture system is that it avoids the need for using living animals to test the technology. The cultures will be monitored daily using various imaging methods, including computerized tomography, or CT, a technology where images of body structures are created by a computer from X-ray images.

In order to realize the potential of stem cell treatments another convergence needs to take place among the government, legislators, business community, and investors and, the stem cell community needs to deal effectively with threats from conventional medicine, pharmaceutical industry, religious groups, and the public opinion. This is discussed in the next section.

5. Stem Cell Industry Dynamics

Global business has the opportunity to develop the stem cell industry and to get into the industry at the early stage to get a head start in the explosive growth potential of this promising technological breakthrough that has the potential to transfer our knowledge of the medical sciences and replace many conventional medicine practices and treatment therapies. A convergence of efforts from government, legislators, business community, and investors is needed to develop the scientific competence and capacity that forms a fundamental basis for the development of effective stem cell based regenerative medicine industry.

First, the government needs to provide the funding for primary research into stem cell science and facilitate the distribution of the knowledge gained. Furthermore funding is needed to develop the necessary number of competent stem cell scientist at universities and research institutes to establish the country's core competence, which forms a basis for a competitive advantage as considered a principle prerequisite for effective strategy formulation by Hamel and Prahalad (1994).

Second, a favorable legislative environment needs to be enacted that balances the public concerns and limits restrictions of stem cell research and funding. Although fundamental stem cell research was pioneered in the USA, it was not until Pr. Obama lifted a ban on federal funding of research on new embryonic stem cell lines that the legal environment changed in favor of applied stem cell research. Similar restrictive attitudes remain as barriers to commercial development in many countries in Europe such as in Italy, France, Spain, Austria, and Germany. However several countries in Europe have enacted stem cell friendly legislations. Sweden and the United Kingdom have strong commitment to stem cell research both financially and by relatively favorable legislation. However Russia has achieved a comparative advantage because of its liberal laws on stem cell research and therapies (see eg De Trizio & Brennan, 2004; UKSCI, 2009; Rowley & Martin, 2009).

Third, the business community needs to develop effective growth strategies to cash in on the opportunities generated by the stem cell technology and the respective spin-off industries this science has generated. Placzek, et al. (2008) consider poor business- and production management as a prime impediment for the development of commercially viable stem cell products, this concern is echoed by other researchers in the field who call for more effective strategy formulation for businesses in the stem cell industry (Brower, 1999, p. 139), improved distribution system (Rowley & Martin, 2009, p. 8), and increased business pragmatism (Seay, 2008, p. 145).

Fourth, investors' attention needs to be drawn to the stem cell industry by promotion and tax incentives needs to be initiated because of the long term investment needed to reach commercialization of stem cell products. Stem cell companies have not gone unnoticed by the financial community and investors are exploring and investing in promising stem cell firms. According to Russ Urban of SpeculatingStocks.com, "Stem cells are extremely powerful and can dramatically change how we treat various diseases," and as in indication of the commercial potential of stem cell regenerative medicine, Speculating Stocks began in its analysis and information sharing on stem cell stocks in October 2008 (PRWeb, 2008).

As noted by Learned, et al. (1965) and Porter (1980) for every business opportunity there is a corresponding threat and, the stem cell industry is no exception and the future of the industry is to a large extent dependence on the effective handling of the following important stakeholders (Drucker, 1955; 1974). First the stem cell industry has to gain public acceptance of its contribution to the health care system and this depends largely on the way the stem cell industry handles its public relations and potential conflict of interest depends in large measure on the naming of the various techniques done by the stem cell industry and at all cost must blunders like happened to the genetic modified food industry be avoided. Terms like GMO must be avoided and acceptable terms for the stem cell treatments must be developed. A recent report from Australia indicates a significant increase in the public support for stem cell research as 82% of respondents are in favor of stem cell research and its potential benefits which is a stark contrast to the public opinion in Italy which has one of the restrictive embryonic stem cell regulation in the (UKSCI, 2009). The HCD Research Inc. conducted a poll on March 9th after Pr. Obama's speech and asked consumers and doctors "How much do you agree with federal funding for embryonic stem cell research?" Consumers and doctors who replied as follows: complete agreement 55%, somewhat agreed 29%, not at all 17% which can be considered good total acceptance rate for stem cell research. However one must note the stark contrast between democrats and independents vs republicans (Reuters, March 11, 2009).

Second, the conventional medicine profession's perception of the threat of obsolescence of conventional medicine must be minimized or the conventional medicine profession will use its considerable political power to hinder developments and funding of the stem cell industry.

Third, the pharmaceutical industry perception of the same obsolescence is equally threatening to the stem cell industry. Thus effective coping strategies must be developed to deal with this threat.

Forth, the concerns of the religious community must be dealt with by the stem cell industry and the concerns are equally shared by the Christian and Muslim communities. Albeit the concerns are different; in the Muslim community's the main concern is the use of pigs or pig derived products as for research or treatment as all contact with pigs is strictly prohibited. The Christian community and Pro-life advocates have reasoned that the human embryo is a living human being and should not be used in research. For an example, on 19th of July, 2006, President George W. Bush vetoed the Stem Cell Research Enhancement Act. Hence the veto upheld previous legislation prohibiting the use of federal money for stem cell research on non-existing lines of embryonic stem cells. The new USA President Obama ended the ban on stem cell funding by an executive order on March 22, 2009. As in the case of the genetics, the ethical issues relating to human stem cell research, particularly on human embryonic stem cells, has triggered heated debates in the United States and in Europe.

In practice the net effect of the restrictions on funding for stem cell research and the related research activities has been the transfer of the stem cell research to countries offering more hospitable climate for the research firms. Therefore breakthrough discoveries in stem cell research are being made in research centers in Japan, Israel, France, Russia, Peoples Republic of China and other countries, which have friendly climate towards this kind of research. Moreover leading scientist are leaving countries like the United Kingdom to work in countries with more favorable working environment for the stem cell research as indicated by the headline news that one of UK's leading stem cell scientist Professor Colin McGuckin, professor of medicine at Newcastle University, was leaving the UK for a favorable working conditions in France where he can focus on his patients' and staffs' welfare (Waggoner, 2008). The importance of recruiting and retaining the highest caliber cadre of competent knowledge workers has been recognized by management researchers (Drucker, 1993; Porter, 1990). Figure 1 shows the stem cell industry's business dynamics.

<Insert Figure 1 here>

6. Conclusions

Already, the stem cell science has drastically impacted the practice of medicine and our perception thereof. The stem cell industry has tremendous growth potential for global businesses willing to take the risk of investing in this industry and the profit potential deriving from an early foothold is great. However the stem cell industry has to balance stakeholders' concerns and overcome several barriers to reach its full potential. The convergence of genetic-, stem cell-, and nanoparticle sciences furthers technological advances in the stem cell industry and facilitates accurate measurement of the effectiveness of stem cell based regenerative medicine therapies.

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Table 1. Stem Cell Therapies 2009

Absence Of The Septum Pellucidum	Glucose Transfer Disorders	Lupus	Optic Nerve Hypoplasia	Rett Syndrome
Acquired Ataxia	Glycogen Storage Disease Type II	Lymphoma	Osteoarthritis	Rheumatoid Arthritis
Acquired Epileptiform Aphasia	Guillain-Barr Syndrome	Machado-Joseph Disease	Osteogenesis Imperfecta	Sarcoidosis
Acute Disseminated Encephalomyelitis	Heart Disease	Macular Degeneration	Parkinson's	Scaphoid Nonunion
Agenesis Of The Corpus Callosum	Hepatic Cirrhosis	MDS	Peripheral Artery Disease	Schizencephaly
Alcardi Syndrome	Hereditary Ataxias	Meningitis	Peripheral Nerve Injuries	SCI
ALS	Hodgkin's Disease	Microcephaly	Peripheral Vascular Disease	SCID
Alzheimer's	Huntington's Disease	Motor Neuron Disease	Perisylvian	Septo-Optic Dysplasia
Amyotrophic Lateral Sclerosis	Hypertonia	Multiple Myeloma	Polymicrogyria	Sequelae
Angina	Hypotonia	Multiple Sclerosis	Pompe Disease	Severe Aplastic Anemia
Ataxia	Including Type C	Multisystem Atrophy	Post Polio Syndrome	Severe Combined Immune Deficiency
Autism	Infantile Osteopetrosis	Muscular Dystrophy	Primary Lateral Sclerosis	Sickle Cell Anemia
Autoimmune Diseases	Infantile Spasms	Myelodysplastic Syndrome	Progressive Muscular Dystrophy	Spastic Tetraparesis
Batten Disease	Inflammatory Bowel Diseases	Myoclonic Encephalopathy Of Infants	Psoriatic Arthritis	Spina Bifida
Becker's Muscular Dystrophy	Ischemic Heart Disease	Myoclonus	Pulmonary Fibrosis	Spinal Amiotrophy
Bell's Palsy	Ischemic Optic Neuropathy	Myopathies	Pulmonary Hypertension	Spinal Cord Injury
Bone Fractures	Kennedy's Disease	Neurofibromatosis	Retinitis Pigmentosa	Spinal Muscular Atrophy
Brachial Plexus Birth Injuries	Kidney Disease	Neurological - Other	Retinopathy of Prematurity	Spinocerebellar Ataxia
Brachial Plexus Injury	Lack Of Cardiac Mobility	Neuronal Ceroid Lipofuscinosis	Rett Syndrome	Spinocerebellar Atrophy
Brain Conditions/Diseases	Landau-Kleffner Syndrome	Neurotoxicity	Rheumatoid Arthritis	Spinocerebellar Degeneration
Brain Injury	Leber's Hereditary Optic Neuropathy	Non Hemorrhagic Brain Vascular Accident	Sarcoidosis	Stroke
Brown-Sequard Syndrome	Leukemia	Non Hodgkin's Lymphoma	Scaphoid Nonunion	Systemic Lupus Erythematosus
Bulbospinal Muscular Atrophy	Leukemia Lissencephaly Liver	Ohtahara Syndrome	Schizencephaly	Tendonitis
Cancer	Lissencephaly	Olivopontocerebellar Atrophy	SCI	Thalassemia

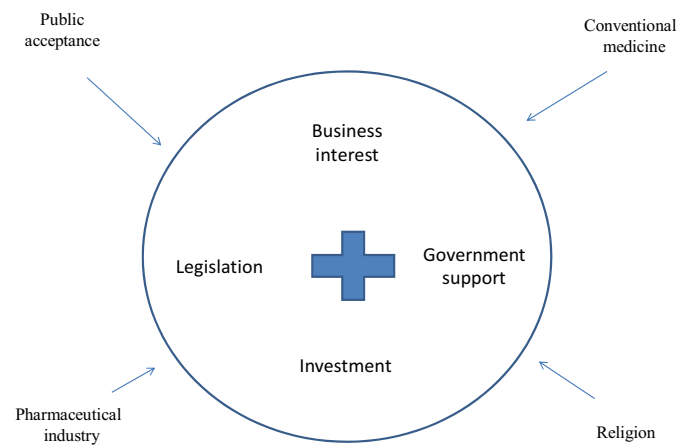


Figure 1. The Dynamics of the Stem Cell Industry and Threats



Strategic Plan in a Greek Manufacturing Company: A Balanced Scorecard and Strategy Map Implementation

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Abstract

This paper aims to translate the strategy of a Greek manufacturing company into objectives and measures that can be clearly communicated to all units and employees. For this purpose two basic strategic tools are implemented, the Balanced Scorecard (BSC) and the strategy map. Based on the statements about mission, vision, and values of the company, and the strategic analysis, we formulate the strategy on four axes. The company's strategy map is constructed using the four axes as strategic themes, and the four traditional perspectives of the BSC. Twenty eight objectives and thirty six measures are used, and nine departments are engaged to monitor the performance of objectives in order the company to achieve the determined targets. Finally, ten strategic initiatives are proposed that company must carry out to achieve the targeted performance of strategic objectives and measures.

Keywords: Strategic plan, Balanced Scorecard, Strategy Map, Strategic themes

1. Introduction

Successful strategy execution has two basic rules, understand the management cycle that links strategy and operations, and know what tools to apply at each stage of the cycle (Kaplan and Norton, 2008b). Based on the six-stage management system described minutely by Kaplan and Norton (2008), our work attempts to translate into objectives and measures the strategy of a tobacco manufacturing company situated in North-East Greece. Specifically, in this paper we focus on the first two stages using the Balanced Scorecard (BSC) and the strategy map tools for translating the strategy.

The strategy map provides a powerful tool for visualizing the strategy as a chain of cause-and-effect relationships among strategic objectives. Categorized into strategic themes, the objective chains start with *financial* objectives and then link down to objectives of *customer* perspective. The chain linkage continues with objectives of *internal business process* and eventuates in *learning and growth* perspective. Once the strategy map is developed, it is linked to the Balanced Scorecard. With the help of BSC performance metrics (measures) and targets are determined for each strategic objective. BSC also assists to identify the proper initiatives in order to achieve the strategic objectives.

1.1 The Six-Stage Management System

The six-stage of the management system proposed by R. Kaplan and D. Norton are shown in Figure 1. At the start of the process (Stage 1 – Develop the Strategy) the managers develop the strategy using appropriate strategy techniques such as the SWOT Analysis, the Five Competitive Forces (Porter, 1980: pp. 3-33) and the Value Chain Model (Porter, 1985: pp. 33-63). In the following Stage 2 – Plan the Strategy the organization plans the strategy using the two basic tools, the strategy map and the BSC. These tools enable an organization to describe and illustrate, in clear and general language, its objectives, initiatives, and targets; the measures used to assess its performance (such as market share and customer surveys); and the linkages that are the foundation for strategic direction (Kaplan and Norton, 2000).

The integrated strategy map and BSC are linked and diffused to all organizational units (Stage 3 – Align the Organization). In this stage, personal objectives and incentives of employees are aligned to strategic objectives. The Stage 4 – Plan Operations, where all organizational units and employees are already aligned with the strategy and operation planning, begins using the appropriate tools (quality and process management, reengineering, process

activity-based costing). In Stage 5 – Monitor and Learn the enterprise monitors and learns about problems, barriers, and challenges. Finally, in Stage 6 – Test and Adapt managers use internal operational data and new external environmental and competitive data to test and adapt the strategy, launching another loop around the integrated strategy planning and operational execution system.

1.2 The Present Work

Our work focuses on the Stage 2 of the above mentioned management system and presents an attempt of strategy translation in a Greek manufacturing company. The strategy translation became with the help of two basic tools, BSC and strategy map. The development of strategy (Stage 1) is demanded as precondition for the Stage 2. The strategy development is a process that is mainly constituted of three elements (Kaplan and Norton, 2008b):

- 1 The enterprise identity determination (mission – values – vision),
- 2 The key issues the company faces (strategic analysis), and
- 3 The strategy formulation.

Regarding the first subject of strategy development, the company's statements of mission, vision and values, are the following:

Mission

“To create and generate values

- For shareholders
- For customers
- For society, the environment and employees”

Vision

“To be among the leaders of Greek industry and to have a continuously growing presence in international markets”

Values

- Total dedication to consumers and their needs;
- Respect for the environment and its protection;
- On-going efforts to achieve and ensure maximum quality standards at all levels;
- Harmonious merging of social intervention and modern terms of human resources organization and marketing;
- High corporate social responsibility.

In order to identify the key issues, the company proceeded to strategic analysis using one of the most known tools for this intended purpose, the SWOT analysis. Perhaps the earliest and most fundamental of all strategy analysis tools, the SWOT analysis identifies the company's existing strengths and weaknesses, its emerging opportunities, and the worrisome threats facing the organization (Kaplan and Norton, 2008: p. 49). The results of SWOT analysis, in relation with company's statements about mission, vision and values, led to strategy formulation. The direction of the company has decided to develop the strategy in four major axes:

- 1 High Quality Products to the Customers
- 2 Development of Intellectual Capital
- 3 Provision of Innovative Products
- 4 Environment Protection

The strategy translation uses also these axes as strategic pillars for the strategy map and BSC development. Firms in the same business often have the same mission; they may also have the same values; they might even share a vision. However, it is unlikely that even two companies in the same business will have the same strategic objectives. Indeed, if a firm's strategy can be applied to any other firm, it is not a very good one (Collis and Rukstad, 2008).

In the next pages we particularize the formation of these four strategy axes, which are reported as “strategic themes”. In each strategic theme (of strategy map), there are objectives that start from *financial* perspective and link down to objectives of *customer*. The chain linkage continues with objectives of *internal business process* perspective and eventuates in *learning and growth* objectives. The total strategy map is given in Figure 2, where the four perspectives and the four strategic themes are included. The integration of each strategic theme is followed by the quotation of measures and targets for each objective, as well as the corresponding initiatives for the achievement of the mentioned objectives. The basic elements of BSC (objectives, measures, targets and initiatives) are selected and integrated through interviews with company's managers and the use of decision making tools (Brainstorming and Analytic Hierarchy

Process – AHP) (Anagnostopoulos et al., 2006).

In the following sections the four themes are expanded through the four perspectives.

2. High Quality Products to the Customers

In strategic theme of HIGH QUALITY PRODUCTS TO THE CUSTOMERS, and beginning from the *financial* perspective of strategy map (fig. 2), there is a single objective; “Increase Earnings”. Table 1, provides ten objectives that belong to the specific theme and twelve measures as well. For “Increase Earnings” objective, the measure of “Earnings before Interest and Tax – EBIT” is reported. EBIT is a frequently used performance measure for earnings determination of various companies, worldwide. Thus it is preferred for the measurement of the relative objective (Increase Earnings of HIGH QUALITY PRODUCTS TO THE CUSTOMERS strategic theme). We must emphasize that this measure of *financial* perspective and also the measures of the same perspective in the other three strategic themes, are performing like drivers to the main performance measure of “Economic Value Added – EVA” (fig. 2). Studies suggest that EVA is an effective measure of the managerial decisions quality as well as a reliable indicator of a company’s value growth in the future. In summary, constant positive EVA values over time will increase company value, while negative EVA implies value depreciation (Roztocki & Needy, 1999).

Concerning the *customer* perspective, two objectives are reported: “Increase Customer Satisfaction” and “Retain & Increase Market Share”. By means of appropriate strategic objectives, measures, targets and initiatives the customer value proposition is represented in the *customer* perspective through which the firm/business unit wants to achieve a competitive advantage in the envisaged market segments (Figge et al., 2002). For “Customer Satisfaction” is proposed the measure of “Customer Satisfaction Index”, while for “Retain & Increase Market Share” are determined two measures, “Customer Devotion Index” and the “Percentage of Market Share”. The cause and effect relationship among these objectives and also between them and the objective of *financial* perspective (Increase Earnings) is obvious (fig. 2). The two indexes/measures pertain to statistical procedure outcomes (via appropriate statistical tools) and answers from ad hoc questionnaires. The third measure in this specific theme and perspective (Percentage of Market Share), concerns the change of share (%), which in turn comes from the qualitative characteristics contribution of company’s products.

In *internal business process* perspective we meet a group of five objectives that could be denominated with the general title of “Quality Improvement”. The objectives are the “Decrease of Errors that Reach the Customer”, the “Decrease of Error Retrieval Time”, the “Direct Response to Customer Complaints”, the “Blends Stability”, and the “High Quality of Raw Materials”. The first four objectives correspond to the measures “Complaints Percentage”, “Time from Error Localisation to Correction”, “Time from Complaint Expression to Regulation”, and “Blends Suitability”, respectively. Complaints Percentage is measure of high importance for the company. It is significant to identify, through this measure, the errors that the customers reach, and try to reduce them. Most unhappy customers do not bother to publicize their experiences. They don’t even bother to complain. Instead, they stop buying and spread bad news in their social networks. These small revenges represent a great loss of lifetime value that is invisible to the firm but has substantial implications for the bottom line (Ariely, 2007). “Time from Error Localisation to Correction” is also a main measure. An increase in productivity is the alpha and omega in manufacturing firms. The goal is high availability, better quality, lower costs, higher system utilization, and, in the end, increased profitability (Baron, 2005). For “Blends Suitability” measure, there is a panel of tobacco experts that is assigned with the task of selecting excellent tobaccos worldwide. The main issue for this team is to retain the perfect quality of purchased tobaccos and to keep them up till the blending procedure.

The measures “Supplier Quality Management System” and “Supplier Appropriateness” belong to the fifth objective of *internal business process* perspective (Table 1). The company’s suppliers must have been approved by any accredited quality assurance organization. Purchased parts that do not conform to specifications can impact every aspect of the company’s business. Both the buyer’s approach and specification management are keys to controlling supplier quality. Competitive cost, service, delivery time and product quality are fundamental criteria of the supplier evaluation (Hrgarek & Bowers, 2009). As it was expected the group of Quality Improvement objectives is directly associated with Customer Satisfaction in *customer* perspective (fig. 2).

The strategic theme of HIGH QUALITY PRODUCTS TO THE CUSTOMERS (as well as the rest of themes) eventuates in *learning and growth* perspective, where two objectives are proposed: “Increase of Educational Effectiveness” and “Knowledge Management Improvement”. The measure of “Educational Effectiveness Index” for “Educational Effectiveness” objective and the “Use of Systems percentage” measure for “Knowledge Management Improvement” are respectively introduced. “Educational Effectiveness Index” refers to the increase in educational effectiveness that is determined after the completion of sophisticated training programmes and relative comprehension tests for trainees’ acquisition of knowledge and capabilities certification. With the help of this index, company can also ascertain the trainer competence and the program effectiveness. The percentage of systems use shows the exact utility of current systems (via their use) and relative reports (users’ complaints, errors frequency etc). The percentage of systems use can also reveal, except the need of updates and improvements, the requirement of a system replacement or the application

necessity of complementary systems.

The linkage (cause and effect relationship) of these two objectives with the group of Quality Improvement objectives (*internal business process perspective*) is illustrated in Figure 2.

2.1 High Quality Products to the Customers: Authorities, Measurement Frequencies and Targets

Table 2 lists the “Authorities”, “Measurement Frequencies” and “Targets” of HIGH QUALITY PRODUCTS TO THE CUSTOMERS strategic theme. Authorities are the Departments (Dpt.) of the company that are assigned to measure the relative objectives effectiveness, and report periodically the measurement results to the manager of the particular strategic theme. The “Measurement Frequencies” are the periods of time that an objective must be measured (or the minimum period that an objective can be measured) by authorities. Finally, “Targets” are the desirable results of each objective after a specific period of time—at least 3 years to close the loop of “Six-Stage Management System” (fig. 1).

For example the objective “Increase Earnings” (*financial perspective*) has the measure of “Earnings before Interest and Tax (EBIT)”. The department that is assigned to measure this objective is Financial Services (FS) and it must determine this performance every year. The target for this objective indicates that EBIT must increase up to 10%.

3. Development of Intellectual Capital

The second strategic theme is the DEVELOPMENT OF INTELLECTUAL CAPITAL, where five objectives and seven measures are reported (Table 3). Since this theme is characterized as an “internal nature theme”, there is not any objective in the *customer perspective*.

This theme starts, like the previous one, with the *financial perspective* of strategy map (fig. 2), where the objective “Cost Reduction” is presented, with measures of “Total Cost per Employee” and “Cash-to-Cash Cycle” (Table 3). “Total Cost per Employee” is a widely used measure, and companies’ efforts direct to minimize it. “Cash-to-Cash Cycle” measured as the sum of day’s cost-of-sales in inventory, day’s sales in accounts receivable, less day’s purchases in accounts payable. While many companies will find it difficult to have zero or negative cash-to-cash cycles, the goal of reducing the cash cycle from current levels (Table 4) can be an excellent target for improving working capital efficiency (Kaplan and Norton, 1996: pp. 58-57).

In strategy map we can also see that *financial perspective* is directly linked to (cause and effect relationship) the objectives of *internal business process* (the particular theme doesn’t contain any objective in *customer perspective*), namely “Employee Attrition” and “Increase Employee Utilization”. The “Employee Attrition” is measured by “Percentage of Employee Turnover”, while “Employee Utilization Increase” by measures of “Manufacturing Cycle Effectiveness – MCE” and “Employees Productivity / Employees Cost” ratio. Employee attrition is a risk during all organizational change, but investing in training is an important step for keeping turnover to an acceptable level. An effective training program sets clear expectations and gives to employees the tools they need. It also shows to employees that company willing to invest in their professional development and wants them to succeed (Ely, 2008). A measure used by many organizations attempting to move to just-in-time production flow processes is MCE defined as the ratio of “Processing Time” to “Throughput Time” (Kaplan and Norton, 1996: p. 117).

The two Internal Business Process objectives are associated with the respective objectives of *learning and growth perspective*, “Cross Training” and “Improve Employee Satisfaction”. The measure for the first one (Cross Training) is “Percentage of Man-hours in Cross Training” and “Employee Satisfaction Index” is the measure for the second objective (Improve Employee Satisfaction). Employees’ training is central to company’s strategy and one of the main concerns in mission statement, “Create and Generate Values for Employees”. A headline employee satisfaction index will usually be the outcome that receives most attention and will be essential for organizations utilizing BSC. It is essential that the headline measure is a composite index rather than a measure based on a single overall satisfaction question, since the latter will suffer from a much higher level of random error and this will damage the reliability of future tracking. The index should be a weighted average, produced by using the relative importance of the requirements to weight the corresponding satisfaction scores. This reflects the way that employees make their satisfaction judgement in the real world – placing more emphasis on their most important requirements. The information age environment for both manufacturing and service organizations requires new capabilities for competitive success. The ability of a company to mobilize and exploit its intangible or invisible assets has become far more decisive than investing and managing physical, tangible assets (Kaplan and Norton, 1996: p. 3).

3.1 Development of Intellectual Capital: Authorities, Measurement Frequencies and Targets

Table 4 – similar to Table 2 – itemizes for DEVELOPMENT OF INTELLECTUAL CAPITAL strategic theme, the targets for each measure and the measurement frequencies as well. In the same table, the company’s departments that are assigned with the progress of objectives are also reported. The percentage of “Employee Turnover” measure for example, must be monitored and measured every three months by Human Research department, and at the end of the current management cycle must have a decrease of 20% (Table 4).

4. Provision of Innovative Products

The third Strategic Theme of strategy map (Figure 2) is the PROVISION OF INNOVATIVE PRODUCTS. In this theme are presented seven objectives and nine measures that are monitored by four departments. This theme also indicates that company's proposed strategy is the differentiation.

Table 5 (and Figure 2 also) shows the specific theme, beginning with the *financial* perspective where the single objective of "Increase Earnings" is mentioned, that can be measured by "Income from State-of-the-art Products / Total Income" ratio. It is known and easy to understand, the market of tobacco products experiences worrying times. Tobacco products face legislative barriers that restrict the promotion and advertisement by mass media (TV, periodicals etc). The campaigns against smoking, from governmental and non-governmental organizations become more intensive, influencing significantly the consumers' (smokers') purchasing will. An equally significant issue is the continuous increase in taxes of tobacco products. The innovation process, the long wave of value creation, is for many companies a more powerful driver of future financial performance than the short-term operating cycle. For many companies, their ability to manage successfully a multiyear product-development process or to develop a capability to reach entirely new categories of customers may be more critical for future economic performance than managing existing operations efficiently, consistently, and responsively (Kaplan and Norton, 1996: p. 28).

Therefore, the answer of above mentioned barriers and future economic performance can come from State-of-the-art Products development. The proposal of a new Research and Development department creation (R&D dpt.) and the corporation with the Institute for Biomedical Research and Biotechnology (IBRB) will help company to develop products (cigarettes) that reduce the destructive consequences of smoking addiction (mainly by developing special types of filters). The outcome from any strategy formulation approach is to develop a direction that differentiates the company's position and offering from those of its competitors so that it can create a sustainable competitive advantage that leads to superior financial performance (Kaplan and Norton, 2008: pp. 56-57).

The achievement of financial objective comes from the successful outcome of two Customer objectives (in this theme). The Customer objectives are the "Increase Market Share" and "Diversify Customer Portfolio". The measure of first objective is the "percentage of Market Share", while the second one can be determined by three measures, "Customer Satisfaction Index", "Number of Relative Articles", and "Percentage of State-of-the-art Projects". Market share reflects the proportion of business in a given market (in terms of customers, dollars spent, or unit volume sold) that a business sell (Kaplan and Norton, 1996: p. 68). The "Customer Satisfaction Index", like previous indexes (see "High Quality Products to the Customers" strategic theme), pertains to statistical procedure outcomes (via appropriate tools) and answers from ad hoc questionnaires. The "Number of Relative Articles" measure is the minimum amount of articles that must be published by R&D dpt. and IBRB, in the three year period to complete the six stages.

Regarding the *internal business process* perspective, two objectives are reported, "Minimize Market Entrance Time (for State-of-the-art Products)" and "Increase Research Range", with measures of "Time from Product Development Approval to Market Entrance" and "Number of State-of-the-art Projects", respectively. These two measures are essential for the production of state-of-the-art products and their variety. The actions of the internal business process of this theme can be transmitted to the customers (mainly with the use of coupons – see next theme) in order to increase the customer satisfaction (to drive to the *customer* perspective objectives).

Finally, the proposed objectives for the *learning and growth* perspective are "Training in Filter and Cigarette Planning" and "Training in New Analytical Methods". The measure for these two objectives is the "Percentage of Man-hours". The company can develop knowledge and skills among its employees through training and development programs, along with career planning that gives employees experiences in various tasks, businesses, regions, and functions. Instilling values is more complex. It requires a combination of taking good inputs through careful recruitment and selection programs – in addition to extensive training and communication of corporate mission and values – to inspire the behaviors that the corporation desires (Kaplan and Norton, 2008: p. 152).

4.1 Provision of Innovative Products: Authorities, Measurement Frequencies and Targets

Table 6 presents the objective "Authorities", the "Measurement Frequencies" and the "Targets" for each measure in PROVISION OF INNOVATIVE PRODUCTS strategic theme. Market share can be measured by marketing department (MKT dpt.) every year and eventually (at the end of the six-stage cycle) state-of-the-art products must possess the 15% of the Greek cigarette market.

5. Environment Protection

The last strategic theme of strategy map is the ENVIRONMENT PROTECTION. This theme points out six objectives and seven measures (Table 7). The first objective (*financial* perspective), "Increase Earnings" can be measured by "Increase Earnings by Waste Trading" and "Cost Reduction of Waste Management" measures. The waste trading refers to the byproducts usability, after some stages of elaboration (or directly), and residuals of raw materials (papers, polypropylenes, tobacco dust etc) as well. These materials are sold (or can be sold) causing significant incomes. The

Cost Reduction of Waste Management, is the exemption from the use of landfill expenditure (the most popular solution in waste management), by recycling them or donating them to interested organizations. Recycling waste is part of the green process that brings several benefits (i.e. the waste is not dumped in a landfill, recycling costs are often much lower than landfill fees etc).

Similarly to previous three strategic themes, there is a cause-and-effect relationship among the objectives (through four perspectives). Thus, first objective of *customer* perspective, “Customer Enlightenment”, is going to drive to the second one, “Customer Satisfaction” which in turn is linked with “Increase Earnings” (of *financial* perspective). The measure for “Customer Enlightenment” is “Percentage of Informed Customers”, while for “Customer Satisfaction” is “Customer Satisfaction Index”. The measure of “Customer Satisfaction Index” can arise from the already mentioned procedure of questionnaires and the second measure (“Percentage of Informed Customers”) can be emerged mainly by the use of coupons, i.e. paper insets that contain valuable information for customers. Customers must be informed about the company’s activities regarding environment protection (see next perspective). This information can drive to their satisfaction and eventually to the financial performance.

In relation to *internal business process* perspective, two objectives are reported, “Increase Recycling” and “Waste Exploitation,” having measures of “Waste to Landfill / Total Waste” ratio and “Percentage of Useful Waste in Secondary Activities”, respectively. Today many companies have accepted their responsibility to do no harm to the environment. Products and production processes are becoming cleaner; and where such change is under way, the environment is on the mend. In the industrialized nations, more and more companies are “going green” as they realize that they can reduce pollution and increase profits simultaneously (Hart, 1997).

Finally, in *learning and growth* perspective is proposed the “Increase Employees’ Environmental Conscience” objective and the measure of “Percentage of Man-hours in Material Management & Environment Issues Training”.

Multiple tool sets have evolved including the triple bottom line (people, profits, planet) and full life cycle analysis. By considering the actual cost of a product through its entire lifecycle, many companies have unearthed savings from environmental action. Whether the cost savings are driven by reduced risk, better use of materials, or higher retention of employees, environmental issues must be considered with a broader mindset than the traditional cost/benefit mindset. The cost/benefit mindset assumes that environmental measures always incur additional cost, an assumption that leads to inaction. Many companies are discovering that by adopting environmental values, they are reducing costs (Freeman et al., 2008).

5.1 Environment Protection: Authorities, Measurement Frequencies and Targets

Table 8 – similar to Tables 2, 4, and 6 – itemizes measure targets and measurement frequencies for ENVIRONMENT PROTECTION strategic theme. Company departments that are assigned with the progress of objectives are also reported in Table 8. The Production department (PR dept.) has the authority to measure the performance of “Waste to Landfill / Total Waste” ratio every month. This measure must achieve a decrease of 50%, at the end of the six-stage cycle.

6. The Strategic Initiatives

The integration of above mentioned Tables 1 to 8 completes the BSC, that accompanies (or is accompanied by) the strategy map (fig. 2).

The elements that haven’t reported yet are the strategic initiatives. Strategic initiatives are action programs aimed at achieving targeted performance for the strategy map objectives. Initiatives cannot be looked at in isolation; they must be viewed as a portfolio of complementary actions, each of which must be successfully implemented if the company is to achieve its theme targets and overall strategy target (Kaplan and Norton, 2008: p. 11). The complete portfolio of strategic initiatives defines the resources and actions required to implement the strategic themes. The themes’ *learning and growth* objectives, for example, involves developing new skills for employees, introducing new information systems and aligning employees’ personal goals and incentives to motivate them to achieve a process objective of investing more time with high-potential customers (Kaplan and Norton, 2006). When the BSC is used as a cornerstone of a company’s management system, the various initiatives can be focused on achieving the organizational objectives, measures, and targets (Kaplan and Norton, 1996: pp. 230-231). The main strategic initiatives and explicit funding for their portfolios are:

- 1 Planning of research procedures regarding the determination of Customer Satisfaction Indexes (questionnaires, sampling points, methods for data analysis etc).
- 2 Cautious planning of communication means (coupons and sell spots) with customer and how messages must be transmitted (simple and comprehensible messages).
- 3 New Research and Development (R&D) department that will undertake the related with new products planning and development procedures (in collaboration with IBRB or other organizations). This department will also be assigned with “Waste Exploitation” issue.

- 4 New service department of Customer Relationship (CR) that will decisively contribute to customers' satisfaction and to perfect relationship with them. This new department will also contribute to company's efforts for continuous quality improvement in products and procedures.
- 5 Quality Control Department Activities Expansion, for raw materials superior quality assurance via indispensable measurements.
- 6 Assistance to IBRB in order to increase the research range and accelerate the procedures of state-of-the-art products insertion to the markets.
- 7 Application of cross-training planning.
- 8 Application of training planning regarding the filter and cigarette characteristics.
- 9 Application of training planning in relation to materials management and environmental issues as well.
- 10 Explicit actions in the direction of employees' satisfaction (financial and non-financial measures).

The above mentioned initiatives concern primarily the part of programs and actions planning, which managers must develop, as well as the financial part for the integration of predetermined objectives. To summarize, strategic initiatives are the short-term actions that launch an organization on a trajectory toward achieving its vision. The company screens and selects strategic initiatives by assessing their impact on achieving the targeted performance for strategic objectives and measures. Each strategic theme requires complete portfolios of strategic initiatives if its ambitious performance targets are to be achieved (Kaplan and Norton, 2008: p. 114). Examining the ten proposed initiatives it is noted that five of them (50%) are related with research, planning and training, and they can be transacted by existing staff and at relatively low cost. Three of these "low cost" initiatives (the 30% of total initiatives) are dedicated to training planning and application ("Cross-Training", "Filter & Cigarette Designing", and "Material Handling and Environmental Issues"), while the remaining two "low cost" initiatives are referred to research procedures and planning of communication means ("Customer Satisfaction" and "Coupons & Sell Spots"). The two of "high cost" initiatives involve the creation of new departments – Research & Development" and "Customer Relationship"– with estimated annual cost of €370,000 and €150,000 respectively. The rest three of "high cost" initiatives (the 30% of total initiatives) refer to the expansion of two already existing services –"Quality Control" and "IBRB"– with estimated annual cost of €100,000 and €70,000 respectively and also to financial measures for employees' satisfaction (annual cost: €500,000). Thus the total estimated annual cost for implementing the ten proposed initiatives is €1,400,000. The BSC and strategy map integration as well as the initiatives completion, signal the second stage integration (of closed-loop management system, see fig. 1) and the start point of third stage ("Align the Organization").

7. Conclusion

This paper aims to translate the strategy of a manufacturing company by focusing on the first two stages of the six-stage strategic management system proposed by R. Kaplan and D. Norton. Based on the statements about mission, vision, and values of the company, and the strategic analysis, we formulate the strategy on four axes. The company's strategy map is constructed using the four axes as strategic themes and the four traditional perspectives of the BSC. Twenty eight objectives and thirty six measures are used, and nine departments are engaged to monitor the performance of objectives in order the company to achieve the determined targets. Finally, ten strategic initiatives are proposed 10 that company must carry out to achieve the targeted performance for strategic objectives and measures.

The final step to integrate the second stage of the six-stage closed-loop (not discussed here) is the cost of the short term programs (initiatives). Executing strategy requires that the portfolios of initiatives be executed simultaneously in a coordinated manner. This requires explicit funding for the portfolios of strategic initiatives (Kaplan and Norton, 2008: p. 11). The high importance subject of initiative portfolios funding is the cornerstone for strategic planning integration and the continuation to closed-loop cycle termination.

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Table 1. Measures of “High Quality Products to the Customers” Strategic Theme

Perspective	Objective	Measure
Financial	Increase Earnings	Earnings Before Interest and Tax (EBIT)
Customers	Increase Customer Satisfaction	Customer Satisfaction Index
	Retain & Increase Market Share	Customer Devotion Index
		Market Share (%)
Internal Business Process	Decrease of Errors that Reach the Customer	Complaints (%)
	Decrease of Error Retrieval Time	Time from Error Localisation to Correction
	Direct Response to Customer Complaints	Time from Complaint Expression to Regulation
	Blends Stability	Blends Suitability
	High Quality of Raw Materials	Supplier Quality Management System
		Supplier Appropriateness
Learning & Growth	Increase of Educational Effectiveness	Educational Effectiveness Index
	Knowledge Management Improvement	Use of Systems (%)

Table 2. Authorities, Measurement Frequencies and Targets of “High Quality Products to the Customers” Strategic Theme

Perspective	Measure	Authority	Measurement Frequency	Target
Financial	Economic Value Added (EVA)	FS	1 year	+10%
	Earnings Before Interest and Tax (EBIT)	FS	1 year	+10%
Customers	Customer Satisfaction Index	MKT	6 months	+10%
	Customer Devotion Index	MKT	6 months	+10%
	Market Share (%)	MKT	1 year	20%
Internal Business Process	Complaints (%)	CR	1 month	-50%
	Time from Error Localisation to Correction	CR	1 month	-50%
	Time from Complaint Expression to Regulation	CR	1 month	-50%
	Blends Suitability	TC	1 month	100%
	Supplier Quality Management System	QC	1 year	90% min
	Supplier Appropriateness	QC	1 year	100%
Learning & Growth	Educational Effectiveness Index	HR	1 year	+10%
	Use of Systems (%)	IT	3 months	+20%

FS : Financial Services - MKT: Marketing - CR: Customer Relationship Dpt. - TC: Tobacco Services
 QC: Quality Control - HR: Human Research Dpt. - IT: Information Systems Dpt.

Table 3. Measures of “Development of Intellectual Capital” Strategic Theme

Perspective	Objective	Measure
Financial	Cost Reduction	Total Cost per Employee
		Cash-to-Cash Cycle
Customers	-	-
Internal Business Process	Employee Attrition	Employee Turnover (%)
	Increase Employee Utilization	Manufacturing Cycle Effectiveness - MCE
		Employees Productivity / Employees Cost
Learning & Growth	Cross Training	% Man-hours in cross training
	Improve Employee Satisfaction	Employee Satisfaction Index

Table 4. Authorities, Measurement Frequencies and Targets of “Development of Intellectual Capital” Strategic Theme

Perspective	Measure	Authority	Measurement Frequency	Target
Financial	Total Cost per Employee	FS	6 months	-10%
	Cash-to-Cash Cycle	FS	6 months	-10%
Customers	-	-	-	-
Internal Business Process	Employee Turnover (%)	HR	3 months	-20%
	Manufacturing Cycle Effectiveness - MCE	PR	3 months	+50%
	Employees Productivity / Employees Cost	PR	1 month	+10%
Learning & Growth	% Man-hours in cross training	HR	6 months	+20%
	Employee Satisfaction Index	HR	1 year	+20%

FS: Financial Services - HR: Human Research Dpt. - PR: Production

Table 5. Measures of “Provision of Innovative Products” Strategic Theme

Perspective	Objective	Measure
Financial	Increase Earnings	Income from State-of-the-art Products / Total Income
Customers	Increase Market Share	Market Share (%)
	Diversify Customer Portfolio	Customer Satisfaction Index
		Number of Relative Articles
		Percentage of State-of-the-art Projects
Internal Business Process	Minimize Market Entrance Time (for State-of-the-art Products)	Time from Product Development Approval to Market Entrance
	Increase Research Range	Number of State-of-the-art Projects
Learning & Growth	Training in Filter and Cigarette Planning	% Man-hours in Plan Training
	Training in New Analytical Methods	% Man-hours in New Analytical Methods Training

Table 6. Authorities, Measurement Frequencies and Targets of “Provision of Innovative Products” Strategic Theme

Perspective	Measure	Authority	Measurement Frequency	Target
Financial	Income from State-of-the-art Products / Total Income	FS	1 year	+20%
Customers	Market Share (%)	MKT	1 year	15%
	Customer Satisfaction Index	MKT	1 year	+10%
	Number of Relative Articles	IBRB & R&D	6 months	9
	Percentage of State-of-the-art Projects	IBRB & R&D	1 year	+50%
Internal Business Process	Time from Product Development Approval to Market Entrance	R&D	1 year	-30%
	Number of State-of-the-art Projects	R&D	1 year	5
Learning & Growth	% Man-hours in Plan Training	HR	6 months	+20%
	% Man-hours in New Analytical Methods Training	HR	Annually	+20%

FS: Financial Services - MKT: Marketing - R&D: Research & Development - IBRB: Institute for Biomedical Research and Biotechnology - HR: Human Research Dpt.

Table 7. Measures of “Environment Protection” Strategic Theme

Perspective	Objective	Measure
Financial	Increase Earnings	Increase Earnings by Waste Trading
		Cost Reduction of Waste Management
Customers	Customer Satisfaction	Customer Satisfaction Index
	Customer Enlightenment	Percentage of Informed Customers
Internal Business Process	Increase Recycling	Waste to Landfill / Total Waste
	Waste Exploitation	Useful Waste in Secondary Activities (%)
Learning & Growth	Increase Employees’ Environmental <i>Conscience</i>	% Man-hours in Material Management & Environment Issues Training

Table 8. Authorities, Measurement Frequencies and Targets of “Environment Protection” Strategic Theme

Perspective	Measure	Authority	Measurement Frequency	Target
Financial	Increase Earnings by Waste Trading	FS	6 months	+10%
	Cost Reduction of Waste Management	FS	6 months	-10%
Customers	Customer Satisfaction Index	MKT	6 months	+10%
	Percentage of Informed Customers	MKT & PR	6 months	100%
Internal Business Process	Waste to Landfill / Total Waste	PR	1 month	-50%
	Useful Waste in Secondary Activities (%)	R&D	6 months	+30%
Learning & Growth	% Man-hours in Material Management & Environment Issues Training	HR	3 months	+20%

FS: Financial Services - MKT: Marketing - PR: Production - R&D: Research & Development - HR: Human Research Dpt.

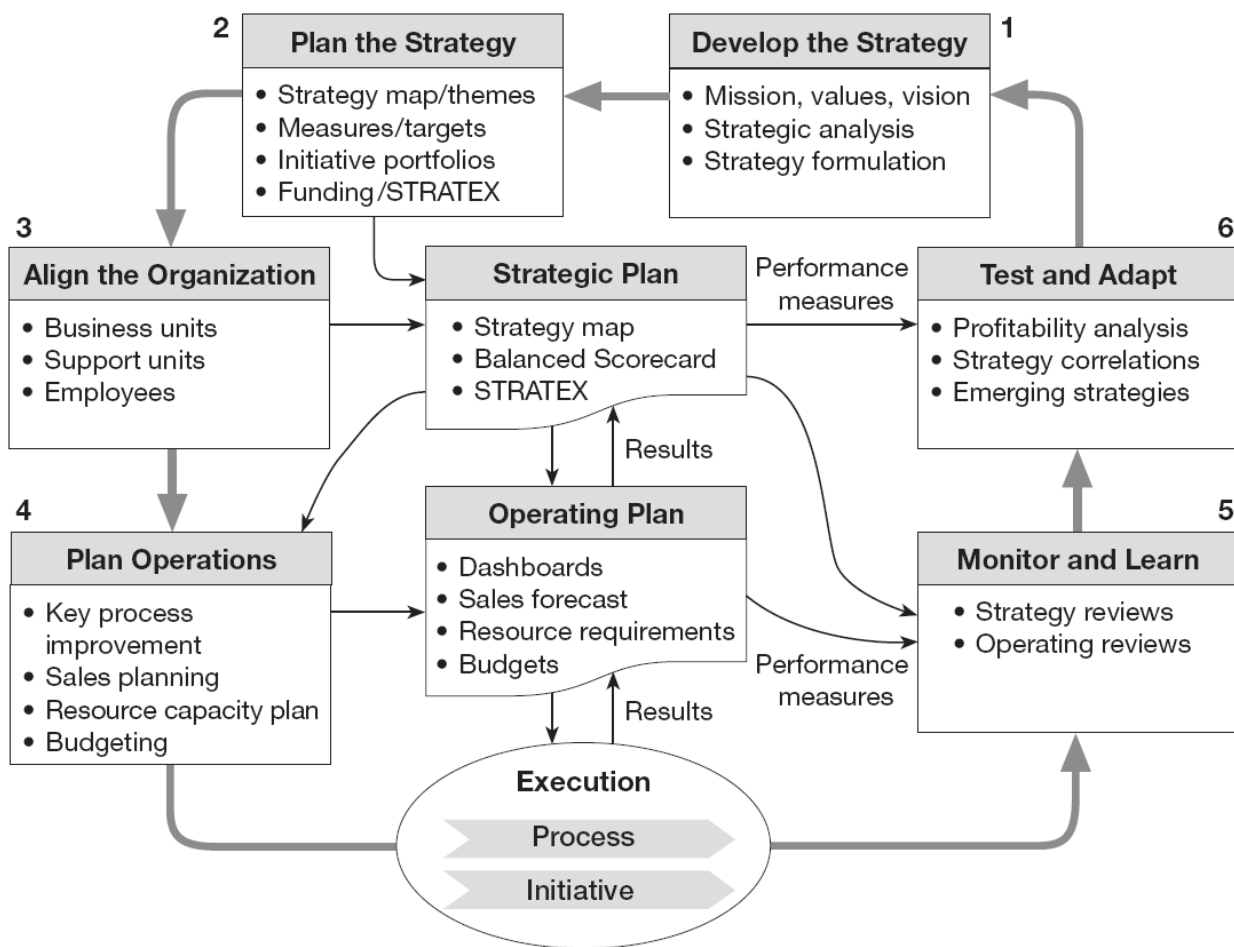


Figure 1. The Six-Stage Management System (Source: Kaplan and Norton, 2008).

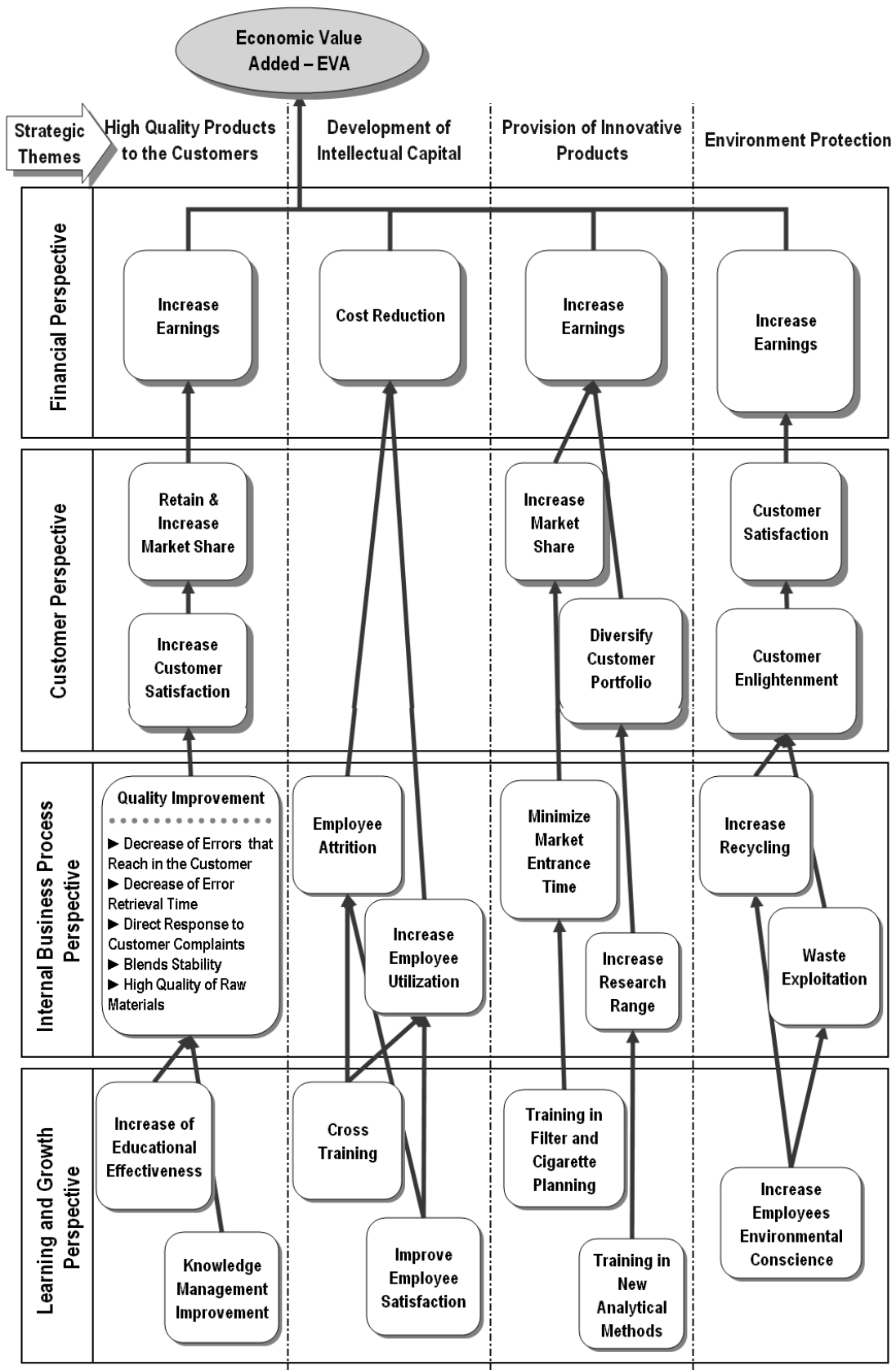


Figure 2. The Company's Strategy Map



Foreign Entry Mode, Cultural Distance and Subsidiary Performance of Malaysian Mnes

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Abstract

This paper explores the extent to which foreign entry mode and cultural distance influence the performance of Malaysian Multinational Enterprise (MNE) subsidiaries established in foreign countries. Data for this study were obtained from 13 Malaysian MNEs, which provided information on a total of 26 subsidiaries located in 16 countries. Implications of the study findings are discussed and suggestions for future research are provided.

Keywords: Foreign entry mode, Cultural distance, Foreign subsidiary performance, Malaysia

1. Introduction

Increased globalization and liberalization of economies in recent years have forced Malaysian companies to seek new locations for cheaper resources and new markets. As a latecomer in the global competitive arena, the Malaysian Multinational Enterprises (MNEs) lack international experience, knowledge and resources to compete with giant Multinational Companies (MNCs) from the more developed countries. Thus, foreign direct investments undertaken by the Malaysian MNEs faces greater challenges to compete in their new foreign locations.

Previous literatures on international expansion have focused mainly on MNCs from developed countries particularly, US and Europe (Stopford & Wells, 1972). Nevertheless, by the end of the 1970s and 1980s, studies started to focus on MNEs from Japan (Kimura, 1989) and on MNEs from developing countries such as India, Hong Kong, Taiwan and the ASEAN countries (Wells, 1983; Kumar & McLeod, 1981; Yeung, 1996). A study by Ragayah (1999) on Malaysian MNEs showed an increasing trend in the number of Malaysian companies starting operations in foreign countries. Internationalization strategies of MNEs from developing countries and emerging economies continue to be a major interest among international business researchers. While some aspects of their strategies are similar to their counterparts in the West and developed nations, differences can be seen as noted by Sim and Pandian (2003) in the internationalization strategies of MNEs from Taiwan and Singapore.

Reports on the performance of Malaysian MNEs in foreign countries have been based mostly on anecdotal evidence. A study has yet to be undertaken to determine their performance and the influence of equity-based entry modes and cultural differences on subsidiary performance. Although many literatures on foreign entry mode, cultural distance, and the effects of these factors on subsidiary performance but similar studies involving MNEs from developing and Asian countries are still very limited. These MNEs differ from those from developed countries in terms of their international knowledge and experience and they have very limited resources in terms of managerial expertise and firm specific assets. In light of these disadvantages and relatively higher risks, it would be interesting to note how they perform in foreign locations.

In this study, we extend the study by Ragayah (1999) by investigating the performance of Malaysian subsidiaries overseas. Two factors commonly related to performance, namely entry mode and cultural distance will be examined.

2. Literature Review and Hypotheses

This section reviews existing literature on foreign entry mode, cultural distance and performance of the MNEs' foreign subsidiaries. Hypotheses showing relationships between these variables are developed.

2.1 Foreign Entry Mode

Previous studies have shown that there are at least three forms of equity-based foreign entry modes – greenfield wholly-owned subsidiaries, joint ventures and acquisitions (Nitsch, Beamish & Makino, 1996). Greenfield wholly-owned subsidiaries involve the formation of a new company by the MNE and holds at least 80% ownership of the company (Yiu & Makino, 2002). Joint ventures are subsidiaries that involve shared ownership between the MNE and a local company of a foreign country in which the subsidiaries are established. In joint ventures, at least 20% ownership of the subsidiary is held by either the MNE or the local partner (Makino & Beamish, 1998). Acquisitions are local companies that were purchased by the MNE either for full ownership to form wholly-owned subsidiaries or partial ownership to form joint ventures.

2.2 Entry Mode and Performance

Previous studies have shown that a relationship exists between entry mode and firm performance. A study on Japanese Foreign Direct Investment (FDI) in Western Europe by Nitsch, Beamish & Makino (1996) showed that wholly owned subsidiaries performed better than joint ventures. Similarly, Japanese FDI in the US that formed new wholly-owned subsidiaries showed better performance than joint venture subsidiaries (Woodcock, Beamish & Makino, 1994).

Hence, based on previous studies, the following hypothesis is proposed:

H1: Wholly owned foreign subsidiaries of Malaysian MNEs are more likely to perform better than joint venture subsidiaries.

2.3 National Cultural Distance

National cultural distance is the difference between the culture of the parent company's country and the culture of the host country in which the subsidiary company is located. Based on Hofstede's four cultural dimensions, namely; power distance, individualism-collectivism, uncertainty avoidance and masculinity-femininity, the cultural distance is calculated using Kogut & Singh's (1989) formula:

$$CD_j = \sum \{(I_{ij} - I_{iu})^2 / V_i\} / 4$$

where

I_{ij} is the index for the i th cultural dimension and j th country,

V_i is the variance of the index of the i th dimension,

u indicates the United States (in this study, Malaysia), and

CD_j is cultural difference of the j th country from the United States (in this study, Malaysia).

2.4 Foreign Entry Mode and Cultural Distance

Previous studies on the relationship between entry mode and cultural distance showed inconclusive findings. Some studies suggested that high cultural distance tend to be associated with the formation of wholly-owned subsidiaries (Anand & Delios, 1997; Padmanabhan & Cho, 1996; Sim & Pandian, 2003). Some studies found no relationship between entry mode and cultural distance (Erramilli, 1996; Gatignon & Anderson, 1988; Rajan & Pangakar, 2000). A relatively larger number of studies showed the formation of joint ventures in countries exhibiting large cultural distance (Brouthers & Brouthers, 2001; Kogut & Singh, 1988; Erramilli & Rao, 1993; Kim & Hwang, 1992). Large cultural distance indicates greater uncertainty thus higher costs in terms of administrative costs. In joint ventures costs can be shared with the partner and such costs may be reduced with the help of the local partner (Brouthers & Brouthers, 2001; Kogut & Singh, 1988).

Based on the findings of previous studies and the argument that larger cultural distance indicates greater uncertainty and that uncertainty can be reduced, by taking a partner, the following hypothesis is proposed for this study:

H2: MNEs are more likely to form joint ventures in countries that exhibit high cultural distance and choose to form wholly owned subsidiaries in countries that exhibit low cultural distance.

2.5 Foreign Entry Mode, Cultural Distance and Subsidiary Performance

Previous studies have not analyzed the relationships between entry mode, cultural distance and firm performance simultaneously. Thus in this study, an attempt is made to assess the influence of both entry mode and cultural distance on performance by presenting the following hypotheses:

H3a: Subsidiary performance is higher in wholly owned subsidiaries than in joint ventures that are formed in low cultural distance countries.

H3b: Subsidiary performance is higher in joint ventures than in wholly owned subsidiaries that are formed in high cultural distance countries.

3. Methodology

This study was based on a convenient sample of 13 MNEs which have a total of 26 operations in a total of 16 countries. Malaysian companies that have operations in other countries were identified from the list of public companies listed in the Kuala Lumpur Stock Exchange (KLSE). Based on information provided in the KLSE Handbook 2001, 113 companies listed as having set up operations in at least one foreign country. These companies were contacted to solicit their cooperation by participating in this study. Only thirteen companies indicated their willingness to participate after they were approached by personal contacts of the researcher.

A survey questionnaire was designed for the study aimed specifically for respondents who were CEOs, Managing Directors or General Managers of the sample companies. Questions pertaining to foreign entry mode, profile of the Malaysian parent company and performance of their foreign subsidiaries were included.

On foreign entry mode, respondents were asked the mode of foreign entry in terms of equity-based ownership; that is whether the foreign subsidiary was a wholly-owned subsidiary of the Malaysian parent or a joint venture with a foreign partner located in the host country. Questions of performance relate to the perceptions of the respondents with regards to the levels of profitability using the following scale: '-2' = 'Very unprofitable', '-1' = 'Unprofitable', '0' = 'Neutral', '1' = 'Profitable' and '2' = 'Very profitable'. Due to the small sample size, only mean scores and percentages are presented.

4. Results and Discussion

In this section, a profile of the Malaysian MNEs is presented followed by an exploratory analysis of the hypotheses.

Profile of Malaysian MNEs

The location of Malaysian MNEs in the following sample report indicates having subsidiaries in a number of countries, represented in four continents (Table 1).

In Asia, Malaysian MNEs have formed subsidiaries in Indonesia, Singapore, Thailand, Vietnam, China, Pakistan, Sri Lanka and the United Arab Emirates. In Europe, subsidiaries of Malaysian MNEs can be found in Denmark, Germany, Italy and the UK. In North America, subsidiaries were established in the USA, Canada and Mexico. A Malaysian MNE subsidiary in this study sample was also identified in Australia.

Out of the 13 Malaysian MNEs in this sample, five MNEs (35.5%) reported as having only one foreign subsidiary, three MNEs (23%) reported as having two foreign subsidiaries and another five MNEs (35.5%) reported as having set up three subsidiaries overseas.

In terms of ownership, out of a total of 26 foreign subsidiaries in this study sample, 14 companies were wholly owned and 12 others were joint ventures (Table 2). For joint venture type subsidiaries, three were majority-owned by the Malaysian MNE and nine subsidiaries were minority-owned by the Malaysian parent.

The Malaysian MNEs report operations covering to several industries: three in chemical, four in palm oil and one each in food, signage, textile, plastic, crane, electric and electronic and real estate (Table 3). It is interesting to note that subsidiaries set up in foreign countries were operating in the same industry as their respective parents. This indicates that the MNE engaged in geographic diversification by leveraging their assets and capabilities overseas do compete in the same industry.

Table 4 shows the performance of Malaysian MNE subsidiaries. Based on perceptions of the respondents on the level of profitability of their foreign subsidiaries abroad, 19 subsidiaries (73%) indicated that their foreign ventures were profitable, 4 subsidiaries (15%) indicated not profitable and 3 subsidiaries (12%) gave a neutral response.

4.1 Foreign Entry Mode and Performance

The study results show that the mean performance of wholly owned subsidiaries is 0.93 (n=14) and the mean performance for joint ventures is 0.92 (n=12). The difference in performance between wholly owned subsidiaries and joint ventures is not significant for this sample. Thus there seems to be no evidence from this study sample that wholly owned subsidiaries perform better than joint ventures. Hypothesis H1 which suggests that wholly-owned subsidiaries are more likely to perform better than joint venture subsidiaries is not supported in this study.

4.2 Foreign Entry Mode and Cultural Distance

Table 5 shows the number of subsidiaries formed by MNEs in the study sample according to mode of entry and cultural distance (CD).

The results show that in low cultural distance countries, there is no difference in the number of joint ventures and wholly owned subsidiaries being formed. However, in high cultural distance countries, there seems to be a tendency for a relatively larger number of wholly owned subsidiaries than joint ventures. Thus, hypothesis H2 which suggests that

MNEs tend to form joint ventures in high cultural distance countries and wholly owned subsidiaries in low cultural distance countries is not supported in this study.

4.3 Cultural Distance and Performance

The results in Table 6 show that performance of subsidiaries located in countries that exhibit similar cultures tend to be higher than subsidiaries located in less culturally-similar countries.

4.4 Foreign Entry Mode, Cultural Distance and Performance

Taking into consideration both cultural distance and entry mode factors, Table 7 shows that when cultural distance is low, performance is higher among the wholly-owned subsidiaries compared to equity joint ventures. However, when cultural distance is high, performance is higher among joint ventures than wholly-owned subsidiaries. Thus hypotheses H3a and H3b are supported.

The results suggest that Malaysian MNEs should form wholly-owned subsidiaries when entering culturally-similar countries and form joint ventures when entering less culturally-similar countries. In practice however, MNEs from developing countries like Malaysia may find that it is not easy to form joint ventures in developed countries. Unlike MNCs in developed countries, MNEs from developing countries do not possess firm specific assets needed by the host country firms. This finding is similar to a study by Sim and Pandian (2003) who found that Taiwanese and Singaporean MNEs formed wholly-owned subsidiaries when investing in high cultural distance countries like Mexico, US and Europe.

Also in practice, MNEs from Malaysia will find it difficult to form wholly-owned subsidiaries in culturally-similar countries as hypothesized. Like most developing countries, these culturally-similar countries like China, Indonesia, Vietnam, and Pakistan impose equity restrictions requiring foreign MNEs to form joint ventures with local companies. The inconsistency between theoretical considerations, empirical findings and managerial practice suggesting a high subsidiary performance among Malaysian MNEs is not attainable based on the findings in this study on the mode-cultural distance-performance relationship. Therefore, Malaysian MNEs will have to focus on other variables that influence performance as alternatives to overcome the constraints imposed by the choice of entry mode.

5. Conclusion

The findings of previous studies have shown the importance of choosing the appropriate mode when investing in foreign countries. As shown by empirical findings, subsidiaries formed in low cultural distance countries should be in the form of wholly-owned subsidiaries if they want to achieve high performance. In high cultural distance countries, firms should form joint ventures if they want to achieve high performance.

In the context of Malaysian MNEs, investing in low cultural distance countries are by coincidence developing countries in which the governments of these countries impose regulations on equity ownership (Gomes-Casseres, 1988), hence, the desired form of ownership, which is wholly-owned subsidiary is not attainable. When investing in high cultural distance countries, the joint venture is recommended. Unlike the large MNEs which possess firm specific assets that make them desirable partners, small MNEs will find it difficult to locate partners (in developed countries where cultural distance is high) when investing in developed countries. Hence, the desired mode is also not attainable.

While entry mode and cultural distance have been found to influence foreign subsidiary performance of MNCs from developed countries, these factors seem to be less appropriate in determining the performance of MNE foreign subsidiaries from developing countries like Malaysia.

Despite the constraints and study limitations (small sample size, lack of methodological rigor and exploratory in nature), the findings in this study can be used as a guide by managers and future researchers. For an extended future research, a large-scale study is needed to further verify the findings in this study. In addition, a review of the measures of cultural distance is needed to accurately determine what actually constitutes cultural distance.

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Table 1. Location of Malaysian MNE subsidiaries by region

Region	Country
Asia – South-east Asia	Indonesia (1)
	Singapore (3)
	Thailand (2)
	Vietnam (1)
Asia – Outside South-east Asia	China (3)
	Pakistan (2)
	Sri Lanka (2)
	United Arab Emirates (1)
Europe	Denmark (1)
	Germany (1)
	Italy (1)
	UK (1)
North America	Canada (1)
	Mexico (1)
	USA (4)
Australia/New Zealand	Australia (1)

() Numbers in brackets show number of subsidiaries

Table 2. Number of subsidiaries by mode of entry

Ownership type	Number of subsidiaries
Wholly-owned	14
Majority-ownership	3
Minority-ownership	9
Total	26

Table 3. Comparing subsidiary industry and industry of MNE by order of entry

Industry of MNE	Subsidiary industry in country 1	Subsidiary industry in country 2	Subsidiary industry in country 3
Chemical	Chemical (Singapore)	Chemical (Indonesia)	
Chemical	Chemical (USA)	Chemical (Canada)	Chemical (Singapore)
Chemical	Chemical (China)	Chemical (UAE)	Chemical (USA)
Palm oil	Palm oil (Pakistan)		
Palm oil	Palm oil (Germany)	Palm oil (Mexico)	Palm oil (Italy)
Palm oil	Palm oil (Pakistan)	Palm oil (Sri Lanka)	
Food	Food (Vietnam)	Food (Vietnam)	
Signage	Signage (China)		
Textiles	Textiles (Sri Lanka)		
Plastics	Plastics (Thailand)	Plastics (UK)	Plastics (USA)
Crane	Crane (Australia)	Crane (Denmark)	Crane (USA)
Electric & Electronic	E & E (Thailand)		
Real estate	Real estate (China)		

Table 4. Foreign subsidiary performance

Performance level	Number of subsidiaries	Percent
Highly profitable	8	31
Profitable	11	42
Neutral	3	12
Not profitable	4	15
Highly not profitable	0	0
Total	26	100

Table 5. Number of subsidiaries by mode type and cultural distance

	Wholly owned subsidiaries	Equity joint ventures
Low CD countries	8 (50%)	8 (50%)
High CD countries	6 (60%)	4 (40%)

Table 6. Mean performance of Malaysian MNE subsidiaries by cultural distance

Cultural distance	Firm performance
Low	1.06
High	0.6

Table 7. Subsidiary performance by foreign entry mode and cultural distance

	Small cultural distance	Large cultural distance
Equity joint ventures	0.75	1.25
Wholly owned subsidiaries	1.50	0.17



Evaluating the Application of Learning Requirements Planning Model in the ERP Project of Esfahan Steel Company

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Abstract

It seems that inappropriate application and implementation of Enterprise Resource Planning (ERP) can harm performance of organizations. For the ERP to be successful there is a necessity for a systematic training plan aligned with the organizational master plan. The model of Learning Requirements Planning (LRP) is developed for linking training with the implementation process of ERP. The aim of this article is to investigate and evaluate the application of LRP model in the ERP project of Esfahan Steel Company as the pioneer in the steel industry of Iran. This research is survey based. The research population includes the employees involved in the implementation of ERP. The results imply that at the time of implementing the project, the required training has not been effective and since the accomplishment of the project, learning has not been continuous. Consequently, in the implementation of the ERP project of Esfahan Steel Company, learning has not been treated effectively.

Keywords: Enterprise Resource Planning, Learning Requirements Planning, Model

1. Introduction

Enterprise Resource Planning (ERP) system is a set of business applications or modules that connects various units in an organization with a common base for the flow of information in the form of an integrated system (Beheshti, 2006).

ERP programs integrate the firm's data and systems into one package and provide best business practices, integration of information across manufacturing, financial, and human resources operations (Lindley et al., 2008). Most ERP systems are based on software packages from companies like SAP or Oracle. ERP implementation is generally cost intensive and takes several months or years (Seidel and Back, 2009).

Currently, the use of this system is increasingly demanded in organizations (Al-Mashari, 2003; Huang et al., 2004a; Huang et al., 2004b). Unfortunately, the success rate of ERP implementation is very low. This is addressed by a majority of authors who have reported up to 90 percent failure rate (Zabjek et al., 2009). The high rate of failure of such projects together with the disability of organizations in having no access to the given targets, are the major challenges that many managers are facing. In this respect, a number of studies are carried out on decision making of the selection of ERP considering its competitive advantage and its important business applications (Lengnick-Hall et al., 2004; Prahalad and Krishnan, 1999; Holland and Light, 1999; Davenport, 1998). Some of the main factors leading to the success of ERP include support from top managers, effective management of the project, continuous and effective training of users and having a look at ERP as a business solution. On the other hand, factors such as inadequate technological planning and user training, spending more time and money beyond what is planned and no access to enough skill for implementation of the project are the reasons for the failure of such projects (Deloitte, 1999; Sumner, 2000; Umble and Umble, 2002; Wright and Wright, 2002).

There is a long list of companies that have problems in the implementation of ERP including Dell computers, Hershi Foods, Apple computers, Whirlpool, etc. Of course this happens with the fact that hundreds or thousands of million dollars are spent on the training of employees. It is important to note that most of the learning plans of ERP (in case they exist) are either not planned or based on a wrong ground. In the training sessions, the people have not realized their responsibilities and new roles and the emphasis is put on technical training and not integrity. However, the result of not having learning plan for the implementation leads to project fail. Managers of organizations do not need step by step technical training, but need to understand the principles of the flow of information in business (Kapp et al., 2001). In most of the companies, an increase in the cost of implementation of ERP (in relation to its prediction) has caused limitation in training and reengineering of processes (Willis and Willis-Brown, 2002).

The results of an investigation entitled "To Investigate the Success and Failure Factors of ERP Implementation within Malaysian Small and Medium Enterprises", which was conducted by Noudoostbeni et al. in the University of Malaya in Kuala Lumpur, show that the two most important failure factors in implementing ERP in Malaysian SMEs are 'poor planning or poor management' and 'inappropriate training methods' and the most important success factors are 'Implementing team's teamwork and composition' and 'Effective training of users'. This implies that teamwork is a key success factor in Malaysian SMEs and also training is of vital importance. As a result, the success of ERP in SMEs in Malaysia is guaranteed by a sound investment and effective training and failure to do so will lead to a defeat for ERP in Malaysian settings (Noudoostbeni et al., 2009).

In a study entitled "Success, failure, and improvement of the projects of Information Systems in developing countries" conducted by Richard Heeks in 2002 at the institute of management and political development in the university of Manchester, the model of ITPOSMO was introduced which helps to identify the gaps between the processes defined and the realities in Information Systems and proposes some solutions for decreasing the gaps and consequently the success of Information Systems. One of the solutions presented is the suitable training of the employees (Heeks, 2002).

In another investigation entitled "factors influencing success and failure of implementation of Information Systems", which was carried out by Buruncuk and Gülser (2004) in Information Systems department of the University of Bugacity in Istanbul, a model was presented for determining factors affecting success and failure of the implementation of Information Systems. Factors like adequate technical and managerial skills, enough training of team members and employees were enumerated as the influential factors in the success of Information Systems.

In a study entitled "proposing a framework for the evaluation of the readiness of the Iranian organizations for ERP implementation", which was conducted by Banijamali et al. (2005), it was concluded that ERP has more values of managerial and organizational aspects rather than technical aspects and more emphasis was put on managerial and organizational aspects can decrease the risk of failure in the implementation of the system in the organization. In this study, it was recommended that the managers of Iranian organizations should realize organizational factors and have a precise evaluation of their organizational readiness prior to the implementation of ERP and should consider seriously the strategic-organizational and tactical-organizational.

In an article entitled "feasibility study of the preparation for reception of ERP II in Iran" by Eshraghnia Jahromi et al. (2005), it was emphasized that ERP is very expensive and complex; its implementation needs a schedule based on a specific approach; its instructional period is long and is conducted in some stages. More important is that the project should be treated the best practice, which contains the most ideal international models of business. This in turn facilitates the adoption of such models and has the capacity of changing organizational structure and processes for the ideal model of ERP.

Organizational learning and its related issues are important and are addressed in organizational studies, particularly in the ERP projects. In a case study in Hershi Food Industry, producer of chocolate and sweet in North America, in the late summer of 1999, the lack of systematic training of employers and managers in the implementation of ERP caused loss of market share and consequently, a decline of %19 in the company revenues. (Kapp et al., 2001).

Considering the above addressed investigations and the importance of users training in the Information Systems projects and also with respect to the fact that at the time of conducting this research, Esfahan Steel Company was the only available large company with an ongoing ERP project, the subject of learning is evaluated based on Learning Requirements Planning (LRP) model. Therefore, the main aim of this research is to address how much attention is paid to learning through the application of LRP model in the ERP project of the Esfahan Steel Company. For this purpose, in the following the subject of ERP is briefly introduced together with a detailed demonstration of the LRP model. Then, the research methodology is explained followed by a case study and finally, the findings are analyzed, discussed and the research limitations and suggestions are addressed.

2. ERP

This is an organizational business strategy that integrates the whole functions and duties of an organization (in the form of a set of software systems) in the light of information technology based on an integrated best practice in order to be

compatible with almost all of the requirements of the system in different departments and put the resources of organization in the hands of different managers rapidly, accurately and qualitatively. It also assists them in the process of improving the quality of planning processes and decision making.

The ERP implementation at the Esfahan Steel Company has been based on the Application Implementation Methodology (AIM) which is developed by Oracle. This methodology covers six phases of implementation as:

1) Definition:

The steps for guiding the project through the implementation are defined.

2) Operations Analysis:

The existing processes and practices are analyzed for understanding the customers and business.

3) Solution Design:

Process solutions are created by matching application features with business requirements, which are identified during the Operations Analysis phase.

4) Build:

Detailed technical architecture that supports the Oracle Applications is defined.

5) Transition:

All of the implementation elements must be put together for a successful transition of production system to go live.

6) Production:

This phase includes all of the support activities of the production system, and also includes some specific post-production tasks.

3. LRP Model

This model is used as an integrated process for the implementation of ERP or any other considerable changes in organization which is based on technology and links training with the implementation processes of ERP. This model was proposed by Kapp et al. (2001). Kapp is a trainer, researcher, consultant, and expert of learning, technology and manufacturing. William Latham, the colleague of Kapp is a world famous trainer and lecturer, and management consultant with a myriad of past records in implementation and supporting systems of ERP and MRP II. Hester Ford Latham, another colleague of Kapp is the manager of this project in Boeing and the one who started organizational training management project.

LRP blends ERP-developed formulas and techniques with a macro level version of the basic instructional design model. LRP is an explosion of corporate strategic goals into discrete, measurable ERP training and implementation objectives combined with proven feedback methods and systematic analysis. With LRP, the ERP implementation initiatives within a company are tied directly to corporate strategic direction, articulated throughout the organization, delivered efficiently, and evaluated for constant improvement (Kapp et al., 2001). Figure 1 shows the steps of this model, which contains some tasks in each of the steps.

The first step in the LRP model is a careful analysis and development of strategic learning objectives based upon the strategic objectives of the organization. The diagnosis step involves the gross-to-net logic of determining what skills and competencies the organization already possesses and what is needed to effectively implement the ERP system. The next step in the process is the design of the instruction. This process involves determining the best method of delivering the instruction in terms of sequencing the information, presentation of the information, and distributing the information to the learners. Implementation step involves utilizing the LRP process to effectively implement the ERP system. LRP is not a one-time event. It is a continuous process. The purpose of an ERP system is to apply a consistent set of standards throughout the organization. Understanding how to develop a systematic method for continuation of the ERP process and how to transfer the process to other areas help an organization to achieve a strategic advantage (Kapp et al., 2001).

4. Relationship between ERP Learning and ERP Success

The influence of knowledge and learning on ERP projects is addressed in a number of investigations. Dezdar and Sulaiman (2009) conducted an investigation and addressed ERP team composition, competence and compensation as one of CSFs in the implementation of ERP projects. Finney and Corbette (2007) Also emphasized on training and job redesign as well as project team as most important critical success factors in the implementation of ERP. Soja (2008) found that employee education leads to increased employee skill level and organizational culture. As Plaza and Rohlf (2008) stated, it seems that extensive training, knowledge transfer, and proper project management are identified in the literature as the critical success factors for any ERP implementation.

In particular, LRP provides a learning architecture upon which to base an ERP system and its implementation. It is a

framework for teaching employees about the integrated nature of the organization and how to optimize that integration. LRP teaches employees to use the knowledge within the ERP system to make informed, intelligent, and effective decisions on a daily basis and it ensures that those decisions are tied to the strategic goals of the organization. Understanding the LRP process will help employees to solve common implementation training problems and to achieve rewards from a successful ERP implementation.

The implementation process is difficult. Project team requires a guidebook to assist them through the implementation process. The more educated the project team, the higher the likelihood of a successful ERP implementation. The LRP process not only could solve ERP implementation and training problems, but also, it will help managers to implement the project on time and on budget, which in turn leads to profit. In addition, LRP enhances the knowledge of employees and they could benefit from it when discussion with management and external consultants.

According to Kapp et al. (2001), LRP approaches organizational adoption of the ERP system from three sides and the interplay of the sides will lead to success in the implementation of the project. As it is illustrated in Figure 2, each side is dependent upon the others and as it is highlighted, "effective implementation team" is addressed as one of the key players. An effective project team must be assembled and empowered to make the implementation happen. Considering other sides of the triangle, it is important to note that the implementation team needs to understand the different rates of adoption and how to utilize techniques to accelerate the technology adoption process.

The implementation team responsible for diffusing the ERP system into the organization is typically unaware of the process by which innovations are adopted by a group. Awareness and proper management of the adoption process increases the likelihood that the ERP system will be adopted and utilized by the entire organization. The two key elements of the diffusion process that must be understood by the implementation team are the attributes of innovations that make them attractive to individuals and, secondly, the different types of employees within the manufacturing organization and their tendencies to accept technology and to pass on innovations to others.

5. Research Methodology

In this research, the LRP phases are developed regarding the ERP implementation as follows (Figure 3):

- 1) The analysis phase of LRP model at the "pre-implementation of ERP project" phase;
- 2) The Diagnosis, Design, Implementation, and Evaluation phases of LRP model at the "during implementation of ERP project" phase, which should be done by the AIM methodology; and
- 3) The Continuation phase of LRP model at the "post implementation of ERP project" phase to support the ERP project.

This research is survey based. Esfahan Steel Company as study is the only large available company that started to implement ERP in 2003. At the time of conducting this research, this project was in the supporting phase. Thus, the representatives of the operational unit, the authorities of this project (Systems and IT department), and managers and experts involved in the project form the research population including 70 respondents. Among the population, a sample of 16 persons is selected based on some specific criteria to respond to the questionnaire. The criteria are addressed by the company experts as familiarity with the system, engagement in the project, honesty in responding to the questionnaire, amount of knowledge, and availability. In the ERP project of the Esfahan Steel Company, five modules are implemented as financial affairs, supply chain management, production planning, human resources management, and maintenance (which are compatible with the Oracle e-business suit modules) and the research population includes at least one person for every module. The research questionnaire is a standard questionnaire available in the model of LRP with closed answer questions.

Because of time limitation of respondents and difficulty of coordination of group meetings, separate sessions are conducted for every respondent in which, questions are explained and the respondents answer the questions. The questionnaire provides the basis to answer the major questions of this research as:

- 1) How much attention is paid to learning in the ERP project by Esfahan Steel Company?
- 2) At the time of ERP implementation, is the organization in a good learning condition?
- 3) Are the required trainings effective during the implementation period?
- 4) Has there been continuous learning and training after the implementation of this project and until conducting this research?

6. Case Study and Analysis

Esfahan Steel Company is one of the largest mother industries in Iran and the first producer of steel products in the country. It has approximately 8000 personnel and also, an equal number of contractors (all together 16 000 personnel). Since Esfahan Steel Company is considered as a pioneer in the implementation of ERP, this company is selected as the case study of this research. The software package for the implementation of ERP is Oracle E-Business Suit which is under the authority of Oracle Company. As it was mentioned earlier, the application modules which have been localized

and implemented in this project include financial affairs, supply chain management, production planning, human resources management, and maintenance.

Figure 4 shows the percentage of the tasks done in relation to the whole tasks in the LRP model in of the ERP project in Esfahan Steel Company. According to the data, it seems that learning has not received due attention in the project.

The working conditions are classified in to three states as pre, during and post implementation of the project and therefore, the questionnaire is designed in three forms, respectively. The average of the answers to questions is calculated with respect to the three stages and is addressed in Tables 1, 2 and 3. Each of the items in the Tables include sub items. Total number of sub items is 134. For example, the first item, i.e. "General Tasks" has two sub items as 1) explained the need for careful analysis of the organization to top managers and 2) conveyed importance of the analysis step to all employees. Each of the sub items are asked by the 16 respondents based on a five scale with a total of 100 (i.e. 20 as very low, 40 as low, 60 as moderate, 80 as high and 100 as very high). Therefore, the values addressed in the Tables denote the average values of the sub items.

It is important to note that general tasks that include the explanation of the need for careful analysis of the organization for top managers and employees are not done as needed in this project. This might be due to the insufficient knowledge on the subject and lack of awareness about its importance in the success of such projects.

In the bill of learning (BOL), strategic objectives are broken into learning objectives, which are independent and measurable for a set of special skills and its provision process guarantees that learning objectives are fully in line with organizational strategies. The low average value of BOL (0.07) denotes the fact that such list is not provided for this project which in turn is an outcome of inadequate awareness of the important role of learning and its compatibility with strategic objectives of the organization.

From the average value of Table 1 (0.40), it can be concluded that the organization has not been in a good situation for learning at the beginning of the implementation of this project.

Table 2 presents the average value of groups of tasks which should be done based on the LRP model during the implementation of ERP.

ERP system will be used by employees who guarantee the success of such projects. For the preparation of the staff in order to learn and effectively cooperate with the project members, it must be made sure that they do not encounter physical or mental problems which may be related to the ERP project. However, learning seems important, particularly with respect to the Maslow's hierarchy of needs. Learning style is an effective subject and developing different training methods based on learning strategies could decrease the amount of time needed for learning. It also could increase efficiency and consequently is cost effective in organization. In the project under study, due to the lack of consideration of effective and productive training and learning, learning styles have not been introduced to managers and staff. This is why their learning styles are neither addressed nor evaluated and as a result, different training instructions do not exist for different learning styles.

It is highly recommended to the members of the project teams to understand each others' behavior, thinking styles and communicative skills, which require appropriate training and allocating time, before implementing large and complex tasks of the project. However, in this project, having no knowledge about this issue has caused inattention to preparation of suitable team training.

There are different approaches to launch ERP, each of which has advantages and disadvantages and the organization can choose a suitable approach to be compatible with its needs. Then it could be put into action effectively.

The lack of scientific and organizational studies for the implementation of the current project has caused unclear prioritization and compatibility of the selected approach with the organizational needs.

Another important subject is the effectiveness of training, which must be evaluated. In this project due to the lack of definition and structure for such evaluation, the effectiveness of the trainings if existed has not been clear. Moreover, considering average values addressed in Table 2, it can be argued that during the implementation of the ERP project, the importance of the role of users is not taken into account and the required trainings have not been effective.

Table 3 presents the average value of the groups of tasks that must be done based on LRP model, after the implementation of ERP.

Since return of investment takes a long run in ERP, the LRP process must be continuous in order to guarantee the efficiency of ERP in the short and long terms. A mechanism must be established in the organization to develop employees' skills in relation to ERP.

Understanding of a systematic approach for continuation of the process of learning requirements planning and its transformation in to information technology will assist organization towards achieving strategic advantage. Some of the key factors in continuous planning include Chief Learning Officer (CLO) and master learning plan. These help to plan

formal and informal events of learning programs effectively. Moreover, when the rewards are directly related to the employees' efficiency, they are more eager and willing to work effectively. The latter important factors have not existed in the organization under study.

One of the most important factors in the development and sustainability of an organization in the complicated business environment of today is learning capability. Peter Senge (1990) recommends five disciplines for moving toward a learning organization. His five disciplines together with the model of LRP can be used in evaluation of movement towards a learning organization. Considering the average values of such tasks, the evaluated organization has not had progress towards a learning organization.

According to the average values in Table 3, it can be concluded that the required continuous learning has not been conducted after the implementation of the project.

7. Discussion and Conclusions

In this article, the subject of learning was evaluated based on Learning Requirements Planning (LRP) model in the ERP project of the Esfahan Steel Company. The results of the investigation are as follows:

- At the moment of the implementation of this project, the organization was not in a good learning condition. While implementing the project the required learning has not been effective and the learning required after the implementation of the project and until the time of this investigation has not been continuous. Therefore it is concluded that in this project, enough attention has not paid to learning and the importance of the role of the users has not been taken into account.
- Although at the moment of the implementation of this project, system thinking has been the center of considerations in the organization, it has not been used in the organization. There also has not been any identification and analysis of the strengths, weaknesses, opportunities, and threats in the organization for the implementation of ERP, thus the decisions for the implementation of ERP have not been accurate and appropriate. In this project, there has not been any evaluation of the implementation approaches as well as their advantages and disadvantages. Hence it is not clear whether the selected approach has been compatible with the needs of the organization and has had an advantage over the other approaches. Consequently, there is a clear lack of knowledge in the organization for the implementation of ERP.
- It is important to note that learning is addressed in the employee job description and required conditions for adequate and effective training have been available prior to the implementation of ERP in the organization. But, for this project, there has not been any Chief Learning Officer (CLO) and master learning plan and therefore, learning objectives have not been defined. Additionally, learning styles have not been introduced or evaluated and as a result, there have not been various training instructions for different learning styles. Structured evaluation (for an evaluation of training) has not been available and no criteria have been defined for evaluating the results of training programs and the amount of their influence. On the other hand, considering the readiness and willingness of users for working with ERP, while running the project, this issue has not been measured in the Esfahan Steel Company. Therefore, the appropriateness of the approaches and performed learning events together with the continuous improvement in training approaches is not clear. Since the return on investment of training has not been evaluated, it can be argued that there has not been any sensitivity towards the cost of training and because of inattention to the importance of learning and training, the costs has been increased and there appears some rework in the project.
- The employees involved in the project have not been identified with respect to the technology adoption continuum, although most of the representatives of the operational units have agreed on the system and have assisted in the implementation of the project effectively. In addition, the opinion leaders have not been designated in this project. These issues influence the speed of adopting the ERP system in the organization and cause increase in costs. Training has not been done for the implementation team. Also, no action has been taken regarding soft skills that include problem-solving techniques, analysis, decision making and other skills of people which are all necessary for improving the implementation of ERP and this, in turn, does not motivate individuals' creativity in confronting special problems and consequently more time and money will be wasted.
- In the time of supporting the project, allocating resources has been done suitably but its efficiency has not been clear. Also, a continuous planning for sustaining ERP (as a dynamic system) has not been available in the organization until the time this investigation. Thus, it is concluded that according to the fifth discipline of Peter Senge and the results achieved from the application of the LRP model, apparently the studied organization has not moved towards a learning organization.

There have also been some limitations in this research, some of which are as follows:

- Considering the available resources, it seems there has not been any similar model to the model of LRP and this makes it difficult to have a comprehensive evaluation of the effects of learning and training in the successful

implementation of ERP.

- Considering the fact that the respondents were involved in the implementation of the project and with respect to the differences of their demographic characteristics, there might be ambiguity in the gathered data.

Considering the results of this investigation, the following subjects are recommended for an effective implementation of ERP:

- The role of the ERP users must be acknowledged as an important critical success factor in the success of the project in all of the phases of planning, implementation, and supporting. Since learning plays a leading role in the success of ERP projects, the use of LRP model is suggested for the success of such projects. Also prior to the implementation of ERP, the required knowledge in every departments and dimensions of organization should be ensured.
- The need for ERP is realized based on the strategic objectives and also the weaknesses and strengths, opportunities, and threats of organization. Therefore, the SWOT technique could be used as an effective approach for extracting of implementing strategies for the ERP system.
- Return on investment of training should be computed prior to the preparation of the ERP plan. The real return on investment is recommended to be calculated through an exact calculation of real costs and to be compared with the predicted data.
- Individual's different learning styles should be identified. For this purpose, adequate information must be given to them, regarding different individuals' training styles. In addition, appropriate training programs should be provided to the employees involved in the implementation team for increasing soft skills, problem-solving techniques and strategies and overall cognitive strategies.
- Before the implementation of project, a Chief Learning Officer (CLO) who is familiar with the ERP and learning subjects should be selected with enough authority. Also, learning requirements and objectives should be defined according to strategic goals independently and measurable considering a set of special skills of the project.
- Some responsibilities should be handed over to the employees involved in the project compatible with their position and suitable team training must be conducted for them before the project implementation.
- It is highly recommended to establish evaluation structure, criteria and effective evaluation checklists. Also, the appropriateness and adequacy of the provided training programs and continuous improvement of such programs are important to be considered.
- Continuous planning for sustaining ERP and allocating appropriate resources are necessary for the dynamism of system. If the organization uses the fifth discipline of Peter Senge and also uses the LRP model, its movement towards learning organization is guaranteed.

The following subjects are suggested as future research opportunities:

- Studying existing learning models for the implementation of ERP.
- Application of the LRP model in other organizations exploiting ERP and comparing the results with the results of this investigation.
- Studying the effects of selecting employees on the success of the project based on technology adoption continuum.
- Investigating the effects of the coordination of the strategy of ERP implementation with the organization strategies on the success of the project.
- Studying the obstacles and limitations of the application and use of ERP in each of the operational units of the Esfahan Steel Company.
- Investigating the factors affecting the development of systems thinking in the large organizations.
- Designing a model for the evaluation structure, criteria, and measurement of training effectiveness of ERP project in organizations.

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Table 1. The average value of the group of LRP tasks before the implementation of ERP

Description of the group of tasks	Value
General Tasks	0.25
System Thinking	0.51
Benchmarking	0.51
Analysis of key processes	0.64
Bill of learning	0.07
Average	0.40

Table 2. The average value of the group of tasks during the implementation of ERP

Description of the kind of activity	Value
Gross-to-Net Learning Requirements	0.43
Employee Learning Styles	0.01
Maslow's Hierarchy of Needs	0.18
Identify Types of Courses and Learning Events Needed	0.55
Identify Delivery Strategy for Courses and Learning Events	0.50
Develop Instructional Strategies and Tactics for Teaching	0.51
Develop Learning Objectives	0.38
Identify Attributes of ERP Appealing to User	0.66
Identify Employee in the Technology Adoption Chain	0.25
Identify Method of Determining Opinion Leaders	0.31
Identify Employees for the Implementation Team	0.62
Providing Team Training	0.21
Consider Pros and Cons of Each of the Setup Methods	0.13
Conduct a Formative Evaluation	0.05
Conduct a Level 1 Summative Evaluation of Training	0.12
Conduct a Level 2 Summative Evaluation of Training	0.00
Conduct a Level 3 Summative Evaluation of Training	0.08
Conduct a Level 4 Summative Evaluation of Training	0.00
Average	0.28

Table 3. The average value of the group of tasks after the implementation of ERP

Description of the kind of activity	Value
Planning Tasks	0.44
Resource Tasks	0.62
Rewards and Incentives	0.17
Learning Disciplines	0.23
Average	0.37

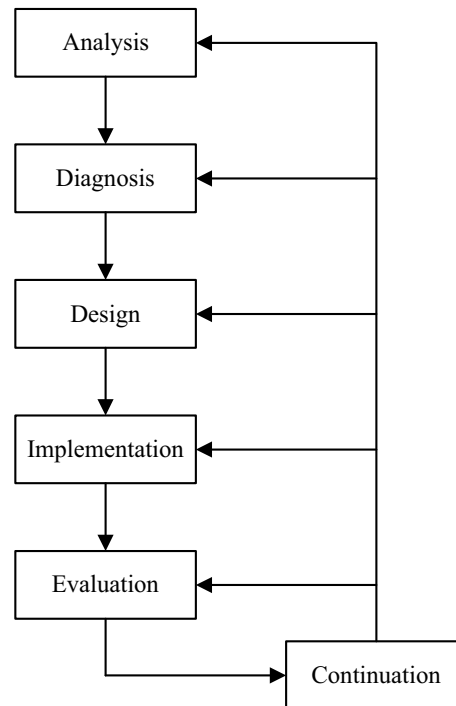


Figure 1. Diagram of LRP Model for ERP implementation (Kapp et al., 2001)



Figure 2. The Critical Areas of Success for an ERP Implementation (Kapp et al., 2001)

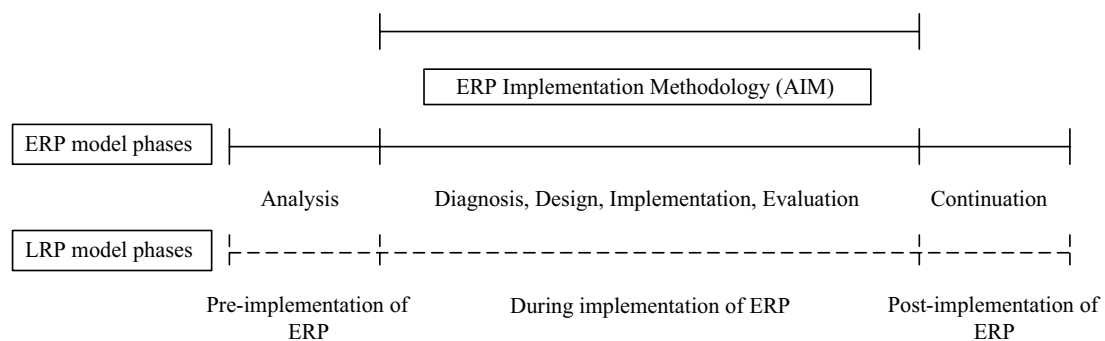


Figure 3. Research methodology: LRP phases before, during and after implementation of ERP

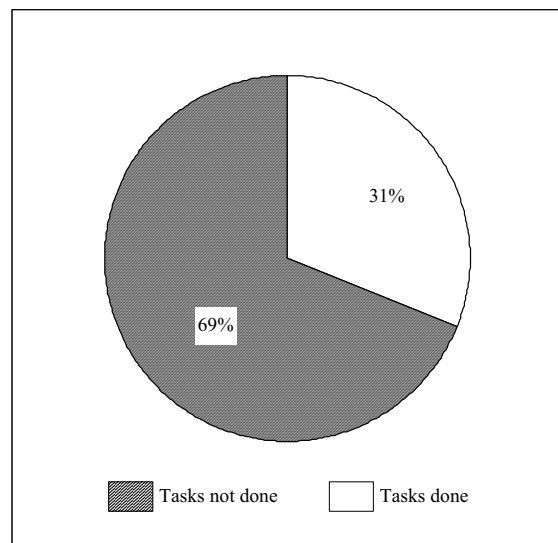


Figure 4. The percentage of the tasks done in relation to the whole tasks in the LRP model



A Cluster Approach towards Enhancing Chinese- American Trade Opportunities

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Abstract

For some time now, China has relied heavily on industrial clusters to create an international competitive edge. While the program has been largely successful, China has increasingly had to cope with severe accusations from its trading partners who claim a policy of dumping and selling low quality products with flaws, and hazardous outcomes. Claims are also made that China has not been as mindful of its resource utilization, environment impact, and overall economic efficiency as it should be. The thrust of this paper recognizes that opportunities exist for both the US and China to use this period as one of enhanced communication and cooperative ventures and planning initiatives. It is a hypothesis that cluster analysis offers a major vehicle that shows how all nations can begin to meet the needs of their people and do it in an environmentally and economically responsible manner.

Keywords: Industrial cluster, Smooth trade, The US-China

1. Introduction

Michael E. Porter, an internationally recognized scholar on competitive strategy, is the Bishop William Lawrence University Professor, based at Harvard Business School. He created the Cluster concept as a tool to better define industrial and geographic concentration both within and among nations. Professor Porter first introduced the concept of Clusters in 1990, which has gained wide acceptance throughout the world. Examples of its implementation as a public-private initiative currently exist in almost every country. Industrial clusters represent geographic concentration of interconnected enterprises in a particular industry that share related production inputs, specialized labor pools, distribution and communication channels, and network association. Clusters can be characterized as being integrated networks of production within strongly interdependent firms, including specialized supplier and extending to knowledge support agents such as universities, research institutes, and engineering companies. Clusters can also exist among bridge institutions such as brokers, and consultants as well as distribution channels and customers themselves, all of which are linked to each other in a value-adding production chain. The cluster approach focuses on the linkages and interdependence between actors in the overall network of producing products and services, contributing to the creation of innovation and a more efficient utilization of scarce resources. Porter's work on clustering was given a trade and global boost in a 1991 (Note 2) study by Paul Krugman who was able to show how the concept was also of importance to government trade planners and policy makers. While the original objective of clusters centered on how national state or regional economic development planners could increase the competitive environment, as globalization became an inherent part of the production and design process, more trade and international opportunities evolved.

Porter used various linkages to define a cluster. They could be purely industrial where different interdependent sectors link to each other such as within the various stages of processing of a natural resource or that of subsequent stages of fabrication. The linkage could also be geographically defined in order to keep distribution, transportation and inventory costs down, or in the case of a global cluster, where specialization or production costs and processes are more economically shared. A cluster could conceivably even be created within competing industrial sectors where for certain projects it would be economically efficient to cluster thereby creating a competitive advantage over other potential bidders.

Mills, Reynolds and Reamer (2008) (Note 3) recognized the importance of cluster analysis in a Brookings study and

called for the federal government to fund the development of a national cluster registry and data base so that industries and planners could better take advantage of the productivity and enhanced resource allocation opportunities offered by clustering.

Cluster analysis has not been without its critics, Barkley and Henry (2001) (Note 4) focused on regional economies and concluded that while the overall approach to clustering had several advantages, the authors considered it critical that each case be reviewed very carefully to avoid the formation of joint ventures that might not be able to survive competitive and growth conditions in their respective industries. Martin and Sunley (2003) (Note 5) were also concerned that there did not exist a formal theory for clustering that in their opinion made it very difficult for researchers to analyze the ultimate benefits and costs in this approach to economic development strategies.

As various nations and planners begin to further explore the opportunities clustering offers as an economic development and trade tool there will surely be more data made available for analysis and review of the concept. Clearly, the fact that so many national and international organizations have embraced the concept makes it incumbent on the part of researchers and policy makers to continue to seek even more ways that clusters as an industrial development tool can better foster economic efficiency and better trade relations and opportunities.

2. An Overview of Industrial Clusters in China

China has created a fairly sophisticated system of industrial clusters in many areas centered principally on their natural market share within domestic as well as global markets. This policy is most evident in the eastern and southern coastline regions, for example, Zhejiang province, which is in the southeast of China. Zhejiang Province has more than 500 villages and towns, many of which have formed their own unique cluster. The total output of these villages and towns accounts for roughly half of the province's industry product. The cluster phenomena consisting of a variety of industries has been created in Guangdong province as well. It has an estimated 60 towns out of all 240 towns in Guangdong that have formed a rather large scale of clusters primarily within traditional industry fields. Moreover, the southern areas of Jiangsu province have formed several IT industry clusters, Jingjin county(in Fujian province) has formed shoe industry clusters, Shouguang county(in Shandong province) has formed a vegetable industry cluster, Qinhou county(in Hebei province) has formed a wool industry cluster and Zhongguan village(in Beijing) has also formed an IT industry cluster.

From table 1, we can see how these industrial clusters play an important role in China.

<Insert Table 1 here>

However, with time many management problems in the industrial clusters began to emerge, often resulting from the low management skills of entrepreneurs, out date of technology or increasing labor cost. In addition, a growing low commitment of working hard, effective mutual cooperation, to mention only a few, began to further exacerbate the problems. Perhaps this phenomenon can be categorized as management deficiencies suffering from excessive growth. It is however, time for clustered firms to upgrade their management level and for the clustering process to move from the low industrial levels to the relatively higher one.

3. Reasons behind the Growth of a Cluster Approach towards Industrial Development and Trade

Professor David L. Barkley and Professor Mark S. Henry in a 2001 paper (Note 6) concluded that there were basically four important advantages underlying industrial clusters including: a) strengthening localization economies, b) facilitating industrial reorganization, c) encouraging networking among enterprises and d) permitting greater focusing of public resources. Their analysis shows the benefits from the cluster from the angle of the macroeconomic perspective.

There exists one other intrinsic strength that provides and incentive for an individual enterprise to join an industrial cluster. We have chosen to use a hypothesized case to make our point.

Assume that there are two separate and distinct retail merchants who are each selling cool drinking water along a linear beach. Let us further assume that; a) the merchandise they sell is of the same quality and sold at the same price; b) consumers are scattered evenly along the beach; c) customers are time and convenient oriented and always prefer to buy cool drinking water from a nearby stall; and d) Our two merchants have an exclusive agreement prohibiting any other competitors entering this market. In order to describe our model conveniently, we define that the beach length is 1, the left point being 0 and the right point being 1. According to geographic optimization, merchant one would locate his stall at 1/4 and merchant 2 would locate at 3/4 because doing so would minimize overall consumer convenience giving each merchant equal access to their respective market share. Although such an arrangement seems fair and reasonable, the reality itself is nevertheless not so simple. Both merchants do the same business, creating an unavoidable competition between them. Absent an agreement to the contrary, each merchant would have an incentive to relocate his stall a little further down the beach towards the territory of the other's. He would do so in hopes of winning some consumers from the other. The other merchant might also consider taking a similar action towards the competitor's territory. Therefore, the interesting competitive forces provided a natural incentive such that both merchants will gradually move their stalls toward each other until they each arrive at the middle point of the beach. A clustering agreement however, would have

both merchants agree to an overall location pattern, better designed to serves the customers and their time.

4. The Impact of China's Industrial Cluster Policies on US/China Trade

Commencing with China's 2001 accession into the WTO the growth in China's exports has increased annually, going from 20.1% in 2001 to 40% of its economy in 2008. The trend strongly reflects the overall dependence of China's economy on its export trade which further ties Chinese growth to that of its trading partners. Besides, the high export volume also tends to cause main trading partners' trade deficit. At present, trade imbalance between US and China is a top concern in US-China relation. Statistics provided by the American Chamber of Commerce indicates that between 2001 and 2008, the US trade deficit with China increased from \$83.10 to \$268.04 billion (excluding service trade, see table 2), accounting for 28.8 of the US total trade deficit. Asking China to take measures to increase inputs from America and decrease trade surplus to the US has become a strong argument from American authorities. Strong concerns continue to exist on the part of all trading nations that China's increasing demand of oil and other energy resources may cause harm to the international economic order. Furthermore, the US worries that China's huge exports may further erode US job losses, a growing concern throughout American labor markets. It has been estimated that approximately 70%-80% of China's exports come from China's current industrial clusters. (Note 7) Therefore, if we want to solve China's foreign trade problems and overall balance of trade, we must pay close attention to industrial clusters and find ways to better distribute this output within China's borders as well as with its trading partners.

<Insert Table 2 here>

5. Industrial Clusters and the Balance of Trade Issue

5.1 The trade issue

Major criticism of China's trade and economic development strategy has come primarily from its major trading partner, the United States. The US has also criticized China for dumping, and selling merchandise of low quality and in some cases with serious production and or design flaws.

Criticism has also pointed towards China's concentration on economic growth at the expense of a more rational utilization of its resources, further damaging the environment, and not being as mindful of economic efficiency as Chinese planners and manufactures might have been. The World Bank cited 16 Chinese cities out of 20 as the worlds most polluted.

In a recent study of carbon dioxide emissions, the most damaging of all greenhouse gases, a Dutch institute (Netherlands Environmental Agency, 2007) concluded that China has surpassed the US and is now the largest CO₂ emitter in the world. This listing was based on the overviews on energy use as compiled by British Petroleum. (Note 8) Anything China can do to reduce its footprint in this area would be most welcomed as a member of the world community, Clusters, well thought out and implemented with an objective towards technological and environmental efficiencies offer one opportunity to do just this.

5.2 Probable solutions

(1) Among the WTO member states, the US has the second largest number of anti-dumping cases against China which has led to much confusion and debate within Chinese business leaders. China recognizes that America is implementing increased protectionism. But President Obama said, "We can't go back to the era where the Chinese or the Germans or other countries just are selling everything to us, but we're not selling anything to them". Just on Sep.11, 2009, President Obama announced that he would impose a 35 percent tariff on automobile and light-truck tires imported from China. Meanwhile, China, not unexpectedly, also took some countermeasures in reaction to this dispute. To some extent, the root reason for the dispute lies in the different cost and quality standards of merchandise that both sides hold. According to the WTO rules, as long as a country is not recognizes as a market economy country, any WTO member can measure the dumping extent of its enterprises by utilizing a third country's (substitute country) prices, not its domestic prices or costs. Therefore, since China is not recognized as market economy country by the US, the domestic prices of China's products will not be recognized as well, hence, the US has usually taken comparable prices of a third country to measure the dumping extent of Chinese enterprises, but China argues that this measure is unfair because the third country's cost may higher than that in China. So, in order to know Chinese merchandise' cost structure and solve the anti-dumping dispute permanently, the US and China need to find a better way to negotiate a more reasonable and workable comparative strategy towards evaluating these exchanges. However, the most important and also the first step, we think, is to implement a stronger and more workable system to communicate and cooperate. Only when both countries trust each other and consider the problems as faced by our trading partners can trade issues be solved easily.

(2) Chinese production has historically been associated with the output of relatively inexpensive goods that traditionally relied on an abundant and low cost labor supply to meet the demands of the market. As Chinese industrial policies developed, and became more capital intensive a significantly higher level of productivity was realized. China rapidly became more diversified in terms of its productive capacity and output choices. The conscious movement towards cluster production has made a more diversified production mix possible as well as a natural outgrowth of modernization.

These changes in Chinese production capacity occurred as the visible shift towards a more service based economy became a reality throughout the American economy. This emerging dynamic has created a more diversified demand for imported goods on the part of the American consumer, products which are now almost exclusively produced outside of domestic American production facilities. Chinese products have been warmly received by the American consumer. However, the America market has also become more diversified with some consumers seeking high quality merchandise while others continue to seek low-priced merchandise. This change has provided a great opportunity for China as well as the need for its producers to prepare a wider range of products to meet this new demand for imports on the part of the United States. One result of this change is that the more diversified demand for any given product must now recognize the need for different levels of quality reflecting different pricing levels as well, creating a wider choice for the American consumer who will then be able to select their desired merchandise at the price and quality levels most desired.

It might at first appear that this diversification will break down the economies of scale enjoyed by the cluster approach to production as currently implemented and indeed even being expanded. This does not however, need to be the case, Upgrading and diversifying the industrial cluster's production level will place upon the manufacturer a great need for more efficient inputs, as well as intensified research and development, to improve techniques as well as technology, the implementation of stricter management measures and improve the competence of employees, all of which open great opportunities for cluster collaboration between American and Chinese management. In the past, China managed to overcome these limitations mainly by absorbing foreign capital or through the creation of temporary joint ventures. The current global financial crisis has significantly reduced opportunities for this strategy to continue, indeed, it is now recognized that capital funds can only solve some these contemporary production problems. A conscious effort at enhancing a targeted industrial cluster's core competence is most important, and can best be accomplished by taking advantage of American advanced knowledge and by attracting American talents to China to augment Chinese production, engineering, and product design. China has the labor costs advantage, while America has technology and capital advantage. A comprehensive mutually beneficial merging of both advantages is certain to transform and enhance the Chinese industrial cluster. A more aggressive merger of American and Chinese manufacturing and administration skills is also an aid to propel the transition towards smoother overall trade relations. This strategy is directly in line with Porter's concept of geographic clusters, all designed to enhance productivity and minimize resource utilization. According to five sets of actors composing cluster (see chart 1), Chinese clusters can combine with American companies, research communities and financial institutions to group a global cluster or upgrade the primitive one.

<Insert Chart 1 here>

(3) Any new ideas involving economic development or production must now take its environmental footprint directly into consideration. All nations must accept the fact that we live on a finite planet with finite resources.

For the past 15 years China has witnessed a rapid rate of growth that has moved it into third place among our world's economies. As the world gets ever smaller in terms of the intellectual and time components of exchange, China needs to better focus on conservation of world resources such that the most efficient production processes flow from a global standard and not only a national one. At the same time, America needs to become a more active and willing partner to Chinese economic reform options. As one of the world's most rapidly developing nations, China is facing significant economic, social, and political challenges as it comes to terms with its next phase of economic expansion. In order to create a sustainable and stable growth strategy, China must reform and innovate more deliberately. China needs American technology management expertise, and administration skills to recreate the next phase of Chinese industrial clusters, and America needs China to lend its huge industrial capacity to become a more receptive and effective trading as well as producing partner. Commemorate with the creation of a more efficient economic growth strategy China must also think of ways to increase its domestic markets, a cornerstone to any stable and sustainable economy. As long as the US and China cooperate closely, business relations, political and social differences, and expanded trade that benefits all parties easily become achievable goals.

(4) China may not confine itself to the traditional industrial clusters. China can learn from America and take the advantage of America's advanced technology and administration skills so that it can more smoothly enter new industrial clusters that stand for new economy, such as tourism, music, sports, arts, film, dance, hotel, finance, insurance, education. Traditional industrial clusters' products are tangible and must incur raw materials costs. While these new industries' products are intangible they contain considerably less cost in solid raw materials they also are generally low level polluters as well. Service sector production is typically considerably less polluting than that of most manufacturing production, especially. Service output is a rapidly growing component of the nominal Gross domestic product of both China and America During recent decades, the importance of services to the global economy has steadily grown while the importance of goods has somewhat declined. It is a general rule that as the national economy develops, the service sector percentage of GDP becomes higher. With the notable exception of China, all the major economies, such as the European Union, the U.S, Japan and Germany, have more than 70% of their GDP from their respective service sectors. China's services are only 40%, of its GDP, which is lower than the world average level of 64%. From the fact we can explain why pollution in

China continues to be a problem. Of course, this also indicates that China has a vast potential in service industry. If China wants to attain a positive impact in tackling its pollution problems, it must not only upgrade the existing traditional industrial clusters as a percentage in GDP, as well as enhance its service sector output.

Moreover, it is totally practical for China to transform its industrial clusters. Pittsburgh has set a good example. Pittsburgh has transformed itself from one of America's dirtiest cities into what is now a beautiful and clean city because of its successful transition from traditional industrial clusters to modern ones. Today, Pittsburgh has not only a viable, successful, and healthy steel cluster, but also a growing and healthy tourism and IT clusters. The economic environment has changed markedly during recent years, with most of the changes being driven by the revolution in information and communication technologies and by the emergence of a knowledge-based economy.

China has successfully taken advantage of foreign capital and skills to achieve ideal effects on the goods industries. It is now a good time to turn its attention towards a higher concentration on its service industries as well, merging with American experience, technology, skills and capitals in all sectors. American service industries are among the most developed in the world and many opportunities for joint development exist for China to take advantage of.

In fact, China and the U.S have both managed to create some successful examples of service industries cooperation. Motorola, Intel, IBM, Cisco, and many other American IT Firms companies have all crowded into China industrial clusters and collaborated with Chinese firms.

Besides, there are many other service cooperation cases. KFC has opened 2600 restaurants in China. Macdonald has opened more than 1200 outlets in China. Although Macdonald's scale is not as big as KFC's, it has always abided by an efficient strategy that each of its restaurants are always geographically close to KFC, which encourages more fast food industries to concentrate in the cluster.

It is a general rule that as the national economy develops, the service sector percentage of GDP becomes higher. With the notable exception of China, all the major economies, such as the European Union, the U.S, Japan and Germany, have more than 70% of their GDP from their respective service sectors. China's services are only 40%, of its GDP (see table 3), which is lower than the world average level of 64%. Of course, this also indicates that China has a vast potential in service industry. From those cooperative efforts in the past and intended cooperation in the future, we can see that China is an emerging new market in service industries cluster with much potentials and combination of both China and the U.S can surely achieve a better operation results.

<Insert Table 3 here>

6. Conclusions

The US and China are the world's second largest trading partners, which means that there is great potential in the US-China economy for expanded global cooperation. America's huge financial and trade deficits requires it try to find a way to attract external funds and markets, while China's large surpluses and domestic requirements create opportunities to upgrade its traditional industrial clusters and expand its service industrial clusters by absorbing international talents. The US and China have many complementary goals and opportunities. As long as they cooperate well and exert their respective strengths, and recognize their individual weaknesses, they are both sure to create the greater global clustered markets. Opportunities exist in the silk and fabric, agriculture, wool, electronics automobile, steel, or even aircraft production sectors that can be both expanded and explored. The US still has a technological advantage, and China has labor and natural resources advantage. The combination of the two advantages should be definitely a resource of innovation and smoother trade relations that will lead to an even greater level of social, political and economic benefits for both countries.

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Notes

Note 1. Michael E. Porter, *The Competitive Advantage of Nation*, Macmillan Press, 1990.

Note 2. Paul Krugman, *Geography and Trade Cambridge MA*, London, MIT Press, 1991.

Note 3. Karen G. Mills, Elisabeth B. Reynolds, Andrew Reamer; *Clusters and Competitiveness: A New Federal Role for Stimulating Regional Economies*. Metropolitan Policy Program at Brookings, April 2008.

Note 4. Barkley, David L. Mark S. Henry, 2001, “Advantages and disadvantages of targeting industry clusters, Clemson University Public Service Activities ” Regional Economic Development Research Laboratory Report 09-2002-01.

Note 5. Martin, Ron and Sunley Peter; *Deconstructing Clusters: Chaotic Concept or Policy Panacea*, *Journal of Economic Geography*, 3, 2003.

Note 6. The same as 4

Note 7. China Market Research Center, 2008-2009 China Customs data Analysis on China Clusters’ Export and Import, 2009.

Note 8. http://seattletimes.nwsources.com/html/nationworld/2003756624_wdig21.html

Table 1. Some examples of China clusters

Location/Product Name	Market Share(%)(Domestic or Global)
Wenzhou/Cigarette Lighter	80(Global)
Hangji/Tooth Brush	80(Domestic), 22(Global)
Fushan/Pottery	80(Domestic), 30(Global)
Yongjia/Cloth Button	80(Domestic)
Chenzhou/Tie	90(Domestic)
Yiwu/Little Merchandise	70(Domestic)
Zhuji/Sock	65(Domestic)
Shaoxing/Texile	33(Domestic)
Wenzhou/Shoes	26(Domestic)
Hainin/Leather	25(Domestic)
...	...

Note: Every location above is a city belonging to a province in China.

Table 2. The U.S Trade with China

Year	Exports	Imports	Balance
January –July 2009	35,662.6	159,130.8	-123,468.2
2008	69,732.8	337,772.6	-268,039.8
2007	62,936.9	321,442.9	-258,506.0
2006	53,673.0	287,774.4	-234,101.3
2005	41,192.0	243,470.1	-202,278.1
2004	34,427.8	196,682.0	-162,254.3
2003	28,367.9	152,436.1	-124,068.2
2002	22,127.7	125,192.6	-103,064.9
2001	19,182.3	102,278.4	-83,096.1
TOTAL	367,303	1,926,179.9	-1,558,876.9

SOURCE: U.S. Census Bureau, Foreign Trade Division, Data Dissemination Branch, Washington, D.C. 20233

NOTE: All figures are in millions of U.S. dollars, and not seasonally adjusted unless otherwise specified.

Table 3. Nominal GDP sector composition, January 2008

Number, country, GDP			Composition in percentages			Composition in million dollars		
Nr.	Country	GDP	Agri.	Indus.	Serv.	Agri.	Indus.	Serv.
—	World	46,660,000	4%	32%	64%	1,866,400	14,931,200	29,862,400
—	European Union	13,620,000	2.1%	27.3%	70.5%	286,020	3,718,260	9,602,1001
1	United States	13,220,000	0.9%	20.4%	78.6%	118,980	2,696,880	10,390,920
2	Japan	4,911,000	1.6%	25.3%	73.1%	78,576	1,242,483	3,589,941
3	Germany	2,858,000	0.9%	29.1%	70%	25,722	831,678	2,000,600
4	People's Republic of China	2,512,000	11.9%	48.1%	40%	298,928	1,208,272	1,004,800
5	United Kingdom	2,341,000	1%	25.6%	73.4%	23,410	599,296	1,718,294
6	France	2,154,000	2.2%	20.6%	77.2%	47,388	443,724	1,662,888
7	Italy	1,780,000	2%	29.1%	69%	35,600	517,980	1,228,200
8	Brazil	1,566,253	8%	38%	54%	125,300	595,176	845,777
9	Canada	1,089,000	2.3%	29.2%	68.5%	25,047	317,988	745,965
10	Spain	1,081,000	3.9%	29.4%	66.7%	42,159	317,814	721,027
11	India	796,100	19.9%	19.3%	60.7%	158,424	153,647	483,233
12	South Korea	768,500	3.3%	40.7%	56%	25,361	312,780	430,360
13	Mexico	741,500	3.9%	25.7%	70.5%	28,919	190,566	522,757
14	Russia	733,000	5.3%	36.6%	58.2%	38,849	268,278	426,606
15	Australia	645,300	3.8%	26.2%	70%	24,521	169,069	451,710

SOURCE: U.S. Census Bureau, Foreign Trade Division, Data Dissemination Branch, Washington, D.C. 20233

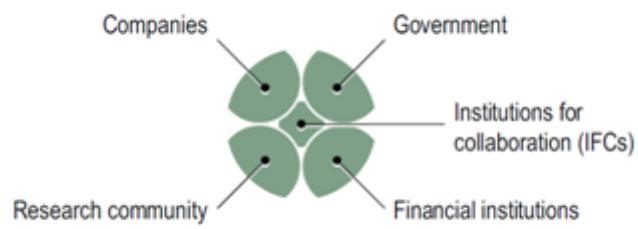


Chart 1. Five sets of actors composing a cluster

Source: Center for Strategy and Competitiveness (2003)



Facing Crisis: Saving a Company via Cultural Transformation

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Abstract

Crisis may require an organization to transform itself; however, transformation may not necessarily help the organization overcome the crisis. Two crises occurred in Taiwan that forced many businesses to change their operating style. The earthquake on September 21, 1999 and the outbreak of SARS in 2003 forced organizations to change. These two calamities exposed companies to a series of challenges which often required creativity and change to overcome. This research is a case study of how a Taiwanese company overcame the challenges caused by these crises, transforming itself from a customer-led business to a market-oriented business. Specifically, we extend Lewin's planned change model to investigate the storytelling and organizational communication styles used in different stages of this company's transformation. The findings reveal that a company can actively respond to crisis thereby providing guidelines for organizations facing catastrophe and chaos.

Keywords: Crisis, Organizational transformation, Cultural artifacts, Market orientation, Case study

1. Introduction

On September 21, 1999, the most severe earthquake in Taiwan's recorded history, 7.3 on the Richter scale, struck the central region of the island, killing 2,494 people, injuring 13,799, destroying 51,392 houses completely and damaging 104,833 houses severely. More than 310,000 residents were displaced. Total damage was estimated at 11.5 billion US dollars, including losses from collapsed buildings, shattered transportation infrastructure, and diminished industrial production due to a two-week power outage (Directorate-General of Budget, Accounting and Statistics, 2000). The increase in the gross domestic product (GDP) fell from a projected 6.72% to 4.89% after the earthquake; meanwhile, the annual consumer price index (CPI) growth rate dropped from a projected 1.7% to 0.2%. These figures indicate that not only did consumer's purchasing power decline but also consumer willingness to consume weakened (Directorate-General of Budget, Accounting and Statistics, 2009). The focus of consumer expenditure changed as well. With the mindset of living in the moment, people temporarily shifted from a long-term perspective to a short-term orientation; spending more on luxuries rather than long-term investment such as continued education (Pavia & Mason, 2004).

While still recovering from the earthquake, a catastrophic epidemic, the Severe Acute Respiratory Syndrome (SARS), attacked Taiwan in the spring of 2003. During the SARS outbreak, consumer confidence severely declined reducing spending in Asian economies between \$11 billion and \$18 billion (General Accounting Office, 2004). The SARS outbreak impacted the service sector including those companies in travel, tourism, retail sales and continuing education, especially hard (Cheng & Wen, 2004).

One of the challenges that companies faced was that many Taiwanese started to avoid going to public places and became more isolated emotionally and socially. This resulted in a major reduction in private consumption spending, forcing many service firms to confront bankruptcy; some went out of business, others struggled to survive, while some thrived. The outstanding businesses in the last category are of particular interest. Understanding how these companies endured the crises, engaged in organizational change and adopted different business philosophies can provide valuable insight to business leaders, who may face future crises. This research uses a case study investigating the organizational transformation of one exemplary Taiwanese company to improve our understanding of how to successfully manage organizational change. "TutorABC", an extracurricular education company not only survived but became a market leader in a new business domain - the live e-learning industry

TutorABC initiated a thorough organizational transformation to respond to the crises. This transformation involved three stages, matching Lewin's Planned Change Model, from a brick-and-mortar business to a dot-com business. To add clarity Lewin's original stages are divided into two parts, with six short-term objectives as follows (1) Awareness of the need for change; (2) Conformity toward the new goal; (3) Adaptiveness to the new route, (4) Compliance with the new

rules; (5) Consolidation into unison; and (6) Elevation beyond status quo (AC-AC-CE).

The analysis combines this organizational change model with marketing and organizational culture analysis. Interestingly each of the six stages shows unique characteristics in the use of cultural artifacts and each of the three main stages of transformation also correspond to a particular marketing strategy of the company. In addition, the company developed its IT capabilities and expanded its use of network communications to gain the many advantages offered by this business model.

Organizational behavior literature on both organizational transformation and cultural artifacts will be reviewed, before discussing research methodology, site selection and data collection. Thirdly, an analysis of how TutorABC Company evolved to overcome the crisis, followed by a discussion on the theoretical significance and managerial contributions of this evolution. Finally, a discussion of how these findings might be beneficial in terms of inspiring organizational leaders to consider how the tool of storytelling might be used and we will offer suggestions for future research.

2. Literature Review

2.1 Organizational Change

To develop an understanding of the different facets of an organizational transformation, we first review literature on organizational transformation, mainly Lewin's planned change model. A second important factor is organizational culture (Johnson, 1990; Pascale, Millemann, & Gioja, 1997). An organizational culture is typically reflected in the organization's cultural artifacts, such as stories and communication styles (Dirskill & Brenton, 2005 & Martin, Feldman, Hatch & Sitkin., 1983; Conrad, 1990), which will be reviewed in the second part of this section. Organizational Transformation

Organizational change theory is well developed and well researched; however even though more complicated models exist; the foundation of organizational change theory remains Lewin's Planned Change Model (Armenakis & Bedeian, 1999). Lewin (1951) theorized that a successful organizational transformation involves three stages: unfreezing, moving, and refreezing. The unfreezing stage, advocates of organizational change will unfreeze a quasi-stationary equilibrium, a fragile balance constructed by driving forces and restraining forces, in order to initiate the organizational transformation (Burnes, 2004; Lewin, 1951; Wilson, 1992). At the moving stage, the organization utilizes internal resources to conduct experiments regarding business operations and then evaluates the results iteratively to explore viable transformation routes. Once the organization identifies the most appropriate route, it crystallizes (refreezes) group behaviors to ensure movement along the calibrated direction.

Beverland and Lindgreen (2007), Armenakis & Bedeian (1999) Day (1999), Gebhardt, Carpenter and Sherry (2006), and Homburg & Pflesser (2000) all used Lewin's model to study organizational change. In fact Beverland and Lindgreen (2007) regard Lewin's model as the most relevant change model for radical planned change. The previously noted research shows that Lewin's model could be utilized to study an organizational transformation with the following characteristics: The transformation is *unexpected, radical, goal oriented and longitudinal*. The transformation must be necessitated by unexpected events such as crises, which require a massive and comprehensive process of organizational transformation to counter the crisis. The change will be guided by a goal proposed by organizational leaders at the initial stage and the nature of transformation is relatively slow and needs a longer period of time to complete. These four characteristics can be found in this case. Hence, this research similarly adopts Lewin's model as its framework.

2.2 Cultural Artifacts

Researchers of organizational transformation have demonstrated their interest in cultural transformation in recent years (Gebhardt, Carpenter & Sherry, 2006; Harris & Mossholder, 1996; Homburg & Pflesser, 2000). Since the concept of organizational culture is an essential factor in organizational transformation, (Burke, 1995; Cummings & Worley, 2005; Johnson, 1990; Pascale, Millemann & Gioja, 1997), senior executives must make use of cultural artifacts to successfully achieve cultural transformation because the artifacts are powerful tools in creating change (Cummings & Worley, 2005; Higgins & McAllaster, 2004). Schein (1992) defined cultural artifacts as the visible symbols of the deeper, underlying culture such as stories, rites, myths, . Studies of cultural artifacts may rely on one element, such as stories (Brown, 1990; Meyer, 1992). However this article examines two cultural artifacts, storytelling and organizational communication styles (Dandridge, Mitroff, & Joyce, 1980; Trice & Beyer, 1993). Stories that denote the sequences of events in the history of an organization and storytelling facilitate the dissemination of experiences, morals, perspectives, and beliefs among an organization's members. Storytelling is an effective means of helping organization members accept vital beliefs, such as an organization's vision and mission, more easily (Boyce, 1996; Foster, 2002), which aids in making sense of vague situations, such as a crisis and forming precedents for future actions and decisions (Boje, 1991). Storytelling can serve as a proactive managerial tool since senior management can actively establish links between strategy, culture, and stories in the transformation process to enhance the probability of success (Higgins & McAllaster, 2004). Observations of an organization's storytelling techniques can assist in understanding a company's reaction to a crisis and its corresponding strategy in a period of change.

Organizational scholars have shown that organizational communication style, defined as “a collective preference by organization members for certain channels of communication”, (Dirskill & Brenton, 2005, p. 50) is a cultural artifact which is important in studying the organizational change process (Albrecht & Hall, 1991; Albrecht & Ropp, 1984; Fairhurst & Wendt, 1993; Rogers, 1995; Van de Ven, Angle & Poole, 2000). Communication channels can be non-verbal (facial and body language), oral, written, and online multi-media. Each communication style plays a different role in conveying information. Organization executives often communicate complex messages through several channels at once. Our research will show how communication style affected the implementation of the organizational change.

3. Research Method

The purpose of qualitative research is to develop an understanding of individuals and events in their natural state, taking into account the relevant context (Lincoln & Guba, 1985; Leedy & Ormrod, 2005; Kostere, Koster & Percy, 2008; Creswell, 2008). Gerring (2004) suggests that case study is best defined as an intensive study of a single unit with an aim to generalize across a larger set of units. Case studies are often used to answer the how and the why questions (Yin, 1994). The case study approach allows for the in-depth examination of a phenomenon which is present in context, such as is the case of TutorABC in which longitudinal and dynamic characteristics are prominent (Leedy & Ormrod, 2005; Kostere, Koster & Percy, 2008; Creswell, 2008; Eisenhardt, 1989). Leedy and Ormrod (2005), Kostere, Kostere and Percy (2008) and Creswell (2008) suggest that extensive data should be gathered on the subject of the study to provide as much detail as possible.

3.1 Site Selection

Four criteria were set for choosing the firm to study how artifacts facilitate transformation. The company needed to have been affected by the earthquake and the SARS outbreak. Second, the company had to be in the service industry, which suffered from those crises, most. Third, the company should be relatively small as small firms are more flexible in reconfiguring their internal resources to face a crisis. Finally, the company needed to have recently entered the refreezing stage as this would provide more relevant data

Tutor ABC was chosen as it met all of the criteria. Established in September 1998 (Note 1), TutorABC was a brick-and-mortar extracurricular educational service (an English learning institution) company with less than 20 employees; which transformed itself in three years to the industry leader in online instruction with more than 400 employees.

3.2 Data Collection

The longitudinal-procedural method was used for this research, collecting data from April 2008 to April 2009. Using a simple longitudinal model of change, the firm was examined at three stages: initiating change, changing, and consolidating reforms. After explaining the purpose to the management team they were supportive and permitted the author to engage in participant observation over a period of one year and we spent eight months interviewing and collecting historical documents that focused on the key players in the transformation of TutorABC.

This research employed unstructured and semi-structured interviewing. Using unstructured and semi-structured interviews with questions focused on gaining a descriptive history of the motivation for change, the pressure for and against change, top management's influence, problems that emerged in the course of transformation, and how IT developments related to communication styles.

We conducted interviews with a wide range of employees to gain a broad perspective on the changes that took place. Interview questions were open-ended and participants were encouraged to speak freely. The author attended the interviews, one asking questions and one taking notes. The interviews were recorded on an MP3 recorder and then translated into English.

Interviewing stopped when saturation occurred, that is, when extra interviews began to yield few novel insights (Strauss & Corbin, 1998). The final sample consisted of nine interviewees, with in-depth interviews totaling 28 recorded hours (Table 1). The full transcript, including information from each interview and secondary sources, totaled 178 pages (155 for formal interviews, 23 pages for field notes).

To organize data from field notes and interview transcripts, data reduction techniques such as coding, labeling, and abstracting were used (Strauss & Corbin, 1998). Data was manually coded after the completion of each interview and analyzed to identify themes relevant to the research. To ensure the accuracy and reliability of the coding, the raw data was separately coded by two people and the results compared. Any areas where the coding did not agree were removed from further consideration. Throughout the interviewing stage theory on organizational change and organizational culture was referenced to ground interpretations as they emerged. Other documentation considered in the analysis included the company website, Intranet Management System (IMS) data, internal company e-mail, archival research, training course material, employee regulations, advertising document reviews, meeting minutes, and video recordings

both of CEO speeches and of annual activities observed during non-participant and participant observation. These extra steps serve to ensure triangulation (Strauss & Corbin, 1998; Yin, 1994) and to supply extra sources to help understand discrepancies among informants and allow additional perspectives on key events and issues (Miles & Huberman, 1994).

4. Results

TutorABC was like most small-sized firms just getting started; the top executives worked very closely with their employees and encouraged members to accept certain values and rules (Denning, 2004). Chris, the R&D manager, said:

'Early in the beginning of the company, the CEO together with employees distributed pamphlets to customers on the street from early in the morning until 8 p.m., regularly . . . The company's rule was to be punctual. On one occasion the CEO was late by a few minutes and he was rebuked by the founder...Since then, everybody followed the rule.'

This story emphasizes the commitment to customer satisfaction; even the CEO was handing out brochures. A second theme is that the enforcement of rules at that early stage mainly relied on an oral style of organizational communication. Profits were suddenly cut by the most devastating earthquake in Taiwan's modern history. The company's classrooms were ruined, public infrastructure was destroyed, and transportation became a major difficulty for both teachers and customers. Adjusting to the setback, the company invested in the development of the computerized automatic assessment system, resulting in the creation of the Dynamic Course Generation System (DCGS) in 2002, a system utilized to assign customized study materials to students. Meanwhile, TutorABC kept working on other ways to serve their customers, but a concrete plan for organizational transformation was not formulated until the SARS outbreak.

The emergence of SARS affected both current and potential customers of TutorABC. Since SARS spread through the air, many existing customers became reluctant to go to classrooms. The situation negatively impacted the bottom-line of the company, giving top executives a strong sense of urgency and a motivation to evolve their business. One possible solution generated by the top executives was to establish e-commerce. Mark, the founder of TutorABC, explained his determination to work in this direction:

'The earthquake gave us a big warning sign that we could not solely depend on a traditional brick-and-mortar business model. We were thinking about some other possibilities...The SARS outbreak gave us the motivation to quickly enact our ideas or else fail.'

We can see that the earthquake and SARS drove TutorABC to conduct a transformation toward a goal set by top managers. During the following three years, the company went through a massive organizational transformation process. By 2006, TutorABC successfully operated an online business and reshaped consumers' learning experience into what the company claimed in its slogan: 'English at anytime, anywhere.' In the next section, we will examine the transformation of TutorABC in the context of Lewin's three-stage view.

4.1 UNFREEZING STAGE

4.1.1 Storytelling

Awareness of the need for change. The story below illustrates creating awareness and convincing employees through storytelling. According to Chris, the R&D manager:

'When SARS first broke out, the CEO was quick to ask our IT team...to accelerate research on on-line products and to evaluate new possibilities within the market. He said: You know, once there was a hotshot Japanese company, NOVA or something. When times were good, it moved into an expensive part of town where the rent was very high. However, when bad times came, it could not keep up with the rent. Well...in the end that company closed down...Why? It failed to realize that it might need a change.'

The SARS crisis forced the TutorABC to re-examine its core business as top-management realized the weaknesses of the current business model. Matthews & Scott (1995) argued that the awareness of environmental uncertainty of top executives is unquestionably an influential antecedent to strategic planning processes in small businesses. The above story displays the factors Lewin (1947) identified, the awareness occurring in the unfreezing stage is cognitive exposure to the change idea, diagnosis of the problem, and the engendering of solutions.

Conformity toward the new goal. During the unfreezing stage, top managers are driven not only to create awareness of the need for change but also to produce a consensus in favor of change. Chris, the R&D manager, said:

'We all felt that the idea of operating a live e-learning center would be impossible, but our founder insisted. He continually encouraged us to keep going and to develop the online system. I remember once in a meeting he told managers, "don't think that live e-learning is impossible. No one can invent products very smoothly.'

The key factor in this stage is conformity, defined by Kosslyn and Rosenberg (2004, p. 703) as 'a change of belief or actions in order to follow a group's norms.' In this case, a number of employees preferred working at a traditional classroom business because they feared the uncertainty of creating a new business model. As Armenakis & Bedeian (1999) wrote, an employee's established skills may become invalid when an organizational change is initiated. To

overcome these restraining forces, top executives used storytelling to bring employees into alignment with the organizational goal “to build a new business of live e-learning based on TutorABC’s traditional classroom model,” and thereby reached the consensus for change. The employees could then accept the new goal and consequently the desired transformation commenced.

4.1.2 Organizational Communication: Oral Style

Oral communication is often the primary method during the unfreezing stage. Senior managers frequently used teleconferences and meetings which involved a great volume of oral communication. As the CEO explained “oral communication helps to reduce fear about crises.”

Oral communication allows people to quickly comprehend complicated phenomena they have never encountered, exchange opinions immediately, and generate alternatives and solutions in a timely fashion. Such characteristics facilitate organizational members’ awareness of the need for change and their conformity toward the new goal of the organization.

4.2 MOVING STAGE

4.2.1 Storytelling

Adaptiveness to the new route; as the product prototype was being developed in 2004, TutorABC entered the moving stage. In order to initiate the live e-learning business model, TutorABC constructed a new department responsible for online services, internal infrastructure and systems were changed, such as the institution of a live e-learning demo room. Despite its effort to nurture the new business, TutorABC still faced several challenges in marketing. Mary, general manager, said:

The CEO often said that one day someone would appreciate our products. At those times, his confidence gave employees hope. John continually shared stories with the employees. He said, “Don’t be frustrated. The reason why our service is very hard to sell is not a quality issue but rather an adaptiveness issue.”

Inspiration is a key factor in achieving employee buy-in, and the employees started to modify their skills to promote the company’s novel online service. As evidenced by the new working schedule from 8:30 a.m. to 10:30 p.m.

Adaptiveness is most often described as how well a person can fit into their environment (Gitterman, 1995; Fraser, 1997; German & Gitterman, 1987) at TutorABC adaptiveness occurred during the moving stage, at which point employees are responsible for recognizing the agenda and taking action to put these decisions in practice (Gebhardt, Carpenter & Sherry, 2006). Previous authors noted that result-oriented, information-sharing, developmental, and employee-centered cultures are supposed to enhance adaptiveness (Denison, 1984; Kanter, 1983; Walton, 1985).

Compliance with the new rule. In addition to asking employees to enhance their capability to adapt to organizational change, TutorABC offered employees incentives or rewards when they performed well and advanced the company’s new goals. According to Chris, The CEO said, “*I promise that when TutorABC makes an IPO [Initial Public Offering] on the stock exchange someday, all of you can join the ESOP [Employee Stock Ownership Plan].*” However if employees did not follow the new program they would be punished.

On the other hand, even those who were considered top performers would be punished if their behavior contradicted the company’s culture. Mary, the general manager, said:

I remember in 2006, before the product was formally launched, ten employees were fired because they colluded with competitors. Once, the CEO reminded us in a meeting, “You need to be careful with company data, especially with new employees or employees who have not completed the probationary period.” After that, the managers were stricter in enforcing the company’s new rules; we no longer shared sensitive data with other departments without prior approval.

This story is an example of “*compliance*,” which is defined as ‘the acceptance of influence in order to gain specific rewards and to avoid punishments’ (Klein & Sorra, 1996, p. 1061). Similarly, Kosslyn and Rosenberg (2004, p. 706), state that compliance is a change in behavior brought about through a direct request rather than by social norms. The company used rewards and punishment to achieve compliance. Compliance accelerates organizational change by complementing the adaptiveness that is fostered in the moving stage. A successful organizational change requires both the members’ ability, which is the core of adaptiveness, and their willingness, which is central to compliance.

4.2.2 Organizational Communication: Written Style

Unlike the unfreezing stage where the company mainly relied on an oral communication style, in the moving stage it used several different styles. Although oral communication is effective in dealing with emergency situations, the importance of written communication is enhanced in the moving stage. The moving stage involves a complex situation with more employees, more departments, and more complicated tasks (Palvia & Ghervany, 1989). In this situation, an organization may find itself trapped in conflicts and confusion without written communication. The following quotation describes the communication problems experienced across departments. Chris, the R&D Manager, said:

Our colleagues thought we in the R&D Department just weren't working hard enough and constantly nagged us about their queries... Later, during a meeting, we voiced our grievances, and all participants agreed that our company should start to use a "request form" in order to reduce inter-departmental conflict. This would mean that when other departments submitted a request for a job, they would do so on paper, which was really great for us and for the company too.

Written documents are traceable and can be iteratively reviewed and checked in horizontal communication, thus alleviating interdepartmental conflicts. Moreover, written documents can also serve as supporting materials to oral communication to clarify ambiguities, especially in the case of vertical communication. This function can be observed in the following narrative.

'During the testing phase of our new product [live e-learning], we asked and noted the opinions of customers who participated in a free trial of our products. We then used these written comments to improve our new products.' [Mary, general manager]

We see that top executives used oral and written communication to deliver their messages to organization members because of the benefits of these different styles of communication, which allow for understanding of goals, strategy, and tactics, to supporting cultural change and create a harmonious environment among departments (Somech, Desivilya, & Lidogoster, 2009), enhancing the company's ability to achieve organizational goals. Through oral and written communication, the employees working together as a team could understand goals, strategy, and tactics, supporting cultural change and creating a harmonious environment among departments. TutorABC recovered from the crisis, emerged from the fiercely competitive traditional classroom market, and sailed through the storm to its next stage.

4.3 REFREEZING STAGE

4.3.1 Storytelling

Consolidation into Unison. The moving stage ended when the company finished development and launched their new product. TutorABC arrived at the refreezing stage in 2007. Since then, the sales department has added about 200 sales representatives. However, when they interacted with potential customers, they faced a lot of questions that they couldn't respond to immediately. As a result, the company has been continually investing in the integration of production (i.e., course materials), marketing, sales, human resources, and R&D functions into the Intranet Management System (IMS). The IMS enables each division to locate its own data at any time. When logging on to the IMS, each employee has a password that will allow them a certain level of access to the company's information. This system facilitates the conflux of business intelligence that helps new employees quickly become accustomed to the working procedures of TutorABC. Nancy, a senior specialist of human resources and a former salesperson, told a story to articulate the function of IMS:

'The company gathered top salespeople to work out 3 to 4 sales pitches in response to possible questions and compiled a reference for all the sales representatives. In the end, the IT department compiled those sales pitches and integrated the information into IMS so that everyone could access the information promptly.'

Meanwhile, TutorABC unified the goals of the different departments by developing a Key Performance Index (KPI) for each department. One of the original KPIs for the marketing department was based on the number of people who responded to the company's advertisements and left their personal information which caused the marketing staff to get as many names as possible. The more customers lured by the marketing department, the more phone calls the sales department had to make to customers who were not likely to purchase the service. Without properly filtering the customer list, salespeople would waste their time contacting non-target customers, hence lowering their performance, which was measured by the hit rate. Salespeople identified this problem and petitioned for a revision of the KPIs. TutorABC thus redesigned its KPIs by establishing a clearer definition of target customers, which it then used to trim the list compiled by marketing creating congruence of goals of the two departments.

In addition, TutorABC utilized customer satisfaction as one of the inputs to determine employees' compensation, which further consolidated the front-end system (i.e., interface between TutorABC and the customers) and back-end system (i.e., IMS). The IMS and KPI systems work together to maximize the efficiency of all levels of the company. The KPI system defines roles and gives clear goals, while the IMS system provides the information needed to achieve the goals. Adding customer feedback as noted in the story, was the final step in the process.

Elevation beyond status quo. TutorABC not only intends to satisfy customers but also tries to go beyond customer's expectations by offering sympathetic service. Allen, a consultant, recalled a story told by the CEO in a meeting:

'The CEO's secretary would often e-mail us a business-related story or article one week before our regular meetings, so everyone could read it and then discuss their opinions during the meeting. We liked this type of meeting because we really learned a lot from the discussion. One time, the CEO used an example from RBC [Royal Bank of Canada] to teach us. He summarized the RBC story, cited from a Harvard Business Review article:

"The daughter of RBC's president once lost her RBC credit card in the United States, and was told when she contacted

the local branch that she would have to get the card replaced in Canada. She was very angry and complained of this poor service to her father. The president decided to take action and hired a consulting firm to better understand customer satisfaction... The analysis indicated that there are two kinds of satisfaction: rational satisfaction (i.e., the satisfaction about the number of branches, the diversity of products etc.) and emotional satisfaction (i.e., the service attitudes, amenities, etc.). RBC got a high score on rational satisfaction but a low score on emotional satisfaction.

While rational satisfaction is comparable to hygiene factor, emotional satisfaction is more influential when it comes to repurchasing decisions. So, let's pay attention to customers' emotional satisfaction. Read our customers' opinions. Put yourself in the customer's shoes. Remember! Always put customers first."

Based on this story, he told us that when customers request a refund, the company should be willing to give back 100% without asking any questions., because we need to respect customers' opinions and complaints at all times. You know, a 100% refund policy is pretty rare in Taiwan.

Top executives used stories to encourage employees to exceed the customer's expectations, especially with regard to emotional satisfaction. This change in policy raised industry standards; we call this elevation.

In the refreezing stage, the company would like to crystallize group behaviors by elevating employees' attitudes to ensure movement along the calibrated direction. In order to foster the affection of employees, top executives must show charisma (Conger & Kanungo, 1994). For example, Nancy, the human resources senior specialist, presented one of the founder's e-mails as follows:

'Dear all, being a good citizen is very important in any community. So please offer your help to me and the other departments whenever you feel it is needed. John and I have made a lot of mistakes in the past 10 years. We all do. We just need a good friend to remind us of those mistakes. You should offer your voice and opinions to the other departments or to me, by emails or via the "idea box" on IMS. You may be right, or may be wrong some times. But, you did your job as a good citizen. This is how a good citizen works for this great company. This is also why we ask our customers to give us their feedback after every session. Never give up! All great companies or nations make mistakes. It all depends on how fast they learn and how they handle the mistakes and move on.

The 'good citizen' ideal represents virtuous behaviors that produce positive attitudes in individuals and then lead to an elevation in positive well-being (Fredrickson, 1998; Seligman, 2002; Fineman, 1999). Employees' positive attitudes (e.g., optimism, passion, sympathy, and gratefulness) can lead to positive habits in their organizations (e.g., politeness, generosity, hospitality, and assistance) and then create affection from customers which then feeds back to reinforce positive attitudes. This virtuous cycle produces a higher level of organizational commitment among employees.

4.3.2 Organizational Communication: Online Network Style

TutorABC developed a massive intranet and online network to support organizational communication effectively and efficiently; launching a blog which has oral and written communication. The blog allows departments to share information quickly and efficiently, enhancing the company's effectiveness. Traceability and clarity are two major advantages of written communication. Online network communication not only possesses these advantages, but also holds many other merits. Five additional features of new communication technologies represent important advancements for organizations: 1) increased speed; 2) reduction in the costs; 3) rise in communication bandwidth; 4) expanded connectivity; and 5) real time updating (Fulk and Desantis, 1995).

Apart from the way it improves on written communication, an online network also incorporates the benefits of the oral communication style using multimedia. For example, employees produced a documentary film to introduce the company's history. The story was acted out by the employees and included much comedic content that made it fun. Their enthusiasm for the film was "infectious and elevated everyone's morale," according to Allen. For the purposes of top-down communication, the oral, face-to-face style is still the most powerful approach (Foster, Cebis, Majetles, Mathur, Morgan & Preuss, 1999), but the online medium can closely replicate it. TutorABC's training program, for example, reaches teachers spread out around the world and their training is all communicated via online networks. The CEO, John said:

'Our teachers' training is based on the Internet; therefore, our instructors have no restrictions.

The integration of multimedia communication with online networking technologies makes it even easier to convey information, unify opinions between superiors and subordinates, and, in turn, mold a cohesive organization. The consolidation and elevation fostered by the multimedia online network communication style can help sustain organizational change.

Figure 1 depicts a summary of our findings and illustrates the construct of cultural transformation, based on the three stages of Lewin's planned change model, that we abstracted from storytelling and organizational communication styles.

5. Discussion

This study reveals how a company, confronted with unexpected crisis, can engage in organizational transformation to save itself. As objectives differ from stage to stage throughout the transformation process, top managers utilized cultural artifacts, mainly storytelling and organizational communication styles, to convey information, promote innovation, as well as declare organizational value propositions, to ensure a successful transformation.

In the unfreezing stage, top executives need to increase subordinates' awareness of the need for change and create conformity toward a new goal. To achieve these aims, the executives played an active role in describing the future and energizing employees (Cummings & Worley, 1997) by making liberal use of storytelling to help employees sense the urgency of developing a new business model and further, to depict a vision beyond the present so that employees are more willing to accept the goal and work toward it (Kickul, Lester, & Finkl, 2002). The senior managers of TutorABC used frequent oral communication to solidify employee's awareness and conformity and to prevent any negative impacts of gossip which can occur in a time of crisis (Cummings & Worley, 1997). To mitigate this anxiousness, intensive two-way communication by telephone and small panel meetings was deemed to be the most effective method.

TutorABC realized that before the crises it focused on solving customers' immediate problems and not on innovating. The company was a "customer-led" business, as identified by Slater & Narver (1998, 1999). Reacting to customers rather than predicting the future. If a company adheres to this culture, it may hinder long-term expansion. Top executives at TutorABC, however, sensed the problem and started to ponder customers' latent needs, which are often impossible for customers themselves to articulate (Slater & Narver, 1999). Partially as a result of the two crises, TutorABC identified the need for a safer, more private, and more convenient environment for learning English and this led to the investment in online infrastructure. Meanwhile, they created cultural change by imbuing employees with the concept of a market-oriented business, a model which has the capacity to satisfy the explicit as well as underlying needs of customers (Slater & Narver, 1998). After creating the will to change in the unfreezing stage, the company then devoted most of its resources to the development of the live e-learning business model in the moving stage. Transforming the company to a "Product-Centric Market-Oriented" business in this stage; that is, the company emphasized experimentation with new products and market development to enlarge customer base.

Hall (1997, p.31) noted that "to influence cultural change, managers must shape organizational beliefs in the appropriate directions. To do this they must intervene in behavior, justifications of behavior, and cultural communications." The moving stage thus involves a kind of cognitive restructuring, requiring change in both attitudes and behaviors (Schein, 1987). Top executives utilize storytelling, including using the company's history, to help organization members adapt to the new plan and comply with the new rules. The organization also realigned rewards as suggested by Gebhardt, Carpenter, and Sherry's (2006) in the institutionalization stage. By announcing planned compensation, top managers influence employees' beliefs and reinforce their new behaviors.

At this stage written communication takes on new importance as different departments need to exchange clear and traceable information (Kein, 1996), helping to clarify each employee's responsibility and performance. TutorABC has achieved the goal of consolidating organizational systems, for example KPI and IMS in the refreezing stage and customer interface so that those systems and structures could be more coherent and comprehensible to organization members (Silince, 1999). To strengthen the effect of consolidation, senior managers used storytelling to elevate employees' attitudes and initiate a virtuous cycle, an ongoing process of self-monitoring and self-renewal (Hall, 1997).

The online network communication system played a key role to leverage the effects of traditional oral and written communication while offering the speed necessary to respond to the market.

Slater & Narver (1999) state that a successful market-oriented business refers to a company that seeks to understand customers' expressed and latent needs and develops superior solutions to those needs. Alternatively market orientation could be described as having behaviors associated with the generation and dissemination of market intelligence (Kohli & Jaworski, 1990). TutorABC fits either definition as the company encourages employees to share opinions and market information through the intranet and, currently, such communication is thriving within the company. Tutor ABC gathers customers' feedback and responds them accordingly through the online interface, enhancing business value. Such behaviors are a reflection of the underlying market-oriented culture (Narver & Slater, 1998).

6. Conclusion

Crises cause immense pressure and uncertainty for organizations and organization members. One way for an organization to face a crisis induced by natural disasters is to conduct an organizational transformation. This study borrows Lewin's planned change model to investigate the cultural artifacts (i.e., storytelling and communication styles) of a company that engaged in an organizational transformation in response to the impact of an earthquake and the SARS outbreak. A modified form of Lewin's three-stage framework was useful in capturing the dynamics of the reaction to the impact of crises. Our research proffers several theoretical implications. First, the paper contributes to research in organizational development by analyzing how artifacts can be used to effect an organizational change. Second,

integrating organizational change theory and market orientation theory enriched the study of organizational transformation and provided a more complete picture of the process. This approach may provide a useful framework for future research. Finally, the six short-term objectives, Awareness, Conformity, Adaptiveness, Compliance, Consolidation, and Elevation (AC-AC-CE) are the essential elements in the process of organizational change and form a valuable six-strep model which is an extension of Lewin's model.

This research also provides several managerial insights. First suggesting organizations to adopt a long-term orientation when they are faced with unexpected crisis, dealing with the crisis itself may not provide the best solution. Secondly, the research shows that the AC-AC-CE six-step model and a market orientation are sufficient for organizational transformation to overcome the crisis. Thirdly, cultural artifacts should be used to foster the transformation, especially storytelling and communication styles.

6.1 Suggestions for Future Research

First of all, the source of our data is confined to a particular organizational context. Future research could include a greater diversity of organizational contexts to elaborate on how cultural artifacts are utilized to ensure organizational success. Secondly, future research would do well to analyze an instance of failure to adopt organizational change, which could more colorfully illustrate our result here. Thirdly, this study focuses on two cultural artifacts: storytelling and organizational communication style. We recommend that the degree to which as well as the way in which these two cultural artifacts are acknowledged, perceived, and received by targeted external customers could form the basis for future research.

Note

Note 1. Prior to 2004, the business was called Columbia Consulting Company. After 2004, coinciding with the launch of the e-learning business, the company used TutorABC as their primary brand name.

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Table 1.

<i>Interview Samples</i>					
Name (Pseudonym)	Position	Current Job Responsibility	Years of Tenure	Length of interviews (hours)	Number of interviews
Mark	Founder	Strategic decision making	11	2	1
John	CEO	Company's operation and strategic decision making	11	5	2
Marry	General Manager	Price setting, marketing and customer service	6	4	2
Allen	Consultants	Locate operation problems and propose improvements	2	5	2
Chris	R&D Manager	Company's research and development	6	4	1
Anny	Vice General Manager	In charge of operations	7	3	1
Mike	Marketing Officer	Design marketing campaign	1	2	1
Nancy	HR Senior Specialist	Training programs, orientation, activities' planning	1	1	1
Julia	Sales Manager	Customer service and revenue generation	5	3	1

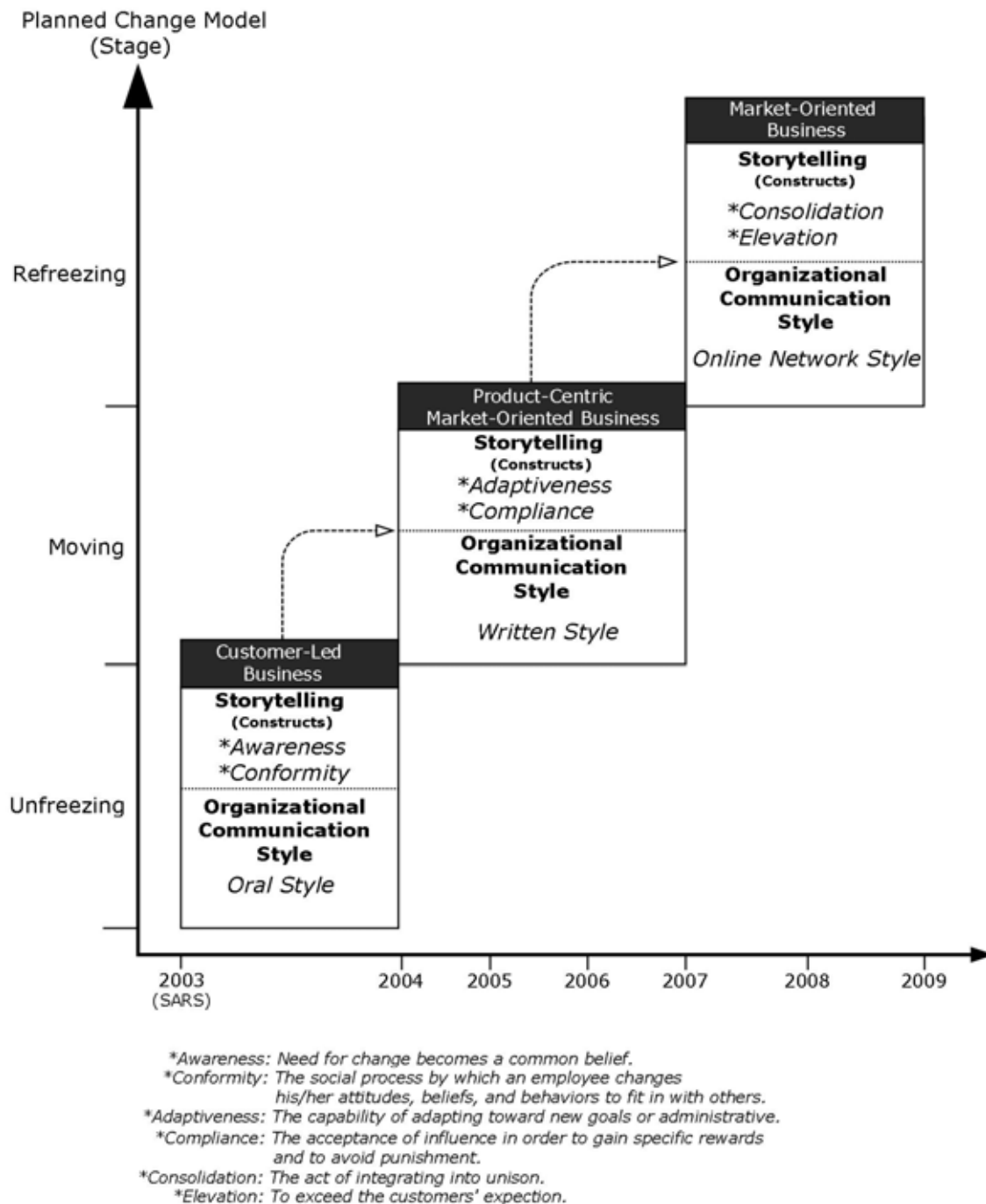


Figure 1. The three stages of cultural transformation



Emotional Intelligence and Its Relationship with Leadership Practices

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Abstract

In recent years leadership and emotional intelligence have become hot topic in management and organization researches. We made an attempt to study the relationship between emotional intelligence and leadership. Emotional intelligence is the ability to perceive and express emotion to stimulate thought, understand and reason. It also regulates emotion in oneself and others. Leadership refers to the ability to influence, motivate and enable others to contribute to the effectiveness and success of the organizations of which they are members.

Keywords: Emotional intelligence, Leadership practices, Executives and Public sector organization

1. Introduction

The new world of order reflects an accelerated rate of change, changes in work force, impact of technology, industrialization and globalization. People currently need to function in a world vastly different from that of previous generations. Researches have revealed that managers with high emotional intelligence obtain results from employees that are beyond expectations, developing and using talents crucial for organizational effectiveness (Barbuto & Burbach, 2006). Effective leaders manage and steer their own feelings, acknowledge subordinates feelings about their work situation, and intervene effectively to enhance morale (Cherniss, 2001). Moreover, Chen, Jacobs, and Spencer, (1998) reported that close to 90 percent of success in leadership positions is attributable to emotional intelligence.

Leadership has been regarded as a single, the most important factor in organizational success or failure (Bass, 1990) and much research has devoted to identify the determinants of effective leadership (Yukl, 1998). Many approaches exist to study leadership, but for the purposes of current investigation accent falls on the Transformational leadership theories which focuses on the importance of leadership behavior within the framework of organizational change and development (Skogstad & Einarsen, 1999). An important component of transformational theories of leadership is the emotionally appealing aspect of leader behavior (Robbins, 2001). Moreover, Cacioppe (1997), expressed that successful leaders have the ability to manage their own emotions while being responsive to others emotions.

Emotional intelligence is a new and growing area of behavioral research; it caught the attention of the general public, academicians, business world and the scientific community. Emotional intelligence is the capacity to effectively perceive, express, understand, and manage your emotions and the emotions of others in a positive and productive manner. Bar – On (2000) defined emotional intelligence as “Emotional intelligence is an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures”. The popularity of the emotional intelligence in the research literature makes the researchers to show more interest in this area.

Emotional intelligence of the executives shared the relationship with their leadership practices. Emotional intelligence empowers the manager with the ability to grasp intuitively what others need and want and develop strategies to fulfilling those needs and wants. The relationship between the emotional intelligence and leadership were explored by many researchers (Barbuto & Burbach., 2006; Barling., Slater., & Kelloway., 2000; Dulewicz., Young., & Dulewicz, V., 2005; Gardner & Stough., 2002; Sivanathan & Fekken., 2002) and they emphasize the significance of emotional intelligence in the organizational context.

Mayer & Salovey (1997) conceptualized emotional intelligence as an aptitude. But, most scholars have conceptualized emotional intelligence as a mix of skills and traits (scholars like Bar-On, 1996; Goleman, 1995; Petrides, 2004; Schutte, et al., 1998) and aimed to measure emotional intelligence through self-report protocols.

The Bar-On EQ-I is one of the most widely used instruments in assessing emotional intelligence, as shown by a number of explorations in this area where this measure was used (See Bar-On, Brown., Kirkcaldy., & Thome., 2000; Brackett & Mayer, 2003; Dawda & Hart, 2000; Derksen., Kramer., & Katzkol., 2002; Freedman, 2003; Newsome., Day., & Cantano., 2000; Parker et al., 2004; Petrides & Furnham, 2000; Ruderman & Bar-On, 2003; Sivanathan & Fekken, 2002.)

2. Leadership

Today's business climate demand high flexible and quick responsiveness. It is inevitable for organizations to have effective leaders' at all hierarchical level. There has been major shift in leadership skills required for today's business managers. Leadership is the ability to influence, motivate and enable others to contribute to the effectiveness and success of the organizations of which they are members.

Leadership competencies depend on many factors such as emotional intelligence, integrity, drive, self-confidence, intelligence, and knowledge of the selective discipline. Geothals., Sorenson., and Burns., (2004), summarize the evolution of leadership theories in four phases: trait, behavioral, situational / contingency, and transformational leadership. Burns (1978) was credited with developing the first transformational leadership model, envisioning the transformational and transactional leadership at opposite ends of the continuum. Bass (1985) expanded on Burns' idea by depicting transformational and transactional leadership as complementary, thus augmenting active transactional leadership behavior.

Kouzes & Posner (1987; 1997; 2002), popularized the notion of transformational leadership with a best selling book and a survey instrument. Transactional leadership style was found to be the most frequently used leadership style (Hasan & Grace, 2006). The focus of the leader's ability to manage complex social and personal dynamics, centered in the concept of emotional intelligence has made the role of emotions in organizations prominent in the leadership literature (Cann, 2004; Mayer., DiPaolo., & Salovey., 1990; Weisinger, 1998). The transformational leadership model is particularly appealing in this changing business environment because it focuses leaders concerns about transforming the present conditions of the organization and followers requirements.

3. Rationale for the Study

In most of the organizations, executives occupy the top management levels, their day-to-day operations at various departments, units or divisions are highly a complex one, they have to communicate, plan, organize, and execute various activities within the organization. Sealing effectively with others require more effective utilization of emotional resources. Hence the level of emotional intelligence makes them to communicate effectively and at the same time they should possess leadership capabilities.

Emotional intelligence has gained much popularity as an absolute necessity for effective leadership (Sosik & Megerian, 1999), and predicted that leaders with greater emotional intelligence will be more effective leaders. Efforts of applying emotional intelligence to leadership have started recently (Caruso., Mayer., & Salovey., 2002; Cooper & Sawaf, 1997; Goleman., McKee., & Boyatzis., 2002; Ry back, 1998) and have coincided with findings that emotional intelligence is a strong requisite for effective leadership (Coetzee & Schaap, 2004; Higgs & Aikkien, 2003; Barbuto & Barbach, 2006; Sosik & Megerian, 1999).

Hence the relationship between the emotional intelligence of executives and their leadership practices needs more introspective look and an attempt is made here. Which was proposed by George (2000) that emotional intelligence play a particularly important role in leadership effectiveness. The current article provides a critical analysis of the claimed role of emotional intelligence in the leadership practices. This approach should help organizations look and prepare for the future more effectively; including better specifying the future requirements they will have for their leaders. The executives gave the most emphasis to emotionally intelligent communication, a prominent feature to facilitative leadership. By studying the relationship between emotional intelligence and leadership behavior, we aimed to contribute to the leadership practices literature and to test emotional intelligence applications for leadership.

4. Hypotheses

The following hypotheses are framed to study the relationship between emotional intelligence and leadership practices of the executives

1. Emotional intelligence (and each of its eight components such as interpersonal relationship, problem solving, stress management, self regard, reality testing, flexibility, assertiveness, and empathy) will positively relate to leadership practices (modeling the way, enabling others to act, inspiring a shared vision, challenging the process, and encouraging the heart) of the executives.

2. Executives differ in their emotional intelligence with regard to their age and educational qualification.
3. There are significant difference in the leadership practices of executives on the basis of their age and educational qualification.
4. Executives differ significantly in their emotional intelligence and leadership practices based on their length of service.

5. Research Method

This study adopted survey method, which is descriptive and associational in nature. A public sector organization in South India has been identified for the present study. 300 executives were selected through stratified random sampling. The investigator met the executives and established rapport. Both the Emotional intelligence inventory (Bar – On, 1997, 2000) and Leadership practices inventory (Kouzes & Posner, 1997) were administered to the executives. The data was collected under the personal supervision of the investigator. Out of 300 questionnaires distributed, the investigator considered only 256 for final analysis ‘t’ test, ‘f’ test and Pearsons Product – moment correlations were used to test the hypothesis.

6. Description of the Tools Used

6.1 Emotional Intelligence Inventory

Emotional intelligence inventory by Bar-On (1997) scale consists of 66 items with five points scale from ‘Not true’ to ‘True’. In this study we have considered only eight dimensions Viz., Empathy, Assertiveness, Flexibility, Reality testing, Stress management, Problem solving, Interpersonal relationship, and self-regard. Respondents were asked to mark on the continuum that most closely describes them. The co-efficient of reliability from the test-retest method ranges from 0.69 to 0.86 (Bar-On, 1997). The validity was also established by the author through an extensive review of the literature. This tool possesses content, face, convergent and discriminated validity.

6.2 Leadership Practices Inventory

Leadership practices inventory by (Kouzes & Posner, 1997) consists of 30 items with five point responses ranging from ‘rarely’ to ‘frequently’. Five different leadership practices are measured by this scale. We have considered 20 items to measure the five different leadership practices viz. modeling the way, challenging the process, inspiring a shared vision, encouraging the heart and enabling others to act. The co-efficient of reliability from the test-retest method ranges from 0.75 to 0.87 (Kouzes & Posner, 1997). The scale possesses concurrent, face and criterion group validity.

7. Results & Discussion

From the table -1, it is observed that the correlation coefficients are significant for more than half of the dimensions of emotional intelligence and its total. Hence, the hypothesis is accepted. It is concluded that most of the components of emotional intelligence along its total have a significant relationship with the leadership practices of executives.

<Table -1, to be inserted here>

It is noticed that the many components of emotional intelligence are correlated with the leadership practices. Emotional intelligence is the ability to perceive and express emotion to stimulate thought, understand and reason. It also regulates emotion in oneself and others. Leadership refers to the ability to influence, motivate and enable others to contribute to the effectiveness and success of the organizations of which they are members. Emotional intelligence is not just able to manage one’s feelings, but also being able to manage the moods and emotions of others (George, 2000). Hence, the influence of emotional intelligence on the leadership practices is understandable.

It is noticed from the table that the “interpersonal relationship” component of emotional intelligence has a positive relationship with “modeling the way” and “enabling others to act” where as negative relationship with “challenging the process” dimensions of leadership practices. The ability of the executives makes them to feel at ease and comfortable in their relationship with others in the organization made positive relationship with “modeling the way” and “enabling others to act.” This finding is supported by Wasielewski, (1985) individuals being able to excite and enthuse other people or make them feel cautious and wary is an important interpersonal skill and vehicle of social influence. Whereas negative relationship with “challenging the process” is quite natural because when an individual’s status is questioned people do not give emphasis for their interpersonal relationship and try to establish themselves to the challenges placed before them.

Interpersonal relationship is one of the good components of emotional intelligence which is related to leadership practices behavior of the executives. The same supported by the many scholars (Barbuto., & Burbach., 2006; Barling et al., 2000; Forgas & Geroqe., 2001; Redmond et al., 1993) as interpersonal skills of the individuals relates to their leadership behavior.

Problem solving ability of executives has a positive relationship with all the dimensions of leadership practices except “inspiring a shared vision.” The conscientious & disciplined nature of executives makes them to learn the capacity to generate alternatives and selection of choices while handling the issues and problems in the different situations. These

characterizes the executives are focused on the organizational changes rather than the stability. This may lead to the effective utilization of leadership practices and emotional intelligence of executives. Constructive thinking can lead to the generation of creative ideas to settle disagreements, arriving win-win solutions to problems, and ensure cooperation and trust throughout an organization (George, 2000).

Stress management has a positive relationship with “modeling the way” and “enabling others to act.” It may be due to the individual’s constructive thinking makes them to deal with their emotions and positively coping up with the stress levels leads to the new ways of thinking and questions their values, beliefs and expectations. It may be the reason for positive relationship. Emotional intelligence contributes to the constructive thinking or the ability to solve the problems with a minimum of stress (Epstein, 1990; Katz & Epstein, 1991).

Self-regard has a positive relationship with all the dimensions of leadership practices except “inspiring a shared vision.” It may be due to the self – awareness and self –realization of executives, which makes them strong, capable, and committed to be a leader in the organization focusing on the organizational development.

Reality testing has a positive relationship with “enabling others to act” and “encouraging the heart.” It may be due to the nature of present business environment that makes the executives to update their knowledge and pass it on to others, in order to make the people around themselves to compete with other players in the industry.

Flexibility has a positive relationship with “enabling others to act” dimension of leadership practices. The abilities of the executives to adapt unfamiliar, unpredictable and dynamic circumstances make them to encourage other people also. When executives know and manage their emotions, they may be better able to flexibly approach problems, consider possible alternatives and avoid rigidity effects in decision making. Increased flexibility deriving from emotional intelligence may also contribute to effective leadership (George, 2000). Further, flexible thinking arising out of emotional intelligence facilitates seeing connections among divergent information, and thus may help leaders see how issues are interested.

Assertiveness has a negative relationship with all the dimensions of leadership practices except “enabling others to act.” The leader who wants to foster collaboration and teamwork involving others to work is not related with their ability to clearly express his/her thoughts and feelings, stand on his/her own and defend a position. The over control or unable to express their feelings may lead them to act like this.

Empathy component of emotional intelligence has a positive relationship with “enabling others to act” dimension of leadership. The nature of executives considering the welfare of others and showing sensitivity to followers’ needs and fears makes them to act. The individuals who are high in empathy are able to control the emotions on others, which creates the positive relationship with the enabling others to act dimension of leadership. This is supported by George (2000), as empathy may contribute to being able to manage emotions on others. Further, empathy enables one to incorporate a greater range of information into his or her attempt to accurately and as objectively as possible assess and understand another person’s perspective (Wolff, Pescosolido, & Druskat, 2002)

Finally, the emotional intelligence total has a positive relationship with “modeling the way” and “enabling others to act” dimensions of leadership practices. Due to the emotional and social competencies executives feel better and comfortable with in their work relationships. The emotional intelligence level helps them to think positive in their attitude which in turn makes them to feel comfortable with their work relationships. It is concluded that the emotional intelligence of executives has a significant relationship with their leadership practices.

Table – 2, shows the emotional intelligence and leadership practices of the executives with respect to their age. Among the analyzed data, only significant values are reported in the tables. Since the ‘t’ values are significant for emotional intelligence dimensions the hypothesis is accepted for the emotional intelligence and not accepted for the leadership practices.

<Table-2, to be inserted here>

The ‘t’ values are significant for the emotional intelligence dimensions viz. interpersonal relationship, problem solving, reality testing, assertiveness and emotional intelligence total. It is noticed that in all of these dimensions, executives with more than 45 years of age have shown significantly higher emotional resources than their counter parts. With the growing age the executives have faced a variety of life situations which in turn made them to be emotionally more intelligent. Hence it is quite natural that the executives with more than 45 years of age have better interpersonal relationship, problem solving and assertiveness than the younger ones. It is also supported by the Kafetsios (2004) based on his finding reported that middle-aged persons scored higher emotional intelligence than the younger persons. Moreover, Carstensen, Pasupathi, Mayr, and Nesselrode (2000), reported that there is correlation between the age and emotional intelligence.

The good relationship with more experience makes the executives to express their thoughts and ideas clearly. Further, Isaacowitz (2005) results indicate that optimum emotional intelligence tends to increase with age. It is observed from

the table that the aged executives have higher score in reality testing. In general the youth will be attracted more by reality testing, due to the urge to prove them as an asset to the organization. But it is contradictory here that the executives with higher age possess higher reality testing which may be due to the sound knowledge about the activities within the organization and ability to manage the emotional complexity which arise in the individuals. Charles (2005) suggests that that greater emotional heterogeneity in older versus young adults.

With regard to leadership practices executives up to 45 years of age have significantly higher score in encouraging the heart. It is a good note that the youth prefer encouraging behaviors within the organization. The younger executives always have a compulsion of establishing and proving themselves in the organization which make them to encourage people and passionate them about their work. It is concluded that executives do not differ in their leadership practices based on their age however they differ significantly in the dimension of “encouraging the heart.” In addition to that executives with more than 45 years of age have better emotional intelligence than their counter parts.

From the table -3, it is observed that the educational qualification of the executives have a significant relationship with the emotional intelligence. Hence the hypothesis is accepted. And there is no significant relationship with their leadership practices; hence the hypothesis do not accepted for leadership practices. It is concluded that the education qualification of the executives has a significant influence on their emotional intelligence and not their leadership practices.

<Table -3, to be inserted here>

It is noticed that the ‘F’ values are significant for most of the emotional intelligence components and emotional intelligence total. It is noticed from the table that executives with non - professional degree have higher Mean score in problem solving, self regard, reality testing and assertiveness along with emotional intelligence total. Basically in the manufacturing organizations, technical jobs are occupied by the persons who have technical qualification. The executives with non – professional degree are might not deal with the technical aspects in the organization.

As self regard is one of the most powerful predictors of competent behavior, executives with higher self regard are better able to assert their intelligence and authority effectively in the organization without self-importance. It is quite natural that the executives have ability to express themselves when they are sound in their self regard.

The educational qualification and variety of opportunities faced by them in the organization made them familiar and learn to know about them. This makes them to feel better in self regard and able to express their feelings, beliefs and thoughts in a constructive manner. Once the individuals have understood their self-regard then it is easy to read the individuals which make them to adopt according to the situation.

Executives with professional degree have higher stress management, flexibility and empathy. The exposure and familiarity what the executives got in their studies of professional degree which helps them how to their thoughts and clearly. Those skills make them to control their stress and impulses this may be reason to better in stress management. Higher in flexibility and empathy may be due to the control of their stress and impulses, which leads to understand the things from the receivers point of view and adopt themselves as according to the situation. In turn this helps the executives to maintain work life balance and emotional intelligence at optimum level.

Whereas for the leadership practices it is noticed that the ‘F’ values are significant for three leadership practices dimensions. The executives with technical diploma have higher Mean score in “inspiring a shared vision.” Technical diploma degree executives came from low levels to executives; these develop ambitions for inspiration and have preference for sharing the trust and responsibility. This would make the executives with technical diploma to have higher preference for inspiring a shared vision.

Executives with non-professional degree have higher score in “encouraging the heart” and “modeling the way.” It may be due to the nature of non-technical job performed by the executives, able to experiment or risk taking and learn the things by exploring the opportunities. Whereas in the technical aspects executives are not ready to do mistakes or accept failures. This is evident from the higher score of executives with non-professional degree in “encouraging the heart” and “modeling the way.” It is concluded that executives with non-professional degree have higher emotional intelligence than the other educational groups. In addition to that executives differ in their leadership practices based on their qualification.

Table - 4, shows the emotional intelligence and leadership practices of executives based on their length of service in the organization. The ‘F’ values are significant are significant for emotional intelligence components and overall emotional intelligence. Hence, the hypothesis is accepted. It is concluded that the executives are differ significantly in their emotional intelligence based on their length of service in the organization.

<Table - 4, to be inserted here>

It is observed from the table that the ‘F’ values are significant for the emotional intelligence dimensions viz. interpersonal relationship, problem solving, stress management, reality testing, empathy and emotional intelligence total. The executives with above 20 years of service in the organization have higher score in interpersonal relationship, problem

solving, stress management and reality testing along with overall emotional intelligence. It is quite nature that the older age groups empathy skill is better than the younger groups, because of their age, commitment and responsibility in the family and workplace which makes them better in emotional intelligence. It may be due to growing age and experience which increases the ability of the executives regulates their emotions which lead to control their impulses.

Executives with 11 to 20 years of service in the organization have higher score in empathy. It may be due to the reason that day to day process by 11 to 20 years of service executives' group deal with various issues and communicate to all level executives and employees in the organization, which gives them lot of exposure to the systems & operations that makes them comfortable with the activities and good them others.

Whereas for leadership practices executives above 20 years of experience have higher mean score in "modeling the way." The growing age and ample experience of the executives makes them to exhibit their behavior in the form of attitudes, perception towards quality of work life and satisfaction about their work to be a model for others. Whereas the organization makes them by being clear about their beliefs and putting into practice. Moreover, they get supports from the organization and family that makes them to be a model. It is concluded that executives with above 20 years of service in the organization have better emotional intelligence than the other experience groups. In addition to that executives differ significantly in modeling the way dimension of leadership practices based on their length of service in the organization.

8. Findings

- The emotional intelligence is high for above 45 years of age, non-professional degree holders and above 20 years of service in the organization.
- The executives above 20 years of service, professional and non-professional degree holders have preference of modeling the way dimension of leadership practices, whereas diploma holders have preference of inspiring a shared vision.
- Encouraging the heart dimension of leadership practices is preferred by up to 45 years of age and non-professional degree holders.
- Emotional intelligence has a significant relationship with the leadership practices of executives. The interpersonal relationship has significant positive relationship with enabling others to act, whereas negative relationship with modeling the way and challenging the process.
- The problem solving and self-regard has a significant positive relationship with all dimensions of leadership practices except inspiring a shared vision.
- The stress management has a significant positive relationship with modeling the way and enabling others to act.
- The reality testing has a significant positive relationship with the enabling others to act and encouraging the heart.
- The flexibility and empathy has a significant positive relationship with enabling others to act.
- The assertiveness has a significant negative relationship with all the dimensions of leadership practices other than the enabling others to act.
- The emotional intelligence total has a positive relationship with modeling the way and enabling others to act.

9. Implications

From the findings of this study, it is observed that the emotional intelligence of the executives has a significant association with leadership practices. Most of the researches reveal that emotional intelligence predicts success at all works of life. Hence, the executives working in the organizations need the emotional intelligence skills to work more effectively to impart knowledge to their sub-ordinates as well as to maintain a cordial relationship with others in the organization.

Emotional intelligence & leadership are two important correlates of which leadership provides the context in which emotional intelligence operates and hence it is imperative to promote both qualities among the executives. From the findings it is suggested that emotional intelligence and leadership training programmes to be organized for the executives at all levels. Moreover, the emotional intelligence should be considered as an important criterion in the selection of executives.

10. Conclusion

It is found in this study that the emotional intelligence significantly related to the leadership practices of executives. Leaders high on emotional intelligence also are likely to have knowledge about the fact that their positive moods may cause them to be overly optimistic (Geroe, 2000). Further, he stated that emotional intelligence may contribute to leaders developing a compelling vision for their groups or organization in a number of ways.

This gives an idea about the relevance of emotional intelligence and leadership practices in the organizations. Training unit in the human resource department of the organizations should think about the different training methods to enhance

emotional intelligence levels whereby they can improve leadership qualities. Training should be provided at right time to ensure its effectiveness.

Emotional intelligence contributes to the magnetic and engaging qualities of the managers who possess exceptional abilities of the leaders. This will enable them to analyze, organize and utilize information's in an effective manner. Enhancing the levels of emotional intelligence will help the executives to lead their team effectively and efficiently.

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Table 1. Emotional Intelligence and Leadership Practices of the Executives: Correlation Analysis

<div>Leadership Practices</div> <div>Emotional Intelligence</div>	Modeling the way	Enabling others to act	Inspiring a shared vision	Challenging the process	Encouraging the heart
Interpersonal relationship	- 0.128*	0.134*	0.055	- 0.225*	- 0.071
Problem solving	0.320*	0.304*	0.097	0.130*	0.236*
Stress management	0.123*	0.325*	0.034	0.116	0.032
Self regard	0.348*	0.354*	0.074	0.339*	0.156*
Reality testing	0.101	0.154*	0.016	- 0.004	0.167*
Flexibility	- 0.073	0.252*	- 0.023	- 0.011	- 0.082
Assertiveness	- 0.149*	0.108	- 0.275*	- 0.138*	- 0.158*
Empathy	0.089	0.246*	0.088	- 0.040	- 0.037
E.I: total	0.166*	0.376*	0.005	0.026	0.059

* Significant at 0.05% level

Table 2. Emotional Intelligence and Leadership Practices of Executives on the Basis of Their Age

Variables	Dimensions	Age Group				t-value
		Up to 45 Years		More than 45 Years		
		Mean	SD	Mean	SD	
Emotional Intelligence	Interpersonal Relationship	12.01	2.43	12.67	2.35	2.18*
	Problem Solving	11.14	2.92	12.80	2.25	5.16*
	Stress Management	10.99	2.88	11.28	2.25	0.91 ^{NS}
	Self-Regard	10.06	1.81	10.11	1.62	0.24 ^{NS}
	Reality Testing	7.76	3.11	9.88	2.72	5.80*
	Flexibility	10.18	1.95	10.66	2.56	1.63 ^{NS}
	Assertiveness	8.55	3.37	10.39	2.72	4.84*
	Empathy	12.65	2.70	12.50	1.88	0.52 ^{NS}
	E.I: Total	85.28	10.83	90.13	10.64	3.58*
Leadership Practices	Modeling the way	16.25	2.29	16.07	2.35	0.62 ^{NS}
	Enabling others to act	16.18	1.86	16.09	1.61	0.37 ^{NS}
	Inspiring a shared vision	15.56	2.34	15.61	1.78	0.20 ^{NS}
	Challenging the process	16.54	1.64	16.29	1.71	1.16 ^{NS}
	Encouraging the heart	16.25	2.53	15.57	2.26	2.27*

N₁= 108

* - Significant at 0.05 level

N₂= 148^{NS} - Not Significant

Table 3. Emotional Intelligence and Leadership Practices of Executives on the Basis of Their Educational Qualification

Dimensions of Emotional Intelligence and Leadership Practices	Educational Qualification			F-Value	Scheffe – Post hoc
	1 Mean (S.D)	2 Mean (S.D)	3 Mean (S.D)		
Interpersonal Relationship	12.69 (2.05)	11.69 (2.45)	12.59 (2.53)	2.318 ^{NS}	---
Problem Solving	11.71 (2.66)	12.90 (2.33)	11.60 (2.83)	6.883*	2 Vs 1 Vs 3
Stress Management	10.21 (2.07)	11.40 (2.34)	11.52 (2.83)	6.050*	3 Vs 2 Vs 1
Self Regard	9.40 (1.50)	10.35 (1.45)	10.26 (1.92)	6.999*	2 Vs 3 Vs 1
Reality Testing	7.61 (3.17)	9.92 (3.15)	9.42 (2.68)	8.667*	2 Vs 3 Vs 1
Flexibility	9.85 (2.19)	10.51 (2.08)	10.77 (2.57)	3.061*	3 Vs 2 Vs 1
Assertiveness	8.53 (3.02)	10.43 (2.92)	9.52 (3.23)	7.175*	2 Vs 3 Vs 1
Empathy	12.05 (2.78)	12.48 (2.09)	12.95 (1.98)	3.212*	3 Vs 2 Vs 1
E.I: total	82.90 (9.72)	89.88 (9.83)	89.60 (11.74)	8.376*	2 Vs 3 Vs 1
Modeling the way	15.90 (2.80)	16.67 (1.58)	15.81 (2.51)	3.808*	2 Vs 1 Vs 3
Enabling others to act	16.10 (1.60)	16.37 (1.33)	15.93 (2.07)	1.568 ^{NS}	---
Inspiring a shared vision	16.26 (2.04)	15.51 (2.04)	15.15 (1.93)	5.033*	1 Vs 2 Vs 3
Challenging the process	16.06 (1.80)	16.48 (1.35)	16.52 (1.87)	1.586 ^{NS}	---
Encouraging the heart	15.73 (2.97)	16.57 (1.80)	15.28 (2.33)	7.546*	2 Vs 1 Vs 3

N₁= 62

1. Technical diploma

N₂= 93

2. Non - Professional Degree

N₃= 101

3. Professional Degree

* - Significant at 0.05 level

NS - Not Significant

Table 4. Emotional Intelligence and Leadership Practices of Executives in Accordance With Their Length of Service

Dimensions of Emotional Intelligence and Leadership Practices	Length of Service			F-Value	Scheffe – Post hoc
	1 Mean (S.D)	2 Mean (S.D)	3 Mean (S.D)		
Interpersonal Relationship	12.69 (2.27)	12.05 (2.47)	13.00 (2.22)	3.891*	3 Vs 1 Vs 2
Problem Solving	10.96 (2.48)	12.07 (2.82)	13.08 (2.06)	8.945*	3 Vs 2 Vs 1
Stress Management	11.58 (3.16)	10.82 (2.41)	11.67 (2.14)	3.280*	3 Vs 1 Vs 2
Self Regard	9.96 (2.04)	10.01 (1.60)	10.37 (1.65)	1.090 ^{NS}	---
Reality Testing	8.13 (2.86)	8.86 (3.14)	9.97 (2.82)	5.240*	3 Vs 2 Vs 1
Flexibility	10.13 (1.59)	10.66 (2.44)	10.22 (2.52)	1.345 ^{NS}	---
Assertiveness	9.54 (2.95)	9.39 (3.23)	10.23 (3.05)	1.576 ^{NS}	---
Empathy	11.71 (3.06)	12.91 (2.02)	12.40 (1.82)	5.488*	2 Vs 3 Vs 1
E.I: total	85.73 (9.86)	87.73 (11.40)	90.83 (10.27)	3.123*	3 Vs 2 Vs 1
Modeling the way	15.37 (2.76)	16.31 (1.94)	16.35 (2.67)	3.312*	3 Vs 2 Vs 1
Enabling others to act	15.81 (2.23)	16.21 (1.51)	16.18 (1.75)	1.004 ^{NS}	---
Inspiring a shared vision	15.21 (1.68)	15.74 (2.22)	15.52 (1.75)	1.276 ^{NS}	---
Challenging the process	16.73 (1.75)	16.34 (1.65)	16.25 (1.70)	1.236 ^{NS}	---
Encouraging the heart	16.23 (3.09)	15.86 (2.14)	15.53 (2.35)	1.130 ^{NS}	---

N₁ = 48

1. Up to 10 years

N₂ = 148

2. 11 to 20 years

N₃ = 60

3. Above 20 years

* - Significant at 0.05 level

NS - Not Significant



An Econometric Estimation of Import Demand Function for Cote D'Ivoire

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Abstract

This paper examines a disaggregated import demand model for Cote d'Ivoire using time series data for the period 1970-2007. An Autoregressive Distributed Lag (ARDL) modeling process is employed to capture the effect of final consumption expenditure, the investment expenditure, the export expenditure and relative prices on import demand. Amongst the key results it is found that a long run cointegration relationship between the variables; and shows inelastic import demand for all the expenditure components and relatives prices. In the long run, investment and exports are the main determinant in Cote d'Ivoire imports. However in the short run both of the components of expenditures are the major determinants of Import demand. Import demand is not sensitive to price changes.

Keywords: ARDL cointegration, Cote d'Ivoire, Import demand

1. Introduction

In the recent years, because of the popularity of the globalization, the interdependence among countries at world level has increased. Every country wants to achieve rapid pace of economic development through getting the maximum benefits from international trade and the use of the modern techniques in the productions process. With the implementation of the world trade organization (WTO) rules and substantial reduction in trade restrictions most of the developing countries imports' are increasing rapidly. Cote d'Ivoire's economy is not an exception as it depends on the of the world's economic trends.

Cote d'Ivoire is a low-income country with a per capita income of 769.8 Euros (2008) and 20.8 million population of inhabitants (DG TRADE, 2009). The country ranked 166 out of the 177 in the 2008 United Nations Human Development Index (UNHDI). About 14.8 per cent of the Cote d'Ivoire population has been estimated to live below the poverty line of 1 US\$ /day over the period of 1990-2005. Nearly 48.8 per cent of the population lives below \$2 (HDI report, 2008).

Cote d'Ivoire is the largest producer and exporter of cacao beans and a significant producer and exporter of coffee and palm oil. The agricultural sector employs over 68 per cent of the population. With the recent statistics the agricultural sector account now for 23.4 per cent, the industry sector 26.1 per cent and the services sector 50.5 per cent (respectively in per cent of the GDP) due to the new orientations of government in the diversification of the economy. However, the political-military crisis since 1999, along with the civil war and division of the country since 2002, has plunged the country into severe economic troubles. It must be stressed that the economy has not collapsed, despite disruptions in infrastructure and the business environment. But several formerly important sectors are deeply damaged, corruption is growing, and modest macroeconomic growth only comes from the cocoa-growing areas of the country and the oil exploration in the Gulf of Guinea, which have been largely untouched by the conflict. Employment has gone down in both parts of the country and outstanding debts have grown. The government, meanwhile, aims to attract the foreign investment to boost the economic growth.

In Cote d'Ivoire, imports as a share of GDP has been rising over than the last decade. A significant share –around 46.29 per cent- of Cote d'Ivoire's national income was spent on import payments in 2008 (WDI, 2008). Given that effectiveness of any country's international trade policy in relation to its balance of payments and development depends on the magnitude of the income and price elasticities of its exports and imports, the central aim of this paper is to

estimate the determinants of Cote d'Ivoire's demand import by using annual data for the period 1970-2007. Following recent studies (Ho 2004; Nayaran and Nayaran, 2005) we used the disaggregated components of domestic income together with the standard relative price variable to specify the aggregate import demand model for Cote d'Ivoire. For policy purposes, it is relevant to know the determinants of aggregate import in Cote d'Ivoire. Among the literature we surveyed, this paper is the first to use the recent disaggregated import demand formulation approach and the autoregressive distributed lag (ARDL) estimate to study the aggregate import demand in Cote d'Ivoire.

As the thrust of this paper is to estimate the aggregate import demand for Cote d'Ivoire by using annual data for the period 1970-2007, the paper is organized as follows: Section 2 discusses the literature review about the aggregate import demand. The model specifications and the econometric methodology used are indicated in Section 3 while the empirical results of the study are presented in section 4; section 5 emphasizes the conclusion of the paper.

2. Literature Review

In view of the importance of foreign trade to economic growth and development, a number of empirical studies on the import demand functions have been carried out. The objective here is to review some of these studies as a guide to the choice of appropriate variables used in this study.

Tang and Nair (2002) evaluate the stability of the import demand function in Malaysia using the bounds test. Import demand, income, and relative price are found to be cointegrated. Their study derives long-run income and relative price elasticities of 1.5 per cent and -1.3 per cent, respectively. Bahamani and Kara (2003) estimated the import and export demand function for nine industrial countries like Australia, Canada, Denmark, US and etc. By using quarterly data for the period 1973-98 they used ARDL approach for estimation. Their results show that long-run income elasticities are greater in import demand function than in the export demand functions are relatively inelastic. They fail to provide any specific answer to the policy question that which policy has the quickest impact on trade. According to them, trade flows of different countries do react differently.

Ho (2004) estimated the import demand function of Macao by testing two popular models: (i) aggregate and (ii) disaggregate import demand model with the components of aggregate expenditure using quarterly data over the 1970-1986 period. Using JJ-Maximum likelihood cointegration and error correction technique, he found significant partial elasticities of import demand with respect to investment (0.1396), exports (1.4810) and relative prices (-0.3041) with their expected signs implied by the economic theory in the disaggregated model. Narayan and Nayaran (2005) recently applied the bounds testing approach to cointegration to estimate the long-run disaggregated import demand model for Fiji using relative prices, total consumption, investment expenditure, and export expenditure variables over the period 1970-2000. Their results indicated a long-run cointegration relationship among the variables when import demand is the independent variable; and import demand to be elastic and statistically significant at the 1 per cent level with respect to all the explanatory variables in the long-run and short-run. The results revealed that long-run elasticities of 0.69 for both export expenditure and total consumption expenditure respectively, followed by relative prices (0.38) and investment expenditure.

From the empirical literature we surveyed, the import demand function generally focuses on developed countries. A few studies were conducted on developing countries particularly in the continent of Africa. Arize (1987) estimates elasticities in the import demand function in Nigeria from 1960 to 1977 using the Cochrane-Orcutt and two-stage least-squares methods. Income elasticity of import demand is high, as is to be expected in an oil exporting country. The study inspects the structural stability of the estimated function according to the Brown-Durbin-Evans test. A structural change is found in 1971, and the result is confirmed by the Chow test. Indeed, an influential import substitution policy was implemented in Nigeria from 1971 to 1972.

Mwega (1993) investigates the short-run dynamic import function in Kenya using an error correction model. Import demand exhibits low elasticities with respect to relative price and income. Stabilization and exchange rate policies would not bring about rapid amelioration of the external disequilibrium, and foreign exchange reserves appear to be the main determinant of imports. The Chow test reveals the stability of the function. Gumede (2000) examines aggregated and disaggregated import demand for South Africa in a framework of cointegration analysis. They obtain the long-run relationship among the variables from the two-step Engle-Granger technique and introduce it into a short-run dynamic model. Income elasticity is found to be much larger than price elasticity. Ivohasina and Hamori (2005) analyzed the long-run relationship among the variables in the aggregate import demand functions of Madagascar and Mauritius in the order to evaluate the appropriateness and effectiveness of the structural adjustment program (SAPs). They used the UECM-based bounds test to investigate cointegration. They found the existence of cointegration relationship between the variables. The long-run income and price elasticities are respectively, 0.855 and -0.487 for Madagascar and 0.671 and -0.644 for Mauritius. They found that the stabilization and devaluation policies under the SAPs can be effective in the reducing import demand. They also estimated Export demand functions. The LM-test is fully met for Mauritius but unequivocal inference cannot be drawn for Madagascar. While both countries achieved lower external deficits, their economies have shown dissimilar growth performance, with remarkable expansion in Mauritius versus mitigated

growth in Madagascar .Hence, the ultimate policy objective should not be confined in containing imports, but should seek to simultaneously improve external balance and economic growth.

3. The Model Specifications and Methodology

In modeling an aggregate import demand function for Cote d'Ivoire, we follow the imperfection substitutes model, in which the key assumption is that neither imports nor exports are perfect substitutes for the domestic goods of the countries under consideration (Goldstein and Khan, 1985). Since Cote d'Ivoire imports only a relatively small fraction of total world imports, it may be quite realistic to assume that the world supply of imports to Cote d'Ivoire is perfectly elastic. This assumption of infinite import supply elasticity reduces our model to a single equation model of an import demand function.

The present analysis follows the used specifications of the aggregate import demand function formulations by Tang (2003), Nayaran and Nayaran (2005). We divide domestic income into its final demand expenditure components (i.e. $Y_t = C + I + X$) and specify a computable disaggregate import demand model for Cote d'Ivoire as follows:

$$\ln M_t = \alpha_0 + \beta_1 \ln FCE_t + \beta_2 \ln EIG_t + \beta_3 \ln X_t + \gamma \ln RP_t + \alpha_1 Dum_t + \varepsilon_t \quad (1)$$

Where $\ln M_t$ is the natural log of real imports of goods and service, $\ln FCE_t$ is the natural log of real of the final consumption expenditure, $\ln EIG_t$ is the natural log of real expenditures on investment goods (i.e. sum of gross capital formation and change in inventory); and $\ln X_t$ is the natural log of real exports, $\ln RP_t$ is the natural log of the relative prices (ratio of import price index to domestic price index), Dum_t is the time dummy which captures structural change due to trade liberalization. It is important to know that it was in 1986 during the wave of independence the Cote d'Ivoire government first adopted a liberalization policy, but the effectiveness of liberalization seems to have begun in 1995. Thus the dummy variable takes the values 0 for 1970-1994 and 1 for 1995-2007. And ε_t is the *i.i.d* error term at period t . Since data for import price index is not available we used the import unit value to proxy import price index for Cote d'Ivoire. All data are in billions of F.cfa (local currency).

The above specifications represent only the long-run equilibrium state of import demand. However, for policy reasons, the short-run adjustment of imports to changes in its determinants is necessary. To capture the speed of adjustment we estimate the following dynamic error correction model:

$$\begin{aligned} \Delta \ln M_t = & \beta_0 + \sum_{i=1}^n \beta_1 \Delta \ln M_{t-i} + \sum_{i=0}^n \beta_2 \Delta \ln FCE_{t-i} + \sum_{i=0}^n \beta_3 \Delta \ln EIG_{t-i} \\ & + \sum_{i=0}^n \beta_4 \Delta \ln X_{t-i} + \sum_{i=0}^n \gamma \Delta \ln RP_{t-i} + \psi ECM_{t-1} + \alpha D_t + \varepsilon_t \end{aligned} \quad (2)$$

Where, Δ represents first difference operator and ECM_{t-1} is the one period lagged error correction term estimated from equation (1). ψ measure the speeds of adjustment to obtain equilibrium in the event of shocks to the system. All annual data were drawn from the World Bank's *World Development Indicators* CD-ROM and from the International Monetary Fund's *International Financial Statistics* CD-ROM .In this study the period of estimation run from 1970 to 2007.

The ARDL bounds test approach developed by Pesaran *et al.* (2001) is used to estimate Equation (1). The choice of this methodology is based on several considerations. Firstly, the ARDL methodology circumvents the problem of the order of integration associated with the Johansen likelihood approach. Secondly, unlike most of the conventional multivariate cointegration procedures, which are valid for large sample size, the bound test is suitable for small sample size study (Pesaran, *et al.*, 2001). Thirdly, this technique generally provides unbiased estimates of the long-run model and valid t-statistics even when some of the regressors are endogenous (Harris and Sollis, 2003). Inder (1993) and Pesaran and Pesaran (1997) have shown that the inclusion of the dynamics may help correct the endogeneity bias. Hence, to apply the bounds procedure, the following autoregressive distributed lag (ARDL) model will be estimated in order to test the cointegration relationship between import demand, relative price and the expenditure component variables:

$$\Delta \ln M_t = \alpha_0 + \eta_1 \ln M_{t-1} + \eta_2 \ln FCE_{t-1} + \eta_3 \ln EIG_{t-1} + \eta_4 \ln X_{t-1} + \eta_5 \ln RP_{t-1}$$

$$\begin{aligned}
& + \sum_{i=1}^p \omega_i \Delta \ln M_{t-i} + \sum_{j=0}^p \varphi_j \Delta \ln FCE_{t-j} + \sum_{k=0}^p \phi_k \Delta \ln EGI_{t-k} \\
& + \sum_{m=1}^p \tau_m \Delta \ln RP_{t-m} + \alpha_1 D_1 + \varepsilon_t
\end{aligned} \quad (3)$$

The first step in the ARDL approach is to estimate Equation (3) using the ordinary least square (OLS). The second step is to trace the presence of cointegration by restricting all estimated coefficients of lagged level variables equal to zero. That is, the null hypothesis of no cointegration ($H_0: \eta_1 = \eta_2 = \eta_3 = \eta_4 = \eta_5 = 0$) is tested against the alternative ($H_1: \eta_1 \neq \eta_2 \neq \eta_3 \neq \eta_4 \neq \eta_5 \neq 0$) by the mean of a F-test with an asymptotic non standard distribution. Two asymptotic critical value bounds provides a test for cointegration when the independent variables are $I(d)$ with $0 \leq d \leq 1$. The lower bound assumes that all the regressors are $I(0)$, and the upper bound assumes that they are $I(1)$. If the computed F-statistic lies above the upper level band, the null is rejected, indicating cointegration. If the computed F-statistic lies below the lower level band, the null cannot be rejected, supporting the absences of cointegration. If the statistics fall within the band, inference would be inconclusive. After confirmation of the existence of the long-run relationship between the variables in the model, the long-run and short-run models can be derived using information criteria such as the Schwartz Bayesian or the Akaike information criteria.

To ascertain the goodness of the fit of the ARDL model, the diagnostic and stability tests are conducted. The diagnostic test examines the serial correlation, functional form, normality and heteroscedasticity associated with the model. The stability test of the regression parameters is undertaken using the Brown et al. (1975) stability testing technique, also known as cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ).

4. Empirical Results

In order to perform the bounds testing procedure, we estimated equation (3) using the ARDL approach to cointegration. The bounds test for cointegration involves the comparison of the F-statistics against the critical values. Each variable in our model for equation (1) is taken as a dependent variable in the calculation of the F-statistic. The calculated F-statistics are reported in table 2. According to the computed F-statistics; we can reject the null hypothesis of no cointegration at 1 percent significance level for import demand. The computed F-statistic $F_M(M/FCE, EGI, X, RP) = 6.7031$ is higher than the upper bound critical value of 5.763 at the 1 per cent significance level. Also both $F_{FCE}(FCE/M, EGI, X, RP) = 5.5863$ and $F_{RP}(RP/M, FCE, EGI, X) = 8.6620$ were higher than the upper bound critical value of 5.763 at the 1 per cent level. However, based on the model specifications above, we used M_t as the dependent variable.

Having found a long run relationship between import demand and its determinants when import demand is the dependent variables, we now estimate the long-run elasticities based on the following ARDL (m, n, o, p, q) specifications:

$$\begin{aligned}
\ln M_t = & \beta_0 + \sum_{i=1}^m \beta_1 \ln M_{t-i} + \sum_{i=0}^n \beta_2 \ln FCE_{t-i} + \sum_{i=0}^o \beta_3 \ln EGI_{t-i} + \sum_{i=0}^p \beta_4 \ln X_{t-i} + \sum_{i=0}^q \beta_5 \ln RP_{t-i} + \alpha_1 \\
& + \vartheta_t
\end{aligned} \quad (4)$$

Where, all variables are as previously defined. The lengths of the lags in the ARDL model was used based on the Akaike Information Criterion before the long-run elasticities were estimated using the ARDL approach. For our annual data, Pesaran and Shin (1999) suggest a maximum of 2 lags.

The long-run results are presented in table 2. All the estimated variables have their expected signs. Our results show that for Cote d'Ivoire import demand function using the disaggregate form the imports are mainly determined by the consumption activities and by the export. For instance, our results reveal that a 1 per cent increase in consumption expenditure and export expenditure induce an increase in imports by 0.65 per cent and 0.49 per cent respectively. Meanwhile, we find that a 1 per cent increase in investment expenditure leads to a 0.10 per cent increase in imports. This is due mainly by the recent series of socio-politico-military troubles during the period 1999 to 2002. This period of troubles with its degree of instability contributed to slowdown the economy performance through the fall of attracting the investment. As can be emphases, over the 1999-2002 periods, the private investments in Cote d'Ivoire has a average of 9.4 per cent of the real GDP (World Development Indicators and authors calculations, 2008). Thus, in the recent years one of the central aims of Cote d'Ivoire government has been put in the development of private investment to help

boost economic growth and reduce poverty. With respect to the relative price variable, a 1 per cent increase in the relative price will contribute to a very low import bill of Cote d'Ivoire (0.05 per cent).

The various measures of impact of disaggregate import demand are therefore very relevant. The dummy variable for trade liberalization carries out the expected sign but with a low magnitude. All estimates are inelastic. Table 3 reports the results of the short-run elasticities. The error correction term, ECM_{t-1} , which represents the speed of adjustment, is positive and not significant. ECM_{t-1} , measure the speed at which import demand adjust to changes in the explanatory variables before converging to its equilibrium level. The coefficient of 0.0035 suggests that convergence to equilibrium after a shock to imports is very slow in Cote d'Ivoire.

We find that as in the long-run, the short-run impact of various expenditure components is inelastic. A 1 per cent increase in consumption expenditure will lead to 0.96 per cent in imports and also a 1 per cent increase in expenditure on export induces 0.51 per cent in imports. The impact of the expenditure on investment in the short-run is as in the long-run have is relatively small; a 1 per cent increase induces 0.12 per cent in imports. In this period both expenditures on consumption, investment and export are statistically significant at the 1 per cent level. The relative prices variable is negatively related with imports (-0.23).

In the regression analysis, the stability of coefficients is considered to be essential for policy purposes. Therefore, the stability tests are performed. The stability of import demand function is very important for the effectiveness of trade policy. In stability test, we see whether the estimated import demand function has shifted or not over the time period included in the sample of the study. We have applied CUSMUS and CUSMUS of Square (Brown, Durbin and Evans, 1975) Tests and Recursive coefficients to check the stability of the import demand function. The model appears stable and correctly specified given that neither the CUSMUS nor the CUSMUS of Squares test statistics exceed the bounds of the 5 per cent level of significances (see Figures 1 and 2).

5. Conclusion

Following Tang (2003), Narayan and Narayan (2005) the import demand function for Cote d'Ivoire is estimated. By employing the recently developed cointegration technique the bounds testing approach to test the long-run relationship between imports, relative import prices, final consumption expenditure, investment expenditure and export expenditure using annual data for the period 1970-2007. We find evidence of a cointegration relationship among the variables in the import demand function when import demand, final consumption expenditure and relative prices are the dependent variable. However based on the model specifications we used import demand as dependent variable. This allows us to examine the long run elasticities but also the short run of Cote d'Ivoire import demand for policy implications. We find that an inelastic and positive relationship exist between the final consumption expenditure, the expenditure on investment and goods and the expenditure on exports. Relative price is also inelastic but negatively impact aggregate demand implying that the import demand is insensitive to increase in domestic levels. Thus the Cote d'Ivoire policymakers have to deal closely with the competitiveness of the relative prices to boost growth and development of the local industries.

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Table 1. Critical value bounds of the statistic: intercept and no trend

90 per cent level			95 per cent level		99 per cent level	
k	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$
4	2.525	3.560	3.058	4.223	4.280	5.840

Calculated F-statistic

F_M (M/FCE, EGI, X, RP)	6.7031
F_{FCE} (FCE/M, EGI, X, RP)	5.5863
F_{EGI} (EGI/M, FCE, X, RP)	1.8048
F_X (X/M, FCE, EGI, RP)	4.8527
F_{RP} (RP/M, FCE, EGI, X)	8.6620

Notes: critical values are extracted from Narayan (2004a, b, 2005a) k is the number of regressors.

Table 2. Estimated Long Run elasticities of import demand using the ARDL approach

Dependent variable: $\ln M_t$		
Explanatory variables	Coefficient	t -statistic
Constant	-16.8263	-2.3957
$\ln FCE_t$	0.6550	2.1905
$\ln EGI_t$	0.0971*	2.7020
$\ln X_t$	0.4926*	4.1567
$\ln RP_t$	0.1955	-1.1327
Dummy	0.0484	1.1527

Note: *denotes statistical significance at the 1 per cent level

Table 3. Estimated Short Run elasticities of import demand using the ARDL approach

Dependent variable: $\Delta \ln M_t$		
Explanatory variables	Coefficient	t -statistic
Constant	0.9949	0.4468
$\ln \Delta FCE_t$	0.9587*	4.0262
$\ln \Delta EGI_t$	0.1166*	3.7375
$\ln \Delta X_t$	0.5146*	3.9897
$\ln \Delta RP_t$	-0.2392	-1.3582
Dummy	0.0569	1.0604
ECM_{t-1}	0.0034	0.4556

Note: *denotes statistical significance at the 1 per cent level

Table 4. Diagnostics tests

ARCH test (2)	F-statistic: 0.7220(0.4940)	R^2 : 0.9161
White test	F-statistic: 1.0591(0.5201)	\bar{R}^2 : 0.7364
Jarque-Bera	1.0023(0.6058)	F-statistic: 5.0974(0.01845)
Ramsey Reset	F-statistic: 0.4153(0.6666)	
Chow test (1997-2007)	F-statistic: 0.6210(0.7765)	

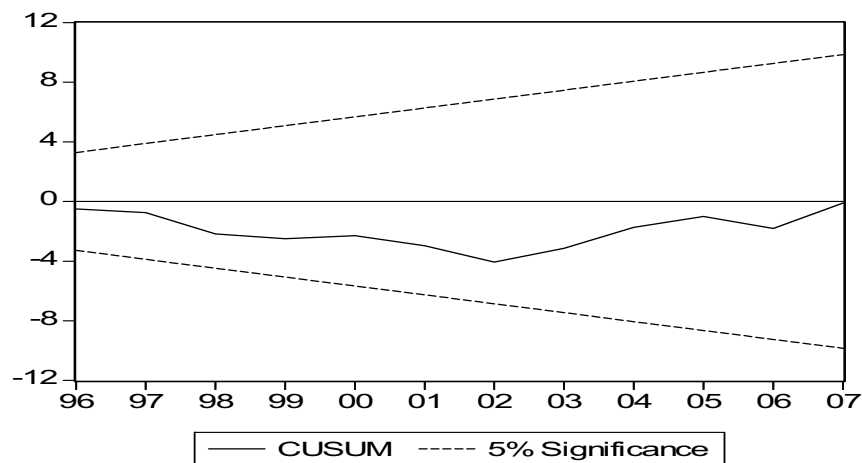


Figure 1. Plot of Cumulative Sum of recursive Residuals

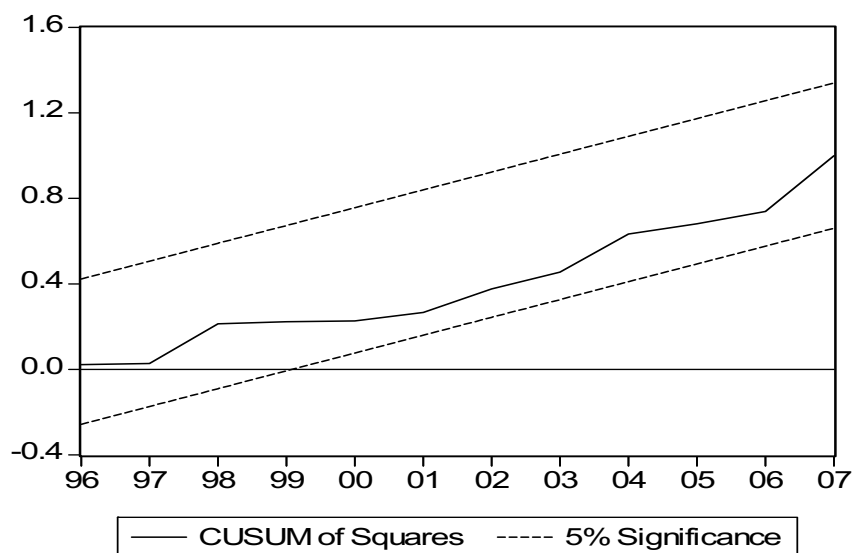


Figure 2. Plot of Cumulative Sum of Squares of Recursive Residuals



Modeling and Estimation of Volatility in the Indian Stock Market

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Abstract

The international financial markets turmoil, which started around mid-2007, has depreciated substantially since August 2008. The financial market crisis has led to the collapse of major financial institutions. Nevertheless, crashes and/or crises are not devoted to only developed markets and developing countries including India, are not excluded from this rule and it may face such a condition. The sharp decline of Sensex price index from its closing peak of 20 873 on January 8, 2008, to less than 10 000 by October 17, 2008, in line with similar large declines in other major stock markets is good reminders of this fact. Volatility as a measure of risk plays an important role in many financial decisions in such a situations. The main purpose of this study is to examine the volatility of the Indian stock markets and its related stylized facts using ARCH models. The BSE500 stock index was used to study the volatility in the Indian stock market over a 10 years period. Two commonly used symmetric volatility models, ARCH and GARCH were estimated and the fitted model of the data, selected using the model selection criterion such as SBIC and AIC. The adequacy of selected model tested using ARCH-LM test and LB statistics. The study concludes that GARCH (1, 1) model explains volatility of the Indian stock markets and its stylized facts including volatility clustering, fat tails and mean reverting satisfactorily

Keywords: India stock exchange, Volatility, Stylized facts, ARCH models

1. Introduction

Fluctuation of stock prices is not destructive per se and is a sign of market efficiency in stock markets. In an efficient market, stock price fully reflects all available information. Thus, stock price fluctuates in response to new information. The main problem with price fluctuation that affects the financial market efficiency is destructive excess volatility that ends up in crashes and/or crises in financial markets. In such a situation, difference between stock intrinsic value and its related market value is significant and has several consequences.

The turmoil in the international financial markets of advanced economies, that started around mid-2007, has exacerbated substantially since August 2008. The financial market crisis has led to the collapse of major financial institutions. Nevertheless, crashes and/or crises are not devoted to only developed markets and developing countries including India, are not excluded from this rule and it may face such a condition. Top-11 Indian stock market crashes include Apr 1992, May 2004, May 2006, April 2007, July 2007, Aug 2007 Oct 2007, Nov 2007, Dec 2007, Aug, 2007 and particularly, Jan 2008 are good reminders of this fact. With the volatility in portfolio flows having been large during 2007 and 2008, the impact of global financial turmoil has been felt particularly in the Indian equity market. The BSE Sensex increased significantly from a level of 13 072 as at end-March 2007 to its peak of 20 873 on January 8, 2008 in the presence of heavy portfolio flows responding to the high growth performance of the Indian corporate sector. With portfolio flows reversing in 2008, partly because of the international market turmoil (Mohan, 2008) the Sensex fell from its closing peak of 20 873 on January 8, 2008, to less than 10000 by October 17, 2008, in line with similar large declines in other major stock markets. In addition, Between January 1 and October 16 2008, the rupee fell by nearly 25 per cent, even relative to a weak currency like the dollar, from Rs 39.20 to the dollar to Rs 48.86 (Chandrasekhar and Ghosh, 2008). Hence, the study of financial asset volatility is important to academics, policymakers, and financial markets participants for several reasons. First, prediction of financial market volatility is important to economic agents

because it represents a measure of risk exposure in their investments. Second, a volatile stock market is a serious concern for policymakers because instability of the stock creates uncertainty and thus adversely affects growth prospects. Evidence shows that when markets are perceived as highly volatile it may act as a potential barrier to investing. Third, the stock market volatility causes reduction in consumer spending. Fourth, pricing of derivative securities and pricing of call option is a function of volatility. Finally, stock return forecasting is in a sense volatility forecasting and this has created new job opportunities for the professionals those who are experts in volatility forecasting (Onyeaso and Rogers, 2004). Consequently, it can be seen that the study of stock market volatility and its characteristics is very important and can be helpful for formulation of economic policies and forming rules and regulations related to stock market.

While the volatility and its relationship with stock price in developed financial markets has been well studied, little concentration has been paid towards an extensive study of the volatility of the emerging stock market of India. It is now well known that equities from emerging capital markets have vastly different characteristics than equities from developed capital markets. There are at least four distinguishing features of emerging market returns: higher sample average returns, low correlations with developed market returns, more predictable returns, and higher volatility (Bekaert and Wu, 2000). These differences may have important implications for decision making by investors and policy makers and put emphasis on developed markets finding may mislead policy makers in making proper decisions. Therefore, in line with developed markets studies, the main objective of this study is to investigate volatility and its related stylized facts in the Indian stock markets using ARCH models.

The rest of this paper is organized as follows. Section 2 deals with the volatility models considered for this paper. The review of literature is presented in section 3. The description of the BSE500 data and the methodology is presented in section 4. The results and discussions are presented in section 5 and finally section 6 concludes the paper.

2. Models of Volatility

ARCH models are capable of modeling and capturing many of the stylized facts of the volatility behavior usually observed in financial time series including time varying volatility or volatility clustering (Zivot and Wang, 2006).

The serial correlation in squared returns, or conditional heteroskedasticity (volatility clustering), can be modeled using a simple autoregressive (AR) process for squared residuals. For example, let y_t denote a stationary time series such as financial returns, then y_t can be expressed as its mean plus a white noise if there is no significant autocorrelation in y_t itself:

$$y_t = c + \varepsilon_t \quad (1)$$

where c is the mean of y_t , and ε_t is iid with mean zero. To allow for volatility clustering or conditional heteroskedasticity, assume that $\text{Var}_{t-1}(\varepsilon_t^2) = \sigma_t^2$ with $\text{Var}_{t-1}(\cdot)$ denoting the variance conditional on information at time $t-1$, and

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \dots + \alpha_p \varepsilon_{t-p}^2 \quad (2)$$

Since ε_t has a zero mean, $\text{Var}_{t-1}(\varepsilon_t^2) = \sigma_t^2$, the above equation can be rewritten as:

$$\varepsilon_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \dots + \alpha_p \varepsilon_{t-p}^2 + u_t \quad (3)$$

Where $u_t = \varepsilon_t^2 - E_{t-1}(\varepsilon_t^2)$ is a zero mean white noise process. The above equation represents an AR (p) process for ε_t^2 , and the model in (1) and (2) is known as the autoregressive conditional heteroskedasticity (ARCH) model of Engle (1982), which is usually referred to as the ARCH(p) model. Before estimating a full ARCH model for a financial time series, it is necessary to test for the presence of ARCH effects in the residuals. If there are no ARCH effects in the residuals, then the ARCH model is unnecessary and misspecified.

Since an ARCH model can be written as an AR model in terms of squared residuals as in equation 3, A simple Lagrange Multiplier (LM) test for ARCH effects can be constructed based on the auxiliary regression as in equation 3. Under the null hypothesis that there is no ARCH effects:

$$H_0 = \alpha_1 = \alpha_2 = \dots = \alpha_p = 0$$

the test statistic is

$$LM = T \cdot R^2 \sim \chi^2_{(p)}$$

where T is the sample size and R^2 is computed from the regression (3) using estimated residuals.

If P-value is smaller than the conventional 5% level, the null hypothesis that there are no ARCH effects will be rejected. In other words, the series under investigation shows volatility clustering or persistence. If the LM test for ARCH effects is significant for a time series, one could proceed to estimate an ARCH model and obtain estimates of the time-varying volatility σ^2 based on past history. However, in practice it is often found that a large number of lags P , and thus a large number of parameters, is required to obtain a good model fit. A more parsimonious model proposed by Bollerslev (1986) replaces the AR model in (equation 2) with the following formulation:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^p \alpha_i \varepsilon_{t-i}^2 + \sum_{j=1}^q b_j \sigma_{t-j}^2 \quad (4)$$

where the coefficients $\alpha_i (i=0, \dots, p)$ and $b_j (j=1, \dots, q)$ are all assumed to be positive to ensure that the

conditional variance σ^2 is always positive. The model in (equation 4) together with (equation 1) is known as the

generalized ARCH or GARCH (p, q) model. When $q=0$, the GARCH model reduces to the ARCH model.

Under the GARCH (p, q) model, the conditional variance of ε_t , σ_t^2 , depends on the squared residuals in the previous p periods, and the conditional variance in the previous q periods. Usually a GARCH (1, 1) model with only three parameters in the conditional variance equation is adequate to obtain a good model fit for financial time series (Zivot and Wang, 2006)

2.1 Arch Models Specification for BSE500

Before estimating ARCH models for a financial time series, taking two steps is necessary. First, check for unit roots in the residuals and second, test for ARCH effects.

The input series for ARMA needs to be stationary before we can apply Box-Jenkins methodology. The series first needs to be differenced until it is stationary. This needs log transforming the data to stabilize the variance. Since the raw data are likely to be non-stationary, an application of ARCH test is not valid. For this reason, it is usual practice to work with the logs of the changes of the series rather than the series itself.

The presence of a unit root in a time series is tested using the Augmented Dickey-Fuller test. It tests for a unit root in the univariate representation of time series. For a return series R_t , the ADF test consists of a regression of the first difference of the series against the series lagged k times as follows:

$$\Delta r_t = \alpha + \delta r_{t-1} + \sum_{i=1}^p \beta_i \Delta r_{t-i} + \varepsilon_t$$

Or

$$\Delta r_t = r_t - r_{t-1}; r_t = \ln(R_t)$$

The null and alternative hypotheses are as follows:

$$\begin{cases} H_0 : \text{the series contains unit root} \\ H_1 : \text{the series is stationary} \end{cases}$$

The acceptance of the null hypothesis implies non-stationarity. If the ADF test rejects the null hypothesis of a unit root in the return series, that is if the absolute value of ADF statistics exceeds the McKinnon critical value, the series is stationary and we can continue to analyze the series.

Before estimating a full ARCH model for a financial time series, it is necessary to check for the presence of ARCH effects in the residuals. If there are no ARCH effects in the residuals, then the ARCH model is unnecessary and misspecified (Zivot and Wang, 2006).

2.1.1 Arch effect test process

Consider the k-variable linear regression model.

$$y_t = \beta_1 + \beta_2 x_{2t} + \cdots + \beta_k x_{kt} + u_t$$

In addition, assume that conditional on the information available at time (t-1), the disturbance term distributed as

$$u_t \sim \left[0, (\alpha_0 + \alpha_1 u_{t-1}^2) \right]$$

That is, u_t is normally distributed with zero mean and

$$Var(u_t) = (\alpha_0 + \alpha_1 u_{t-1}^2)$$

That is the variance of u_t follows an ARCH (1) process. The variance of u at time t is dependent on the squared disturbance at time (t-1), thus giving the appearance of serial correlation. The error variance may depend not only on one lagged term of the squared error term but also on several lagged squared terms as follows:

$$Var(u_t) = \sigma_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \alpha_2 u_{t-2}^2 + \cdots + \alpha_p u_{t-p}^2$$

If there is no autocorrelation in the error variance, we have

$$H_0 : \alpha_1 = \alpha_2 = \cdots = \alpha_p = 0$$

In such a case, $Var(u_t) = \alpha_0$, and we do not have the ARCH effect.

Since we do not directly observe σ_t^2 Engle has shown that running the following regression can easily test the preceding null hypothesis:

$$u_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \alpha_2 u_{t-2}^2 + \cdots + \alpha_p u_{t-p}^2$$

Where u_t , as usual, denote the OLS variance obtained from the original regression model.

The null hypothesis can be tested by the usual F test but the ARCH-LM test of Engle 1982 is a common test in this regard. Under ARCH-LM test the null and alternative hypothesis for BSE500 stock index are as follows:

$$H_0 : \alpha_1 = 0 \text{ and } \alpha_2 = 0 \text{ and } \alpha_3 = 0 \text{ and } \cdots \alpha_q = 0$$

$$H_1 : \alpha_1 \neq 0 \text{ and } \alpha_2 \neq 0 \text{ and } \alpha_3 \neq 0 \text{ and } \cdots \alpha_q \neq 0$$

Null hypothesis in this case is homoskedasticity or equality in the variance. Acceptance of this hypothesis imply that, there is no ARCH effects in the under process series. In other word, the data do not show volatility clustering i.e. there is no heteroskedasticity or time varying variance in the data.

Since an ARCH model can be written as an AR model in terms of squared residuals as in

$$\varepsilon_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \cdots + \alpha_p \varepsilon_{t-p}^2 + u_t$$

a simple Lagrange Multiplier (LM) test for ARCH effects can be constructed based on the auxiliary regression.

$$\varepsilon_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \cdots + \alpha_p \varepsilon_{t-p}^2 + u_t$$

Under the null hypothesis that there are no ARCH effects:

The test statistic is as follows:

$$LM = T \cdot R^2 \sim \chi^2_{(p)}$$

Where T is the sample size R^2 is computed from the regression

$$\varepsilon_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \cdots + \alpha_p \varepsilon_{t-p}^2 + u_t$$

using estimated residuals. That is in large sample TR^2 follows the Chi-square distribution with df equal to the number of autoregressive terms in the auxiliary regression.

The test statistic is defined as TR2 (the number of observations multiplied by the coefficient of multiple correlation) from the last regression, and it is distributed as a $\chi^2_{(q)}$ (Gujarati, 2007).

Thus, the test is one of a joint null hypothesis that all q lags of the squared residuals have coefficient values that are not significantly different from zero. If the value of the test statistic is greater than the critical value from the χ^2 distribution, then one can reject the null hypothesis. The test can also be thought of as a test for autocorrelation in the squared residuals. Alternatively, if P-value is smaller than the conventional α % level, the null hypothesis that there are no ARCH effects will be rejected. In other words, the series under investigation shows volatility clustering or volatility persistence (Brooks, 2002).

If an ARCH effect is found to be significant, then the specification of an appropriate ARCH model is necessary. In order to identify the ARCH characteristics in BSE500, the conditional return should be modeled first; the general form of the return can be expressed as a process of autoregressive AR (p), up to (p) lags, as follows:

$$R_t = \alpha_0 + \sum_{i=1}^p \alpha_i R_{t-i} + \varepsilon_t$$

This general form implies that the current return depends not only on (R_{t-1}) but also on the previous (p) return value (R_{t-p}).

The next step is to construct a series of squared residuals (ε_t^2) based on conditional return to drive the conditional variance. Unlike the OLS assumption of a constant variance of (ε_t, S), ARCH models assume that (ε_t, S) have a non-constant variance or heteroscedasticity, denoted by (h_t^2). After constructing time series residuals, we modeled the conditional variance in a way that incorporates the ARCH process of (ε_t^2) in the conditional variance with (q) lags.

The general forms of the conditional variance, including (q) lag of the residuals is as follows:

$$h_t^2 = \beta_0 + \sum_{i=1}^q \beta_i \varepsilon_{t-i}^2$$

The above equation is what Engle (1982) referred to as the linear ARCH (q) model because of the inclusion of the (q) lags of the (ε_t^2) in the variance equation. This model suggests that volatility in the current period is related to volatility in the past periods,

For example in the case of AR(1) model, If β_1 is positive, it suggests that if volatility was high in the previous period, it will continue to be high in the current period, indicating volatility clustering. If β_1 is zero, then there is no volatility clustering.

To determine the value of q or the ARCH model order, we use the model selection criterion such as AIC (Akaike Information Criterion) and SBIC (Schwarz Bayesian Information Criterion). The decision rule is to select the model with the minimum value of information criterion. This condition is necessary but not enough because the estimate meets the general requirements of an ARCH model. The model to be adequate should have coefficients that all are significant. If this requirement is met then the specified model is adequate and fits the data well.

2.2 Garch model

The problem with applying the original ARCH model is the non-negativity constraint on the coefficient parameters of (β_i 's) to ensure the positivity of the conditional variance. However, when a model requires many lags to model the process correctly the non-negativity may be violated.

To avoid the long lag structure of the ARCH (q) developed by Engle (1982), Bollerslev (1986), generalized the ARCH model, the so-called (GARCH), by including the lagged values of the conditional variance. Thus, GARCH(p,q) specifies the conditional variance to be a linear combination of (q) lags of the squared residuals ε_t^2 from the conditional return equation and (p) lags from the conditional variance σ_{t-j}^2 . Then, the GARCH(p,q) specification can be written as follows:

$$h_t^2 = \beta_0 + \sum_{i=1}^q \beta_1 \varepsilon_{t-i}^2 + \sum_{j=1}^p \beta_2 h_{t-j}^2 \quad \forall j=1, \dots, p \text{ and } i=1, \dots, q$$

Where $\beta_1, \beta_2 > 0$ and $(\beta_1 + \beta_2) < 1$ is to avoid the possibility of negative conditional variance.

The above equation states that the current value of the conditional variance is a function of a constant and values of the squared residual from the conditional return equation plus values of the previous conditional variance.

To show the significance of the explanation of conditional variance of one lag of both ε_t^2 and h_t^2 , e.g. ε_{t-1} and h_{t-1}^2 , the GARCH process should be employed by estimating the conditional return to drive ε_t^2 , and then the estimation of the conditional variance by using equation below

$$h_t^2 = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \alpha_1 h_{t-1}^2$$

The adequacy of the GARCH model can be examined by standardized residuals, $\left(\frac{\varepsilon}{\sigma}\right)$, where (σ) is the conditional standard deviation as calculated by the GARCH model, and (ε) is the residuals of the conditional return equation.

$$R_t = \alpha_0 + \sum_{i=1}^p \alpha_1 R_{t-i} + \varepsilon_t$$

If the GARCH model is well specified, then the standardized residuals will be Independent and Identically Distributed (IID). To show this, two-step test is needed. The first step is to calculate the Ljung-Box Q-Statistics (LB) on the squared observation of the raw data. This test can be used to test for remaining serial correlation in the mean equation and to check the specification of the mean equation. If the mean equation is correctly specified, all Q-statistics should not be significant.

The next step is to calculate the Q-statistics of the squared standardized residuals. This test can be used to test for remaining ARCH in the variance equation and to check the specification of the variance equation. If the variance equation is correctly specified, all Q-statistics should not be significant. Put another way, if the GARCH is well specified, then the LB statistic of the standardized residuals will be less than the critical value of the Chi-square statistic

$$\chi_{m-p-q}^2 \text{ (Alsalman.A.E.2002).}$$

The test for mean equation specification can be thought of as a test for autocorrelation in the standardized residuals. The test is one of a joint null hypothesis that there is no autocorrelation up to order k of the residuals.

If the value of the test statistic is greater than the critical value from the Q-statistics, then the null hypothesis can be rejected. Alternatively, if p-value is smaller than the conventional significance level, the null hypothesis that there are

no autocorrelation will be rejected. In other words, the series under investigation shows volatility clustering or volatility persistence. The same is true for variance equation. The only difference is that in this case the test will be done on squared standardized residuals.

In addition to Ljung-Box Q-statistics the ARCH-LM test also can be used to test the adequacy of Arch model. The procedure is same as ARCH model. To model selection, model selection criteria such as SBC criteria and AIC is used.

2.3 Mean reversion

The high or low persistence in volatility is generally captured in the GARCH coefficient(s) of a stationary GARCH model. For a stationary GARCH model the volatility mean reverts to its long run level, at rate given by the sum of ARCH and GARCH coefficients, which is generally close to one for a financial time series. The average number of time periods for the volatility to revert to its long run level is measured by the half life of the volatility shock and it is used to forecast the BSE500 series volatility on a moving average basis (Banerjee and sarkar, 2006).

A covariance stationary time series $\{y_t\}$ has an infinite order moving average representation of the form

$$y_t = \mu + \sum_{i=0}^{\infty} \psi_i \varepsilon_{t-i}, \quad \psi_0 = 1, \quad \sum_{i=0}^{\infty} \psi_i^2 < \infty$$

The plot of the ψ_i against i is called the Impulse Response Function (IRF). The decay rate of IRF is sometimes

reported as a half-life, denoted by L_{half} , which is the lag at which the IRF reaches $\frac{1}{2}$.

2.3.1 Calculation of half-life of volatility shock for a stationary GARCH (1, 1) process

The mean reverting form of the basic GARCH (1, 1) model is:

$$(\varepsilon_t^2 - \bar{\sigma}^2) = (\alpha_1 + \beta_1)(\varepsilon_{t-1}^2 - \bar{\sigma}^2) + u_t - \beta_1 u_{t-1}$$

where $\bar{\sigma}^2 = \alpha_0 / (1 - \alpha_1 - \beta_1)$ is the unconditional long run level of volatility and $u_t = (\varepsilon_t^2 - \sigma_t^2)$. The mean

reverting rate $\alpha_1 + \beta_1$ implied by most fitted models is usually very close to 1. The magnitude of $\alpha_1 + \beta_1$ controls the speed of mean reversion. The half life of a volatility shock is given by the formula

$$L_{half} = \ln\left(\frac{1}{2}\right) / \ln(\alpha_1 + \beta_1)$$

Measures the average time it takes for $|\varepsilon_t^2 - \bar{\sigma}^2|$ to decrease by one half. The closer $\alpha_1 + \beta_1$ is to one the longer is

the half life of a volatility shock. If $\alpha_1 + \beta_1 > 1$, the GARCH model is nonstationary and the volatility will eventually explode to infinity (Banerjee and sarkar, 2006).

3. Review of Literature

Stock prices volatility is an extremely important concept in finance for numerous reasons. The literature on stock price volatility agrees on one key phenomenon. There is evidence of severe movements in stock prices. In other words, dynamic nature of stock prices behavior is an accepted phenomenon and all participants in stock markets include regulators, professionals and academics have consensus about it. But, what causes stock prices volatility is a question that remains unsettled in finance field. Answer to this question, because of the great number of involved variables is not an easy task and up to now there is no consensus about it. However researchers in quest of answer this question has investigated the stock prices volatility from different angles. In this regards, from late twentieth century and particularly after introducing ARCH model by Engle (1982), as said by Bollerslev (1999) and Granger and Poon (2000) several hundred research that mainly accomplished in developed country and to some extent in developing countries has been

done by researchers in this area using different methodology. Our objective in this section is to give the reader just a glimpse of these studies as follows:

Engle (1982) published a paper that measured the time-varying volatility. His model, ARCH, is based on the idea that a natural way to update a variance forecast is to average it with the most recent squared "surprise" (i.e. the squared deviation of the rate of return from its mean). While conventional time series and econometric models operate under an assumption of constant variance, the ARCH process allows the conditional variance to change over time as a function of past errors leaving the unconditional variance constant. In the empirical application of the ARCH model a relatively long lag in the conditional variance equation is often called for, and to avoid problems with negative variance parameters a fixed lag structure is typically imposed.

Bollerslev (1986) to overcome the ARCH limitations introduced his model, GARCH, that generalized the ARCH model to allow for both a longer memory and a more flexible lag structure. As noted above, in the empirical application of the ARCH model, a relatively long lag in the conditional variance equation is often called for, and to avoid problems with negative variance parameters a fixed lag structure is typically imposed. In the ARCH process the conditional variance is specified as a linear function of past sample variance only, whereas the GARCH process allows lagged conditional variances to enter in the model as well.

Engle, Lilien, and Robins (1987) introduced the ARCH-M model by extending the ARCH model to allow the conditional variance to be determinant of the mean. Whereas in its standard form, ARCH model expresses the conditional variance as a linear function of past squared innovations in this new model they hypothesize that, changing conditional variance directly affect the expected return on a portfolio. Their results from applying this model to three different data sets of bond yields are quite promising. Consequently, they conclude that risk premia are not time invariant; rather they vary systematically with agent's perceptions of underlying uncertainty.

Nelson (1991) extended the ARCH framework in order to better describe the behavior of return volatilities. Nelson's study is important because of the fact that it extended the ARCH methodology in a new direction, breaking the rigidity of the GARCH specification. The most important contribution was to propose a model (EGARCH) to test the hypothesis that the variance of return was influenced differently by positive and negative excess returns. His study found that not only was the statement true, but also that excess returns were negatively related to stock market variance.

Glosten, Jagannathan and Runkle (1993), to modify the primary restrictions of GARCH-M model based upon the truth that GARCH model enforce a symmetric response of volatility to positive and negative shocks, introduced GJR's (TGARCH) models. They conclude that there is a positive but significant relation between the conditional mean and conditional volatility of the excess return on stocks when the standard GARCH-M framework is used to model the stochastic volatility of stock returns. On the other hand, Campbell's Instrumental Variable Model estimates a negative relation between conditional mean and conditional volatility. They empirically show that the standard GARCH-M model is misspecified and alternative specifications provide reconciliation between these two results. When the model is modified to allow positive and negative unanticipated returns to have different impacts on conditional variance, they find that a negative relation between the conditional mean and the conditional variance of the excess return on stocks. Finally, they also find that positive and negative unexpected returns have vastly different effects on future conditional variance and the expected impact of a positive unexpected return is negative.

Engle and Ng (1993) measure the impact of bad and good news on volatility and report an asymmetry in stock market volatility towards good news as compared to bad news. More specifically, market volatility is assumed to be associated with the arrival of news. A sudden drop in price is associated with bad news on the other hand, a sudden increase in price is said to be due to good news. Engle and Ng find that bad news create more volatility than good news of equal importance. This asymmetric characteristic of market volatility has come to be known as the "leverage effect". The studies of Black (1976), Christie (1982), FSS (1987), Schwert (1990) and Pagan and Schwert (1989) also explain this volatility asymmetry with the "leverage effect". However, their models do not capture this asymmetry. Engle and Ng (1993) provide new diagnostic tests and models, which incorporate the asymmetry between the type of news and volatility, they advise researchers to use such enhanced models when studying volatility.

Batra [2004] in an article entitled "stock return volatility patterns in India" examined the time varying pattern of stock return volatility and asymmetric Garch methodology. He also examined sudden shifts in volatility and the possibility of coincidence of these sudden shifts with significant economic and political events both of domestic and global origin. Also, he examined stock market cycles for variation in amplitude, duration and volatility of the bull and bear phases over the reference period. His analysis revealed that liberalization of the stock market or the FII entry in particular does not have any direct implications for the stock returns volatility. No structural changes in the stock price volatility around any liberalization event or more importantly around the dates of breaks for volatility in FII sales and purchases in India were observed. The apparent link generally drawn between stock price volatility and the sudden withdrawal or heavy purchase by the FIIs i.e. the volatile FII investment in the stock market did not seem to hold true for India. In all the phases, as delineated by their structural break analysis, the period between 1991:05 and 1993:12 was the most volatile

period with the standard deviation of stock returns exceeding that in the other periods. The study also showed that in general over the references period the bull phases are longer, the amplitude of the bull is higher and the volatility in the phases is also higher. He also concluded that the gains during expansions are larger than the losses during the bear phases of stock market cycles. The bull phase, in comparison with its pre liberalization character was more stable in the post liberalization phase. The results of their analysis also, showed that the stock market cycles have dampened in the recent past. Finally, the study showed that volatility has declined in the post liberalization phase for both the bull and bear phase of the stock market cycles.

Kumar [2006] in an article entitled "comparative performance of volatility forecasting models in Indian markets" evaluated the comparative ability of different statistical and economic volatility forecasting models in the context of Indian stock and forex markets. Based on the out of sample forecasts and the number of evaluated measures that rank a particular method as superior he concluded that it is possible to infer that EWMA will lead to improvements in volatility forecasts in the stock markets and the GARCH (5,1) will achieve the same in the forex market. As he concluded, his findings were contrary to the findings of Brailsford and Paff [1996] who found no single method as superior, but the results in stock market were similar to the findings of Akigray [1989], McNillian [2001], Anderson and Bollerslev [1998] and Anderson et al [1999] in the Forex market.

Banerjee and Sarkar [2006] in an article entitled "long memory property of stock returns; evidence from India" examined the presence of long memory in asset returns in the Indian stock market. They found that although daily returns are largely uncorrelated, there is strong evidence of long memory in its conditional variance. They concluded that FIGARCH is the best-fit volatility model and it outperforms other Garch type models. They also observed that the leverage effect is insignificant in SenSex returns and hence symmetric volatility models turn out to be superior as they expected.

4. Methodology

The required data including 2108 daily closing observation for BSE500 price index covering the period 26/7/2000 through 20/01/2009 were obtained from the Bangalore Stock Exchange, and were based on daily closing prices. The

BSE500 returns (r_t) at time t are defined in the logarithm of BSE500 indices (p), that is,

$$r_t = \log(p_t / p_{(t-1)})$$
 Visual inspection of the plot of daily returns series of BSE500 proved very useful. It can be seen that from figure 1 that return fluctuates around mean value that is close to zero. Volatility is high for certain time periods and low for other periods. The movements are in the positive and negative territory and larger fluctuations tend to cluster together separated by periods of relative calm. The volatility was highest in 2004 and 2008. Thus figure 1 shows volatility clustering where large returns tend to be followed by small returns leading to continuous periods of volatility and stability. Volatility clustering implies a strong autocorrelation in squared return.

The number of observation is 2108. The mean daily return is $1.53E-18$. The volatility (measured as a standard deviation) is 0.017142. There is indication of negative skewness ($Skw = -0.906$) which indicates that the lower tail of the distribution is thicker than the upper tail, that is, the index declines occur more often than its increases. The kurtosis coefficient is positive, having high value for the return series ($Kurt = 8.293$) that is the pointer of leptokurtosis or fat tailedness in the underlying distribution. In fact, under the null hypothesis of normality the Jarque-Bera statistic asymptotically follows a Chi-square distribution with 2 degree of freedom. The computed value of 2750 with P-value of zero rejects the normality assumption due to the high kurtosis indicating fat tail. Q-Q plot in figure 2 also confirm the non-normality of the returns series.

As table.1 shows ARCH-LM test is statistically significant which indicates the presence of ARCH effect in the residuals of mean equation of BSE 500. The ADF test statistics rejects the hypothesis of unit root in the returns series at 1% level of significance. A formal application of ADF test on log returns, rejects the null hypothesis of a unit root in the return series. There is rejection at 0.01 level of significance because absolute value of ADF statistics 19.66671 exceeds McKinnon critical value 3.4365. These properties of the BSE500 returns series are consistent with other financial times series.

The ARCH and GARCH models are estimated for BSE500 returns series using the robust method of Bollerslev-Wooldridge's quasi-maximum likelihood estimator (QMLE) assuming the Gaussian standard normal distribution. Next, we use information criteria such as AIC, SBIC values, and a set of model diagnostic tests (ARCH-LM test and Q-Statistics) to choose the volatility models which represent the conditional variance of the BSE500 returns series appropriately. We estimated the model using Eviews 4, Eviews 5.1 and S-plus 8.0.

5. Findings

To detect the presence of ARCH effect in the mean equation of BSE500 we use the ARCH-LM (Lagrange multiplier) test. We tested for ARCH-effect for higher order and found that coefficient of ε_{t-3}^2 , ε_{t-5}^2 , ε_{t-6}^2 and ε_{t-8}^2 found to be statistically insignificant.

ARCH-LM test is statistically significant which indicates the presence of ARCH effect in the residuals of mean equation of BSE 500[table1]. To determine which ARCH model is adequate for describing the conditional heteroscedasticity of the data at 5% significance level we apply sample ACF and PACF of the squared residuals which showed the existence of ARCH effects. The sample PACF indicated that an ARCH (4) model might be appropriate. Consequently, we specify the ARCH (4) model as follows:

$$r_t = \mu + \alpha_1 r_{t-1} + \varepsilon_t$$

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \varepsilon_{t-2}^2 + \alpha_3 \varepsilon_{t-3}^2 + \alpha_4 \varepsilon_{t-4}^2$$

The results for the ARCH (4) for daily log returns of BSE500 are reported in table 2. As table 2 shows the estimates of

$\alpha_1, \alpha_2, \alpha_3$ and α_4 are all statistically significant at the 5% level of significance. Therefore, the model need not to be simplified. Therefore, we choose ARCH (4) for our data set of BSE500. Using the AIC, SBIC and Loglikelihood model selection criteria we achieved same results.

To test the adequacy of the model we applied the ARCH-LM test up to four lag. The result has reported in the table 3. As table 3 indicates, both test statistics are statistically insignificants. It means no ARCH effects left in the model. Thus, we found that ARCH (4) can be possible representative of the conditional volatility process for daily return series of BSE500. Hence we obtain the following fitted model for mean and variance equations.

$$r_t = 0.001691 + 0.146755 r_{t-1} + \varepsilon_t$$

$$\sigma_t^2 = 8.01E - 05 + 0.237925 \varepsilon_{t-1}^2 + 0.181726 \varepsilon_{t-2}^2 + 0.167373 \varepsilon_{t-3}^2 + 0.170113 \varepsilon_{t-4}^2 \quad 5.1 \text{ Garch model}$$

Although the ARCH model is simple, it often requires many parameters to adequately describe the volatility process of an asset returns. Bollerslev (1986) proposes a useful extension known as the generalized ARCH (GARCH) model. The modeling process of ARCH models can also be used to build a GARCH model. However, specifying the order of GARCH model is difficult. For this reason only lower order of GARCH, models are used in most application. We fit the GARCH models with different orders (up to 5) to the daily returns. To select the order of GARCH model, we used SBC criteria. The model with lower value of SBC fits the data best. The results are presented in table 4. As table 4 shows, The SBIC value is lowest for p=1 and q=1. Therefore, we choose GARCH (1,1) for our data set of BSE500. Thus, we found that GARCH(1,1) can be possible representative of the conditional volatility process for daily return series of BSE500. Table5 reports the statistics regarding GARCH(1,1). To test the adequacy of GARCH (1,1) model we apply ARCH-LM test up to 10 lag. The results of ARCH –LM test are reported in table 6. As results show the F-statistic and Obs*R-squared statistic both are insignificance and indicating no arch effects left in the series.

Thus we employed GARCH (1,1) to model volatility .The model of volatility for BSE500 index using GARCH (1,1) are as follows:

$$r_t = 0.001526 + 0.131403 r_{t-1} + \varepsilon_t$$

$$\sigma_t^2 = 1.13E - 05 + 0.179646 \varepsilon_{t-1}^2 + 0.786714 \sigma_{t-1}^2 + \varepsilon_t$$

As above model indicates the value of α is 0.179646 and the value of β is 0.786714. The sum of parameters is 0.97. The stationary condition $(\alpha + \beta < 1)$ is satisfied. The mean reverting rate $(\alpha + \beta) = 0.97$, implied by our fitted

model is close to one. Therefore, the fitted GARCH model implies that conditional volatility is very persistent. A large value of GARCH lag coefficient β (0.786714) indicates that shocks to conditional variance takes a long time to die out, so the volatility is persistent. Low value of error coefficient α i.e. (0.179646) suggests that large market surprises induce relatively small revision in future volatility. $(\alpha + \beta) = 0.97$ is close to unity and implies that a shock at time t persists for many future periods. A high value of this kind implies a “long memory” in the stock market. Any shock will lead to a permanent change in all the future values of h_t , hence shocks to conditional variance are persistent.

5.1 Mean reversion

To test the null of non stationary series or no mean reversion in the BSE500 returns we applied two tests. First we used the unit root test. As it stated in the beginning of the chapter, the results of the ADF test showed that the series is stationary. In other words there was no evidence in favor of unit root in the data and we concluded that the data series is stationary. When the data series is stationary, it is mean reverting and volatility finally reverts to its long run average. Another way of testing mean reversion is using GARCH model. For a stationary GARCH model the volatility mean reverts to its long run level, at rate given by the sum of ARCH and GARCH coefficients, which is generally close to one for a financial time series. The average number of time periods for the volatility to revert to its long run level is measured by the half life of the volatility shock and it is used to forecast the BSE500 series volatility. Here the sum of arch and garch term is nearly 0.97 which is close to 1. The mean reverting

rate $\alpha_1 + \beta_1$ implied by our fitted model is very close to 1. The magnitude of $\alpha_1 + \beta_1$ controls the speed of mean reversion. The half life of a volatility shock Measures the average time it takes for $|\varepsilon_t^2 - \bar{\sigma}^2|$ to decrease by one half the closer $\alpha_1 + \beta_1$ is to one the longer is the half life of a volatility shock. if $\alpha_1 + \beta_1 > 1$, the GARCH model is nonstationary and the volatility will eventually explode to infinity. In our case it is almost 22 or approximately one calendar month. Therefore, the null hypothesis of unit root or no mean reversion is rejected and we accept the alternative hypothesis of stationary or mean reverting in the underlying series.

6. Conclusions

This study attempted to study the volatility and its stylized facts in the Indian stock market. The BSE500 index of Mumbai stock exchange is used as a proxy for the Indian market. The data used for analysis were 2108 daily observations for the period of 07/26/2000 to 01/20/2009. Empirical results showed that GARCH (1,1) model can adequately describe the BSE500 stylized facts. The results suggest that the volatility in the Indian stock market exhibits the persistence of volatility and mean reverting behavior. The conditional volatility of the BSE500 was found to be quite persistence. Within the ARCH family that used in this study, our results revealed that the GARCH (1,1) model satisfactorily explains volatility and is the most appropriate model for explaining volatility clustering, fat tails and mean reverting in the series under analysis. The results of the study have useful implications for regulator and policy makers in the Indian stock market. Given the inefficiency of traditional methods of calculating volatility such as Moving Average and EWMA in capturing stylized facts of stock market i.e. volatility clustering and mean reversion, using these methods in evaluating risk needs to be reviewed and using GARCH-type model should be considered in risk management decisions.

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Table 1. ARCH-LM test of BSE500 log returns series up to 10 lags

ARCH-LM TEST			
F-statistics	53.79811	Probability	0.0
Obs*R-Squared	429.9781	Probability	0.0

Table 2. ARCH (4) model parameters

ARCH (4) model parameters				
Mean equation				
	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001691	0.000299	5.659764	0.0000
AR(1)	0.146755	0.024379	6.019606	0.0000
Variance Equation				
C	8.01E-05	8.14E-06	9.834135	0.0000
ARCH(1)	0.237925	0.044676	5.325500	0.0000
ARCH(2)	0.181726	0.046683	3.892787	0.0001
ARCH(3)	0.167373	0.048233	3.470131	0.0005
ARCH(4)	0.170113	0.038239	4.448684	0.0000

Table 3. Arch-Lm Test for Arch (4) Model Up to 4 Lag

ARCH(4) Test			
F-statistics	0.918461	Probability	0.514922
Obs*R-Squared	9.192570	Probability	0.513931

Table 4. SBIC for different Garch model

Comparisons of the SBC for the GARCH(p,q) model with different combinations of p and q for BSE500					
p	1	2	3	4	5
q					
1	-5.637290	-5.633765	-5.630554	-5.629541	-5.631872
2	-5.633735	-5.636361	-5.626771	-5.623496	-5.628710
3	-5.630212	-5.628160	-5.626771	-5.626950	-5.628535
4	-5.629460	-5.623036	-5.626453	-5.626464	-5.631176
5	-5.631211	-5.627702	-5.624387	-5.625789	-5.618241

Table 5. GARCH (1, 1) parameters

GARCH(1,1) Parameters				
Mean equation				
	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001526	0.000294	5.190229	0.0000
AR(1)	0.131403	0.024166	5.437636	0.0000
Variance Equation				
C	1.13E-05	2.95E-06	3.819740	0.0001
ARCH(1)	0.179646	0.030620	5.867004	0.0000
GARCH(1)	0.786714	0.030442	25.84289	0.0000

Table 6. ARCH-LM test for Garch (1,1) model up to 10 lag

ARCH(10) test			
F-statistics	0.634337	Probability	0.785415
Obs*R-Squared	6.357489	Probability	0.784388

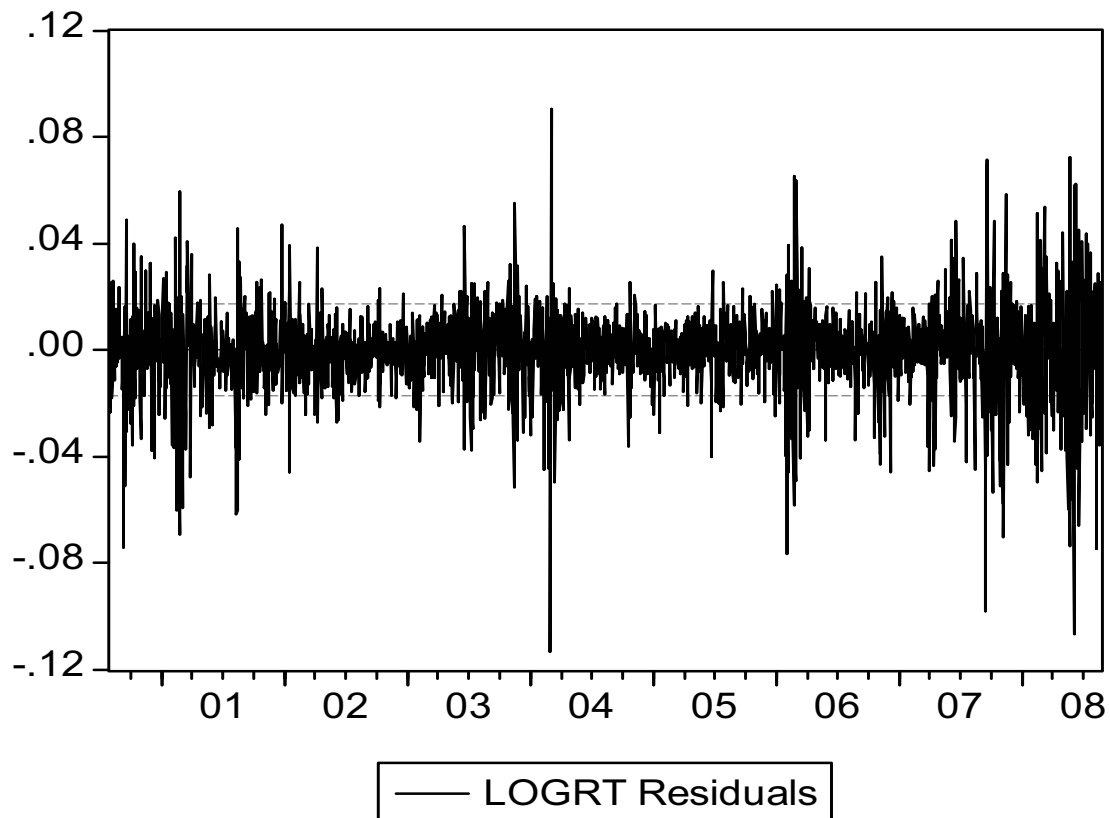


Figure 1. The Residuals of Bse500 Returns

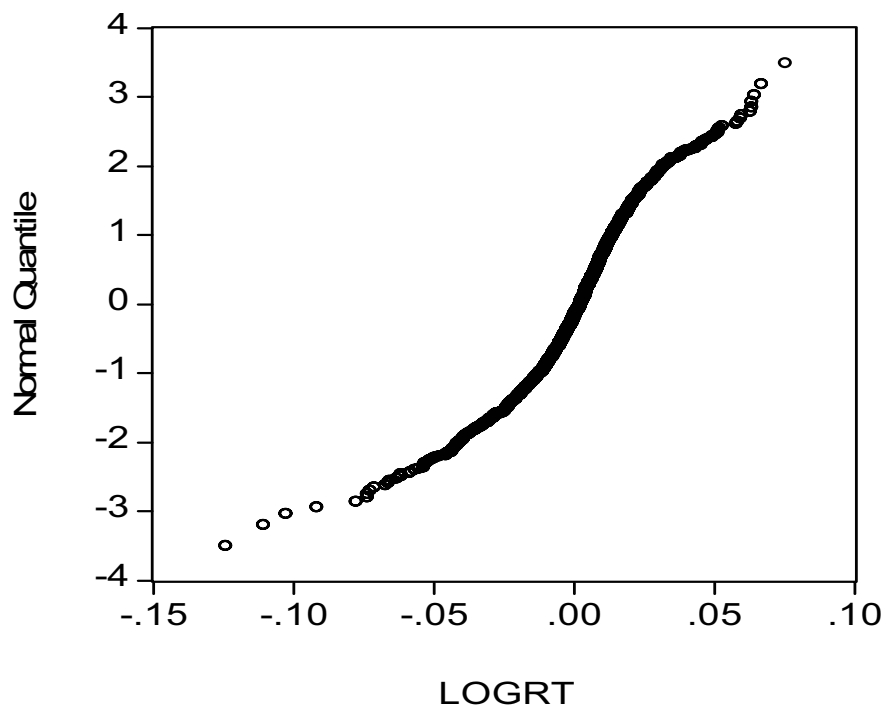


Figure 2. Q-Q Plot of BSE500 Daily Returns Series



Gold Mining Investment Incentives in Tanzania: Current Issues and the Possible Remedies

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Abstract

In recent years Tanzania has seen a rapid growth of its gold mining sector, the trend which has made the country the third largest gold producer in Africa. This growth is attributed much to the favorable investment climate created by the government for Multinational mining companies through the provision of various tax incentives and the ongoing discovery of new mining locations. Although tax incentives are attributed much for the promising trend of the mining sector, but, there is a controversy linking the granted incentives and the actual benefits the country realizes. The provided tax incentives seem to be way too generous causing the country to lose substantial amount of much-needed tax revenues. The practices of the incoming mining companies and local tax authorities are largely blamed for the ongoing trend.

Keywords: Gold mining incentives, Tanzania, Tax regimes

1. Introduction

In recent decades, Tanzania as one of non-oil producing countries in Africa has recognized the significance of encouraging the FDI inflows to its economy in order to compete with other countries with bigger local markets and more favorable environments with on-demand natural resources for foreign investments (for instance, oil producing nations). The flourishing incoming FDIs to the mining sector have had a substantial impact on the mining industry and the local economy. The incoming MNEs have helped the country in; boosting government revenues through tax revenues, human capital formation, transfer of knowhow and technology, etc. The efforts by the central government which in the year 2004 saw the country's GDP surge with the rise in economic growth led the country being named by FDI Magazine as the best economic potential in Africa for the year 2005-2006 behind South Africa, with the promising trend to date.

Although Tanzania has successfully attracted a significant amount of FDIs in the mining sector, however, still questions surround the actual benefits of the incoming foreign capital to the local economy and common citizens. People are questioning on how sincere are the granted incentives and if the tax authorities in the country are being overgenerous to the incoming MNEs. For instance, the country is locked in some investment contracts under ludicrous tax regimes that go for up to 50 years with huge tax exemptions and very low loyalty rates. This has contributed much to the country being ranked as one of the 10 poorest countries in the world although the country is a third largest producer of gold in Africa.

Several reports have critically disapproved these tax incentives as of being harmful to the country and the overall welfare of the locals. For instance, a number of tax incentives granted to MNEs investing in mining sector allow these MNEs to offset 100% of their capital expenditure against tax in the year, e.g., expenditure on mining equipments and properties, and Tanzanian government at present levies a 3% royalty rate on gold compared to other African countries such as Botswana which in turn caused the country to miss out on a chance to pocket about an extra US\$58 million over the last five years (Tundu Lisu and Mark Curtis: A Golden opportunity?: How Tanzania is failing to benefit from Gold Mining, 2008). The tax incentives in force are blamed for the frustrating trend of the mining industry, especially during the period from 1995 to 2005 where most of the mining deals between the country and the investors took place.

Although some might argue that the implemented tax incentives for attracting FDI inflows have positively reshaped the face of Tanzania's mining sector, but the fact that local authorities' adopted settings of these fiscal incentives policies have a number of shortcomings and need major restructuring and or if necessary an overall setup. The current government under the leadership of president Jakaya M. Kikwete after a strong push from lawmakers and various scholars has come to realize the shortcomings of the existing incentives regimes and decided to act by forming a taskforce (Presidential Mining Review Committee) to review, identify unproductive incentives in use, and give

recommendations on the formulation of better and more productive tax regimes to attract healthy investments as well as looking for more appealing solution on how to deal with the existing bad contracts.

2. The Literature Overview

As already mentioned above, gold mining sector has become one of the top contributors to Tanzania's economy surpassing most of the traditional contributors of the local economy (agriculture). This sector contributes about 50 percent of the total government revenues with Geita gold mine, in Mwanza region, being the largest gold mining site in the country and contributes a bigger share of the total gold exports. Since the year 2000, mining in the country has generated about 67 percent of the overall FDIs to the country (US\$ 2 billion of the total US\$ 3 billion FDI inflows). Various reports by relevant sources such as UNCTAD show that the development of the country's gold mining sector has shown a strong momentum and if local authorities sincerely decide to step up strong measures to curb the existing constraints which cripple the sector, the country will realize a smooth running of the sector and positive contribution to the nation. Figure (1) shows the contribution of gold mining to the total exports of various commodities. The figure clearly shows the pace at which gold exports have taken since last decade, and since several new gold mining sites have been and are expected to be opened in the near future, the future of the sector looks bright.

During the period of 1995-2005, the country under the leadership of the then president Benjamin W. Mkapa, saw a number of mining contracts signed between the government and various MNEs. AngloGold Ashanti (South Africa) controls Geita gold mine while, Barrick Gold Corporation (Canada) currently operates three mining sites. Although there are other local firms engaged in small-scale gold mining in the country, but their share of the total contribution to the overall output is very low and the existing mining policies do not give small-scale mining firms better opportunity to compete with the incoming well-established MNEs. This has led to many local private small-scale gold mining firms to be "pushed" out to pave way for bigger investment projects by the incoming more advanced and well-equipped MNEs. The current policies don't provide enough protection to local civilians who are engaged in gold mining activities which in a number of times has caused violence to erupt in some parts of the country whereby locals who depend in that sector for living were forced to move to other places "supposedly with less gold deposits" paving way for large investments in their locations. The absence of transparency in majority of the processes, from signing of contracts to the granting of overly favorable tax incentives to the MNEs has raised eye brows of many people and they question if there is any sincere intention to have the locals enjoy the national cake.

Though there are various issues with the mining policy in the country, but Tanzania has maintained a solid performance compared to other African countries. For instance, among East African countries, Tanzania is ranked fairly higher than Kenya and Uganda on the investment climate. This is well shown on the report by the World Bank (2004) on the Investment climate in East Africa summarized in the Table (1).

As previously noted above, the existing mining policies favor the incoming MNEs, giving them a chance to unfairly profit from their investments in the local economy for decades with huge tax cuts or total exemptions. The existing mining laws seem to not have teeth sharp enough to press mining companies into sustainable contracts, for instance, the MNEs can "easily" walk away after they are "satisfied" that the mining sites they were operating in don't have any substantial deposits leaving behind useless (polluted) land. Also, in some areas, e.g., Mara region, there were claims connecting the mining activities in one of the mining sites with the water pollution, the claims which later led to the closure of the particular mining site. Several people died and many other infected after consuming contaminated water from the water sources near the mining site. The authorities couldn't act quick enough to solve the problem and the existing mining laws couldn't effectively solve the matter or severely punished all relevant sides involved in causing the catastrophe.

It is unarguably that these incentives plus tax evasions by MNEs have caused the government to lose a substantial amount of cash and the situation worries not only locals but also International bodies, such as International Monetary Fund (IMF). In one of its recent reports, IMF has shown its concern over the extended tax incentives granted by the government through Special Economic Zones (SEZs) which can be easily taken advantage of and leading to the loss of revenues from taxation (corporate tax). And the time limit set for the MNEs to enjoy the granted fiscal incentives is astonishingly long and not easily changed without further losses to the country. The following below is an account of key issues behind the granted tax incentives to the gold mining companies in the country and the possible measures that can be taken to curb the existing situation.

3. The Problems behind the Offered Tax Incentives and the Possible Measures to Remedy the Situation

A number of constraints face the gold mining sector in Tanzania in which some of them seem to be more critical, and, in case the government is serious about eradicating the existing situation more efforts need to be applied. A big portion of the country's wealth is driven out of the country leaving majority of the population with less feasible economic benefits while a few people responsible for ensuring the country's economy prosper unfairly benefit by abusing the

national assets that they are trusted to protect. Key issues facing the country's gold mining sector due to the ongoing implementation of tax incentives are explained below:

3.1 Existing Problems

3.1.1 Lack of openness

This is one of the main issues that cause headache in the country. It has been a thorny issue for quite some time now whereby the government signs contracts with the gold mining companies but decide to keep the details of the signed deals from the public and even country's lawmakers. During the period from 1995 to date, several questionable contracts have been signed with the important details of the signed deals still a big mystery to the public and the call to release the details get a discouraging response from the local authorities. For instance, the lack of openness on the subject of who really owns or who is in charge of the mining sites is an issue since some of the high ranking political figures directly or indirectly involve themselves in the running or ownership of gold mining sites which in turn make it harder for the public to get the desirable results due to the politicians' influence on decision making and less desire by those particular officials to eradicate this particular problem.

3.1.2 Poor setting of tax regimes

In addition to above, poor setting of local tax regimes seems to be the core issue surrounding the gold mining sector in the country whereby mining companies are granted extensive favorable tax incentives which on occasions involve the complete writing off of the tax (zero tax). These fiscal incentives although boost the inflows of FDIs in the industry but they seriously hurt the economy due to the loss of corporate tax revenues. Very low rates of royalties (3%) and exemption of tax deal a big blow to the local economy, and this as noted above has alarmed various international bodies such as IMF. Some scholars argue that, some of the excessive generous incentives provided are not necessary, and the investments would probably have taken place regardless of the presence of incentives. Also the time limit set for most of the implemented investment projects in the mining sector to enjoy the provided incentives is too long. For instance in the Special Economic Zones (SEZs), the government grants up to 20 years with a possible extension to up to 50 years of tax reductions to the investors. And last but not least;

3.1.3 Corruption

Tanzania is one of the African countries that are plagued with high corruption rates. Apart from petty corruptions, grand corruption, particularly, seems to be unstoppable although the government has taken several measures to combat this thorny issue. The president of Tanzania took an initiative to formulate an agency to fight against corruption in the country, namely, the Prevention and Combating of Corruption Bureau (PCCB), the agency which has seen a constant outcry from the public on the way it operates. Several high-profile figures who have been accused of being involved in grand corruption were either defended or never been investigated by the bureau although most of the required evidences were seem to be in the open. This has raised many questions on the usefulness of the bureau and the integrity of the people trusted to run it. Also the failure of the central government to punish those in charge of running the bureau raises another question on the really intention of the government in combating corruption.

Although the government through the push by the lawmakers from the local opposition parties has shown some signs of trying to find a way out of the existing problems, more needs to be done. Below is an account of the possible measures the government and the public can take to eradicate the already mentioned core problems. These are as follows:

3.2 Possible measures

3.2.1 Proper setting of tax regimes

This is one of the key measures the Tanzanian government needs to take to minimize the problems brought by the careless adoption of the existing tax incentives. Formation of well-constructed tax regimes after a careful research on the subject matter would bring down the negative effect towards the economy without hurting the ongoing warming trend of the FDI inflows to the country. These new and restructured tax regimes will ensure that the government gains feasible results while the investors enjoy the favorable investment environment and obtain the value for their investment in the sector. For the country like Tanzania, setting royalty rates at 5% (similar to some major producers of gold in Africa) as advised by various authors seems to be a fair and reasonable solution, given that most of these investors have already been enjoying excessively-generous tax incentives for over a decade. But this should be carefully implemented without scaring away the much-needed existing and expected FDIs in the sector while, the relevant local tax authorities work hard to achieve the most important goal of creating an effective tax administration which encourages voluntary tax compliance through the provision of high quality customer service with fairness and integrity through competent and motivated staff in the country.

3.2.2 Increasing Public Awareness

Furthermore, there is also a great need for the central government to increase public awareness on the need and importance behind adoption of various measures (granting of fiscal incentives) to attract new investments and

solidifying the existing ones in the country. This can be well done through various means such as; local media channels (TV, Radio, Magazines, etc), and by ensuring that all important details of the investment contracts are openly released in advance to important bodies in the country (e.g., national parliament, economic research centers, etc). This can help the government to get vital ideas, recommendations and suggestions on how to best construct the terms of investment projects (help with the better ways to negotiate investment contracts). This will also reduce misunderstanding between the investors and the locals who believe they are being robbed (which somehow seems to be the case) by the incoming foreign investors thanks to the poor investment policies and some dishonest local leaders and tax administrators.

3.2.3 Cleaning and Strengthening the PCCB

As previously noted above, corruption is one of the key issues that contribute in crippling the economy, and the institute that is given the mandate to combat the corruption problem has yet to deliver the outcomes every country-loving citizen in Tanzania was expecting. There is a call to the president (who picks the head of the bureau) to change the structure of the bureau, particularly firing the current PCCB's director general Dr. Edward Hosea for showing lack of integrity (by officially defending high-profile political figures who after investigation conducted by the special taskforce formed by national parliament were proven to be involved in grand corruption) at his work and his refusal to voluntarily step down from his current position. In addition to that, the bureau should be put under the national parliament watch instead of the currently assigned office, the President's office. This would ensure that the performance of this institute and its officials can easily and openly be monitored, and in case of serious mishandling of corruption (especially, grand corruption) cases, be easily held responsible and punished by the existing governing laws.

3.2.4 Encouraging and supporting local investors

Moreover, in recent years, there has been an occurrence of the central government putting much emphasize on the foreign investors side while keeping low profile on the other side, local investors. It has been proven that there is a number of local investors (e.g., Executive Chairman of IPP Group, Mr. Reginald Mengi, etc) who, if provided with proper tools and support, can perform well and even better than the incoming foreign investors, and in comparison to the incoming foreign investors, these local investors have considerably low demands for tax-incentives. The native investors are supposedly to care more about the local economy (employment of locals, minimum to no profit repatriation, etc) compared to the MNEs who can decide to leave at any time, for instance, in case of running into unprofitable business. Thus, Tanzanian government should encourage investment by local investors (large and small) especially in sectors as important as gold mining. And, last but not least;

3.2.5 Use of alternative investment incentives

Last but not least, in order to facilitate the reduction of the demands for excessively high tax reductions (or, exemptions) by mining companies for their investments projects, the government needs to engage in improving its own alternative incentives for investment. For instance, the government should improve transport networks (roads, railways, and telecommunication networks, etc) in the areas where the investment projects are likely to be established. This would cut down the need for "huge" cost of investment incurred by the mining companies investing in the areas. Also, it would boost the easy transportation of the products to other destinations and at the same time making the particular regions more favorable to investors with reduced demands from MNEs for high investment incentives.

4. Conclusion

This study took a look at the fiscal (tax) incentives offered to the multinational gold mining companies investing in the United Republic of Tanzania's rapid growing gold mining sector. These incoming mining companies seem to be enjoying considerable low-rates of tax (and sometimes, total exemptions) and other customs payments compared to MNEs investing in other major gold producing African countries (e.g., Botswana). The provided tax incentives are thought to be excessively-generous hence hurting local economy while providing the incoming gold mining companies with lucrative "hidden" profits for a considerable long period of time already.

This trend is well contributed by various factors, for instance; corruption, poor (ineffective) formation of tax regimes, just to mention a few. Various studies agree that, some of the tax incentives provided to the incoming foreign investors in the mining sector are not necessary and there is a chance that the investment in this particular sector would have taken place with or without their adoption.

Therefore, the government of Tanzania needs to take a closer look at the subject matter and take various (serious) measures to curb the ongoing trend which if not taken care as soon as possible, the country will keep on losing the much-needed tax revenues while finding itself being bound to poorly negotiated gold mining contracts that keep hurting the local economy.

Thus, in concluding this, the Tanzanian government needs to put more efforts in identifying and blocking all the identified loopholes that have been and still are spearheading the existence of badly negotiated mining contracts which lead to provision of excessively generous tax incentives, while looking for the right way to either re-negotiate or

completely terminating the already signed mining deals but without scaring away the incoming investors. Also, the government needs to ensure that only vital investment projects that wouldn't take place or wouldn't be successfully as desired with the absence of lucrative fiscal incentives are provided with tax incentives while trying to fairly compensate the lost revenues in other investment projects in the gold mining sector or and other sectors of the economy.

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Table 1. Doing Business in East Africa (World Bank: 2004).

		Tanzania	Uganda	Kenya
Starting Business	Number of Procedures	13	17	12
	Number of Days	35	36	47
Hiring and Firing Workers	Difficult of Hiring Index	56	0	22
	Rigidity of Hours Index	80	20	20
	Difficult of Firing Index	60	0	30
Getting Credit	Cost to Create Collateral (percentage of Income per capita)	21.3	11.9	3.3
	Legal Rights	5	5	8
Protecting Investors and Enforcing Contracts	Disclosure Index	1	2	2
	Number of Procedures	21	15	25
	Days Taken for Enforcement Contracts	242	209	36
	Closing Business (Years)	3	2.1	4.5
	Cost as percentage of Estate Concerned	23	18	38
Registration of Property	Number of Procedures	12	8	7
	Number of Days	61	48	39

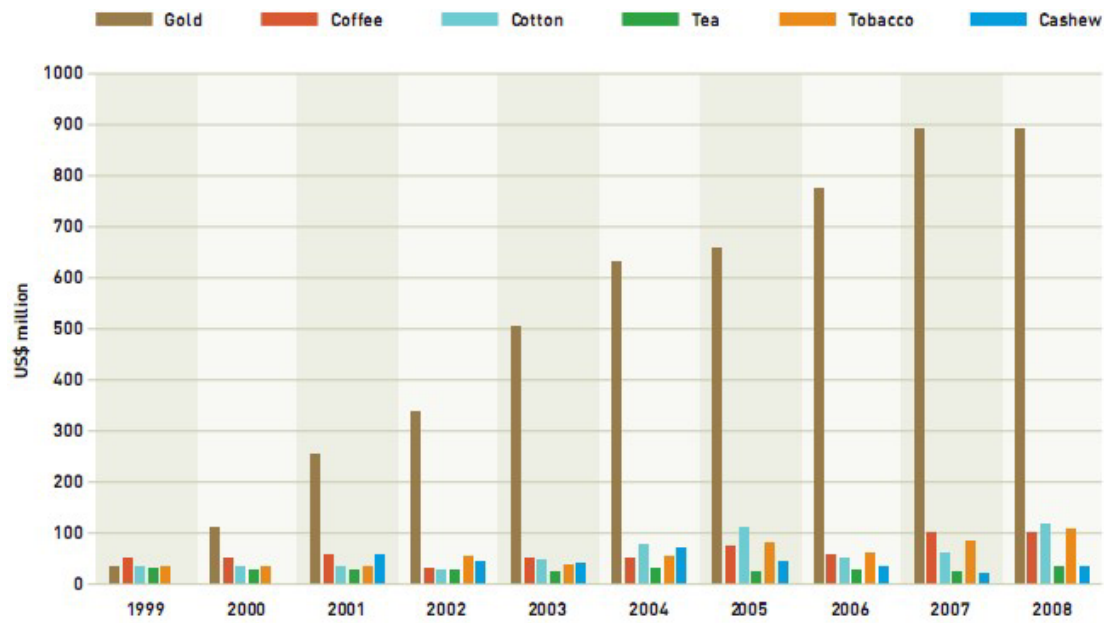


Figure 1. Exports display of Major exporting products in the country (1999-2008)

Note: The figures are in US\$ million



Organic Food: A Study on Demographic Characteristics and Factors Influencing Purchase Intentions among Consumers in Klang Valley, Malaysia

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Abstract

This study attempted to gain knowledge about consumers' intention to purchase organic food products and their demographic characteristics. Data were collected in supermarkets within 3 different areas in Klang Valley, Malaysia using mall-intercept approach. A total of 177 respondents were generated. The data obtained from the survey were analyzed using chi-square test, ANOVA, correlation analysis and multiple linear regression tests. Result indicated that the intention to purchase organic products were heavily influenced by the perception on organic product worth of purchase and the belief on the safety and health aspect of the product. Respondents were divided into organic buyers and non-buyers categories. Among the organic buyers majority consumers believed organic food to be healthier, tastier and better for environment compared to conventional food.

Keywords: Malaysia, Organic Foods, Purchase Intention, Environmental friendly, Demographics

1. Introduction

The increase of the environmental consciousness has had a thoughtful effect on consumer behaviour, with the green product market expanding at a remarkable rate (Aini et al., 2003). Therefore, in the past decades there has been an increased of production and consumption of organically-produced products which is seen as having less impact to the environment. In December 2000, the National Organic Standards Board of the U.S. Department of Agriculture (USDA) established a national standard for the term "organic." Organic food, defined by how it cannot be made rather than how it can be made, must be produced without the use of sewer-sludge fertilizers, most synthetic fertilizers and pesticides, genetic engineering (biotechnology), growth hormones, irradiation and antibiotics. A variety of agricultural products can be produced organically, including produce of grains, meat, dairy, eggs, and processed food products. "Organic" does not mean "natural." There is no legal definition as to what constitutes a "natural" food. However, the food industry uses the term "natural" to indicate that a food has been minimally processed and is preservative-free. Natural foods can include organic foods, but not all natural foods are organic.

It is highly important to examine the underlying factors that might influence the tendency of consumer to purchase organic food products. Such research is believed could help to formulate a strong market communication and policy strategies in order to influence behaviour toward organic food. As most researches were conducted in developed countries, there might be some socio-demographic differences in organic food acceptance and consumption behaviour. According to Lockie et al. (2002) the proportion of people consuming organic food products may increase as they experience a rise in income and normally organic food consumers are among those with high education level compared to non-organic consumers.

This study seeks to examine factors that might influence the people's intention to purchase organic products. It also aims to analyze the demographic characteristics of the respondents by looking at their buying pattern towards organic

products, types and volume of organic products consumed, common places to shop for the products as well as other characteristics that may provide better picture about the consumers within Klang Valley in Malaysia.

1.1 Objective of Study

This objective of this study is generally to understand the attitude of local consumers on their intention towards buying organic food product. These consumers are among those who have experience consuming or buying organic products and those who never purchase any organic products. Specifically the study aims to:

- a. report the descriptive analysis on the respondents' demographic characteristics in regard to organic products;
- b. examine factors that influence purchase intention of organic food among consumers

The ultimate goal was to better understand consumer motivations for buying organic food products so that organic producers could develop more effective strategic marketing planning. The results could be used for the marketing planning of organic food products to enable proper marketing strategies, a proper sales channel and promotion to be targeted to these groups of consumers.

2. Literature Review

Researches on consumers' attitude towards the use of chemical substance in agriculture were explored as early as in 1965 (Bearler and Willits, 1968). This marked the beginning of the era when human beings were becoming more concerned with preserving the environment. However, given the need to expand the production in agricultural sector to ensure continuous supply of food, the use of pesticides and other chemical substance is hard to resist. Perhaps, green product industry could be deemed as the ideal solution to this problem. The growth of organic agriculture is seen as part of the emerging marketing trends where consumers demand to know what benefits a food could deliver before making a purchasing decision. Given the various factors that influence the intention to purchase organic products, it is necessary to examine which of the factors give the strongest effects.

2.1 Belief on the Safety and Health Aspects of Organic Products

Research related to consumer attitudes and preferences for organic products is very unnoticeable (Chinnici et al., 2002). Results of studies confirmed that consumers have positive attitudes towards organic products where one of the most common mentioned reason for purchasing organic products was it is perceived as healthier than conventional alternatives (Chinnici et al., 2002; Harper and Makatouni, 2002). Consumers do not always buy sustainable products as consequences of environmental concern or to benefit the community or due to personal beliefs but mainly to give priority to health (Vermeir and Verbeke, 2004). Based on the previous evidence that implies the positive relationship between people's belief that organic product is good for their safety and health, the following hypothesis is forwarded:

Hypothesis 1: The more people believe that consuming organic products as safe and healthy, the higher their intention to purchase organic products.

2.2 Belief on the Friendliness of Organic Products to the Environment

In Malaysia, as reported in its 9th Malaysia Plan (2006), the use of chemical and hazardous substances showed an increase, particularly in the agricultural sector. The volume of fertilizers used increased from 2.2 million tones in 2001 to 4.0 million tones in 2004. Through Skim Akreditasi Ladang Malaysia (SLAM) and Skim Organik Malaysia (SOM), government has introduced better farming practices to reduce the use of chemicals and hazardous substances. Given the high awareness on preserving the environment, consumers welcome any efforts that seek to apply environmental friendly farming practices. Consumers are getting more concerned with the consumption of chemical substance used in farming and as contended by Crosby, Gill and Taylor (1981), environmental concern is a strong attitude towards preserving the environment. Given the high concern, the behavioural intention of consumers is somehow influenced. Based on this evidence, the hypothesis is proposed:

Hypothesis 2: The more people believe that organic product farming as environmental friendly, the higher their intention to purchase the products.

2.3 Perception of Organic Product Worth of Purchase

In the international literature one can find a large body of research regarding consumers' willingness to pay for environmental friendliness and/or quality/safety in food production (Harris et al., 2000; Goldman et al., 1991; Lea et al., 2005) as well as for non-food products (Laroche et al., 1996). Perhaps the most convincing evidence supporting the growth of ecologically favourable consumer behaviour is the increasing number of individuals who are willing to pay more for environmentally friendly products (M.harris, 2007). Some researchers have found that organic food consumers are less likely to consider price as important compared to whose consumers who don't and never purchase organic products before (Yiridoe, et al, 2005). It thus expected that price could be one factor that influences people's intention to consume organic product. The following hypothesis is therefore forwarded:

Hypothesis 3: The more people perceive the worth of buying organic products, the higher the intention to purchase the products.

2.4 Availability of Organic Product Information

Empirical evidence shows that consumer's difficulty in locating environmentally directed products is partly due to lack of information (Brown 2003). Several studies have identified that lack of organic food availability in store is considered as one of the barriers to consumer purchase (Beardworth et.al., 2002; Davies, 1995). Market maven are defined as "individuals who have information about many kinds of products, place to shop and other facets of market and initiate discussion with consumers and respond to requests from consumers about market information" (Feick and Price 1987). Interaction between consumers with positive believe and attitude and high market mavenship and high product availability might create a favourable attitude towards purchase behaviour, which would result in a stronger intention to purchase leading to a higher purchase of organic food products. The argument has led to the formation of the following hypothesis:

Hypothesis 4: The more information that people have about organic products, the higher the intention to purchase the products.

This paper presents the results conducted with buyers who come and purchases at specified supermarket which is certain to sell organic food. Again, to be highlighted the objective of this paper is to gain knowledge about consumers' attitude towards organic food products. To that end, attitude, knowledge on government action, perception towards organic food, belief about organic food, knowledge of organic food product availability and intention of buying organic food were studied with a sample of 177 respondents.

3. Research Design

3.1 Sample for the Study and the Measurement Instruments

The survey was conducted using mall-intercept personal survey. Potential respondents were approached while they were shopping in supermarkets located in 3 different locations within Klang Valley. Prior to the data collection, the availability of organic food product within these locations was confirmed. The respondents were requested to fill up the questionnaire and to return it back immediately to the researcher. As a result, a total of 177 questionnaires were collected. The questionnaire was designed especially to elicit consumers' buying pattern and their views on organic products. The first section asked the respondents' frequency in buying organic product, shopping places, the type of organic products bought and the reasons for buying. Some of the items used in this section were adapted from Batt et al., (1999), Brown (2003). The next section asked on the respondents views on various aspects of organic products. The items in this section were measured using 5-point Likert scale (1 is low and 5 is high). Most items used in this section were adapted from (Davies, 1995). Other items in the questionnaire were developed by the researchers based on the consumers' buying behaviour in Malaysia.

3.2 Data Analyses

The data obtained from the survey were factor analyzed in order to summarize the large number of items into smaller underlying factors. A factor analysis using Principal Component extraction was performed. The factor analysis output is reported in Table 1.

<< Insert Table 1 >>

Based on the factor analysis output, the factors were labelled after some items were deleted in order to reach the minimum coefficient alpha of 0.7. In order to test the hypotheses, Pearson correlation tests were used using SPSS package version 15.0.

4. Analyses of Findings

4.1 Demographic Analysis of the Respondents

One hundred and seventy seven respondents participated in the survey. Majority were female (63.8%) and their ages ranged between 18 to 50 years and above. The mean of age for the sample was 35.5 years old. The sample was predominantly Malays (46.3%) followed Chinese (34.5%), Indians (11.3%) and the remaining 7.3% were from other races. Most respondents (38.4%) were married with kids and 88.1% indicated that they have no chronic illnesses. Table 2 demonstrated the summary of sample demographics. Two questions on chronic illness were asked at the end of the demographic questionnaire section. It was found that 11.4% of the respondents were diagnosed with chronic illness and the remaining 88.6% were not. The other part of the section asking the respondents on chronic illness among family members and result identified that 44.3% of the respondents' family members has a history of suffering from chronic illness.

<<Insert Table 2>>

4.2 Demographic Analysis of the Respondents in Organic Products Consumption

The respondents were asked to indicate their food buying behaviour related to organic foods. Category 1, 2 and 3 (refer to Table 3) are those who never bought (non users) any of organic products and they made up 50.3% of the sample. It somehow signified that the sample contained about equal number of organic product users and non users. Table 3 showed the summary of the whole category.

There were 6 six categories of consumers and the first three groups of respondents; Category 1 - those who have not bought organic food and not thinking of buying organic food; Category 2 - those who have not bought organic food and thinking of buying in the near future; and finally Category 3 - those who have not bought organic food and plan to buy in the next 30 days. The first 3 categories were regarded as non-buyers of organic products. Category 4 are among those who used to buy organic food but no more now, Category 5 are those who buy organic food but not regularly and finally Category 6 are those who buy organic food on regular basis.

<<Insert Table 3>>

Based on survey question asking whether respondents and family members do suffer from chronic illness, our analyses suggested that there is significant differences with regard to regular buyer response (category 6), where 85.7% of them claim to buy organic food regularly due to history of family members to suffer from chronic illness ($\chi^2= 5.149$, $df= 1$, $p=0.29$). Similar significant results were found with 58.3% respondents of category 4 (used to buy organic food, but no longer buy them and planned to buy again in the future, $\chi^2= 5.515$, $df= 1$, $p=0.15$) and respondents who never bought organic food but thinking to buy in the near future (category 2) indicated significant results with their responses towards family member history of suffering chronic illness ($\chi^2= 6.963$, $df= 1$, $p=0.06$). The only significant differences with regard to respondents own experience of suffering from chronic illness was found among consumer who used to buy organic food, but no longer buy them and planned to buy again in the future (Category 4) ($\chi^2= 3.503$, $df= 1$, $p=0.058$).

4.3 Type of Organic Products Consumed

In order to examine the volume and type of organic products consumed, respondents in Categories 4, 5 and 6 (refer to Table 4) were further examined their level of organic product consumption. Their buying pattern is examined by looking at the type and volume of products that they bought in every shopping trip. The respondents were asked to report the portion of products that they buy which were organic and non-organic. The measurement used was in percentage; 1) below 50% products bought were organic or 2) above 50% products bought were organic. Table 4 gives the summary of buying score of organic food products among those in Category 4, 5 and 6.

<<Insert Table 4>>

4.4 Places to Shop for Organic Products

Organic products were mainly bought by organic food buyers from conventional markets followed by natural and whole food supermarket (Figure 1). Only 3 respondents indicated that they bought their supply straight from the farmers and remaining 85 respondents has no experience at all with the places of buying organic food products.

<<Insert Figure 1>>

4.5 Consumer Perception and Knowledge Related to Organic Products

On top of asking respondent on how much (more or less than 50%) would they spend in buying organic food products, respondents were also asked on the reasons that influences their decision to buying organic food. The reasons for all four favourite categories of organic food product were shown in the table 5. Most of the respondents reported that they choose to buy organic food products because they perceived organic food as very healthy, fresher and natural. Some demographic characteristics and buying behaviour of consumers influence their attitude towards organic products. This is consistent with the previous study (Pearson, 2002) which indicated that quality, taste, freshness, healthy diet, family preferences and habits are the most important food-choice factors. Harper and Makatouni (2002) also demonstrated that the top five important attributes for fresh meat in UK are freshness, quality, taste, healthiness and free of hormones.

<<Insert Table 5>>

Using ANOVA it showed that there is significant interaction effects ($p=0.02$) between influence of knowledge on government action towards respondents according to gender. The effect is depending on the role of government in supporting local agricultural sector as well as keeping the food supply safer. When respondents were asked to indicate their level of knowledge or familiarity on government action and role related to agricultural production, 26% claimed to be very sure that they are very knowledgeable on the issues related to environment. In addition to that 31.6% respondents also claimed to be very sure on the action taken by government in controlling the pollution (Table 6 and 7). About 9% of respondents claimed that they are not knowledgeable at all about the environment issue as well as the action taken by government in controlling the pollution (11.3%).

<< Insert Table 6>>

<< Insert Table 7>>

4.6 Price Willingness and Purchase Intention in the Future

Respondents were asked to indicate if they are willing to pay a higher price for organic food products and how much extra are they willing to pay whether less than half, more than half or more than 100% of the conventional food price. Of the respondents only 6.8% (n=12) are willing to pay more than 100% of the conventional product price, 46.3% (n=82) are willing to pay more than half of the conventional product price and 44.6% (n=79) are willing to pay only less than the price charged for conventional produce product. However, with regards to respondents willingness to buy more of organic food if it is cost less in the future, 76.8% or 136 respondents exhibit their willingness to buy more and only 6.8% (n=12) do not want to buy more of organic food product in the future if it costs less. A significant probability of future purchases of organic food product was indicated with their type of occupation ($p=0.11$).

<<Insert Figure 2>>

4.7 Pearson Correlation Tests Analysis

Pearson correlation tests were used to examine the individual relationships between the independent variables (perception on organic product worth of purchase, belief on the friendliness of organic products to the environment, belief on the safety and health aspects of organic products and availability of organic product information) and the dependent variable (intention to purchase organic products). The tests indicated that 3 independent variables (all except for availability of organic product information) were significantly related to intention to buy organic products. However, the strength of the relationships varies from weak to strong. Table 8 showed the summary results.

<<Insert Table 8>>

4.8 Multiple Linear Regression Analysis

Multiple linear regression (MLR) tests using standard regression method were subsequently conducted to find which determinants that could explain the intention to purchase organic food products according to their level of importance. Before the results of the analysis were discussed, the assumptions of MLR was first investigated. Based on the exhibits in Figure 3 and 4, the expected patterns for non-violation of the assumptions were found. The results of the investigation seemed to support the use of MLR as an appropriate statistical analysis for this study.

<<Insert Figure 3>>

<<Insert Figure 4>>

<<Insert Table 9>>

<<Insert Table 10>>

Table 10 provides result of the MLR analysis. Based on the results, the overall MLR model with four predictors of perception on organic product worth of purchase, belief on the friendliness of organic products to the environment, belief on the safety and health aspects of organic products and availability of organic product information have worked well in explaining the variation in intention to purchase organic products ($F=11.151$; d.f. =5; $p=.000$). From Table 11, perception on organic product worth of purchase was found to exert significant positive influence on intention to purchase organic products ($t=4.708$; $p=0.000$; $\beta=0.361$). Similar effect was also found in the other dependent variable; belief on the safety and health aspects of organic products. The relationship of the variable to intention to purchase organic products was positive and significant ($t=2.232$; $p=0.027$; $\beta=0.166$). The proportion of explained variance as measured by R-Squared for the regression is 25.3% as depicted in Table 9. The beta values given in Table 11 seemed to indicate perception on organic product worth of purchase ($\beta=0.361$) as more important predictor of intention to purchase organic products than belief on the safety and health aspects of organic products ($\beta=0.166$). The other dependent variables were not found to be significantly related to intention to purchase organic products.

<<Insert Table 11>>

5. Discussions and Conclusion

It can be concluded that many of respondents are unable to answer the questions on stage of changes towards organic food. This may be due to misunderstanding of what was being asked and also due to unable to remember purchases which they may have forgotten. Other reasons could be that respondents were answering questions without serious focus which could happen to any number of questions. When groups of people were clustered together based on their buying score, this may resulted in the blending of two people who have some real differences but given small numbers this is unlikely noticeable.

Similarly, those who had experienced with organic food but has stopped buying for quite sometimes with those who never had experienced before may have real differences. When consumer decided whether to buy organic or not, it clearly involved a complex set of factors that cannot easily be interpreted. In Malaysia, the organic food is considered at

the introductory stage where not all many people are aware about. The interest to conduct this study is to have better understanding among urban Malaysian consumers' choice of food products. This helps to distinguishes shoppers at different point including those who buy no organic food. Many studies indicated that one major factor that considered to be the barrier to organic food consumption is its price (Fotopoulos and Krystallis, 2002; McEachern and McClean, 2002). In this present study, women were more likely than men to agree that they would purchase more organic foods if they were less expensive and more available. As mentioned by Beardworth et al. (2002) this is commonly assumed the role of women and the household food purchasers and "gatekeepers".

Consumers perceived organic food contain health benefits contribute as an important attributes in this study. Most respondent among buyers of organic food believed that organic food is healthier compared to conventional grown food. This is consistent with previous study (Chinnici et al., 2002; Pearson, 2002) that discovered health and the natural content of food have been found to be essential in food choices of organic consumers. In this study respondents also perceived that organic food products as environmentally friendly contribute, which accord with previous research that found out that environmental concerns and perceived environmental benefits are related to positive organic food attitudes (Harper and Makatouni, 2002 and Lockie et al., 2002).

Given the broad range of possible factors that influences organic food decision making, there are others that might considered as barriers to organic food consumption among Malaysian instead of price. For instance, knowledge on organic food as well as action taken by the government either to inform or to create awareness has not reach the satisfactory level in encouraging sustainable consumption with organic food. Therefore, knowing how consumer perceived organic food product by understanding the reasons of buying would probably help the marketers of organic food to establish a proper communication message. Hopefully the intended message would be appealing for consumers who fall within the same category of buyers who exhibit their interest towards organic food products. In addition, education of consumers must become one of the first objectives for organic producers. An important task is to increase the consumers' knowledge what organic products are all about and how to differentiate it in the market place. Research also showed that some group of consumers (category 4, 5 and 6) have more positive attitude toward organic products and they exhibit an increase willingness to pay higher prices for these products. For such reason, marketing strategies for organic food product must be targeted towards those segments of consumers most appreciative of the positive attributes of organic food.

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Table 1. Rotated Component Matrix for All Items

Factors and items	Factor loading
<i>Factor 1: Intention to Purchase Organic Products</i>	
Eigenvalues: 6.554	
Cumulative Variance Explained: 23.789 per cent	
Cronbach's Coefficient Alpha: 0.912	
I would buy OP* if it uses less energy	.847
I would buy OP if I know that the farming is environmental friendly	.833
I would buy OP if animal on organic farming are treated better	.798
I would buy OP if it is more nutritious	.787
I would buy OP if it is safer to eat	.770
I would buy OP if I can trust it is really organic	.754
I would buy OPs if I can get them more conveniently	.725
I would still buy OP if it costs more that conventional ones**	.631
<i>Factor 2: Perception of Organic Product Worth of Purchase</i>	
Eigenvalues: 2.54	
Cumulative Variance Explained: 33.452 per cent	
Cronbach's Coefficient Alpha: 0.746	
I would buy OP because it is worth buying	.781
I would buy OP because buying it helps preserve the environment	.682

I would buy OP because it is higher quality than conventional products	.599
I search for info on the OP whereabouts from internet**	.496

Factor 3: Belief on the Friendliness of Organic Products to the Environment

Eigenvalues:1.801

Cumulative Variance Explained: 42.948 per cent

Cronbach's Coefficient Alpha: 0.735

Organic farming is better to environment	.796
Organic farming uses less energy	.783
I can trust OP labels that indicates its friendliness to the environment	.684

Factor 4: Belief on the Safety and Health Aspects of Organic Products

Eigenvalues:1.688

Cumulative Variance Explained: 51.524 per cent

Cronbach's Coefficient Alpha: 0.756

Growing food organically is better for health and safety	.844
OP is safer to eat	.829

Factor 6: Availability of Organic Product Information

Eigenvalues:1.083

Cumulative Variance Explained: 68.091 per cent

Cronbach's Coefficient Alpha: 0.745

It is easy to locate shops with wide range of OP	.878
I know where to buy OP based on promotion in media	.864

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 6 iterations.

***Notes:** OP stands for organic products

****Items** were deleted from the factor due to low inter-item correlations

******* Labels of factors: Factor 1 (Intention to Purchase OP), Factor 2 (Perception of Organic Product Worth of Purchase), Factor 3 (Belief on the Friendliness of Organic Products to the Environment), Factor 4 (Belief on the Safety and Health Aspects of Organic Products, Factor 5 was dropped from further analysis due to low Cronbach's coefficient alpha, Factor 6 (Availability of Organic Product Information)

Table 2. Demographic Profile of Respondents (n=177)

Items	Number	Percentage (%)
<i>Gender</i>		
Male	63	35.6
Female	113	63.8
<i>Ethnicity</i>		
Malay	82	46.3
Chinese	61	34.5
Indians	20	11.3
Others	13	7.3
<i>Age</i>		
18-24	25	14.1
25-30	35	19.8
31-40	67	37.9
41-50	34	19.2
51 and above	15	8.5
<i>Marital Status</i>		
Single	67	37.9
Married	34	19.2
Married with kids	68	38.4
<i>Level of Education</i>		
Diploma	37	20.9
Bachelor	56	31.6
Master	39	22.0
PhD	4	2.3
Professional	10	5.6
<i>Suffered form chronic Illness</i>		
Yes	20	11.3
No	156	88.1
<i>Family suffered from chronic illness</i>		
Yes	78	44.1
No	98	55.4

Table 3. Categories of Respondents According to Their Organic Products Consumption

Categories	Frequencies	%	Consumer Type
Category 1: I have never bought organic foods and I am not thinking about buying organic foods now	36	20.3	Non buyer
Category 2: I have never bought organic foods and I am thinking about buying organic foods sometimes in the near future	49	27.7	Non buyer
Category 3: I have never bought organic foods and I am definitely planning to buy organic foods in the future	4	2.3	Non buyer
Category 4: I used to buy organic foods, but I no longer buy them, I might start buying them again	33	18.6	Started again buyers
Category 5: I buy organic foods, but not regularly	46	26	Occasional buyer
Category 6: I buy organic foods on most trips to marketplace	7	4	Regular buyer

Table 4. Buying Score of Organic Products among Buyers in Categories 4, 5 and 6

Types of Organic Food	Purchased of > 50%	Purchased of < 50%
Rice, grain, cereal or bakery products	22% (n=39)	7.5% (n=31)
Organic fruits and vegetables	21.5% (n=38)	22.6% (n=40)
Organic dairy products	15.8% (n=20)	17.5% (n=31)
Organic meat, poultry or eggs	20.8% (n=37)	19.7% (n=35)

Table 5. Perception towards organic food products

Reasons of Buying	n	%
<i>Organic fruits and vegetables</i>		
Healthier	61	34.5
Less chemical in production	51	28.8
Natural	50	28.2
Fresher	48	27.1
Environmentally friendly	34	19.2
Family influence	22	12.4
<i>Organic Dairy products</i>		
Less chemical in production	22	12.4
Healthier	35	19.8
Fresher	25	14.1
Natural	27	15.3
<i>Rice, grain, cereal or bakery products</i>		

Less chemical	29	16.4
Healthier	47	26.6
Fresher	24	13.6
Environmentally friendly	23	13.0
natural	44	24.9
<i>Organic meat, poultry or eggs</i>		
Protecting animal welfare	23	13
Healthier	43	24.3
Fresher	29	16.4
Environmentally friendly	23	13
natural	30	16.9

Table 6. Awareness about Environmental Issues

Level of Awareness	Frequency	Percent	Cumulative Percent
Not at all	16	9.0	9.0
Somewhat	115	65.0	74.0
Very	46	26.0	100.0
Total	177	100.0	

Table 7. Knowledge about Government Role in Controlling Pollution

Level of Knowledge	Frequency	Percent	Cumulative Percent
Not at all	20	11.3	11.3
Somewhat	101	57.1	68.4
Very	56	31.6	100.0
Total	177	100.0	

Table 8. Hypotheses Tests using Pearson Correlations

Hypothesis	r-value	p-value	Results
Hypothesis 1: The more people believe that consuming organic products as safe and healthy, the higher their intention to purchase organic products.	.302	.000	Supported
Hypothesis 2: The more people believe that organic product farming as environmental friendly, the higher their intention to purchase the products.	.320	.000	Supported
Hypothesis 3: The more people perceive the worth of buying organic products, the higher the intention to purchase the products.	.453	.000	Supported
Hypothesis 4: The more information that people have about organic products, the higher the intention to purchase the products.	.041	.295	Not Supported

Table 9. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503(a)	.253	.230	.59851

a Predictors: (Constant SAFETY_HEALTH, PRODUCT_INFO, ENVIRONT_FRIENDLY,PERCEIVED_WORTH

b Dependent Variable: INTENTION_TO_PURCHASE

Table 10. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.973	5	3.995	11.151	.000(a)
	Residual	59.106	165	.358		
	Total	79.079	170			

a Predictors: (Constant), SAFETY_HEALTH, PRODUCT_INFO, ENVIRONT_FRIENDLY, PERCEIVED_WORTH

b Dependent Variable: INTENTION_TO_PURCHASE

Table 11. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.876	.374		5.019	.000
	PERCEIVED_WORTH	.334	.071	.361	4.708	.000
	ENVIRONT_FRIENDLY	.152	.068	.166	2.232	.027
	SAFETY_HEALTH	.113	.072	.118	1.575	.117
	PRODUCT_INFO	-.012	.052	-.016	-.231	.818

a Dependent Variable: INTENTION_TO_PURCHASE

Where do you usually buy organic products?

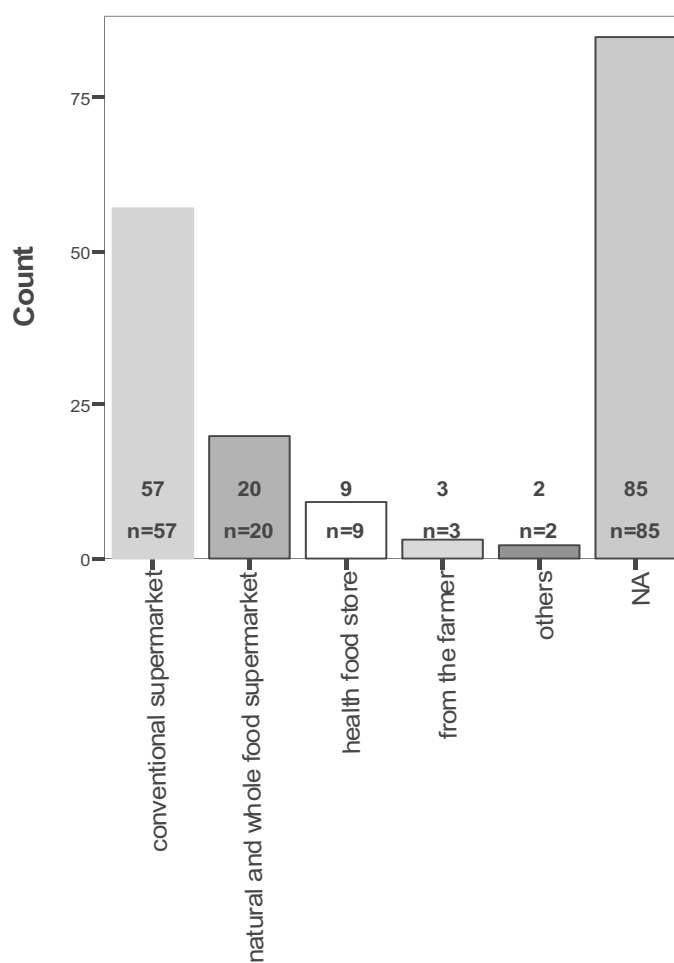


Figure 1. Common Places to Shop for Organic Products

Willingness to pay more for organic product

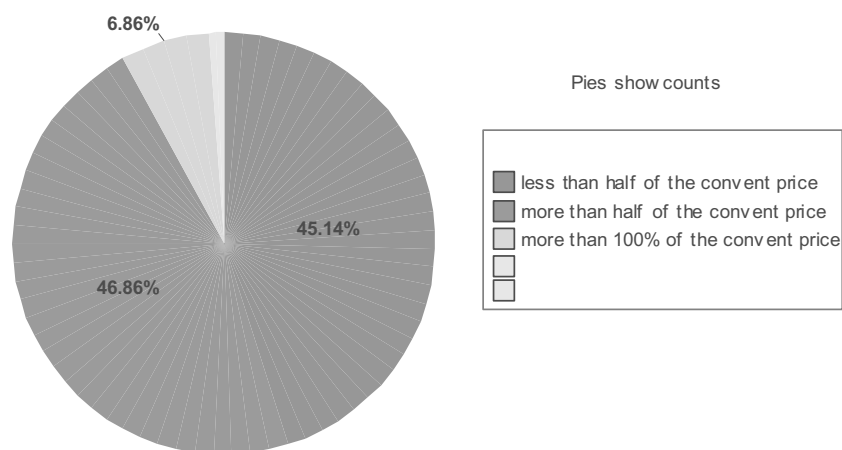


Figure 2. Consumers willingness to pay for organic products

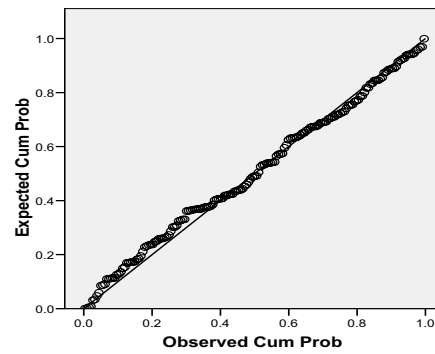
Normal P-P Plot of Regression Standardized Residual**Dependent Variable: INTENTION_TO_PURCHASE**

Figure 3. Normal P-P Plot

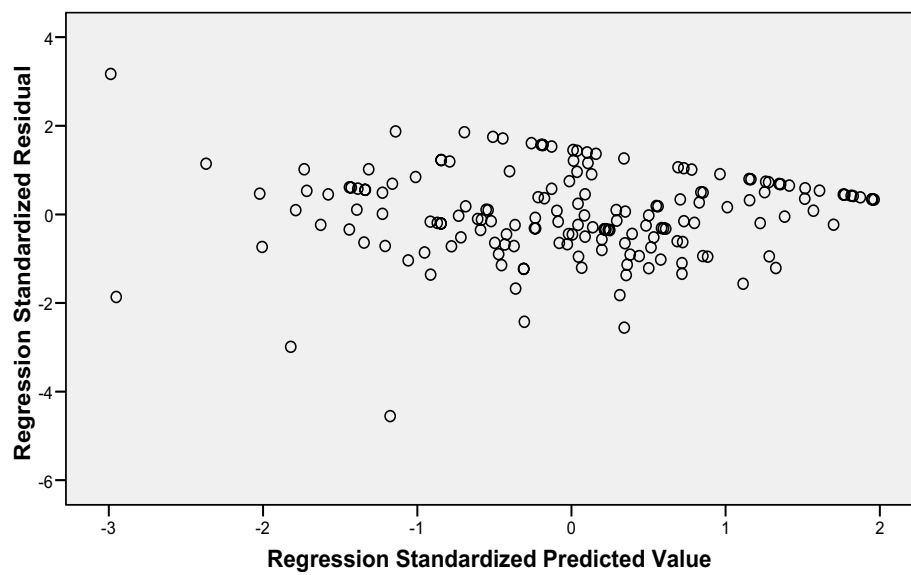
Scatterplot**Dependent Variable: INTENTION_TO_PURCHASE**

Figure 4. Scatter Plot



Reward Strategy in Chinese IT Industry

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Abstract

The essay identifies the reward strategies of Huawei, Haier and Lenovo the three Chinese top IT companies. Although the reward strategies are varied, the evidence gathered supports the essay that reward strategies adopted by the Chinese top IT companies is the reason for their success. In exploring the process of causality, two broad opinions are produced by comparing the reward strategies between different IT companies.

Keywords: Reward strategy, IT industry

1. Research Findings

1.1 Huawei Reward Strategy

Among Huawei 30,000 employees worldwide, R&D: 48%, over 14,500; Marketing, Sales and Customer service: 38%; Supply Chain: 8% and Administration: 6% (see Figure 1.1). 90% of employees hold bachelor's degree or higher (Wu, et al 2005).

<Insert Figure 1.1 here>

Base Pay

The company has been implementing a high salary policy since the early 90's. In 1996, Chinese average salary of new graduates was lower than RMB 2,000. But monthly salary of undergraduates in Huawei was RMB 6,000, and graduates RMB 8,000 (Yin, 2005). The starting salary for an engineer is about \$6,600 one year, and its top performers earn up to about \$22,000. The salary of managers is continually changing.

Long-term Incentives

Huawei pursues the strategy of 'knowledge capitalization'. Although it isn't a listed company, employees can hold stock options. Company stock options structure is: 30% of excellent employees share; 40% of skeleton employees scale to share; 10-20% of general employees properly share (Wu, 2004). The stock options of employees may be dynamic adjusted in term of talent, responsibility, contribution, job attitudes and risk recognition.

Performance-Related Pay

Huawei emphasizes result oriented in performance management and strives to build up a self-motivated, self-improving mechanism. Through continuously setting goals, coaching, appraising and communicating, managers help employees to improve their performance and capability (see Figure 1.2).

<Insert Figure 1.2 here>

In the process of performance management, Huawei has also set up a very strict result-oriented assessment system, through which the pressure is passed from top to low level. As a result of this system, 3-5% of its employees are laid off annually, and it is a common practice at Huawei that one's salary will be cut due to his/her poor performance, which is well acceptable to Huawei people (Jia, 2005).

Employee Training and Development

According to different position requirement, Huawei sets up varied training systems (see Figure 1.3). All employees can enter training system to learn training course.

<Insert Figure 1.3 here>

Huawei provides a dual career development path to the employees. Employees can choose an appropriate career path for themselves according to their characteristics and reach their career plans (see Figure 1.4).

<Insert Figure 1.4 here>

1.2 Haier Reward Strategy

Haier has 51,000 full time employees and hires 175,000 contract service personnel, providing a total of 230,000 opportunities (Liu & Li, 2005). In 2004, Haier was ranked the most value Chinese brand (Zhang, 2004).

Long-term Incentives

Since 2000 Haier Group stock options came into the market, the company has been operating long-term incentives plan. The actual number of long-term incentives that will be granted to the Members of the Board of Management, the other members of the Group Management Committee, Executives and other key employees depends on the team and/or individual performance of the team/individual and on the share performance of Haier (Floyd & Taylor, 2005).

Performance-Related Pay

Haier carries out 'notebook' strategy, namely, keeping a notebook on all employees to distribute these cash rewards fairly. Here company can keep notes on employees' performance, both good and bad, throughout the year (Collins, 2003).

Employee Development

Haier employee career development initially bases on "Each individual is a talent" and "firstly training people and then creating a brand". Under the idea, the company provides staffs 3 kinds of career designing: 1. For administrators; 2. For professionals; 3. For workers (see Figure 1.5). Each of them has one direction towards his promotion (Liu, 2005).

<Insert Figure 1.5 here>

Achievement

In certain period of time and within certain division, Haier set a quota to lay off staffs in percent, namely, elimination quota. In the company, there is no such saying "I cannot give any achievement to the enterprise. However my time and physical works shall be taken into account." If employee cannot offer his best efforts, Haier follows out its elimination quota in proportion (Zhao, 2005).

Haier Group issues *Staff Rewarding Regulation for Inventions*, which establishes an "award of Haier", "Hope of Haier" and "Rationalized Advice" etc. and based on the economic effectiveness and social effectiveness what they achieve, and the enterprise, the administrators and the staffs have equal chances to win the awards respectively (Wu, 2005).

1.3 Lenovo Reward Strategy

As at March 31, 2005, the Group had a total of 9,682 employees, 9,625 of whom were employed in Chinese mainland and 57 in Hong Kong and overseas (Nystedt, 2005).

Long-term Incentives

Lenovo Group implements remuneration policy, bonus and share options schemes with reference to the performance of the Group and individual employees. Since 25 March 2002, the shareholders of the company approved have been adopting a new share options scheme (the 'New Option Scheme'). Details of the movement of share options of the company for the six months ended 30 September 2004.

Performance-Related Pay

Lenovo strives to reward employees for their contributions to its financial success. To that end, the company maintains a unique bonus program wherein employees demonstrating exceptional performance may be awarded bonuses during a performance period. The value of the bonus is based on the financial performance of the business unit and the company as a whole, and on the employee's commitment to company values. Lenovo also award profit-sharing and discretionary bonuses, as appropriate, based on individual and overall company performance (Lerzberg, et al 2005).

Benefits

- Health Cares. Medical coverage is available for all new Lenovo employees on the first day of employment. Dependents are also covered, including an eligible spouse or same-sex domestic partner, and children. On the first day of the third month of employment, employees become eligible for **Lenovo Flex**, which includes medical, dental, vision, prescription, life insurance and disability insurance coverage (Jia & Chen, 2005).
- Vacations. Lenovo has a very generous paid vacation policy that is based on years of service. Seven days of paid vacation are available to new employees hired between January 1 and September 1 in the year of hire. As many as 28 days of paid time off are available after 15 years (Taylaor, 2005).

Employee Development

Lenovo has strengthened its employee redeployment process, which is now designed to identify and assist more quickly employees who may be part of skills rebalancing actions. For example, in many cases in the United States, employees have a few months, rather than 30 days, to locate a new position and gain skills for it. From March 2004 to January

2005, more than 1,400 employees in the United States had been identified and moved into new positions (Li, 2005).

In 2002, Lenovo launched College Graduate program to develop company leaders. Every College Graduate receives support, coaching and mentoring from his program mentor as well as his immediate supervisors (Sun, 2004). Successful candidates typically have a superior scholastic record and have demonstrated characteristics such as the ability to work well with others, self-expression, maturity, resourcefulness and integrity. According to the record develop the talent and leadership the company needs.

2. Discussions

Total Remuneration

- **Base Pay.** Analyze the three big IT companies in China, only Huawei implement high salary strategy. The salary of the individual members of the Board of Management in Huawei was continuous going up from 2002 to 2004. The high salary strategy has two advantages: Firstly, it is in favor of recruit talent. 'Money, still identified by participants as being the single most important factor in a decision to join an organization for both past and present IT recruits' (Lockwood & Ansary, 1999). The special motive force in Huawei attracts number of Masters and Doctors, which accelerate the process of multinomial technique innovation and development. Secondly, it can retain talent. In Furlonger's (1997) words: 'offering a valued employee more money to stay was instrumental in getting them to stay'.

- **Stock Options.** The three IT companies are implementing the same form of long-term incentive, namely stock options. Stock options is same as base pay, is also necessary monetary incentives. But it needs to go through a short run (e.g. less than ten years), the run result usually can improve efficiency and reduce costs. Focus on Huawei, Haier and Lenovo three IT companies, they are carrying out the strategy of *stock options* to attract and retain workers, reward outstanding performance, and return value to shareholders while minimizing costs. The compensation package has following characters:

- Enlarged range. In every company, stock options on longer are once exclusive to executives, but become broad based to include middle management and non-management employees.

- High the proportion of employee holds. Analyze Appendix B, in Lenovo, 92.15% of stock options is held by employees. Huawei employees hold options to up to 80%-90% too.

- Different issue identity. Haier and Lenovo are listed companies, so they follow strict stock options issue procedure. However, it is a pity Huawei isn't a listed company, so employee stock options can't be transferred and realized. The system has three defects: firstly, managers and employee hold stock options is above the subjunctive capital; secondly, options scenario of implementation and decision are controlled by the biggest stockholder; thirdly, the system breaks a basic option rule, namely option implement condition isn't owned by authorizer, but is absolutely controlled by real the representing capital. Base on long view, Huawei stock should come into the market as early as possible.

- **Performance-Related Pay.** The research finding has indicated the three IT companies are now using Performance-Related Pay (PRP). Huawei focus on high efficiency strategy and high press strategy. Figure 4.2 clearly describe the process of PRP in Huawei, which direct contact with employee salary and retention. One the one hand, as a coach, company can timely adjust employee goal position and lead they escalate to up to good performance. On the other hand, company plays a supervisor role, form a crisis consciousness of clear rewards and punishment. If the mechanism is successful operated, who can mobilize employee activeness and improve work efficiency. Otherwise, it is easy to form a contradiction what managers attributed high financial needs to employees, but the staff themselves bases on heavy extrinsic pressure result in poor performance. In Huawei, the unique three high management models (high salary, high efficiency and high press) control financial reward operation and raise the overall level of available talent. Compared with Huawei, Haier PRP strategy is more simple and intuitionistic. A 'notebook' notes all performance in one year. This way, the company can reward people for longer-term performance rather than skipping them because of a mistake they made last week. Lenovo PRP strategy directly relates financial performance, which reduces unfair factors, it is flexible and objective.

- **Benefits.** Employee benefits are elements of remuneration given in addition to the various forms of cash pay (Holbeche, 2001). They provide a quantifiable value for individual employees. Armstrong suggests that benefits can be divided into seven categories. To Lenovo, benefits mainly focus on *personal security* and *personal needs*. 'Health care' is a common benefit for employees at all levels which enhance the individual's personal and family security and relieve employee misgivings at home and further troubles. Moreover, annual leave entitlements are a major benefit too. Lenovo carries out different vacation standard in terms of hire time to meet company employee needs, which implies flexible benefits provision, namely employees can choose vacations time in the light of own desire. The flexible benefits 'allow employees more choice over how they were rewarded, allowing them to shape their benefits package so that it more closely matched their personal circumstances' (Armstrong, 2005).

Non-financial Reward

● **Employee Training and Development.** Figure 1.3 shows Huawei training system includes six embranchments. The six subsystem training object is from manager to general employee, from administrator to professional. Figure 1.4 clearly list two paths of career development. One is management path. The other is technical/professional path. The talent selection bases on equal competitiveness. Once junior staff grows senior staff, he/she has chance to choose two difference path—supervisor or specialist. He/she can momentarily adjust position in the promotion process till leader or professional. Figure 1.5 indicates Haier training object includes three parts: administrators, professionals and workers. The mechanism provides employee wide development space and equitable competition working environment. Lenovo emphasizes the time and efficiency of training process, namely how use the most short time to attain the best effect. The career development has two advantages: firstly, company can find and use talents as early as possible; secondly, enhance work efficiency. No matter which form of career training and development, the essential is ‘to recognize that our employees are our most important asset’ (Johnson & Welsh, 1999). The recognition is a form of non-financial reward. It isn’t just a motivator for the individual or group reward, is also a message to other employees about the type of performance that gets noticed, which make employee have a sense of ascription and self-identity and motivate them to up to good performance.

● **Achievement.** The Achievement motive is based on expectations of doing something better or faster than anybody else or better than the person’s earlier accomplishments (Hansemark, 1998). Haier imports the means to reward strategy in order to equitably and objectively motivate employee. Equity is because it considers two appraisable factors of economic effectiveness and social effectiveness what includes both top management and general staff. Objectivity is because the strategy provides employee more space of self-evaluation. In fact, the strategy is both reward and punishment. The prerequisite of employee rewarded is to achieve dual effectiveness. Otherwise, he/she will be laid off.

3. Conclusions

‘In the modern commercial world, with high levels of competition and technological advances, it is clear that if organizations are to succeed, they must ensure a high level of organizations performance’ (Hume, 1995). Employers are also realizing that ‘employees are the principal variable in organizational success’ (Schuster and Zingheim, 1992). The challenge of attracting and retaining talents has led employers to finally recognize what reward strategies are important in the war of winning. A reward strategy is an integrated and comprehensive total package what the employers offer to the employees.

According to Armstrong (2003), ‘Compensation and benefits’ belong to financial reward. ‘Career training and development’ is non-financial reward. The essential of the two types of reward is to motivate employees by satisfy their needs to up to high level of performance. Although Huawei, Haier and Lenovo the three Chinese top IT companies and IBM the world top IT companies are implementing reward strategies, the form of reward strategies varies between different countries, different companies even and different development stage of the same company, which both aligns with the theory of Maslow’s hierarchy of needs and embodies the culture differentiation.

Firstly, reward strategy aligns with Maslow’s hierarchy of needs. He describes needs on five hierarchical levels (1954). (See Figure 2.1)

<Insert Figure 3.1 here>

Some employees are interested in financial reward. For example, Huawei’s high salary strategy attracts and retains a great of talents by satisfying the basic needs of employees because new graduates believe that making money is the most important. The contribution of base pay enhances labour productivity and improves the firm’s performance. Contrarily, high performance promotes base pay increase. The choice of strategy therefore is important to satisfying employee needs. Additionally, Stock options also are commonly used in the four IT companies. They depend on leverage and the ability to select exercise price to attract employees. Stock options values can increase dramatically and proportionally when the underlying asset increases in value. Furthermore, although options can be granted with a fixed exercise price, if the share price is below the exercise price, the option is not valuable. It follows that the stock options value closely link asset value and share prices. Then how to satisfy employee needs by continuously increase share prices and asset value? The only way is to motivate employees to improve stock performance by encouraging them to work harder and better. Other employees such as supervisors and specialists hope to realize self-worth by non-financial reward strategies. Huawei designs two different career development paths according to employee needs. One is for administrative staffs. The other is for technical staffs. For employees, there is a need for both the professional experience within particular appointments and the wider experience that comes with a variety of jobs. For employers, there is a need for quality of performance to promote employees; employees are motivated through achieving organizational aims and objectives.

But no matter what form, the same reward doesn’t fit the same person for ever, because employee needs are continuous changing. A satisfied need is no longer motivating, as maintaining motivation require the satisfaction of needs

progressively. This means that when employee needs have satisfied at one level company tries to meet those at the next level up, and a higher-level need is only experienced when those below are met. The process what the motivation and needs satisfied act each other is the process what to continuously improve performance.

Secondly, reward strategy embodies the culture differentiation between different countries. Although all organisations have to plan, source, develop and reward their people, they do not all do these things in the same way. Many of these differences will occur within countries: some organizations will have more sophisticated systems, some less; some will do it more carefully, some more casually. However, a key to these differences is national cultures and institutions (Harris, et al 2004). Bloom & Milkovich (1999) also argues that there are substantial differences within countries as well as between them, that no one best rewards way will meet all contexts, and that national culture must be taken into account.

- Differentiation of base pay. Every employee believes that pay and reward are an important part of an organization's human resource management. But each country tends to compensate its workers for the time and commitment that they bring to work is completely different. In the USA, most people are better off financially, pay generally is not considered to be a strong motivating factor (unless it is "big chunk" pay; that is, 20 per cent or more). Pay raises are based on a set of criteria tied to merit, equity and seniority; and an emerging trend towards use of base salary combined with gain sharing has been observed (Lawrence, 2003). In China, most workers' incomes are still low, monetary rewards play a far more important role. Pay is still the most crucial incentive.

- Differentiation of various pay. National culture influences the efficiency of various pay formulae and techniques (Gomez-Mejia and Welbourne, 1991). White et al (1996) note international comparisons of pay systems focus on four aspects. Each of them has a culture cause:

- Locus of decision-taking (reflecting the emphasis on centralisation and hierarchical authority, attitudes to worker participation). Many managers in the USA believe that people's basic physiological needs for safety and security have been met and that therefore only opportunities to satisfy higher-order needs will motivate most people. They believe that the majority of the people who work for them want to develop interpersonal relationships characterized by trust and open communication. The Chinese managers strongly believe that managers must give workers' welfare prominence over production. They encourage collaboration and broad participation in decision making by replacing individual rewards with collective rewards, and emphasizing democracy and decentralization.

- Management criteria for pay-determination decisions (reflecting the different mindsets, perceived causal factors, and cognitive schemata that managers use to differentially interpret what might be a common idea). For example, in the USA companies, pay closely links with performance. High performing new-comers to the organization may be rewarded more highly than those of a higher status in the organization. Chinese companies will take care of employees through housing and other social benefits, which base on a strong loyalty effect. In other words, they believe that performance is short-term, while loyalty and belongingness are long-term.

- The effect of particular reward strategies on employees' behaviour (reflecting the role of values and the attitudes and actual behaviour that these values generate). In the USA, new professionals tend to be well-educated, ambitious and articulate. Most of them have engineering or physical science backgrounds (Von Glinow, 2000).

Naturally, for such new professionals the most valued rewards are job challenge, responsibility and feedback. In China, pay and intrinsic rewards are equal importance for professionals. Especially in the special economic zones of China, that a radically altered institutional and social environment can change previously deep-seated psychological determinants of rewards behavior, such as distributive justice.

- The content and practice of the actual rewards packages in various countries (acting as an amalgam of the above three factors). Employers across Europe, for example, have generally been moving away from more rigid pay structures and increasing their use of variable pay. Japanese companies tend to use the *nenko* system of pay based on seniority (Morishima, 1995). In China, pay is less important than the range of benefits (housing, food, childcare, etc) typically provided for employees (Verma & Zhiming, 1995).

- Differentiation of employee benefits. In countries such as the Nordic, generous childcare provision is established by the state, so childcare doesn't as a significant part of an employee package. In France, employees prefer to get most of their pay and reward packages in cash and to be free to spend it as they wish. In the USA, the holiday is traditionally limited two weeks per annum, but whereas a European would expect perhaps five weeks' holiday. In countries where a 'career break' generally refers to something women take when their children are young, such as UK; in France it is a legal right of a leave of absence from the job for educational purposes.

- Differentiation employee areas of training. The central and eastern European countries when, following the collapse of the Communist governments there a need for training in such areas as marketing became apparent. Across Europe, the top four subjects are the management of people (supervising), information technology, the management of change,

and customer service skills. In Asia, IT training appears to be more common; customer service skills do not figure so highly (Lawrence & Edwards, 2000).

4. Summary

If the three Chinese top IT companies are to gain a footing in the world top 500, they should envisage the reality of culture collision, because the culture collision limits the reward strategies. 'The reward strategies must be regularly modified and aligned to meet business strategies and goals in keeping with the culture and the competencies required' (Filella & Hegewisch, 1994). To implement a reward strategy within particular culture and under particular laws and institutional arrangements means that organizations have to be aware of these the culture differences when they determine their reward policies and practices, as ideas of good practice in reward strategies differ from country to country.

The results of the research findings and discussion reflect that there are still some problems existing in the Chinese IT industry.

- For example, it points out individual reward, and ignores team-based reward. However, today, teams have become a popular way to organize business, and are being used to improve communication among interdependent individuals, to take advantage of multiple perspectives in problem solving situations, and to improve productivity. One way to support and reinforce this team concept is through the 'team-based rewards' system. 'Team-based rewards' is giving a reward to the whole team or dividing the reward equally between members of the team based on the total team performance. It has following advantages:

- It motivates the team members to achieve the vision and goals;
- It reinforces the key roles and behaviors for a successful team needed;
- It enhances employee relationships by encouraging cooperation and working toward common goals;
- And encourages development and learning by stimulating risk taking and trying new initiatives.

The advantage of 'team-based rewards' brings other choice to company reward operation. DeMatteo et al. (1998) also raises the key question is how can multiple reward practices be used to reinforce and encourage high level of individual performance and, at the same time, foster team work among individuals? Some researchers have suggested that: rather than choosing either individual or team-based incentives, a combination of the two incentive strategies may be more effective in motivating performance at the individual level and co-operation at the team level (Heneman & Hippel, 1995; Pearce & Ravlin, 1987).

- Furthermore, companies lack flexible reward mechanism to respond the culture collision between China and foreign countries. It seems that the reward strategies in Huawei, Haier and Lenovo are more suited to motivating domestic employees, which contradicts company objective what pursue globalized enterprise and globalized employees. 'Globalization' means implement different reward strategies in terms of different national cultures and institutions. McNally (2003) also suggests that the right reward model will depend on company's culture structure and overall strategy.

5. Recommendations

- By developing a combination of financial and non-financial reward, designed for individuals and teams may be beneficial for the Chinese top IT companies to today's international environment. The present reward strategies of Huawei, Haier and Lenovo meet the domestic development needs of IT industry, so they succeed in the Chinese market. But, as transnational corporations, the three IT companies face varied employees not only domestic but international. The differentiation of employees and the diversification of needs drive the companies to implement a combinable reward strategy to respond the changeable cases. The future development trend indicates that who wins in the war of attracting and retaining talents by implementing effective reward strategy, who can unique succeed in fierce competition.

- By deeply exploring national culture character, establish for subsidiary companies in different country flexible reward mechanism is significant to the Chinese IT companies enter into the world top 500. The world comprises many countries with huge different between the north and the south, between the east and the west, between economic strength and culture background. The extent to which nationality has to be taken into account in reward strategies is an issue that continually exercises every international corporation. The success in local country doesn't mean the success in international competition because the culture differentiation decides what pertains in one area may not be the case in another. Compare with IBM or the other world top IT companies, the reward strategies of Huawei, Haier and Lenovo seem little narrow. So it is vital to adjust reward strategy according to national culture diversify to the Chinese IT companies.

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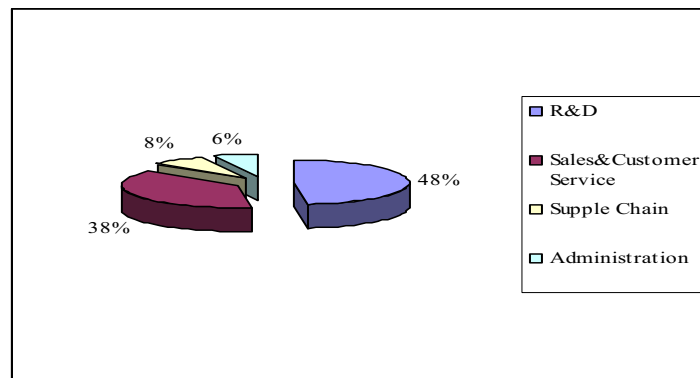
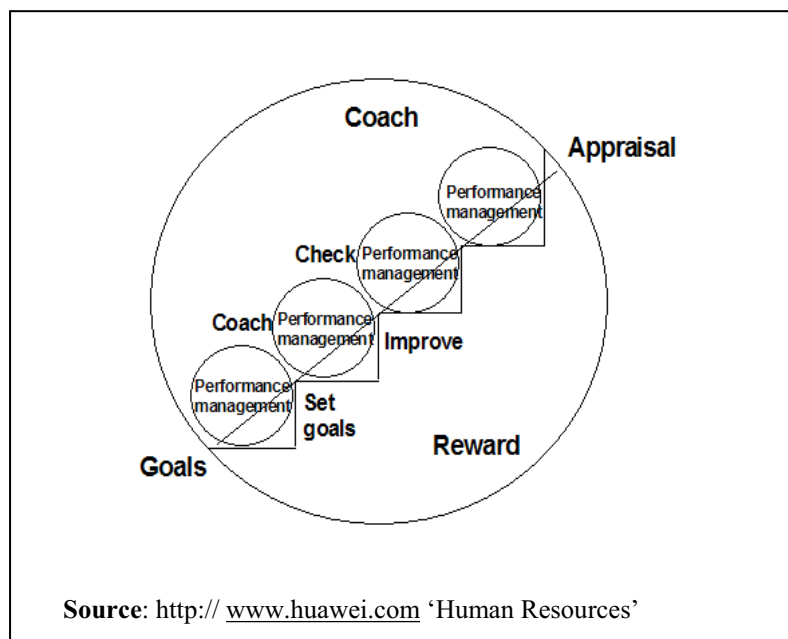
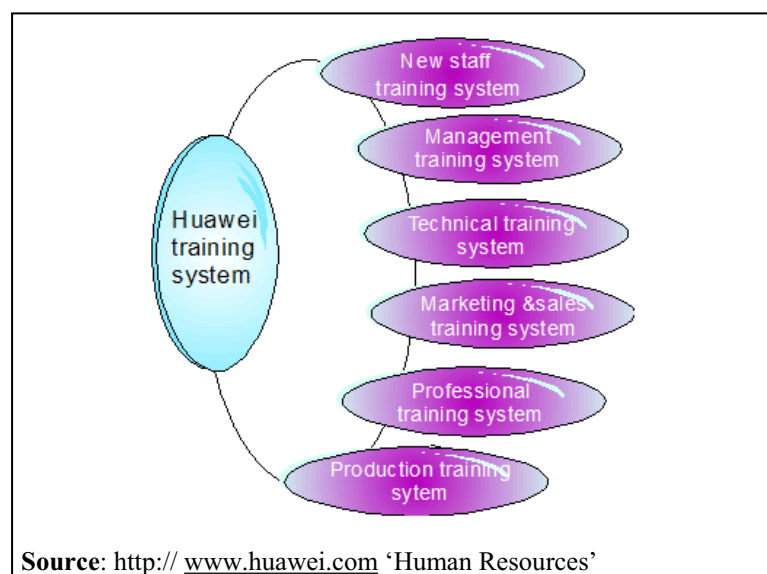


Figure 1.1. Huawei Employees Worldwide



Source: [http:// www.huawei.com](http://www.huawei.com) 'Human Resources'

Figure 1.2. Huawei Performance-Related Pay



Source: [http:// www.huawei.com](http://www.huawei.com) 'Human Resources'

Figure 1.3. Huawei Training Systems

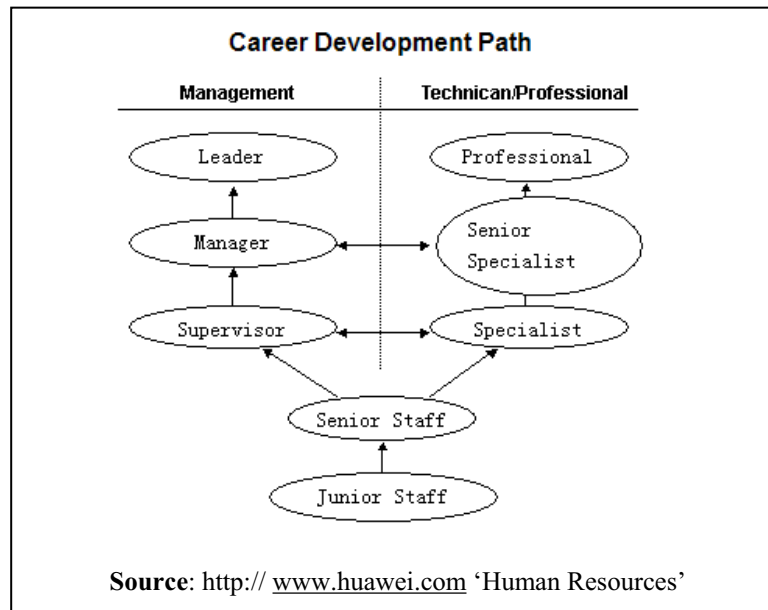


Figure 1.4. Huawei Career Development Paths

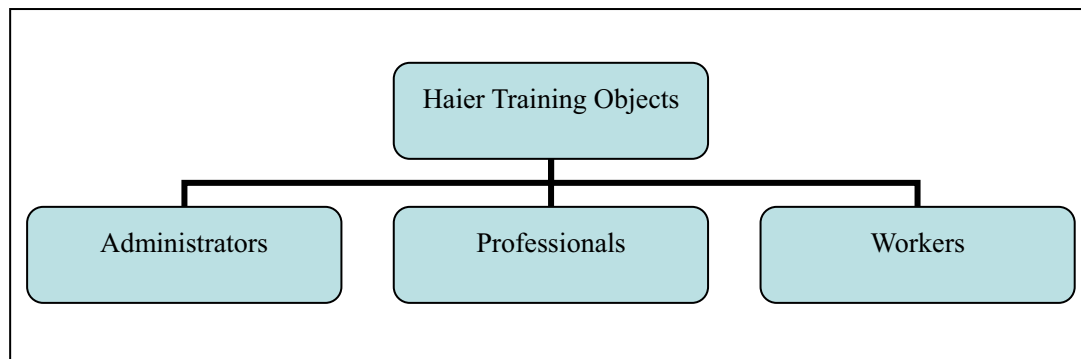


Figure 1.5. Haier Training Objects

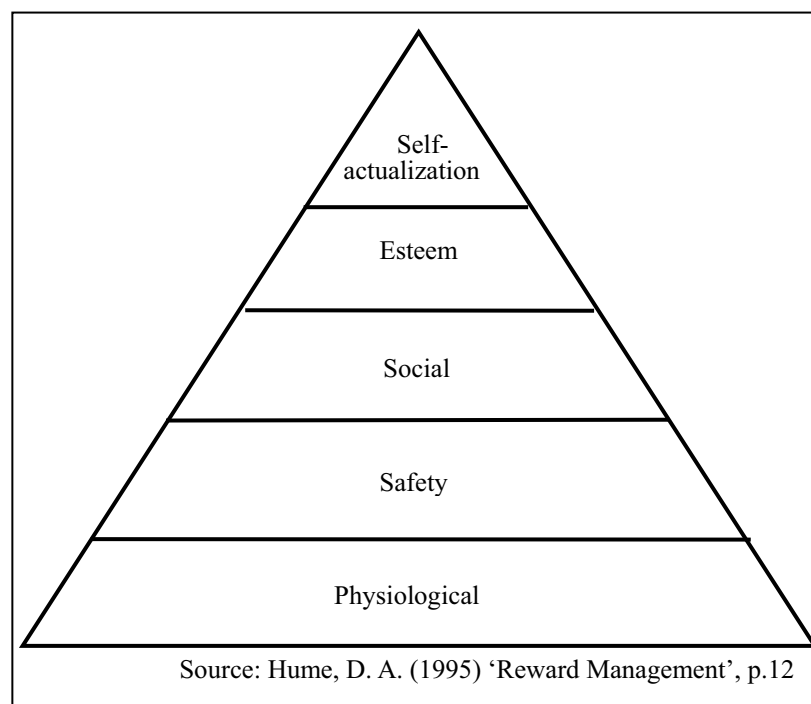


Figure 3.1. Maslow's hierarchy of needs



The Optimal Supermarket Service

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Abstract

According to economic theory, this paper studies about waiting cost of every unit time and customer, on the condition of adding cost of a serviceman, on the scope of free time and time customer expending on system.

Keywords: Supermarket service, Waiting cost

1. Introduction

Under the condition of market economy, enterprises pursue for the maximum profits with fixed costs. Facing today's serious market competition, supermarket should not only satisfy customers' needs but also make best use of service sources. Along with the continuous development of market economy, more and more supermarkets appear in cities and towns. In fierce market competition, lots of supermarkets give priorities to the quality of commodities. They examine every chain carefully, first the product procurement, second the warehouse entry inspection, and third the quality of shelf products, excluding every unqualified products out of supermarkets. Secondly, supermarkets take the expansion of fields, the extension of scale, and the increase of sales as the key for survival and development. The first is to adjust commodity structure in time and enlarge business scope. The second is to explore business channels and promote chain business. With the precondition of insuring the quality of commodities and the base of optimizing commodity structure, how to improve enterprises' business effect and how to absorb more customers arouse more attentions from supermarkets. Check-out stands are the service windows of supermarkets, which not only reflect supermarkets' images but also associate with supermarkets' service quality and business efficiency. The standards for customers selecting supermarkets are not only qualified and inexpensive commodities but also service quality. The long queue waiting for check-out is not an ideal purchasing environment for people. Most people prefer to give up or go away instead of waiting in queue. With similar quality and price, service quality is the key for winning the competition. For supermarkets, more check-out stands mean more investments. Sometimes, it may cause waste of sources. However, few check-out stands may lead to serious waiting, affecting service quality, and causing loses of customers. This paper will probe into supermarkets' service management and optimization based on relevant queuing theory.

2. Theoretical Model for Supermarket Service

Supermarkets aim at self shopping. They pursue for quick returns and small margins. However, lots of supermarkets notice customers' needs and lay stresses on services. They understand that the overall service is the key for the success of supermarkets. Customers, service institutions, and queuing phenomenon are a queuing system. The basic model includes the input process, the service time, the service institution, and queuing rule. The supermarket service system is an M/M/C model (customer source, capacity are unlimited. And C service stands are connected together). The input process is a Poisson distribution. The service time is negative exponential distribution. The service institution means lots of service stands. The queuing rule is for service institution. The waiting system means customers have to wait if the service stand is in busy.

In a statistical balance state, the service intensity $\rho = \frac{\lambda}{cu} < 1$.

Here the stability probability of this system is

$$(1) P_0 = \left[\sum_{n=0}^{c-1} \frac{1}{n!} \left(\frac{\lambda}{u} \right)^n + \frac{1}{c!} \left(\frac{\lambda}{u} \right)^c \frac{cu}{cu - \lambda} \right]^{-1}$$

$$\begin{aligned}
 (2) \text{ The average length of queue } L_q &= \sum_{n=c+1}^{\infty} (n-c)P_n = \sum_{n=c+1}^{\infty} (n-c) \frac{c^c}{c!} \rho^n P_0 \\
 &= \frac{c^c}{c!} P_0 \rho^{c+1} \sum_{k=1}^{\infty} k \rho^{k-1} = \frac{(c\rho)^c}{c!(1-\rho)^2} \rho P_0
 \end{aligned}$$

$$(3) \text{ The average length of queue } L_s = L_q + c\rho$$

$$(4) \text{ The average waiting time for customers in queue } W_q = \frac{L_q}{\lambda}$$

$$(5) \text{ The average waiting time for customers in the system } W_s = \frac{L_s}{\lambda} = W_q + \frac{1}{u}$$

$$(6) \text{ The waiting cost } C' = \frac{2u}{L_q}$$

3. Examples for Application

λ : Average arrival ratio of customers.

u : Average service ratio.

In a supermarket survey in Beijing, in the $\lambda = 18.5$ capita / hour and $u = 9$ capita / hour $M / M / C$, establish the number of servers that makes customers' waiting time no more than 16% and each customer spends no more than 30 min in the system. If the cost for increasing every server for every unit time is 12 Yuan, then how the waiting cost for each customer per unit time determined by decision - making?

As $c = 1$

$$P_0 = 1 - \rho = 1 - \frac{18.5}{9} = -0.85 (\text{Imperfect})$$

As $c = 2$

$$\begin{aligned}
 P_0 &= \left(1 + \frac{\lambda}{u} + \frac{1}{2!} \left(\frac{\lambda}{u} \right)^2 \frac{2u}{2u - \lambda} \right)^{-1} \\
 &= \left(1 + \frac{18.5}{10} + \frac{1}{2} \left(\frac{18.5}{10} \right)^2 * \frac{2.10}{18.5} \right)^{-1} \\
 &= (1 + 1.85 + 22.817)^{-1} = 0.039 < 0.15
 \end{aligned}$$

$$\begin{aligned}
W_s &= \frac{L_s}{\lambda} = Wq + \frac{1}{u} \\
&= \frac{\rho}{\lambda(1-\rho)^2} \frac{(c\rho)^c}{c!} P_0 + \frac{1}{u} \\
&= \frac{1.85}{18.5(1-1.85)^2} * \frac{(2*1.85)^2}{2!} * 0.039 + \frac{1}{10} \\
&= \frac{1.85}{1.85*0.723} * \frac{13.69}{2} * 0.039 + \frac{1}{10} \\
&= 0.369(\text{hour}) = 22.15(\text{minute}) < 30\text{minute}
\end{aligned}$$

Therefore, the optimal number of servers is 2

$$\text{Average waiting time: } Wq = W_s - \frac{1}{u} = 0.369 - 0.1 = 0.269(\text{hour}) = 16.16(\text{minute})$$

$$\text{Average length of queue: } Lq = \lambda Wq = 18.5 * 0.269 = 4.9765$$

When hire 2 servers, the waiting cost for each customer per unit reaches the maximum

$$C' = \frac{2U}{Lq} = \frac{20}{4.9765} = 4.019(\text{Yuan})$$

Conclusion: based on introducing practical data into the model, we conclude that the waiting cost for each customer per unit time reaches the maximum 4.019 Yuan as hiring 2 servers. It is in accordance with facts. Therefore, this model is practical.

4. Discussions on the Defects of the Model

The supermarket service model is in accordance with facts in general. However, there are still some defects and problems hard to be solved.

Firstly, supermarket service is a flowing service system. In this paper, data are merely records during certain time period in one area. Supermarket service system has a strong liquidity. Customers may face kinds of choices. This issue can not be solved by this model.

Secondly, customers' choice for supermarkets is affected by personal income, geological location, and consumption preference. This model does not take these factors into consideration. It is not in accordance with facts and will affect the preciseness of the model.

5. Suggestions and Countermeasures

Chain supermarket, as a new business mode, brings about the second revolution of retail commerce due to its special sale mode "high turnover, low profits, competitive price and quality, self-service, and one- for-all purchase". This business mode greatly drives the circulation of commodities.

In recent more than one decade, various chain supermarkets have gained fast development in China. The competition tends to be more serious. Especially, after China's WTO entry, foreign large supermarkets enter China's retail market, forming a huge impact on China's retail industry. People realize that it is necessary to strengthen supermarket management and build special core competitiveness as reforming the selling mode.

This paper offers a model reflecting supermarket service optimization. This model is based on customers' requirements for shorter waiting time and supermarkets' needs for making best use of sources. To design an optimal waiting scheme can effectively improve supermarkets' service efficiency, which can improve customers' satisfaction and loyalty. Along with the fast development of economy, people cherish time more and more. Competition for supermarket service is fiercer. How to solve the conflict between customers and supermarkets deserves more considerations. Here, the author puts forward some opinions. Supermarkets managers should always take the management as the core for development. They can explore a set of management tools that are right for certain supermarket. Firstly, keep in perfecting supermarkets' management system. Set up relevant work rules for different positions. Make up safety protection system and perfect supermarket service management further. Organize employees to study relevant rules and learn from their suggestions. Form a set of scientific and preciseness system that is right for one supermarket. In the implementation of relevant rules, managers must sustain the strictness and the preciseness in practice. By this way, the management will be more regular. Secondly, set up strict performance assessment system for employees. Constitute leveled goal-responsibility system for every department. Responsibilities are for everyone. Form an assessment team and evaluate

everyone's performance periodically. For the excellent performance, the management level should offer rewards. For the unqualified performance, the management can offer trainings. Strict performance assessment can greatly improve employees' responsibilities and motives in work. Thirdly, strengthen learning and training. Offer kinds of trainings periodically, especially in fields of marketing, customer psychology, and product quality. Organize managers and employees to learn from large supermarkets, concerning their advanced management methods and experiences. By means of observations and trainings, supermarkets can train a batch of talents and experts for relevant positions. The first-class management can create first-class service. The first-class service can create the first-class effects.

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Strategic Financial Management in Small and Medium-Sized Enterprises

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Abstract

Along with the development of social economy and the progress of science and technology, Chinese enterprises are being in a stage filled with opportunities and dangers. This paper introduces the connotation and significance of strategic financial management, elaborates the problems in the financial strategies conducted by small and medium-sized enterprises together with the causes and proposes some countermeasures finally.

Keywords: Small and medium-sized enterprises, Strategic financial management, Problems, Countermeasures

The uncertainty of an enterprise's financial environment fills its financial activities with risks. In addition to opportunities, quite a lot of dangers arise from time to time in its financial management. Therefore, it has become the key to the success of an enterprise's financial management whether it can keep track of the trends of changes and absorb what is useful while rejecting what is harmful. Strategic management ideas are significant in enterprises' financial management since we must make efforts to analyze and grasp the general environment and development tendency of an enterprise and therefore to improve the adaptability, changeability and applicability of financial management to uncertain environment. Currently, over 10,000,000 small and medium-sized enterprises have passed the industrial and commercial registration, taking up 90% of the total enterprises in China. Accordingly, their strategic financial management is of particular importance, which is also the topic of this paper.

1. Connotation and Main Contents of Strategic Financial Management

Strategic financial management refers to financial management theories according to which financing should be conducted in the most proper way, the collected capital should be utilized and managed in the most effective way in enterprises and decisions on the reinvestment and distribution of profits should be made most reasonably. According to its connotation, we can sum up the three main contents of strategic financial management, including financing strategy, investment strategy and profit-distribution strategy. Details are as follows:

Financing strategy

Highly developed modern enterprises are characterized by sharp growth in sales. When faced up with such a situation, enterprises tend to have great demands for capital since stocks and receivables are increased as well. The greater the tension of sales growth is, the greater capital demands will be. Therefore, financing strategy is of significance in strategic financial management. The functions of financing strategy lie in clarifying the guidelines for financing, laying down financing objectives, establishing the overall scale, channels and methods of financing, arranging strategic schemes of capital structure optimization, laying down relevant countermeasures in order to achieve the financing objectives, and finally predicting and collecting the amount of capital the enterprise needs.

Investment strategy

As the core of strategic financial management, this strategy determines whether an enterprise can allocate its capital and resources in a reasonable and effective way or not. Investment strategy involves the confirmation of the investment direction of fixed assets, corporate scale and capital scale, the investment choices related to external expansion or internal expansion, the reform of old products or the development of new ones, independent or joint operation, investment with self-capital or with loans and decisions on the percentage between fixed assets and current assets, investment strategies with risks and those during inflation.

Profit-distribution strategy

This strategy, including the management of capital gains and the establishment of stock bonus distribution, mainly deals with the proportion an enterprise puts aside in a long run for reproduction on an expanded scale, improvement of employees' welfare and their living standards. Profit-distribution strategy is intended to satisfy the demands for equity capital in the development and improvement of enterprises' core competitiveness based on relevant investment strategy and financing strategy. Meanwhile, when carrying out this strategy, enterprises are expected to establish talent-oriented distribution policies by exploring effective methods to apply those important elements such as knowledge, technique,

patent and management to the profit-distribution course.

2. Problems in Strategic Financial Management of Small and Medium-Sized Enterprises in China

Currently, some common problems include:

2.1 Lacking in Scientific and Standardized Financial Strategies

Quite a few enterprises are pursuing only a large scale, or purchasing a large amount of land while neglecting asset structure allocation, or having no reasonable arrangement for its capital. They have no financial strategies at all, not to mention their implementation. As for some others, the effect of their strategic financial management is greatly affected due to their unscientific and irregular strategies, which are characterized by the following features: first, their strategic financial aims depart from their enterprises' overall ones; second, financial strategies are regarded equal to financial plans, hence neglecting the comprehensiveness of financial strategies; third, financial strategies are not made based on their enterprises' long-term goals and therefore have great randomness.

2.2 Neglecting Strategic Environment Analysis and Having Unreasonable Strategic Financial Goals

Strategic environment analysis is both the foundation of financial strategies and the guarantee for its implementation. It includes internal and external environment analysis with the former being the internal foundation and implementation basis for the establishment of financial strategies. At present, quite a lot of small and medium enterprises haven't realized the importance of strategic environment for the establishment and implementation of financial strategies and accordingly failed to have proper analysis on their strategic financial environment especially its internal environment. As a result, their unpractical and unreasonable strategies have restricted the effective implementation of their financial strategies.

2.3 Lessening the Role of Budgeting in Strategic Financial Implementation

Budgeting mainly exerts its role in strategic financial implementation in two aspects. First, it further clarifies and specifies strategic financial ideas so as to be understood and conducted by all the staff. Budgeting can help to divide strategic goals into every section of an enterprise and even every employee. In addition, when implementing a task jointly, all sections and all employees will have better cooperation and communication with each other. Second, budgeting also provides a standard for an enterprise's daily operation and performance. With a quantitative financial goal set in budget, the actual implementation can be compared with the budget to reveal the disparity between the goal and the reality and take effective countermeasures. Now, most small and medium enterprises in China have no systematic and complete budget system made up of sales budget, production cost budget, general indirect cost budget, loss and expense budget and cash budget and so on. Even if some have such a system, its shortage of careful budgeting and strict implementation also lessens the role of budgeting as well as the implementation of financial strategies.

2.4 Problems in Enterprises' Financial Management

Now, some problems in small and medium enterprises' financial management have also restricted the establishment and implementation of their financial strategies. Some main problems are as follows.

- ① Obsolete ideas, unclear duty division and disordered management. Enterprises have no idea of "corporate management should be based on financial management and financial management should center on capital management; entrepreneurs and financial staff's lack of scientific and advanced financial ideas including time value, risk value, marginal cost, opportunity cost and insufficient knowledge about financial management theories and methods have resulted in unclear duty division, disordered management, ineffective monitor, false accounting information and so on.
- ② Extensive financial calculation, including simplifying accounting procedures at will, keeping additional accounts in addition to the authorized one, adopting irregular check of properties and cash, having no regular check of their bank deposits, claims and debts which cause their accounts inconsistent with items or funds, blindly promising bonuses and evading taxes by distributing bonuses before paying taxes.
- ③ Difficult financing, mainly manifested in insufficient channels and scales of financing channels as well as disordered financing orders. Currently, most small and medium enterprises are faced with great difficulty in gaining short-term loans, not to mention long-term ones. 81% of all enterprises have no enough current funds for their operation. The longer the periods of loans are, the less money they can really utilize from their loans. As is shown in a survey, 60.5% enterprises have no access to long-term loans, among those who can really get such loans, 16% enterprises' demands are fully fulfilled, 52.7% are partially fulfilled, 31.2% are not fulfilled. (Huang, 2008)
- ④ (Note 1) Poor financial control. First, loose cash management tends to cause inactive or insufficient capital. For some enterprises, the more cash, the better. Therefore, a large sum of cash is not allocated to operation, failing to exert its role; for some others, their cash is overspent on real properties, hence failing to tackle some emergent uses. Second, slow turnover of accounts receivable causes great difficulty in recovering capital or even bad debts. Third, the control over stock is poor. Many enterprises have a stock over twice its turnover, leading to failures in capital turnover. Fourth,

too much emphasis is put on money instead of properties, causing serious waste of assets. Actually, quite a few small and medium enterprises are lacking in effective management of their raw materials, semi-manufactured goods, fixed assets and so on, as a result of which asset wastes are quite serious.

3. Causes of the Problems in Strategic Financial Management of Small and Medium-Sized Chinese Enterprises

3.1 Rigid Management Pattern, Laggard Management Idea and Managers' Poor Quality

At present, most small and medium enterprises especially those private ones employ highly unification of ownership and management rights in which the investor is the manager whose power can not be restricted in any case. Having no clear division of duties and strict regulations, these managers don't embody financial management into an effective corporate management system, not to mention regarding financial strategies as a significant part of the enterprise's overall strategies, hence lessening their significance and function. These managers don't believe in strategy but good luck, not system but ties of blood, not procedures but tackling key points, not management but technology and market. Especially for those enterprises venturing out of niches, unfavorable environment is the chief offender.

In addition, managers' poor quality is also an important cause for the failure of financial strategies. It is well known that most managers in small and medium Chinese enterprises have poor comprehensive quality, insufficient management experiences and low efficiency because they haven't gone through any systematic learning of management theories and special professional training. Therefore, they are not able to have reasonable predictions, decisions, budgets, control, analysis and evaluation based on their own characteristics and the market, to have analysis on financial environment and lay down applicable and feasible strategies for financing, investment as well as profit distribution or to fully realize the importance of financial budgeting and therefore to have effective control over its implementation in order to serve the overall goals of their enterprises' development strategies in a better way.

3.2 Lacking Independent Financing System with Diversified Channels

With changeable market, operation risks are greater, so are financial ones caused by a large amount of debt and high financing cost, hence resulting in enterprises' low credit. Besides, their credit is also affected by their non-transparent operation process, non-standardized financial reports as well as asymmetrical information, hence leading to the difficulty in achieving financing goals.

Seen from the perspective of financing system, these enterprises' lack of independent financing system with diversified channels has greatly restricted their financing strategies. First, there is no national institution or preferential policies to assist small and medium enterprises with their management, causing their unfavorable financing situation. Second, due to these enterprises' private nature, some banks set rigid requirements for loans because of some traditional ideas and administrative interferences. Third, there are not enough financial agencies and loan guarantee institutions specially serving for small and medium enterprises. Fourth, most small and medium enterprises have no direct financing rights and cannot issue stocks or bonds. The main board market is inaccessible and the second board one is too risky.

3.3 Poor Investment Ability and Lacking Feasibility Researches

Small and medium enterprises suffer from insufficient registered capital, limited operation capital, hence poor investment ability. Focusing on short-term goals to recover investment, they have to rely on simple reproduction instead of expanded one. In addition, without any special institution for market analysis, their investment activities tend to be based on their perception and therefore blindness. These decision makers usually fail to have an overall grasp of the characteristics or principles of market economy or to pursue reasonable economic profits with their proper operation at the capital market. Their poor abilities are also reflected in the shortage of some feasibility researches on their shrink and expansion strategies, how to choose financing channels and structures, how to establish new investment directions and so on. All these greatly affect the establishment and implementation of an enterprise's strategic financial goals.

3.4 Incomplete Internal Control System Leading to Ineffective Control

Incomplete internal control system commonly exist in small and medium enterprises, which is profoundly manifested in having no or just incomplete internal control system, hence failing to effectively restrain their own economic behavior institutionally. A lot of enterprises have no department for internal audit to guarantee the strict implementation of their financial system. Even if some establish such a department, its lack of independence may lead to ineffective internal control. As a result, financial management as well as financial strategies will be greatly affected.

4. Countermeasures for Small and Medium-Sized Enterprises in China

Seen from the above, the problems in present small and medium Chinese enterprises are mainly attributed to their internal causes and external environment. Therefore, some effective countermeasures should be taken from the following aspects.

4.1 Establishing Right Financial Goals and Firm Strategic Sense

An enterprise's financial goals are not only the direction of its efforts but an effective standard to measure whether its

financial decisions are right or wrong. Proper goals are beneficial for an enterprise's overall strategic goals. With survival, profit and development as any enterprise's basic goals, maximized corporate value should be regarded as the financial goal. Guided with this goal, enterprises are expected to establish the central status of financial management in the overall corporate management first of all, to put emphasis on the management of financing, investment and profit earning, to take their abilities of debt paying, operation, profit earning and development and guide all the aspects of their production and capital operation by controlling their capital, cost, profit and so on. It is required by strategic management that enterprises must follow the aim of competitive edges and center on strategic management to deal with the relationship between enterprises' benefits and social benefits, between enterprises' overall benefits and sectional ones as well as between long-term benefits and short-term ones and to fully realize the importance of strategic management in enterprises' development and the significant role of financial strategies. Therefore, it is the precondition for the implementation of financial strategies to establish firm strategic sense. In addition, some other modern management ideas should be established, such as those related to risks, time value, cash flow, knowledge benefit and talent value.

4.2 Adopting Budget Control to Guarantee the Effective Implementation of Financial Strategies

Budget control is the guarantee and key point in converting financial goals into specific action plans and implementing them. First, a variety of financial budgets, including sales, production cost, general indirect expenses, capital expenses, losses and cash, should be compiled in a scientific and reasonable way based on financial strategies and financial predictions. When compiling budget, sales prediction should be based on to pre-calculate the possible sales in the future sales period, then to compile budgets on production cost and general indirect cost and after that to create loss budgets according to the relevant sales budget and cost budget as well as cash budget according to the budget on capital expenses and losses. Next, budget indexes can be disintegrated to be allocated to every section or individual, whose sense of responsibility and enthusiasm can be encouraged by clarified duties and obligations. Third, budgets should be followed strictly in the implementation of financial strategies with no exception. Last, some adjustments should be made according to the changes in strategic environment and new demands of development strategies.

4.3 Creating Favorable Strategic Environment and Emphasizing Environmental Analysis

For small and medium enterprises, their strategic environment has impact on not only their financing but the establishment and implementation of their financial strategies. Therefore, it is of great importance to create favorable strategic environment and emphasize environmental analysis.

In spite of a series of national policies encouraging, guiding and supporting the development of small and medium enterprises in China, the internal and external environment for their development needs to be improved greatly. Accordingly, China should make more efforts to develop its local banks and financial agents with small or medium scale, to establish a financial system beneficial for these enterprises' development, to establish or perfect effective loans guarantee system to help these enterprises, to offer opportunities for them to issue their stocks or bonds, to expand direct financing channels and encourage the development of risk investment, to promote the development of enterprises specialized in high and new technology by perfecting institutions and organization construction, strengthening the support for these enterprises by financial agents and to establish funds to support their development. For enterprises themselves, they should try to improve their qualities, strengthen their sense of credit and improve their credit as well to create favorable credit environment.

In a word, government, society and enterprises' joint efforts should be relied on to create favorable financial environment for these small and medium enterprises. In addition, these enterprises should be fully aware of the importance of environment for their financial strategies and try to establish scientific, reasonable and feasible strategic goals and guarantee their effective implementation by further strengthening environmental analysis and improve their decision-making abilities.

4.4 Establishing Financial Crisis Early-Warning System to Effectively Control Financial Risks

Financial crisis early-warning system is a very important means to control financial risks and achieve strategic financial goals for small and medium enterprises. By collecting some information on relevant industrial policies and market competition, setting and observing some sensitivity indexes and employing early-warning models, such a system will provide signals for enterprises to help them take effective preventive measures and to avoid financial crises.

It is critical to fix early-warning indexes and limits when establishing the pre-warning system. These indexes mainly involve early-warnings in cash, the current ratio, debt, operation, credit, turnover, investment, cost, profit and environment and so on. There are two major patterns: the multivariate pattern and the single-variate pattern. Enterprise are supposed to establish their own early-warning systems with different patterns according to their reality.

5. Conclusion

To sum up, a variety of elements related to enterprises' external and internal conditions should be taken into

consideration when they establish their financial strategies. Due to their different characteristics, small and medium-sized enterprises have to establish their own financial management strategies instead of copying those of the large enterprises.

Note

Note 1. Huang, Baomei. (2008). Problems and Countermeasures of Financial Management in Small and Medium-Sized Enterprises. *The Wealth of Networks*. 7.

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Islamic Banking Experience of Pakistan: Comparison between Islamic and Conventional Banks

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Abstract

This study examines the relationship between service quality and customer satisfaction regarding Islamic banks as well as conventional banks in Pakistan. It also investigated how service quality affects customer satisfaction by assessing the magnitude of the relationship between selected variables. This study is important due to an emerging trend of Islamic banking practices in Pakistan in the existence of conventional banking system. Data were collected from 720 bank customers by using stratified random sampling. SPSS 15.0 version is applied for data analysis. The results reflect that there is strong positive relationship between service quality and customer satisfaction in case of Islamic banks as well as in case of conventional banks. Findings showed that there is stronger positive relationship between service quality and customer satisfaction in Islamic banks as compared to Conventional banks in Pakistan. The study has a number of implications for bankers, policy makers and academicians.

Keywords: Islamic banking, Bank customers, Service quality, Customer satisfaction, Pakistan, Conventional bank

1. Introduction

Banks are performing multiple functions to provide a variety of products and service for different segments of the economy. Since its creation, Pakistani banking sector has experienced very turbulent environment due to unstable policies and uncertainty. Private sector banks dominated during 1950s and 1960s but they were nationalized in 1974. Nationalized banks showed very poor performance due to inferior products/services that resulted into the privatization of banking sector in 1992. State Bank of Pakistan has initiated working for the inception of Islamic banking practices in 2000 and Meezan Islamic bank was registered as first full-fledged Islamic bank in 2002. Islamic banks are new entrants in the Pakistani banking industry and also require a comparative study to assess the performance of their operations and products/services. Services industry particularly banking sector is growing across the globe during the decade of 1990s. The 21st century came with blending of opportunities and threats for the banking sector due to inception of Islamic banking practices in different countries like Malaysia, Pakistan, Bangladesh, Bahrain and even in non-Muslim parts of the globe. Islamic banks affect monetary system by adjusting the demand and supply forces for money. It is found that Islamic banking system is superior to conventional banking system as it ensures more stable financial sector (Khan, 1986). In another study, it was empirically verified that Islamic banking system showed excellent performance by supporting financial sector in Tunisia (Darrat, 1988). There is an empirical evidence to find out the influence of Islamic banking practices on monetary stability of Iran. The study showed mixed results, both for some evidence in favor to support and stabilize monetary system and somewhat against it (Yousefi, Abizadeh and McCormick, 1997).

The existence of Islamic and conventional banks created competition among banks to meet customers' expectations for long term benefits. There are two banking systems that exist in Pakistan namely Islamic banking and conventional

banking. The Islamic bank (IB) and conventional bank (CB) is differentiated on the basis of objectives, Riba and risk sharing practices. IB follows principles of Sharia'h given by Allah Almighty while CB follows manmade SOPs; IB generates income as profits that is variable while CB earns from the interest that is fixed; risk is shared among lender, borrower and bank in IB while CB transfers the whole risk to others; IB is trade oriented unit while CB works as a pure financial intermediary to deal on the basis of interest. SBP plays an active role to establish a sound Islamic banking system in Pakistan according to principles of Sharia'h as mentioned in its mission statement that read "To promote and develop Islamic Banking industry in line with the best international practices, ensuring Sharia'h Compliance and transparency". SBP issued detailed criteria in December 2001 for the establishment of full-fledged Islamic bank in the private sector. Al Meezan Investment Bank received the license from SBP in January 2002 and started its operations with the name of Meezan Islamic bank as the first Islamic bank from March 20, 2002 (SBP, 2002).

Islamic banks have a number of opportunities in Pakistan with a population of more than 96% Muslims. Islamic banks have to face multiple challenges due to strong reaction from conventional banks because they were deep rooted and popular among the public to meet their requirements. The increasing number of conventional and Islamic banks created a healthy competition for the provision of quality service to retain satisfied customers for long-term benefits. The banking industry experienced an expansion due to diversification and innovation of products/services. Everyone tries to introduce innovative products and services by beautiful blending of traditional facilities and modern technology to cope with each other for greater number of customers that leads to more profitability. Pakistani banking sector witnessed a major change due to key role of private sector having about 80% of banking assets (Economic Survey of Pakistan, 2007-08). The ups and downs in the growth of banking sector requires a study to analyze the performance by considering quality of services offered by banks in relation to customer satisfaction. There are studies about two banking systems (Islamic banking and conventional banking); plenty of studies are available regarding different aspects of conventional system while rare for the other. The acute shortage of literature regarding Islamic banking system inspired the researchers to conduct a comparative study in Pakistan. This study examines how service quality affects the customers' judgments towards satisfaction of the Islamic banks as well as conventional banks in Pakistan. This research is an effort to fill this gap in the literature. This study aims to examine the two banking streams i.e. Islamic banking and conventional banking in Pakistan with reference to service quality and customer satisfaction. This study may help the practitioners, bank managers, academician and policy makers to find out the pattern of satisfaction for bank customers in Pakistan. This study is also important because Islamic banking is growing in terms of size and structure at a rate of 114 percent per annum (SBP, 2006).

2. Literature Review

Islamic banks are striving to capture the maximum number of customers to compete with conventional banks by providing a large number of products as an alternative for interest based products. In Pakistan, banks are providing a wide range of products and services and facing intensive competition to attract potential customers. Persuraman *et al.* (1985, 1991b) devised SERVQUAL model and investigated the service quality. They explored ten dimensions of service quality and refined into five dimensions. It was documented that an increase in service quality and professional behavior resulted a greater customer satisfaction and reduced customer erosion (Leeds, 1992). The relationship between service quality and customer satisfaction is becoming crucial with the increased level of awareness among bank customers (Sureshchander *et al.* 2002). Islamic banks showed remarkable progress. It has captured a reasonable market share with excellent growth rate of 114% per annum. The increasing number and size of Islamic banks is also a positive sign of development and success. There are six full-fledged Islamic banks working in different cities of Pakistan and 13 conventional banks have started partial Islamic banking practices by establishing a large number of branches exclusively engaged in Islamic banking practices (SBP, 2006).

Mishkin (2001) reported that banking and financial services are the integral part of services industry and its contribution is increasing with the passage of time. However, expansion of global and integrated banking sector has to face many challenges of legislation, technological and structural changes (Angur *et al.* 1999). The relationship between service quality and customer satisfaction is investigated by a number of researchers across the globe. It is concluded that there is strong association between dimensions of service quality and overall customer satisfaction (Anderson and Sullivan, 1993). It is found that the banking industry has a link between service quality and customer satisfaction (Avkiran, 1994). Islamic banking practices resulted into a notable increase in the supply of loans. It is found that government intervention played an important role to manage funds besides other economic factors in the economy (Makiyan, 2003).

Levesque and McDougall (1996) investigated the influence of key determinants of service quality on customer satisfaction in financial institutions. They found a substantial impact of service problems on customer satisfaction and their intentions to switch. It is suggested that service quality is an essential determinant of customer satisfaction (Yavas *et al.*, 1997). Islamic banks working in different parts of the world assessed their performance in reference to service quality and customers' responses. An empirical study was conducted to measure customer awareness and satisfaction by using a sample of 206 respondents towards Islamic banking in Jordan. It is observed that customers have awareness about

products of Islamic bank but expressed a sense of dissatisfaction towards some of the services (Naseer, Jamal and Al-Khatib, 1999). Bahia and Nantel (2000) developed an alternative scale for measurement of service quality in retail banking. They developed BSQ and compared with SERVQUAL. They found that BSQ dimensions are more reliable than SERVQUAL dimensions. In another study SERVQUAL is compared with Technical/Functional quality of services in private banks. Results showed that Technical/Functional quality model is better (Lassar et.al, 2000). A survey of 801 customers indicated that customers' perception of service quality differs in terms of demographic characteristics (gender, ethnicity, education and income) of the respondents (Urban and Pratt, 2000).

Oppewal and Vriens (2000) empirically investigated the relationship between service quality and customer satisfaction by using original SERVQUAL instrument with 10 dimensions as devised by Parasuraman *et al.* (1985). This study gave a direction to relate service quality and customer satisfaction. Service quality gained significance with the passage of time due to increased competition among service firms. It was examined that how customer satisfaction affects the customers' behavioral consequences. The study found a strong impact of customer satisfaction on their decision to stay with the existing service provider; and restrain their negative behavioral intentions. (Athanasopoulos, Gounaris and Stathakopoulos, 2001). Kayis, Kim and Shin (2003) conducted a comparative analysis of Australian and Korean banks to find out the quality management practices and its outcomes. They found a meaningful relationship between perceived service quality and customer satisfaction. They suggest that organizations should focus on service quality as an input to customer satisfaction for long-term benefits and business success. Now banks have realized the importance of service quality for successful survival in today's global and highly competitive environment (Wang *et al.* 2003). Jamal (2004) investigated the customer behavior in retail banking by considering service quality and its outcomes. It was observed that customers have varied experiences of satisfaction and dissatisfaction for utilization of self-service technologies. Financial sector is becoming more conscious about the performance evaluation regarding quality of products/services according to customers' expectations. In another study, findings reveal a positive correlation between financial performance and customer service quality scores (Duncan and Elliott, 2004).

Curry and Penman (2004) reported that service quality is inevitable for differentiation to compete in the banking sector. They suggested that the right service could retain the customers for long-term benefits. So, Banks should maintain the level of services by proper allocation of resources to meet customer requirements. Findings indicated that financial institutions require reasonable procedures to evaluate the overall satisfaction of their customers. However, understanding of changing needs and expectations of customers is an essential prerequisite for the financial sector (Joseph *et al.* 2005). Jabnoun and Khalifa (2005) proposed and tested a measure of service quality to compare conventional and Islamic banks in UAE. The study found that four dimensions were significant in case of conventional banks. While only personal skill and values were crucial in determining service quality in Islamic banks. It is found that bank-customer relationship quality is evident between satisfied and dissatisfied customers. Both types of customers have clearly distinctive feelings regarding their service experience (Nelson and Chan, 2005). Al-Hawari and Ward (2006) found that customer satisfaction plays an inter-mediator role in the relationship between service quality and financial performance of the banks. In another study, overall customer satisfaction was investigated in Malaysian banking industry by collecting data from 220 customers of 15 retail banks. It was found that overall customer satisfaction is one of the key determinants of relationship quality (Nelson, 2006). It is suggested that bank should start service quality improvement programs to enhance customer satisfaction and customer loyalty (Razak *et al.*, 2007). On the basis of existing literature, this study examines the perception of bank customers regarding service quality and its impact on customer satisfaction in Pakistani banking sector, we test the following hypotheses.

H1: There will be positive relationships between service quality and customer satisfaction regarding Islamic banks in Pakistan.

H2: There will be positive relationships between service quality and customer satisfaction regarding Conventional banks in Pakistan.

3. Method of the Study

This study investigates satisfaction level of bank customers regarding products offered by Islamic and conventional banks in Pakistan. The population of the study consists of the customers of Islamic banks and conventional banks operating in Pakistan. A sample of 720 respondents is selected for this study by using stratified random sampling. The stratification has been done based on the nature of bank i.e. Islamic bank or conventional bank. From each group of bank, customers were selected randomly to assess their responses. A structured questionnaire was developed to record their responses. From each group of bank (Islamic bank or conventional bank), customers were approached to collect data by self-administrated questionnaires. The study also adopted "personal contact" approach i.e. respondents were approached personally. The researchers explained the questionnaire and the objective of survey by telling its purpose, the meaning of the items and what is expected from the respondents. Following Banks were included in the study that is listed in table 1.

Conducting a comprehensive literature review and consulting with bank managers, professionals and customers enabled the researchers to modify and refine the research instrument in Pakistani environment. The researchers used structured questionnaire in English to collect data from customers of IB and CB. Customers' responses regarding service quality were collected by a modified version of SERVQUAL model developed by Parasuraman et al. (1988, 1991). It contains 22 items and divided into five dimensions i.e. tangibility, reliability, responsiveness, assurance and empathy. Each item is assessed by a seven point Likert scale as it stands for 1 = strongly disagree to 7 = strongly agree. Customer satisfaction was judged by a modified version of research instrument applied by Sureshchander *et al.* (2002). It consisted of 29 items that were classified into five dimensions i.e. core service or service product; human elements of service delivery; systematization of service delivery (non-human element); tangible of service (servicescapes) and social responsibility. Customers were asked to give their feelings of satisfaction related to their banking experiences. Customers' responses were evaluated on a seven point Likert scale ranging from 1 (reflects very high dissatisfaction) to 7 (reflects very high satisfaction) with respect to all 29 items. The data were collected from the respondents residing in the 10 major cities of Pakistan i.e. Islamabad, Rawalpindi, Lahore, Karachi, Gujranwala, Sargodha, Multan, Sialkot, Gujrat, and Faisalabad. The researchers selected the most populous cities that represent the approximately 20% of total population of the Pakistan (World Gazette, 2009). A total of 1000 questionnaires were distributed among respondents to gather their responses. There were 720 completed and useable questionnaires available for data analysis. The response rate is 72% that is reasonable to perform statistical analysis by using SPSS 15.0 version.

4. Results and Discussion

Descriptive statistics are used to have a snapshot of demographic characteristics of the respondents. While Pearson correlation and regression test is applied to examine the relationship between service quality and customer satisfaction in the banking sector of Pakistan. Demographics of the respondents reflect that male customers are greater than female customers. In case of IB 79% are male customers and 21% of the sample is represented by female customers. While the CB reflects that 77% respondent are male and 23% are female. Male customers are more inclined towards IB as compared to CB but female customers prefer CB as compared to IB. It is consistent with the literature as men and women are differentiated due to role and perception in the society (Woldie and Adersua, 2004). Social, cultural and religious factors also influence the banking activities. Men are responsible for financial activities outside the home while female performs domestic duties inside the home (Obbe, 1980). The distribution of customers according to age reflects that young and mature people (25-34) are more interested to interact with IB while young people (18-24 years) are inclined towards CB. It is found that the majority of primary bank customers are male between 20 to 55 years old in Nigeria (Ojo, 1994). While most of the customers of Islamic banks fall in the age group of 25-35 years (Khan, Hassan and Shahid, 2008).

A summary of relationship between service quality and customer satisfaction is shown in table 2. Table 2 shows the relationship between IBSQL and IBCS. It is found that there is strong positive relationship ($r = 0.8640$) between IBSQL and IBCS. It supported the hypothesis that service quality is positively related to customer satisfaction in Islamic banks working in Pakistan. It is consistent with the literature as it is reported that there is a positive relationship between service quality and customer satisfaction (Razak, Chong and Lin, 2007). Similarly, findings reveal that there is a strong positive correlation ($r = 0.777$) between CBSQL and CBCS. It supported the hypothesis that service quality is positively related to customer satisfaction in conventional banks working in Pakistan. The results reflect that the service quality leads to greater satisfaction among bank customers. It is found that there is positive relationship between service quality and customer satisfaction in Pakistan (Jamal and Naseer, 2003). It is reported that the meeting of customers' expectation is crucial to increase customers' satisfaction by delivery of better quality services (Gao, Jia and Zhao, 2006). However, results indicate that service quality offered by Islamic banks leads to greater satisfaction among Islamic bank customer as compared to customer of conventional bank.

Table 3 shows the results of IBSQL-IBCS model. The coefficient of determination is 0.745 that indicates the goodness of the model. There is highly significant linear relationship (i.e. $p = 0.000$) between service quality and customer satisfaction in Islamic bank. F-statistics (210.595) shows that variation (influence) of Independent Variable (IBSQL) is appropriately explained in the dependent variable (IBCS). The estimated regression model is $IBCS = 0.739 + 0.854 (IBSQL)$. It indicates that service quality has significant ($p < 0.005$) impact on customer satisfaction in Islamic banks. Table 4 represents the results of CBSQL-CBCS model. The coefficient of determination is 0.604 that indicates the goodness of the model. It shows significant linear relationship (i.e. $p = 0.000$) between service quality and customer satisfaction in conventional banks. F-statistics (545.714) reflects that variation (influence) of Independent Variable (CBSQL) is appropriately explained in the dependent variable (CBCS). The estimated regression model is $CBCS = 1.174 + 0.756 (CBSQL)$. It reflects that service quality has significant ($p < 0.005$) impact on customer satisfaction in conventional banks.

The results show that male customers are greater than female customers that used products/services of selected banks working in Pakistan. It is consistent with literature as men and women bank customers could be differentiated due to social, cultural, and religious factors. It is evident from previous research that male customers perform more banking

activities than female customers (Obbe, 1980; Alsop, 1984; Woldie and Adersua, 2004). Similarly, the most of the customers fall in the age group of 25-34 years in case of IB and 18-24 year in case of CB. It is in line with literature, it is reported that the most of the bank customers dealing with Islamic banks fall in the group of 25-35 years besides education level and income group (Khan, Hassan and Shahid, 2008).

There is strong positive relationship between IBSQL and IBCS ($r=0.846$). It is in line with previous research that there is strong positive relationship between service quality and customer satisfaction in Pakistan (Jamal and Naseer, 2003). Similarly, it is found that there is strong positive relationship between CBSQL and CBCS ($r=0.777$). Furthermore, the relationship between service quality and customer satisfaction is stronger in Islamic banks as compared to Conventional banks in Pakistan. The results are consistent with the literature, as a strong relationship is reported between service quality and customer satisfaction regarding products offered by Islamic banks (Metawa and Almossawi, 1998). The findings supported the hypotheses and null hypotheses are accepted due to positive relationship between selected variables. The results also supported the previous studies (Athanasopoulos *et al.*, 2001; Jabnoun and Khalifa, 2005; Nelson, 2006). Similarly, Iglesias and Guille'n (2004) reported a direct and positive relationship between service quality and satisfaction level of customers regarding their banking experiences. There are a number of studies that reported a positive relationship between service quality and customer satisfaction in the banking sector (Levesque and McDougall, 1996; Yavas *et al.*, 1997; Bahia and Nantel, 2000; Oppewal and Vriens, 2000; Arasli *et al.*, 2005; Al-Hawari and Ward, 2006; Tahir and Abu Bakar, 2007).

5. Summary and Concluding Remarks

Financial services industry especially banking sector witnessed unprecedented growth during the last few years in every part of the world. A large number of new banks have started operations in Pakistan at the beginning of 21st century. Similarly, inception of Islamic banking operations in 2002 opened new avenues to exploit the opportunities. Islamic banks are getting popularity due to interest free products, risk sharing activities and strong ties with the religion. Islamic banks work as welfare organization to promote trade and economic activities in line with the instructions of Islam to provide a number of interest-free products/service. The existence of Islamic and conventional banks in Pakistan created stiff competition among banks to attract and retain greater number of customers by the provision of quality services. This study examined the relationship between service quality and customer satisfaction by comparing Islamic and conventional banks operating in Pakistan. A structured questionnaire is used to collect data regarding service quality and customer satisfaction. The researchers collected data from 720 respondents using products/services of Islamic bank and conventional by stratified random sampling. The responses of bank customers were analyzed by Pearson's Correlation and regression techniques using SPSS 15.0 version. The results show that there is strong direct and positive relationship between service quality and customer satisfaction. The magnitude of relationship between service quality and customer satisfaction is greater in Islamic banks as compared to conventional banks. The findings supported the hypotheses being consistent with the previous literature (Sureshchnader *et al.* 2002; Jamal, 2004; Arasli *et al.*, 2005; Al-Hawari and Ward, 2006; Razak *et al.*, 2007). Bankers can attract more customers by launching effective marketing campaigns to enhance awareness towards quality of their services. It helps to enhance the understanding of bank customers about service quality regarding Islamic and conventional banks in Pakistan. Bank managers should take quality initiatives to improve their products by considering demographic characteristics of the customers.

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Table 1.

Islamic Banks	Conventional Banks
Meezan Islamic Bank	National Bank of Pakistan
Dubai Islamic Bank Limited	Habib Bank Limited Pakistan
Albaraka Islamic Bank Limited	MCB Bank Limited
Bank Islami Pakistan Limited	United Bank Limited
First Dawood Islamic Bank Limited	Askari Bank Limited
Qatar Islamic Bank Limited	Bank Alfalah Limited

Table 2. Summary of Correlation between Selected Variables

Variables	Pearson Correlation	Sig. (2-tailed)
IBSQL and IBCS	0.864**	0.000
SBSQL and CBCS	0.777**	0.000

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

Table 3. Summary of the IBSQL-IBCS Linear Regression Model (based on SPSS results)

(Coefficients, Standard Error in Parenthesis, t-values in Brackets & p-values in italics)

Constant	IBSQL	R ²	F-Statistics
0.739	0.854	0.746	210.595
(0.139)	(0.026)		
[5.311]	[32.437]		
<i>0.000</i>	<i>0.000</i>		<i>0.000</i>

Predictor (Constant), IBSQL (Islamic Bank Service Quality)

Dependent Variable: IBCS (Islamic Bank Customer Satisfaction)

Table 4. Summary of the CBSQL-CBCS Linear Regression Model (based on SPSS results)

(Coefficients, Standard Error in Parenthesis, t-values in Brackets and p-values in italics)

Constant	CBSQL	R ²	F-Statistics
1.174	0.756	0.604	545.714
(0.163)	(0.032)		
[7.188]	[23.361]		
<i>0.000</i>	<i>0.000</i>		<i>0.000</i>

Predictor (Constant), CBSQL (Conventional Bank Service Quality)

Dependent Variable: CBCS (Conventional Bank Customer Satisfaction)



A Time Series Analysis of Foreign Direct Investment and Economic Growth: A Case Study of Nepal

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Abstract

This study has been carried out to find out the linkage between Foreign Direct Investment (FDI) and economic growth in terms of Gross Domestic Product Growth Rate (GDPGR) for Nepal over the period 1980-2006; using the Granger Causality test, Unit root test and Co-integration test. The results show that there exit a long term relationship between the variable and direction of causality runs from FDI to GDPGR.

Keywords: FDI, GDPGR, Regression, Co-integration, Unit root test, Causality

1. Introduction

The ultimate goal of development is to reduce poverty and improve standard of living. For this to happen, sustainable economic growth and investment in people are necessary. However, given the prevalence of resources constraint, poorer countries like Nepal cannot achieve this goal by itself. There is a need that the poorer countries should seek support from donors in the form of aid for financing project and programmers in needy areas.

Today, Nepal is one of the most liberalized countries in the South Asian region. However, growth performance has been very poor in recent years. In this context, a closer examination of the linkages between foreign direct investment and economic growth is critically important from a policy point of view. There are highly liberal Foreign Direct Investment (FDI) and Gross Domestic Product (GDP)-related policies supplemented by important Acts. In the aftermath of liberalization that began in the early 1990s, FDI increased substantially. However, that could not be sustained for long. After becoming a World Trade Organization (WTO) member in 2004, Nepal has been pursuing further opening up and liberalization policies on the FDI. Nepal is also a member of the South Asian Preferential Trade Arrangement (SAPTA) and the Bay of Bengal Initiative for Multi-Scrotal Technical and Economic Cooperation-Free Trade Area (BIMST-EC FTA). New initiatives on FDI have been taken with the aim of enhancing sustained growth and reducing poverty.

During 1980-1989, FDI flows to Nepal were minimal or even negative and there was a distinct acceleration during the 1990s and peaked at \$23 million in 1997 because of liberal trade policy (treaty with India 1996; which allowed India to import goods from Nepal free of import duty and quantitative restrictions if the goods were manufactured in Nepal and liberalization of the exchange rate regime)

The economic performance of Nepal was exceptionally very weak even registering as negative growth rate in some year leading a major negative impact on the Government's fiscal position. Despite a series of ambitious development plans and assistance from international aid agencies, Nepal's economic growth has barely kept pace with its expanding population.

The main objective of this study is to test the relationship between FDI inflows and economic growth in terms of GDPGR and to find the direction of linkage between them.

2. Literature Review

According to Gorg and Greenaway foreign direct investment has negative rather than positive spillovers in transition economies. Findlay postulates that FDI increases the rate of technological progress in the host country through a "contagion" effect from the more advanced technology, management practices etc. used by the foreign firms UNCTD

(1999) finds that the FDI has either a positive or negative impact on output depending on the variables that are entered alongside it in the test Equation

De Gregorio shows, in a panel data of 12 Latin American countries, which FDI is about three times more efficient than domestic investment Using time series data at the industry level for US firms during the early 1970's .M.S. Noorzoy 1980, concluded that a positive relationship prevailed between investment at home and abroad. On the other hand, more recent studies have shown a negative relationship to exist between FDI and home-country investments' Bengoa and Sanchez-Robles show that positively correlated with economic growth, but host countries require human capital, economic stability and liberalized markets in order to benefit from long term FDI inflows. As summarized in Balasuramanyam, Salisu and Spasford and De Mello; FDI is a capital bundle of capital stock, know-how and technology and can augment the existing stock of knowledge in the recipient economy through labor training skill acquisition and diffusion and the introduction of alternative management practices and organizational arrangement. Unfortunately, the impact of FDI on growth remains more contentious in empirical than in theoretical studies. While some studies observe a positive impact of FDI in economic growth, other detects a negative relationship between these two variables. The controversy has arisen partially due to data insufficiency in either cross country and time series investigation Durham fails to identify a positive relationship between FDI and Economic growth, but instead suggest that effects of FDI are contingent on the" absorptive capability of host countries .According to the findings of Choe J.I. (2003), causality between economic growth and FDI runs in either direction but with a tendency towards growth causing FDI; there is little evidence that FDI causes host country growth

3. Analytical Framework and Methodology

The data used in this study is aggregate annual time series at constant prices for Gross Domestic Product, GDP (annual growth) and total net inflows for foreign direct investment, FDI as a percentage of GDP (FDI ratio) covering the period of 1980-2006 in 27 pairs of observations. The data was extracted from the International Monetary Fund, World economic Outlook and World Investment Report, Fact book of various years and Econ- stat.

In this study, two methods are used. The statistical methods used are; the Ordinary Least Squares Method (OLS) and the Granger causality test. Before using the Granger causality test we performed some of the other test like unit root test and co-integration test.

For this study, Statistical Package for Social Sciences (SPSS) and E-views Microsoft package has been applied. Ordinary Least Square test was run using SPSS Microsoft regression package with GDPGR as a dependent variable while FDI as an independent. Then calculated F value is then compared to the critical value or level of significance. If the calculated F value is greater than the critical F value at a chosen level of significance, the null hypothesis is rejected; otherwise accepted.

Similarly; Granger Causality Test was run using E-views Microsoft package. But before using the Granger Causality Test, nature of the data has been studied using unit root test and Co-integration test using same Microsoft package. Then with maximal order of integration ($d_{\max} = 1$) and optimal lag ($k = 1, 2, 3$), Granger Causality Test was run using E-views Microsoft package. Then calculated F value is then compared to the critical value or level of significance. If the calculated F value is greater than the critical F value at a chosen level of significance, the null hypothesis is rejected; otherwise accepted.

Unit root test: The objective of the unit root test is to empirically examine whether a series contains a unit root or not. If the series contains a unit root, this means that the series is non-stationary. Otherwise, the series will be categorized as stationary.

Co-integration test: Co-integration test is used to find out the long-term relation bet the variables.

Ordinary least square method: Here we will assume the hypothesis that there is no relationship between Foreign Direct Investment (FDI) and Economic Growth in terms of GDP (GDPGR). To confirm about our hypothesis let us consider, linear regression Equation

$$GDPGR_i = \alpha_i + \beta_i FDI_i + \varepsilon_i \quad 1$$

where, $GDPGR_i$ and FDI_i shows the Gross Domestic Product annual growth rate and Foreign Direct Investment at a particular time respectively while ε_i represents the "noise" or error term; α_i and β_i represent the slope and coefficient of regression. The coefficient of regression, β_i indicates how a unit change in the independent variable (foreign direct investment) affects the dependent variable (gross domestic product). The error, ε_i is incorporated in the equation to cater for other factors that may influence GDP. The validity or strength of the Ordinary Least Squares method depends on the accuracy of assumptions. In this study, the Gauss-Markov assumptions are used and they include; that the dependent and independent variables (GDP and FDI) are linearly co-related, the estimators (α , β) are unbiased with an expected value of zero i.e., $E(\varepsilon_i) = 0$, which implies that on average the errors cancel out each other. The procedure involves

specifying the dependent and independent variables; in this case, GDP is the dependent variable while FDI is the independent variable

But it depends on the assumptions and that the results of the methods can be adversely affected by outliers. In addition, whereas the Ordinary Least squares regression analysis can establish the dependence of either GDP on FDI or vice versa; this does not necessarily imply direction of causation. Stuart Kendal noted that “a statistical relationship however strong and however suggestive, can never establish causal connection.” Thus, in this study, another method, the Granger causality test, is used to further test for the direction of causality.

Granger causality test: FDI and GDPGR are, in fact, interlinked and co-related through various channels. There is no theoretical or empirical evidence that could conclusively indicate sequencing from either direction. For this reason, the Granger Causality test was carried out on FDI and GDPGR.

Following Seabra and Flach, Granger test is implemented by running the following regression:

$$\ln GDPGR_t = \gamma_0 + \sum_{i=1}^{k+d} \alpha_{1i} \ln GDPGR_{t-i} + \sum_{j=1}^{k+d} \beta_{1j} \ln FDI_{t-j} + \varepsilon_{1t} \quad 2$$

$$\ln FDI_t = \gamma_0 + \sum_{i=1}^{k+d} \alpha_{2i} \ln FDI_{t-i} + \sum_{j=1}^{k+d} \beta_{2j} \ln GDPGR_{t-j} + \varepsilon_{2t} \quad 3$$

where, $\ln GDPGR$ and $\ln FDI$ are, respectively, the natural logarithm of GDPGR growth and foreign direct investment FDI as a percentage of GDP. k is the optimal lag order, d is the maximal order of integration of the variables in the system and ε_1 and ε_2 are error terms.

Using maximal order of integration ($d_{\max} = 1$) and optimal lag ($k = 1, 2, 3$) in Eq. 2 and 3:

$$\ln GDPGR_t = \gamma_0 + \sum_{i=1}^{k+1} \alpha_{1i} \ln GDPGR_{t-i} + \sum_{j=1}^{k+1} \beta_{1j} \ln FDI_{t-j} + \varepsilon_{1t} \quad 4$$

$$\ln FDI_t = \gamma_0 + \sum_{i=1}^{k+1} \alpha_{2i} \ln FDI_{t-i} + \sum_{j=1}^{k+1} \beta_{2j} \ln GDPGR_{t-j} + \varepsilon_{2t} \quad 5$$

Here, we analyze our research with lag values 2, 3 and 4 using the Granger test.

4. Empirical results

In the Ordinary Least Square Method, we reject the hypothesis that there is no relationship between the variable and the results of the Ordinary Least Squares Regression are summarized in Table 1. Similarly, the results of the Unit Root test, Co-Integration Test and Granger Causality test are summarized in Table 2, Table 3 and Table 4 respectively.

5. Result and Discussion

The Ordinary Least Square Method indicates that there is a positive relationship between FDI and GDP and the Unit Root Test indicates that the data are non-stationary in level but stationary in first difference so these data are integrated in order (1). Similarly, the Johansen Co-Integration test indicates that the null hypothesis that there is no co-integration is rejected for a rank of zero at 5% level of significance. This means that there exists a long-run relationship between the variables. And the Granger Causality Test indicates that GDPGR does not Granger Cause FDI at all whereas FDI Granger Causes GDPGR for the lag value 5. That means the Granger Causality Test shows that a causal effect ceases to exist after 4 years and causality runs from FDI to GDP.

6. Conclusion

There was no direct way of identifying the linkage between FDI and GDPGR. Unavailability of necessary data was an additional constraint. There were no official data required for research. Moreover, getting a quick response from the respondents involved in FDI activities was also a difficult task. Therefore, the research had to be based on secondary data; which may not provide a representative picture of the overall situation of FDI and GDPGR in Nepal.

The empirical analysis on the basis of the Ordinary Least Square Method suggests that there is a weak positive relationship between the variables and the Unit Root Test suggested that the variables used in this study are non-stationary in their levels. Similarly, the Johansen Co-Integration test suggests that there is a long-run equilibrium relationship among these variables and the Granger Causality Test suggests that causality runs from Foreign Direct Investment to Gross Domestic

Product Growth Rate after four year. Then from above analysis we may conclude that Nepal's Gross Domestic Product growth Rate especially does not depend up on FDI.

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Table 1. Ordinary least square

Variable	Coefficient	t-value	R ²	p-value	F-statistics
			0.113		3.192
GDP/alpha	3.184	4.992		0.000	
FDI/beta	0.108	1.787		0.086	

H₀: There is no relationship between the variables; H₁: There is relationship between the variables

Table 2. Unit root test

Variables in levels	Variables in		ADF value
	ADF value	first difference	
Ln (GDPGR)	-4.938894	DLn (GDPGR)	-7.148367*
Ln (FDI)	-1.322019	DLn (FDI)	-7.816663*

Ho: unit root; H1: trend stationary, * significance at 1 and 5 % level of significance

Table 3. Co-integration test

Null hypothesis	Max. eigen value	5% critical value	Trace statistics	5% critical value
None*	27.33121	15.89210	32.68519	20.26184
At most one	5.353985	9.164546	5.353985	9.164546

Ho: has no co-integration; H1: has co-integration

Table 4. Granger causality test

Null hypothesis	lag	Obs.	F-statistics	Probability	Decision
GDPGR does not granger cause FDI	2	25*	0.46045	0.63753	Accept
	3	24*	0.51554	0.67710	Accept
	4	23*	1.17011	0.36570	Accept
	5	22*	0.99579	0.46352	Accept
FDI does not granger cause GDPGR	2	25*	0.26828	0.76740	Accept
	3	24*	0.09408	0.96288	Accept
	4	23*	1.06517	0.40999	Accept
	5	22*	3.66647	0.03381	Reject**

*Obs.after lag; ** Reject at 5% level of significance



Marketing of Sabai Grass in Socio-Economic Development of Tribals in Mayurbhanj District, Orissa (India)

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Abstract

Socio-Economic development involves an increase in the material well being of the society. In a country like India, about 80 per cent of the population living in rural area and around 70 per cent of the population dependent on agriculture. Mayurbhanj is one of the richest districts in Orissa so far as forest and mineral wealth are concerned. Sabai grass industry plays a predominant role in shaping the economic destiny of the rural people in the district. The objective of this paper is to analyse the innovative schemes and the role of Sabai grass industry for the economic developments of growers of the district; Results show that the tribal of Mayurbhanj district generates the Sabai grass product marketing demand in national and international market so as to develop their economic status.

Keywords: Marketing Information System, Multiple Regression, ANOVA, Discriminant analysis, Rural Economic Development

1. Introduction

Mayurbhanj is said to be a land of tribals. Out of 62 tribal communities of Orissa, 45 communities are found in Mayurbhanj alone. The per capita income of Orissa as measured by net state domestic agricultural and forest product per head of population, was about 20 percent lower than the all India per capita income in 2008. It remained as much as 43 percent below that of national average in 2007-08. Thus it was intended to make all empirical investigation of rural income in Mayurbhanj district of Orissa in India and to assess the impact of agricultural and forest product marketing programmes initiated by the Government of Orissa over the years. In spite of rich natural and human resources it is a poor district more than 48 per cent of the rural area people live below the poverty line. Though majority of population are dependent on primary sector, the agriculture is undeveloped because the district is lacking in irrigation facilities. In agricultural sector there is hardly any marketable surplus production in the district except for Sabai grass. (Mohapatra P.C., Economic Dev. of Tribal.)

Sabai grass is practically considered to be “The Money Plant” which ensures cash receipt through out the year. The industry is associated with various activities of raising production of grass and processing of consumer goods such as ropes, mats, carpets, sofa sets, wall hangings and other sophisticated fashionable articles. The Sabai grass industry has tremendous export potential. Artistic designing Sabai products are very popular in foreign countries which earn precious foreign exchange for the country. The industry helps in the growth of entrepreneurship amongst the villagers. This ensures economic development through modernization and innovation of the industrial culture in rural areas.

2. Objectives

The main objectives of this paper are to (i) review the present growth of Sabai grass industry scenario of Orissa in comparison to other states in India ;(ii) find out the innovative marketing schemes and analyse the role of Sabai grass industry for the economic developments of the Mayurbhanj district; (iii) examine the various State Government plans, programmes and their implementation in the agricultural development of Sabai grass;(iv) identify various marketing problems faced by the Sabai grass industries and to suggest suitable measures for solving them;(v) explore the

involvement of existing agencies (NGO, Bank and Co-operative Society) for development by the way of education, training and their support in financing for improving the Sabai grass products and processes.

3. Data Sources

Mayurbhanj is a tribal dominated district having 26 blocks. The villages are selected on the basis of agricultural production of Sabai grass. The data are collected from the field sources by direct observation and interview to the persons associated with Sabai grass industry such as growers, processors, rope makers, entrepreneurs, traders and other intermediaries for the year 2007-2008. The questions were related to information regarding the size of the households and characteristic of household members such as age, sex, education, economic status & activities, income source and expenditure pattern, landed property, Government and NGOs support, marketing, packaging and transportation facility available etc.

A house to house survey were conducted to find out the economic development with the help of the questionnaire from 210 households in 18 selected villages of Mayurbhanj district of Orissa in India .

The secondary data were collected from various published sources of the Central and State Government such as the Census of India volumes, statistical abstract, selected socio-economic statistics, per capita Net State Domestic Product of States, Economic Survey, Central Government Publications, District Statistical Hand books and Indian Council of Marketing Research journals from 1999 to 2008 and have been used in this study.

4. Methodology

The data analysis is undertaken mostly with the help of marketing dynamics and computer based statistical analysis. The marketing dynamics includes: (1) the planning of organization for marketing of Sabai grass products;(2) diagnosis of the area sample formation in the Mayurbhanj district;(3) participative analysis of market chains;(4) creating and Implementing the concept of Sabai grass enterprise option;(5) identification of supply, demand and gaps in the local business development services by designing the strategy to strength the market decision and communication as shown in the model for enterprise development in the sample area of Mayurbhanj district.

A marketing model based information system is a continuing and interacting structure of people, equipment, and procedures to collect, sort, analyze, evaluate and distribute pertinent, timely and accurate information for use by marketing decision makers in improve their marketing planning, implementation and control.

Insert Figure 1 here

The marketing model is extensively used to determine the Sabai grass product marketing demand in national and international market so as to develop the economic status of the cultivators. (Singh,Katar., "Sabaigrass processing and marketing").

The Computer based statistical analysis is carried out to identify the various economic factors impacting the Sabai grass production by applying the various statistical tools like Regression analysis and Analysis of Variance (ANOVA).

5. Analysis

Most of the Sabai Grass plantations are located in the Revenue Sub-division of Baripada and Kaptipada of Mayurbhanj District. Roughly the total area under Sabai Grass in district at present is about 22758 hectares Sabai Grass was in cultivation long since in the district, however, substantial extension of area was achieved during the 8th, 9th and 10th plan period. Up to the end of 7th plan the total area under Sabai Grass was estimated to be 9218 hecets.

Sabai Grass is cultivated mostly by poor marginal and small farmers on their degraded lands. It is also collected by them as well as by the landless poor from the common pool village lands where it grows naturally. The per acre cost of production of Sabai Grass in the initial year works to around Rs. 2, 200. The cost for the second year is roughly Rs.650 and from the third year to ten year Rs.1000 per year. The produce is finally harvested in the 11th and 12th years. In the last two years, no maintenance is required and hence no maintenance costs. Thus the total cost of production over a period of 12 year works out Rs.11500 per acre. (Barik."Performance of Sabai .," IJASVol. 68).

The returns are realized from the sale of dry Sabai Grass which has a good market in the Mayurbhanj district. The total yield per acre over a period of 12 years was about 96 quintals (qt). The gross returns from the sale of Sabai Grass were estimated at the 2008 market price of Rs.500 per quintal. The gross returns over a period of 12 years were estimated to be Rs.48, 000 per acre and net return to be Rs.35, 500. The average net return per acre per annum over the 12 year period was Rs.3041. This represents a significant income from (land) resources that is degraded and whose opportunity cost is almost zero.

Sabai Grass of the Mayurbhanj district of Orissa in India is of good quality and has been accepted widely in the Indian market. Most of the traders prefer the Ropes made out of the Sabai Grass of this region. A large number of people are involved in this cottage industry (harvesting and rope making) or as a trader sending the produce (ropes) to the urban areas, both near and distant.

The total harvesting area of the Mayurbhanj district is 4.47 lakh hector of which 43.70 percent is highland with very poor water retention capacity. The highlands are generally not suitable for harvesting of crops or orchards. But they are suitable for harvesting of Sabai Grass. The agro climatic conditions obtaining in the district are also suitable for Sabai Grass production. According to general estimate the total production of Sabai grass in Mayurbhanj district of the state is about 15000 to 20000 metric ton/per annum of which some 9000 to 12000 metric ton is converted into ropes and the remainder is used for other purposes. At an average/minimum price of Rs.10 per kg of ropes and Rs.5 per kg of grass the total value of the produce works to Rs.16 crore per annum which is quite a significant contribution to the economy of the Mayurbhanj district.

(a) Marketing Analysis

The marketing of Sabai Grass in Mayurbhanj district is analysed with the following points taken into consideration that, method of Marketing, Types of Market Place, Setting up Sabai grass enterprise, Marketing Agencies, Cooperative Societies, Market Yard Brokers, Price, Fixation of Price, Distress Sale, Problems of Marketing, Transportation, Storage, Supply of Agricultural Inputs Marketing Information and Role of Government in agricultural marketing.

Traditionally farmers have made decisions on what they should grow, what they should keep for home consumption, and what they are able to sell at the marketplace. In former times sales would have cantered on local markets and it would have been rare for a farmer to venture far a field in search of new market opportunities or to consider developing new, higher value to consider developing new, higher value products. This traditional form of agriculture starts to change as communities and nations begin to modernize. Through processes of urbanization, generally fostered by industrialization, demand for Sabai grass product from urban dwellers becomes dependent upon more sophisticated arrangements that require aggregation of farm produce, transportation, storage, wholesaling, processing and retailing. As cities expand, supply systems develop into increasingly longer and more complex market chains with many market channels and specialization of roles in the market chain based on product type, levels of added value and market segmentation.

Farmers must also provide products and services at a price that is competitive with rival suppliers and there is increasing social pressure to ensure that production systems are environmentally sustainable. To achieve desired levels of competitiveness, farmers and their service providers need to build strategies that incorporate the following elements:

- A clear market orientation, producing the right product for the right buyer at the right time and price.
- The establishment of production systems that makes efficient use of existing financial human and natural resources.
- The incorporation of necessary post harvest handling and processing techniques.
- Appropriate business and marketing skills and organizational schemes which lead to economies of scale by reducing costs and increasing marketable volumes of produce.
- Improved links among market chain actors and flows of both market based information and new production technologies.

The NTFP collection and marketing both private and collective domain are equally important. If one suppresses the other, it leads to exploitation of marginalized, inefficient management and non-realization of desired goal. In the first case, no importance was given to collective domain. As a result individuals continued to be exploited in one or other form in spite of corrective measures taken by government.

In the second case on Sabai grass cooperatives, collective domains did not ensure private growth through interdependent accountability. It only aimed at solving marketing problems. This was the case of collective suppressing private domain to a great or small extent. As a result individual producers became less accountable to the cooperatives. The Market value of Sabai rope at present is Rs.13.00 to Rs.16.00 per Kg. as per quality. The Sabai grass from the Forest Corporation and Soil Conservation department Depot is available at Rs.1150/qtl., compared to the rate of Rs.1300 to Rs.1700/quintal in the open market. So the regional income is estimated to be Rs.8.12 to 6.5 lakhs per week, depending on the seasons.

Therefore an attempt has been made to appreciate the importance of both private and collective domain through mutually interdependent growth sustenance cycle. Here individuals are encouraged to enhance their living standard through skill up gradation. Commons facilitate the individual growth and ensure most competitive market price. This makes private and common dependent on each other without intruding into others domain or suppressing individual's enterprising ability. However, as system it is of recent origin, one needs to wait and watch how it works in the long run.

The major functions are:

- Attending exhibitions at state, national and international level with rural ethnic products like Sabai grass, Jute products of Mayurbhanj.
- Organising Pallishree Mela and District Level Exhibition.

- Assisting DRDA in implementing SGSY scheme from planning to implementation stage.
- Preparation of model project report based on cluster approach under SGSY scheme.
- Formulation of unit cost under SGSY for individual and group finance.
- Developing two key products covering all aspects of micro enterprise right from market identification, technology transfer, improvement of productivity and quality, organizing skill development training, bank credit linkage and market tie-up.
- Organising training/workshop on related topics design development, product development, micro enterprise development etc for block level functionaries, bankers, NGOs, Integrated Community Development Society (ICDS) and for Swarojgaris.

(b) Statistical Analysis

The analysis reveals that the 1.0% of the respondents Sabai grass product are purchased by consumers, 3.0% by both consumers and middlemen, 15.0% by Government organization, 31.5% by non-government organization and 47.5% by co-operative enterprises. There are nearly 8000 SHG that have been formed over the years. Sabai Grass Development Corporation was set up in 1994 to provide improved varieties of Sabai seeds and implements to women engaged in cultivation and trade. The bank caters to the farm credit establishment of the farmers through its 15 branches and 52 affiliated LAMPS.

An analysis has been made to know the effect and significant contribution of indicators towards income from Sabai grass for economic development in the study area. For multiple regression analysis Independent variables taken are

In most variables the calculated value of the coefficient (Beta) in the regression equation is either negative or insignificantly different from zero.

$$Y = f(X_1 X_2 X_3 X_4 X_5 X_6 X_7 X_8),$$

Where Y = Income from Sabai grass and Total Income

Sale - X_1 , Market Trend - X_2

Land holding - X_3 , Transportation - X_4

Age - X_5 , Family size - X_6

Education - X_7 , Occupation - X_8

The form of equation fitted for production is given below linear model

$$Y = C_0 + C_1X_1 + C_2X_2 + C_3X_3 + C_4X_4 + C_5X_5 + C_6X_6 + C_7X_7 + C_8X_8$$

It shows that with increase in income from Sabai grass, the role of transportation (X_4) followed by sale (X_1) increases. Therefore the factor transportation (X_4) and sale (X_1) have more effect on the dependable variable (Y) i.e. income from Sabai grass than other factors. It is found that transportation and sale plays important role to increase income from Sabai grass in the study area. The factors like Market trend (X_2), Land holding (X_3), Age (X_5), Education (X_7) and Occupation (X_8) have negative impact on income from Sabai grass. It is also observed that the factor family size (X_6) has positive impact on income from Sabai grass.

The correlation between a set of obtained scores and same score obtained from the multiple regression equation is called coefficient of multiple correlation. It is designated by 'R'.

Karl Pearson's Coefficient of Correlation (R) =

$$\frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \cdot \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

X = given, or reduced values of the first variable

Y = given, or reduced value of the second variable, and

N = number of pairs of observations of X and Y.

The value of 'R' lies between ± 1 .

Thus the correlation between Income from Sabai grass and other eight independent factors is 0.586. It means that scores in income from Sabai grass predicted from a multiple regression equation containing independent factors $X_1, X_2, X_3, X_4, X_5, X_6, X_7$ & X_8 correlate 0.59 with scores obtained in dependent factor Income from Sabai grass(Y). Here R^2 is 0.343; this shows 34% of the total variance of dependent income from Sabai grass is associated with the independent factors.

The t-statistic for each C_i

$$t = \frac{\hat{C}_i - C_i}{S.E.(\hat{C}_i)}$$

which follows t-distribution with (n-1) degrees of freedom.

Thus, greater the value of t the stronger the evidence that C_i is statistically significant. Tabulated value of t-test for transportation (X_4) and sale (X_1) are more significant and have significant contribution towards income from Sabai grass.

The multiple correlations between Total Income and other eight independent factors is 0.562. It means that scores in Total income predicted from a multiple regression equation containing factors $X_1, X_2, X_3, X_4, X_5, X_6, X_7$ & X_8 correlate 0.56 with scores obtained in factor Total Income (Y). Here R^2 is 0.316; this shows 32% of the total variance of income from Sabai grass is associated with the independent factors.

Tabulated value of t-test shows that the Land holding (X_3) is more significant and has significant contribution towards Total Income in the study area.

Analysis of Variance test

Analysis of Variance (ANOVA) for the factors in case of Income from Sabai grass:

F-Statistics is computed as

$$F = \frac{\text{Mean sum of square of explained sum square}}{\text{Mean sum of square of residual sum square}} = \frac{\sum y_i^2 / k - 1}{\sum e_i^2 / n - k}$$

since our model consists of five explanatory variable

$$\text{so, } F = \frac{\sum y_i^2 / 4 - 1}{\sum e_i^2 / n - 4} = \frac{\hat{C}^2 \sum x_i^2}{\sum e_i^2 / n - 4}$$

The null hypothesis H_0 is $C_i = 0$. If calculated $F >$ tabulated F with (k-1) and (n-k) degrees of freedom with chosen level of significance, hence reject the null hypothesis and accept that the data is significant. If calculated $F <$ tabulated F , then accept the null hypothesis and conclude that data is not significant. (ANOVA Table-I)

Tabulated value of F-test at 5% level of significance for (8,209) degree of freedom = 1.9384 and tabulated value of F-test at 1% level of significance for (8,209) degree of freedom = 2.5113. In case of the above table only between the indicators (column) is significant. The calculated value is 156.2920. This shows calculated 'F' value is more than tabulated 'F' value both at 5% and 1% level of significance. (ANOVA Table-II)

Tabulated value of F-test at 5% level of significance for (8,209) degree of freedom = 1.9384 and tabulated value of F-test at 1% level of significance for (8,209) degree of freedom = 2.5113.

In case of the above table only between the indicators (column) is significant. The calculated value is 156.2920. This shows calculated 'F' value is more than tabulated 'F' value both at 5% and 1% level of significance. In order to know the effect of different factors, viz. (i) fertilizer consumption per hectre of gross cropped area in kgs of nutrients (ii) actual rainfall (in mm) received during the period of cropping (iii) area under Sabai grass crop in hectre a time series analysis has been carried out with the use of a multiple linear regression model. The analysis considers the relevant secondary data of Mayurbhanj District for a period of 5 years i.e. from 2003-04 to 2007-08 being collected for the season of Kharif and Rabi. The analysis has been made for Kharif (Autumn & Winter) season over a period of 5 years taking variable Y = Production in quintals, X_1 = Area in hectare, X_2 = fertilizer consumption per hectare of gross cropped in Kgs of nutrients, X_3 = Annual rainfall in mm. and also the analysis has been made for Rabi taking into consideration the above variables. It should be mentioned here that the data on fertilizer consumption have been collected in the form of total consumption of fertilizer per hectare of gross cropped area for each period of cropping i.e. Kharif and Rabi. The analysis was carried out with the total consumption of fertilizer.

Table -A shows linear form for kharif season. From the analysis, it is found that intercept value $C_0 = 80904.922$, area $C_1 = -454.962$, co-efficient of fertilizer consumption X_2 (C_2) = 11.246 and rainfall X_3 (C_3) = -11.101. Table-B

shows linear form for Rabi season, it is found that D-W statistic = 2.464 and $F = 2.850$. Further, it is found that the intercept value $C_0 = 5007.695$, HYV area $C_1 (X_1) = -57.489$, local area $C_2 (X_2) = 0.235$ and rainfall $C_3 (X_3) = 1.323$.

Tabulated value of F-test at 5% level of significance for (3, 5) degree of freedom = 5.4095 and tabulated value of F-test at 1% level of significance for (3,5) degree of freedom = 12.060. Similarly, tabulated value of t-test at 5% level of significance = 2.776 and for 1% level of significance = 4.604, where degree of freedom. = 4.

The Table-A (Linear form) shows the analysis for Kharif season.

Note: 1)The value given in () is the value of standard error and the value given in [] is the value of 't'. statistic.

- 2) * represents the significant of the co-efficient at 5% level of significance.
- 3) ** represents the significance of the co-efficient at 1% level of significance.

The Table-B(Linear form) shows the analysis for Rabi season.

Note: 1)The value given in () is the value of standard error and the value given in [] is the value of 't'. Statistic.

- 2) * represents the significant of the co-efficient at 5% level of significance.
- 3) ** represents the significance of the co-efficient at 1% level of significance.

From the analysis table-A, it is found that F-statistics is significant both at 5% and 1% level of significance, where tabulated value is more than calculated value and R^2 is more than 0.5 for the Sabai grass crop (Kharif season). It indicates strong relationship between dependant and independent variables. Here, the t-statistic for fertilizer is significant only at 5% level of significance and the corresponding regression co-efficient is significant. Also, the corresponding standard error is significant. It is observed that only in case of fertilizer the t-statistic tabulated value is close to calculated value at 5% level of significance which shows fertilizer only provides contribution to the production of Sabai grass. The use of Durbin-Watson d-statistics shows that no auto correlation is present.

From the table-B, it is observed that that calculated $F >$ tabulated F both at 5% and 1% level of significance. It indicates strong relationship between dependant and independent variables, which shows each variable, provides more or less contribution to the production of the Sabai grass. Here use of Durbin-Watson, d-statistics show that no autocorrelation is present.

For Kharif season fertilizer consumption have more contribution towards the production of Sabai grass, For Rabi season it is observed that all the variables have more or less impact on production of Sabai grass in the study area. Computation of Durbin-Watson, d-statistic shows that no autocorrelation is present.

Discriminant Analysis.

Discriminant analysis is a method of distinguishing between classes of objects. The values of various attributes of an object are measured and a rule (function) is applied that assigns a classification to that object. The discriminant function arrives at coefficients, which set the highest possible ratio. (Satpathy, M. D. & Sahoo, Bivariate Discriminant Vol. 1, No.2, PP 13-21).

The Table –C shows the Standardized Classification Discriminant Function Coefficients (As in case of Income from Sabai grass)

Discriminant analysis is useful for situations where one need to build a predictive model of group membership based on observed characteristics of each case. The procedure generates a discriminant function (or, for more than two groups, a set of discriminant functions) based on linear combinations of the predictor variables that provide the best discrimination between the groups. The functions are generated from a sample of cases for which group membership is known; the functions can then be applied to new cases with measurements for the predictor variables but unknown group membership. On average, people in family size & health play more roles for economic development in case of income from Sabai grass. A researcher wants to combine this information in a function to determine how well an individual can discriminate between the two groups. (Overall and Klett, J. C. (1972), Applied Multivariate PP 243-279.)

The Table –D shows the Standardized Classification Discriminant Function Coefficients (As in case of Total Income from Sabai grass)

The procedure generates a discriminant function (or, for more than two groups, a set of discriminant functions) based on linear combinations of the predictor variables that provide the best discrimination between the groups. The functions are generated from a sample of cases for which group membership is known; the functions can then be applied to new cases with measurements for the predictor variables but unknown group membership. On average, people in family size play more roles for economic development in case of total income. The researcher found that population size and economic information are important. Discriminant analysis allows estimating coefficients of the linear discriminant function,

which looks like the right-hand side of a multiple linear regression equation. (Joshi, Vidyut, Tribals Situation in India-Issues in Development).

6. Conclusion

The result summaries the tribals of Mayurbhanj district of Orissa in India confronts many problems like, education, income source and expenditure pattern, landed property, Government and NGOs support, marketing, packaging and transportation. The bank caters to the farm credit establishment of the farmers through its branches and affiliated LAMPS. Most of the people live in small family and very less still maintains their traditional joint family. . The cultivation of Sabai grass is second main occupation of the tribals and few are engaged in Government service. The source of income from Sabai grass is maximum from the primary source and very less from the secondary sources .The packaging and grading are the most important aspect of marketing any product. The maximum villagers are depends on the local market and only few of them use themselves to grade and pack their finished product of Sabai grass for transporting to different market. For marketing of the product of the rural people the organization has established marketing channel with ORUPA (Orissa Rural & Urban Producers Association) and other enterprises. The Mayurbhanj Sabai Processing and Marketing Co-operative Society were established at the behest of the Government of Orissa with the main objective of improving the economic well-being of Sabai grass growers in the district. ORMAS, an apex State Level Marketing Organisation was established with a mandate to provide non-credit inputs like procurement / purchase of raw materials. District Supply and Marketing Society is engaged in market promotion and facilitating marketing of Swarnajayanti Gram Swarajgar Yojna (SGSY) and Self Help Group (SHG) products. Due to changes in professional status it has impact on the income. It is also found that changes in age, family size and education do not change the total income in same direction. The land holding and transportation are important factor and have significant contribution to increase total income and economic development of the district.

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ANOVA Table-I. Analysis of Variance (ANOVA) for the factors in case of Income from Sabai grass

Source of variation	Sum of Square	Degree of Freedom	Mean Square	F-statistic (Calculated)
Between Row	4035.4979	209	19.3134	1.1322
Between Row & Column	49851.5556	1680	29.5735	1.7336
Between Column	21329.2392	8	2666.1549	156.2920**
Residual (error)	28522.3164	1672	17.0588	
Total	53888.0534	1889	28.5273	

ANOVA Table-II. Analysis of Variance (ANOVA) for the factors in case of Total Income

Source of variation	Sum of Square	Degree of Freedom	Mean Square	F-statistic (Calculated)
Between Row	4102.3328	209	19.6284	1.1505
Between Row & Column	49554.0000	1680	29.4964	1.7289
Between Column	21027.8042	8	2628.4755	154.0623
Residual (error)	28526.1958	1672	17.0611	
Total	53656.3328	1889	28.4046	

Analysis Table-A. (Linear Form) for Kharif Season

Crop (Sabai grass)	Intercept 'C ₀ '	C ₁	C ₂	C ₃	R ²	Adj R ²	D-W statistic	F-statistic
Kharif	80904.922 (14254.836) [5.676]	-454.962 (121.907) [-3.732]	11.246 (3.839) [2.929*]	-11.101 (3.847) [-2.886]	0.968	0.870	3.181	9.939

Analysis Table-B. (Linear Form) for Rabi Season

Crop (Sabai grass)	Intercept ' C_0 '	C_1	C_2	C_3	R^2	Adj R^2	D-W statistic	F-statistic
Rabi	5007.695 (1995.389) [2.510]	-57.489 (72.387) [-0.794]	0.235 (1.124) [0.209]	1.323 (0.651) [2.032]	0.895	0.581	2.464	2.850

Table C. Standardized Classification Discriminant Function Coefficients [In case of Income from Sabai grass]

Factors	Income from Sabi Grass				
	1	2	3	4	5
Sale	1.960	1.994	2.336	2.739	2.724
Market Trend	5.741	5.139	5.033	5.005	5.168
Land Holding	0.357	0.283	0.250	0.183	0.198
Transportation	0.052	0.080	0.150	0.143	0.158
AGE	2.974	3.048	3.121	2.428	2.201
Family Size	9.334	9.794	9.616	10.351	10.273
Education	-0.363	-0.523	-0.478	-0.478	-0.498
Occupation	9.358	9.215	8.208	7.450	7.488
Constant	-55.217	-52.905	-47.792	-43.667	-43.881

Table D. Standardized Classification Discriminant Function Coefficients [In case of Total Income]

Factors	Total Income				
	1	2	3	4	5
Sale	2.508	2.579	2.715	2.270	2.846
Market Trend	4.884	4.873	5.043	4.468	4.881
Land Holding	-0.029	-0.097	-0.007	0.125	0.097
Transportation	0.096	0.158	0.173	0.142	0.184
AGE	2.245	2.675	2.671	3.413	2.445
Family Size	10.375	11.022	11.054	11.952	10.312
Education	-0.342	-0.414	-0.490	-0.334	-0.455
Occupation	9.545	9.507	8.513	8.145	7.558
Constant	-53.604	-55.584	-50.302	-51.096	-43.702

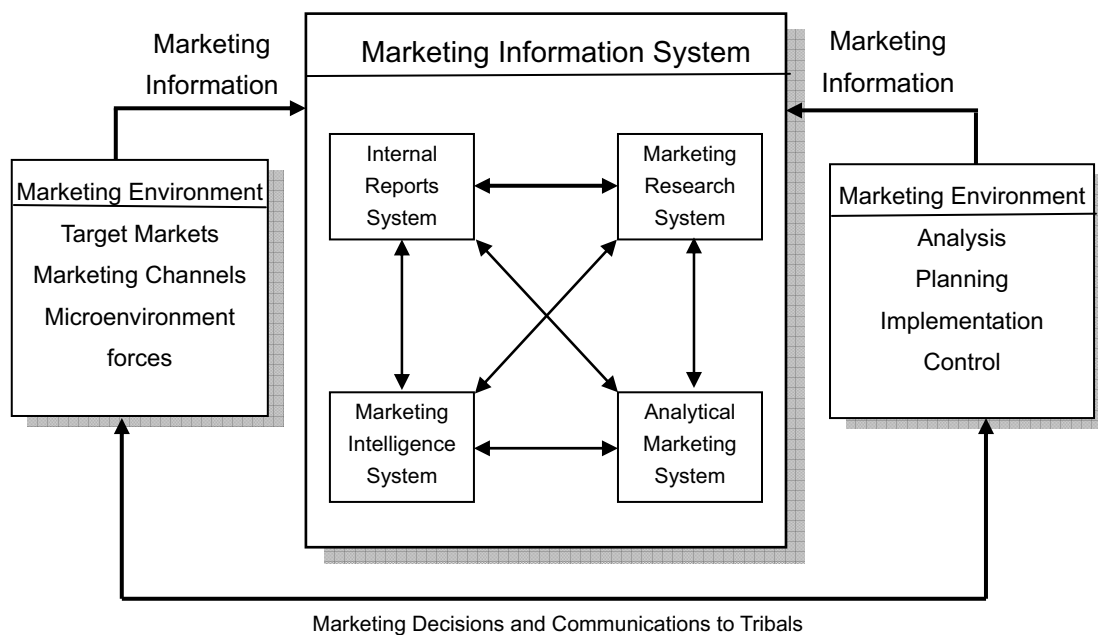


Figure 1. The Marketing Model Based Information System



Impact of Reward and Recognition on Job Satisfaction and Motivation: An Empirical Study from Pakistan

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Abstract

Human resources are the most important among all the resources an organization owns. To retain efficient and experienced workforce in an organization is very crucial in overall performance of an organization. Motivated employees can help make an organization competitively more value added and profitable. The present study is an attempt to find out the major factors that motivate employees and it tells what is the relationship among reward, recognition and motivation while working within an organization. The data were collected from employees of diverse type of organizations to gain wide representation of sectoral composition. In all, 250 self administered questionnaires were distributed among the employees of different sectors and they returned 220 completed useable questionnaires for response rate of 88%. The participation in survey was voluntary and confidentiality of responses was ensured. The statistical analysis showed that different dimensions of work motivation and satisfaction are significantly correlated and reward and recognition have great impact on motivation of the employees. Implications of the study for managers and policy makers in the context of human resource practices have been discussed. Limitations and guidelines for future research are also provided.

Keywords: Work motivation, Job satisfaction, Reward, Recognition

1. Introduction

Motivation is such a factor that exerts a driving force on our actions and work. According to Baron (1983, p. 123), motivation is an accumulation of different processes which influence and direct our behavior to achieve some specific goal. It is such a dynamic in today's environment that explicitly creates and encompasses a positive impact on job. Within an organization, the best performance is feasible with most committed employees that can only be achieved through employee motivation. Kreitner and Kinicki (2004) assume that motivation contains "those psychological processes that cause the arousal, direction and persistence of voluntary actions that are goal directed." Motivation depends on certain intrinsic, as well as, extrinsic factors which in collaboration results in fully committed employees. According to Broad (2007), tangible incentives are effective in increasing performance for task not done before, to encourage "thinking smarter" and to support both quality and quantity to achieve goals. Incentives, rewards and recognitions are the prime factors that impact on employee motivation. As the employees engage in their working activities purposely for own's sake then they will feel intrinsic motivation in their behaviours as their activities will essentially be enjoyable and satisfactory (Vansteenkiste, 2005, p. 22). The factors like incentives and rewards are the most preferred factors for employee motivation programs. This paper is an attempt that focuses on how incentives, rewards and recognitions impact employee motivation.

2. Literature Review

Organizations in today's environment seek to determine the reasonable balance between employee commitment and performance of the organization. The reward and recognition programs serve as the most contingent factor in keeping employees' self esteem high and passionate. Oosthuizen (2001) stated that it is among the function of managers to motivate the employees successfully and influence their behavior to achieve greater organizational efficiency. La Motta (1995) is of the view that performance at job is the result of ability and motivation. Ability formulated through education, equipment, training, experience, ease in task and two types of capacities *i.e.* mental and physical. The performance evaluation and rewards are the factors that proved to be the bonding agents of the performance evaluation

programs. According to Wilson (1994), the process of performance management is one among the key elements of total reward system.

Entwistle (1987) is of the view that if an employee performs successfully, it leads to organizational rewards and as a result motivational factor of employees lies in their performance. Majority of the organizations require their employees to work according to the rules and regulations, as well as, job requirements that comply with full standards. The investigations that have been conducted to find the relationship between compensation and individuals were focused to increase the performance of employees (Ciscel, 1974). The highly motivated employees serve as the competitive advantage for any company because their performance leads an organization to well accomplishment of its goals. Among financial, economical and human resources, human resources are more vital that can provide a company competitive edge as compared to others. According to Andrew (2004), commitment of all employees is based on rewards and recognition. Lawler (2003) argued that prosperity and survival of the organizations is determined through the human resources how they are treated. Most of organizations have gained the immense progress by fully complying with their business strategy through a well balanced reward and recognition programs for employee. Deeprose (1994) argued that the motivation of employees and their productivity can be enhanced through providing them effective recognition which ultimately results in improved performance of organizations. The entire success of an organization is based on how an organization keeps its employees motivated and in what way they evaluate the performance of employees for job compensation. Managing the performance of employees forms an integral part of any organizational strategy and how they deal with their human capital (Drucker as cited in Meyer & Kirsten, 2005). Today where every organization has to meet its obligations; the performance of employees has a very crucial impact on overall organizational achievement. In a demotivated environment, low or courageless employees can not practice their skills, abilities, innovation and full commitment to the extent an organization needs. Freedman (1978) is of the view that when effective rewards and recognition are implemented within an organization, favorable working environment is produced which motivates employees to excel in their performance. Employees take recognition as their feelings of value and appreciation and as a result it boosts up morale of employee which ultimately increases productivity of organizations. Csikszentmihalyi (1990) posits a view that the state of satisfaction and happiness is achieved by the employees only when they maximally put their abilities in performing the activities and functions at work. In this way motivated employees are retained with the organizations thus reducing extra costs of hiring.

Flynn (1998) argued that rewards and recognition programs keep high spirits among employees, boosts up their morale and create a linkage between performance and motivation of the employees. The basic purpose of recognition and reward program is to define a system to pay and communicate it to the employees so that they can link their reward to their performance which ultimately leads to employee's job satisfaction. Where job satisfaction, as defined by Lock (cited in Gruneberg, 1979, p. 3), is a pleasurable positive emotional state as a result of work appraisal from one's job experiences. The rewards include the financial rewards, pay and benefits, promotions and incentives that satisfy employees to some extent but for committed employees, recognition must be given to keep them motivated, appreciated and committed. Baron (1983) argued that when we recognize and acknowledge the employees in terms of their identification, their working capacity and performance is very high. Recognition today is highest need according to most of the experts whereas a reward which includes all the monetary and compensative benefits cannot be the sole motivator for employees' motivation program. Employees are motivated fully when their needs are met. The level of motivation of employees increases when employees get an unexpected increase in recognition, praise and pay (La Motta, 1995). In today's dynamic environment the highly motivated employees serve as a synergy for accomplishment of company's goals, business plans, high efficiency, growth and performance. Motivation is also required when the organizational workforce has not a good relationship pattern. Employees' relation with employees and with supervisor is a key ingredient of the inner strength of the organization. The ability of supervisors to provide strong leadership has an effect on job satisfaction of employees (Morris, 2004). The study relates how the impact of incentives, rewards and recognition programs drives employee motivation.

Rewards play a vital role in determining the significant performance in job and it is positively associated with the process of motivation. Lawler (2003) argued that there are two factors which determine how much a reward is attractive, first is the amount of reward which is given and the second is the weightage an individual gives to a certain reward. Deeprose (1994, p. 3) is of the view that "Good managers recognize people by doing things that acknowledge their accomplishments and they reward people by giving them something tangible." Fair chances of promotion according to employee's ability and skills make employee more loyal to their work and become a source of pertinent workability for the employee. Bull (2005) posits a view that when employees experience success in mentally challenging occupations which allows them to exercise their skills and abilities, they experience greater levels of job satisfaction. Incentives, rewards and recognition are the key parameters of today's motivation programs according to most of the organizations as these bind the success factor with the employees' performance. Robbins (2001) asserts that promotions create the opportunity for personal growth, increased levels of responsibility and an increase on social standing. Similarly, the recognition which is a central point towards employee motivation adores an employee through appreciation and assigns

a status at individual level in addition to being an employee of the organization. Barton (2002) argued that the factor in Fortune best companies which discriminates companies from the others is recognition that is the most important factor of their reward system. Wilson (1994) stated that the conditional recognition is that type of recognition which one has to earn by his own efforts and which is gained by some sense of achievement of an action or result. Employees are definitely closer to their organization as their job can become the major satisfaction in their life after having a proper rewards and recognition at their job. Rewards enhance the level of productivity and performance at job whether it's a first time performance or repeated activity at the job in a progressive way. Research by Eastman (2009) consistently found that intrinsic motivation is conducive to producing creative work, while extrinsic motivation is unfavorable to producing creative work. Gagne (2009) suggested a new model of knowledge-sharing motivation which provides suggestion for designing five important human resource management (HRM) practices including staffing, job design, performance and compensation systems, managerial styles and training. Ali and Ahmed (2009) confirmed that there is a statistically significant relationship between reward and recognition respectively, also motivation and satisfaction. The study revealed that if rewards or recognition offered to employees were to be altered, then there would be a corresponding change in work motivation and satisfaction.

From the above literature following hypotheses emerge;

H1: *The promotional opportunities are correlated positively and significantly with work motivation and satisfaction.*

H2: *The work itself is correlated positively and significantly with work motivation and satisfaction.*

H3: *The operating procedures are correlated positively and significantly with work motivation and satisfaction.*

H4: *The sense of achievement is correlated positively and significantly with work motivation and satisfaction.*

H5: *The recognition is correlated positively and significantly with work motivation and satisfaction.*

H6: *The different facets of satisfaction (compensation, relationship with coworker, security, supervision and growth) are correlated positively and significantly with work motivation.*

3. Methodology

The present research aims to determine the impact of incentives, rewards and recognition on employees of financial services, telecommunication, education, health manufacturing and other industries of both government and private sectors. Population of the study comprises of employees from all of these sectors in both private and public divisions in a major industrial city of Pakistan. The reason of including all these sectors is their positive and prominent growth in recent years in Pakistan. These sectors are favorable for this study because they contain a) line and middle level employees; b) the employees from each sector shares common characteristics. Thus the selection of these employees from large city of Gujranwala, Pakistan can be used as the sample representing the employees belonging to all these sectors in the whole country. For this purpose a non probability sampling, i.e. convenience sampling technique is used for recording the responses of 220 respondents. The convenience sampling is used because the information gathered from those employees who were accessed quite easily and conveniently.

3.1 Demographics Characteristics

The demographic section of the questionnaire shows the information about the age, gender, marital status, sector, industrial composition, establishment size, job tenure and position of employees to have a better understanding of their responses and resulting conclusion for the research. In the current sample, the number of male respondents are more than female respondents, as there are $N=177$, (81%) males and (19%), $N= 43$ are females. The majority of the respondents are of age between 25-30 years (43.2%), $N= 95$ whereas the lowest majority of the respondents fall in the age of 20 or less (.9%), $N=2$. The demographics showed that majority of the respondents in the sample are married (55%), $N=121$ where as unmarried respondents are (45%), $N=99$. Most of the respondents in the sample are the employees in private sectors, $N=165$, (71%) whereas rest belongs to public sectors $N=65$, (29%). Among the industrial compositions, the number of respondents in the sample from financial services is $N=72$, (33%) and the least respondents are from manufacturing industries, $N=11$ (5%). Majority of the respondents belongs to the organizations having an establishment size of more than 500 employees, $N=74$ (34%) whereas the least respondents are from organizations with 100 to 199 employees, $N=24$ (11%). Most of the respondents have a job tenure between 2 to 3 years, $N=64$ (29%) while least respondents having job tenure of less than one year are $N=12$ (6%). Most of the respondents in the sample having a non-managerial position in the job, $N=161$ (73%). While $N=59$, (28%) have a managerial position in their respective organizations.

3.2 Defining variables

3.2.1 Promotional Opportunities

Robbins (2001) asserts that promotions create the opportunity for personal growth, increased levels of responsibility and an increase on social standing. It is infact an extent that an organization provides to its employees for organizational

growth and job satisfaction. It is a part of performance evaluation process where an employee is provided an opportunity for growth and development according to his or her abilities, skills and work. It was measured through promotion satisfaction items of Job Satisfaction Survey which was developed by Spector (1985). Responses were recorded ranging from the strongly disagree (1) to strongly agree (2). Reverse coding was done where required. Sample item contains “people get ahead as fast here as they do in other places”.

3.2.2 Work itself

Work itself means the employees liking and disliking of his or her job. It explains whether the job of employee is enjoyable or not. It was measured through work itself satisfaction items of Job Satisfaction Survey which was developed by Spector (1985). Responses were recorded on a 5 point Likert scale ranging from the strongly disagree to strongly agree. Reverse coding was done where required. Sample item contains “I feel a sense of pride in doing my job”.

3.2.3 Operating Procedures

Operating procedures include all those rules, regulations, procedures and requirements of the job that have to be performed during the job. It also includes the nature of job and values of an organization that one has to be bound of while performing the job. Operating procedures in fact provide the information about how an employee does his or her job in that organization. It was measured through operating procedure satisfaction items of Job Satisfaction Survey which was developed by Spector (1985). Responses were recorded on a 5 point Likert scale ranging from the strongly disagree to strongly agree. Reverse coding was done where required. Sample item contains “I have too much paper work”.

3.2.4 Recognition

The recognition is a process of giving an employee a certain status within an organization. This is a very crucial factor towards an employee motivation. Recognition describes how the work of an employee is evaluated and how much the appreciation he receives in return from the organization. It also specifies the way an organization gives its employee the reward and status for his work and activities. It was measured through recognition satisfaction item of Job Satisfaction Survey which was developed by Spector (1985). Responses were recorded on a 5 point Likert scale ranging from the strongly disagree to strongly agree. Reverse coding was done where required. Sample item contains “When I do a good job, I receive the recognition for it that I should receive.”

3.2.5 Relationship with Co-workers

The relation ship among co workers indicates the environment of an organization i.e. how a employee works with this or her coo workers. This explains whether an employee likes his or her co worker employees in doing job or he has good relationships with his coworkers. It was measured through coworkers' satisfaction items of Job Satisfaction Survey which was developed by Spector (1985). Responses were obtained on a 5 point Likert scale ranging from strongly disagree to strongly agree. Reverse coding was done where required. Sample item contains “I like the people I work with”.

3.2.6 Satisfaction with compensation

It was measured with the help of two items from Job Diagnostic Survey by Hackman and Oldham (1974) which were on Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied). The items were “The amount of pay and fringe benefits I receive” and “The degree to which I am fairly paid for what I contribute to this company”.

3.2.7 Satisfaction with security

It was measured with the help of two items from Job Diagnostic Survey by Hackman and Oldham (1974) which were on Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied). The items were “The amount of job security I have” and “How secure things look for me in the future in this company”.

3.2.8 Satisfaction with supervision

It was measured with the help of three items from Job Diagnostic Survey by Hackman and Oldham (1974) which were on Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied). The items consist of “The amount of support and guidance I receive from my manager”.

3.2.9 Satisfaction with growth

It was measured with the help of three items from Job Diagnostic Survey by Hackman and Oldham (1974) which were on Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied). The items consist of “The amount of personal growth and development I get in doing my job”.

3.2.10 Sense of achievement

Sense of achievement was measured with a single item "The sense of achievement I get from doing my job". It was also developed by Hackman and Oldham (1974) in Job Diagnostic Survey and was measured on Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied).

4. Results

Descriptive statistics in the form of arithmetic means and standard deviations for the respondents were computed for the multiple dimensions that have been assessed through the questionnaire are presented in Table 4.1. With respect to the dimensions of work motivation assessed by the questionnaire, Table 4.1 indicates that the means for the, promotional opportunities, work itself, operating procedures, recognition, relationship with coworkers, satisfaction with security, satisfaction with supervision, satisfaction with growth, satisfaction with compensation and sense of achievement ranged from a low of 3.01 to a high of 3.66.

It therefore appears that respondents in the given sample are relatively motivated; however, the mean values for recognition, work itself and operating procedure are the lowest. The following mean values indicating those areas where employees were most likely to be demotivated and dissatisfied. Table 4.1 thus showing that staff in the current sample is most likely to be motivated with their working conditions, personal and general dimensions. But they are least motivated by their recognition.

The Pearson's Product Moment Correlation Coefficient was computed for the purposes of determining the relationships a) The relationship between the different dimensions of the work motivation and satisfaction and b) The relationship between rewards, recognition motivation and work satisfaction. In order to delineate the relationship between the various facets of the work environment on work motivation and satisfaction, the sub-dimensions of the questionnaire were correlated and are presented in Table 4.2.

The Table 4.2 shows that there is statistically strong positive relationship between all the variables of work satisfaction and motivation, except highlighted ones. The relationship between recognition and sense of achievement and all the four components of satisfaction is insignificant. The recognition is only significantly related with relationship with coworker ($r = 0.14, p < 0.05$). In the same way work itself and recognition is not significantly correlated. The values of correlation coefficient in case of significant relationship vary from lowest 0.140 to highest 0.658. The lowest value corresponds with operating procedure and recognition relationship while highest value is between the relationship of promotional opportunities and operating procedures. Procedural justice is important while recognition in Pakistani firms is meaningless where the matter of bread and butter is more important. The habit of bosses is also important to consider because good performance is not appreciated well.

The results presented in Table 4.3 indicate that promotional opportunities correlates significantly with work motivation and satisfaction ($r = 0.31, p < 0.01$). This supports the hypothesis that there is a significant relationship between promotional opportunities and work motivation and satisfaction.

A significant correlation is shown to exist between work itself and work motivation and satisfaction ($r = 0.34, p < 0.01$), supporting the hypothesis that there is a significant relationship between work itself and work motivation and satisfaction.

There was also a significant relationship between operating procedure and work motivation and satisfaction ($r = 0.37, p < 0.01$). Hence, this supports the hypothesis that operating procedures are significantly related to work motivation and satisfaction. A significant correlation also exists between sense of achievement and work motivation and satisfaction ($r = 0.33, p < 0.01$), supporting that recognition is significant in explaining the variance in work motivation and satisfaction.

There was a significant relationship between recognition and work motivation and satisfaction ($r = 0.13, p < 0.05$) but at a low level. Hence, the hypothesis that there is a relationship between recognition and work motivation and satisfaction is supported.

There was also significant relationship between different facets of satisfaction and work motivation, supporting the hypothesis that compensation, relationship with coworker, security, supervision and growth are significant in explaining work motivation and satisfaction.

There is a statistically direct significant, and positive relationship between rewards and motivation ($r = 0.36, p < 0.01$). Hence, if rewards being offered to employees were to be altered, then there would be a corresponding change in satisfaction and work motivation. The results indicate that there is a statistically positive significant and direct existing relationship between recognition and work satisfaction and motivation ($r = 0.13, p < 0.05$) but this relationship is very low. This implies that if the change in recognition accorded to employees is experienced, then there would be a corresponding change in work motivation and satisfaction.

5. Discussion

The purpose of study was to investigate the relationship between incentives, rewards recognition on employee motivation and satisfaction. The results are quite according to our hypotheses. Although many dimensions of work and job motivation are related to motivation and satisfaction but recognition, work itself and operating procedures have many low mean values as compared to other dimensions. This shows that employees are less motivated with their work contents, difficulties of operating procedures and neglecting the aspects of recognition. On the other hand, when they have sufficient promotional opportunities their relationship with co-workers are friendly, they are paid for what they work, and they find their job secured, their supervisors are cooperative and they feel that they can grow living within the organizations, than their level of motivation is very high. The mean value of sense of achievement ($M=3.66$) is higher than the other values which shows that employees who feel pride in their work are more motivated. When Pearson Product Moment Coefficient Correlation was calculated purposely for determining the relationship between different dimensions of work motivation and satisfaction and along its relationship with reward and recognition we found very interesting results. Although the relationship is strong in case of promotional opportunities, work itself, operating procedures and relation ship between co-workers but the relation ship between recognition and satisfaction and all the four components of satisfaction is insignificant. The recognition is only significantly correlated with relationship between coworkers but work itself and recognition are not significantly correlated. This means that, if an employee does a certain good work at job then he will expects his co worker employees to admire his work, as he thinks the appreciation of work from the boss is out of question. In this way, his motivational question remains high.

The values of Correlation Coefficient in case of significant relationship vary from lowest 0.140 to highest 0.658. The lowest value corresponds with operating procedure and recognition relationship while highest value is between the relationship of promotional opportunities and operating procedures. The lowest value among operating procedures and recognition is due to the in appropriate performance evaluation system held in Pakistani business units, where employees do not receive the exact in return they deliver to organization. Procedural justice is important as recognition in Pakistani firms is meaningless where the matter of bread and butter is more important. This is due to the fact that informally regulated environment exists in the business units that hinders in the way of employees productive aspects of life and they feel difficulty in receiving what they do at work. The habit of bosses is also important to consider because good performance is not appreciated well. A very strong reason complimenting this statement is the unemployment rate which is quite high in Pakistan that's why the managers pay less attention towards employee's problems and consideration. We made posited 6 hypotheses, and all of these hypotheses were confirmed on the basis of our results. These hypotheses are made on factors in correlation with motivation. These factors are promotional opportunities, work itself, operating procedures, recognition, and different facets of satisfaction.

The results of this investigation are quite beneficial for managers and policy makers. The managers can provide recognition to employees by sitting with employees having informal talks, spending time with them in form of a combine dinner or else in other activities like asking about their families and other crucial aspects related to their personal life. Secondly operating procedures should be fairly implemented, as procedural justice is quite important for employee motivational programs. Thirdly the managers should let the employees to participate in decision making so that employees feel that their opinion is important for the organization development. Fourthly, increments in pay, allowances, compensations and fringe benefits both on periodic basis as well as on special occasions should be provided to the employees for keeping them motivated. Fifthly, HR managers should make work contents interesting, so that employees don't consider their job boring, meaningless and dull.

The limitations for this study must also be noted. The data has been collected on cross-sectional basis, longitudinal data may have produced different results as the level of motivation of employees may vary at certain period of time and with growing experience. The number of female respondents in our study is less; also the sample size selected for the study is not representative of whole of the country. The technique of research used is survey design if mix method could have been used with interviews and qualitative data gathering techniques the result could be more generalizable. Finally, our study setting comprised of only one division of Pakistan while other two such industrial division also need to be investigated so the results cannot be generalized widely.

Future guidelines for this study must also be noted. The future study must focus on collecting the data from different managerial level i.e. top, middle and low level of management so that a true picture may be depicted what motivates employees at different managerial levels. Needs and requirements at different managerial levels may differ significantly. Different professions demand different motivational levels, like teachers, persons at defense, employees at different financial institutions and employees of certain marketing professions vary at individual levels. May be, one person is motivated and ready to sacrifice his life only for recognition and other prefers to make money in his life and motivated only through fringe benefits and job compensation. Economic factor must also be considered while making generalization about the result of study, like inflation rate, unemployment level. The study must be replicated in different cultural contexts so that its wide generalization could be possible.

6. Conclusion

The aim of the study was to explore the impact of reward and recognition on motivation and job satisfaction. Analysis has shown a close relationship between several dimensions of work motivation and satisfaction but recognition along with work itself and operating procedures have shown low mean values and insignificant relationship. In Pakistani context the employees think that there is a minor chance of appreciation from the boss on doing a good job. These deficiencies can be worked out if the superiors motivate their juniors with proper recognition and appreciation even through minor things like asking their family problems. Employee's participation in the decision making process will made them more courageous and enthusiastic towards working in the organization. On the other side the periodically salary increments, allowances, bonuses, fringe benefits and other compensations on regular and specific periods keeps their morale high and makes them more motivated. There are certain limitations or constraints to the generalizability of the study, for example, consideration of inflation rate and unemployment rate. However the research is very important in building the relationship between employees and employer.

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Table 4.1. Descriptive statistics for the dimensions of work motivation and satisfaction

Variables	Mean	Std. Dev.
1. Promotional Opportunities	3.30	.79
2. Work Itself	3.25	.75
3. Operating Procedures	3.30	.86
4. Recognition	3.01	.71
5. Relationship with Coworker	3.47	.72
6. Satisfaction with Compensation	3.59	.98
7. Satisfaction with Security	3.64	.93
8. Satisfaction with Supervision	3.61	.87
9. Satisfaction with Growth	3.61	.82
10. Sense of Achievement	3.66	1.18

Table 4.2. Dimension Correlations with work motivation and satisfaction ($N=220$)

Variables	1	2	3	4	5	6	7	8	9
1. Promotional Opportunities									
2. Work Itself	.519**								
3. Operating Procedures	.658**	.382**							
4. Recognition	.156*	.129	.140*						
5. Relationship with Coworker	.594**	.385**	.649**	.144*					
6. Satisfaction with Compensation	.457**	.269**	.387**	.090	.499**				
7. Satisfaction with Security	.405**	.259**	.414**	.016	.415**	.512**			
8. Satisfaction with Supervision	.422**	.324**	.452**	.054	.466**	.485**	.431**		
9. Satisfaction with Growth	.482**	.390**	.459**	.102	.510**	.501**	.509**	.648**	
10. Sense of Achievement	.424**	.317**	.329**	.102	.292**	.306**	.397**	.410**	.478**

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

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

Table 4.3. The relationship between different dimensions of work and motivation

Variables	Pearson's correlation	p-values
1. Promotion Opportunities	.316**	.000
2. Work Itself	.343**	.000
3. Operating Procedure	.372**	.000
4. Recognition	.133*	.049
5. Relationship with Coworker	.373**	.000
6. Satisfaction with Compensation	.357**	.000
7. Satisfaction with Security	.321**	.000
8. Satisfaction with Supervision	.406**	.000
9. Satisfaction with Growth	.445**	.000
10. Sense of Achievement	.330**	.000

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

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

Table 4.4 The relationship between rewards, recognition and motivation

	Motivation	Significance
Recognition	.13*	.049
Reward	.36**	.000

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

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



Study on the Network Structure Character of Core Enterprises in the Innovation Network

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Abstract

The formation and development of core enterprises is very important for enterprises and the whole innovation network. The correct cognition about core enterprises can instruct the enterprise to intentionally cultivate its own network state and enhance its competitive force. Based on relative theories of network structure, this article points out that network is the set of relationships, and the network structure comprehensively reflects various relationships of enterprise in the network. In this article, the network structure character of core enterprises is analyzed, the representation and the function of the centrality of network structure of core enterprises are described, and relative advices about cultivating core enterprises and enhancing the network state of enterprise are proposed based on above results.

Keywords: Innovation network, Core enterprises, Network structure, Structure holes

In the quickly changing market environment, the technical innovation network formed by the cooperation of various innovation subjects has been the important organization form of the technical innovation activity of the enterprise. In the technical innovation network, the network states of various node enterprises are different, and they occupy unequal knowledge, which will certainly induce that some part of enterprises in the network develop more quickly than other enterprises, and become into core enterprises in the technical innovation network, and core enterprises in the technical innovation network is very important for the whole development of the network. And it is very important to correctly know the character of core enterprises in the network for deeply studying and promoting the growth of common enterprise in the technical innovation network, helping enterprises to deeply know their actual representations of the core state in the cooperation network, enhancing the independent innovation ability of the enterprise, cultivating the technical innovation ability of the enterprise, and driving the whole development of the technical innovation network. Therefore, the network structure character of core enterprises in the technical innovational network organization is analyzed as viewed from the network structure.

1. Technical Innovation Network is the Main Organizational form of Technical Innovation for Enterprises

The quick development of IT industry makes the social and economic life enter into the network time which offers more possible implementation forms for the organization of technical innovation. For the importance of cooperative innovation, the consensus has been achieved at present. By the surveys in Germany and Portugal, Pedro Faria studied the cooperation between enterprises with foreign enterprises, and thought that the cooperation has played important role in the innovation process of enterprise, and the behavior of innovation cooperation had been regarded as the effective industrial organization form of the complex innovation R&D process. Aschhoff and Schmidt thought that the cooperation with other enterprises or institutions was an opportunity by the enterprise, and it can acquire the supplement of technical resources needed by the quickly innovational development, promote the market entrance, acquire scale economy and range economy, share in costs, and decentralize risks (Birgit Aschhoff, 2008, P.41-62). Based on the view of innovation network, Zhang Weifeng discussed the network property of technical innovation, and pointed out that the innovation network was the innovation platform of interactive function of relative enterprise knowledge, and was a new innovation mode which can adapt the knowledge economy society and the technical innovation.

As a representative complex network organization, the uniform definition of the technical innovation network has been deficient at present. Freeman's definition about the innovation network was quoted many times, and they thought that the innovation network was a basic system arrangement to deal with systematic innovation, and it had abnormal relationship network with hidden characters (Freeman C, 1991, P.499-514). Some other scholars pointed out that the innovation network was a form of the network among companies or the network among organizations. The research of the sociology indicated that the innovation network was the special relationship network among enterprises, not common relationship among enterprises.

The enterprise cooperation taking the technical innovation as the basic start universally exists, and when the enterprises

cooperating mutually achieve certain amount, the technical innovation network will be formed (Dang, 2004). The technical innovation network is a organization form established by relative enterprises or organizations on different layers based on common target of technical innovation to solve the predominant conflict between the uncertainty of technical innovation with the limitation of innovational resource of single enterprise in the network environment, and this organization form implements the communication of materials or non-materials by various cooperative forms of technical innovation to enhance the competitive force and the anti-risk ability of the whole network and profit all members.

2. Main Function of Core Enterprises in the Network of Technical Innovation

The core enterprises in the technical innovation network always have stronger technical innovation ability and the ability to manage the whole network and harmonize the exchanges of materials, information and energy among enterprises in the network. The researches about the function of core enterprises in the technical innovation network can be mainly classified as the relationship maintenance, the information communication and the network management of core enterprises to the network.

Agrawal and Cockburn thought that core enterprises led the diffusion of technology and knowledge in the technical innovation network (Agrawala A., 2002). Leach & Makatsoris thought that the core enterprise controlled the whole network organization (including technical alliance and dummy enterprise), and it had the right to decide the production activity of other enterprise, and whether the corresponding enterprise existed in the network organization. The core enterprise in the technical innovation network could enhance the technical innovation ability of enterprise in the technical innovation network, and stimulate the demand and creation of new technology and acquire exterior market (Schmitz, Lazerson & Lorenzoni), and the role and task of these enterprise in the network are heterogeneous and irreplaceable, and the cause of heterogeneity is because they are in the key nodes in the network, and they have ability to design and operate large network relationship different with other enterprises (Lorenzoni, Baden Fuller & Uzzer). Owen-Smith and Powell studied the biologic innovation network in Boston, and emphasized that core enterprises need to change the information flow in the whole network by sharing the knowledge of enterprise, which would actively increase the patent amount in the whole network (Jason Owen-Smith & Walter W. Powell, 2003, P.1695-1711).

Morrison and Malipiero thought that in the growth process of core enterprises, core enterprises mainly utilize the interior knowledge in the network to promote their growth, and comparing with other enterprise, the knowledge utilization degree was higher. It is obvious that the exterior resource base formed by core enterprises in the technical innovation network is the quality and the quantity of knowledge in the network, and they decide the size of the knowledge acquirement opportunity of core enterprises. At the same time, core enterprises are not to simply absorb network knowledge, and with the enhancement of influencing power of core enterprises in the network, they will influence the flow of network knowledge. Rosenkorf & Almeida thought that the growth process of core enterprises was not only a knowledge absorption process, but a process with the technical standardization in the network, and the technical standardization would simulate the transfer of relative knowledge among enterprises, which would induce quicker growth of core enterprises.

3. Actuality of Character Analysis of Core Enterprises in the Network of Technical Innovation

The technical innovation network is a representative cooperative organization, and in this organization, the relationships among enterprises and the characters of core enterprises have much commonness with other cooperative organizations. Because different scholars have different cognitions about the connotation of core enterprises in the cooperation among enterprises, so many different indexes are adopted in the empirical researches, such as sale (Zhang, Yuli, 2003, Wu, Aiqi 2005, Wan, Weiwu, 2004), employee amount (Delmar, 1997), asset (Flamholtz, 2003), market share (Weinzimmer, 1998), enterprise scale (Vlachopoulou and Manthou, 2003), and knowledge absorption and creation ability (Pittaway and Robertson, 2004). It is obvious that the description about the characters of core enterprises in cooperative organization is mainly centralized in the attribute data of enterprise, and the essential of "core" of core enterprises still has not been grasped. The cooperative organization is a network of social relationship, and the mutual relationships among enterprises should be the essential, and the relationships between enterprises with other node organizations in the network forms the most basic character in the cooperation process of technical innovation.

4. Essential Character of Core Enterprises in the Network of Technical Innovation

4.1 View of network structure

Scott (Scott, 2000) thought that the data of social science are mainly divided into three sorts including attribute data, relationship data and concept data. Though existing researches all admit that core enterprises occupy very important state in the cooperation process among enterprises, but the descriptions about the characters of core enterprises in the cooperative enterprises are very different, and most of them adopted the index of attribute. But in the real world, enterprises (actors) are not in the completely free and competitive market environment like "atoms", and they are connected and influenced each other, and they are embedded into the society and the network with the exchange

relationship of professional factors and other organizational factors (Gulati, 1998, P.293-317). Vijay's research (Vijay, 2001) also pointed out that the network was formed among participants by achieving certain sharing contract for key resources in the technical innovation network. Kamann & Strijker thought that the network included all mutual relationships among organizations, and this extensive definition makes any two organizations with mutual relationship to be brought into same one network. The technical innovation network is the representative complex social network organization, and the relationship is the base of network research, and the mutual influence and dependence is the core of network relationship, so to analyze the characters of core enterprises from the relationship among nodes in the technical innovation network more can grasp the essential of the technical innovation network.

In 1985, Granovetter introduced the concept of "Embeddedness" (Uzzi B, 1997, P.35-67), and emphasized the structured embeddedness was on the macro layer of the network, and the relationship network composed by node enterprises was embedded into the social structure composed by node enterprises, which was influenced or decided by the cultural and valuable factors coming from social structure. That is a kind of opinion of network structure, and it thinks that resources are not flowing in the network system equally or randomly, and network members differently occupy scarce resources and distribute these resources according to connection nodes. The nodes of technical innovation network occupy different positions in the network, and present different characters in the network structure. And the network position of enterprise will largely influence actors' behaviors and performances.

4.2 Theory of network structure

Ronald Burt created the theory of "structure hole" in his article of "structure hole" in 1992. The so-called "structure hole" means the non-redundant relationship between two nodes. For example, A respectively keeps direct touch with B and C, but B and C have not direct association, i.e. B and C establish the indirect relationship by the agency of A, thus the relationship vacancy will be formed between B and C, and this is a "structure hole" (Burt R, 1992, P.231-235). The enterprise occupying the network structure hole will occupy the position information of other enterprises in the network and their information of information flow, and possess the information resources containing less redundant connections, saving network costs and approaching particularity. The enterprises with thus position will have many advantages in the network, and core enterprises could utilize their position to successfully select future cooperative fellows and new technologies (Freeman, 1977, Knoke & Kuklinski, 1982, Wasserman & Faust, 1994). Furthermore, the enterprises in the central position could build themselves as a cooperative fellow with skillful technology and abundant knowledge, and possess more ability to attract enterprises in the network (Powell, Koput et al, 1996 & Brass, Butterfield et al, 1998).

The node enterprise occupying special position in the technical innovation network have more rights to acquire more resources and more quickly contact resources, and more bargaining opportunities, and accordingly control resources and outputs and the prior acquirement rights of work chances. The people or actor in the position of agency in the cooperation network will always build the bridge among organizations, and operate the resource flow of at least one even two sub-groups, and make them highly depend on his activities.

4.3 Representation of network structure character of core enterprises

Freeman (2001) firstly put forward the concept of "centrality" in the complex network, and he called the individual occupying important position in the network structure as centrality, and thought that these centralities had important function for the network, and largely influenced the growth of network (Freeman, 1991, P.499-514). Chuang et al (2006) studied the influencing factors forming the core state in the technical innovation network, and they thought that when enterprises more approached the network center or their agency character was stronger, the information they contacted would more, and the innovation character of enterprises would be stronger. That will gradually enhance the network state of enterprises, and make them finally turn into the core enterprises in the technical innovation network (Cheng-Min Chuang, 2006). Burt thought that nodes are in the key position in the network, and they can enjoy the information advantage and the control advantage. The information advantage means that the individual occupying the structure hole could acquire non-repeated information from many aspects and forms the distribution center of information (Burt R, 1992, P.231-235). The centricity can be used to evaluate the importance of one person in the social network, and measure the superiority or privilege of his state and his social reputation (Luo, Jiade, 2005). In the network, the nodes with centricity are those people with most powers and most important state in the organizational behavior theory, and they are "key nodes" in the network.

As viewed from the network structure of core enterprises, first, core enterprises more easily approach the resources of other enterprises in the network, such as technology and management method. Second, because core enterprises are at the intersection point of various connections, so they can more early acquire information than other enterprises (Rogers, 1995). Third, higher centricity means higher state and power (Wasserman & Faust, 1994), because the roles containing many connections are always regarded as those persons with higher reputation (Brass & Burkhardt, 1992). Therefore, the enterprises in the hub have more and better resources and opportunities (Gulati, Nohria et al, 2000), and could acquire asymmetric useful resources in the asymmetric network states.

The important representation of core enterprise network structure in the technical innovation network is the central position in the network. The hub position of core enterprises in the technical innovation network are mainly embodied in two aspects, i.e. the centrality of degree and the centrality of agency. The centrality of agency could measure the ability of core enterprises as the medium, because core enterprises always occupy the position of bridge, and become into the nodes with important position among other nodes, and if other enterprises refuse this medium, the divided nodes may not be communicated. Core enterprises generally are at the position of structure hole, which can first acquire the information and knowledge of other networks, even screen or control the nodes in the network.

5. Conclusions and Revelations

In this article, the structure hole theory in the complex network organization is mainly utilized to analyze the network structure character of core enterprises in the technical innovation network organization, and the result shows that because core enterprises occupy the structure centrality of network, obvious relationship advantage and higher state and reputation, they have more opportunities to acquire more benefit returns, and very advantaged state in the network cooperation.

The technical innovation network is a representative self-organizational system, and the adjustment is completed by the enterprise itself, not the exterior environment. Enterprises should confirm their states in the strategic alliance according to their cognitions about the technical innovation network, and plan the strategic position and the implementation method what they want to achieve. The relative researches in the article indicate that the enterprises must find and strive for the advantaged position by analyzing and managing the relationship between them and other enterprises in the cooperation to enhance the competitive ability and grow to core enterprises in the network. In the strategic arrangement, these enterprises should adjust them on the central position, and extensively associate with other network nodes to acquire advantages of information and control.

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A Modeling of Game Learning Theory Based on Fairness

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Abstract: By incorporating fairness factor in the EWA (experience-weighted attraction) learning model, we develop an extended game learning model called FGL model. We use psychological effect in stead of material effect to modify strategy's payoff and attraction, and to study the equilibrium movement further in dynamic Games. That participants have fair thinking will, in turn, lead to their psychological function changes. Compared with EWA learning model by simulating the decision-making in Ultimatum Game, we find FGL model converges to equilibrium strategy faster.

Keywords: Fairness, Game, Learning model

1. Introduction

Traditional theories of economics are based on rational hypothesis which assumes people only pursue their own material self-interest. However, many famous economists such as Simon (1955), Arrow(1981), Samuelson(1993) and Sen(1995)believed that people are bounded rational rather than perfect rational in reality. The hypothesis which economic-man is self-interest has been challenged since 1980s. Many experimental economists have proved that participants are altruism, and have strategy learning and fair thinking in games, which contravene the behaviors forecasted by standard game theory in many different game experiments (Guth, Schmittberger, and Schwarze. (1982);Forsythe, Joel, Savin and Martin (1994); Camerer, Thaler,Richard (1995); Roth(1995);Fehr,Alexander and Schmidt(2007); Ernst Fehr , Jean-robert Tyran(2008);Qingquan He and Yulei Rao(2009)). Explaining these phenomenas is the main focus of experimental economics and other related economic theories. Theoretical methods to explain these anomalies mainly include learning model and fairness model.

Learning model assumes that people are bounded rational, but it makes the material payoffs as utilities. There are three main learning models: belief learning model (Brown (1951); Milgrom and Roberts (1991); Hon-snrir, Monderer, and Sela(1998); Sela (2000); Berger (2005)), reinforcement learning model (Gale,K.Binmore and Samuelson(1995); Roth and Erev(1995)) and EWA learning model(Camerer, and Ho (1999)). Crawford(1995) thought players have belief learning in games, namely, players can take account of previous behavior by other players or themselves to update their beliefs about what others will do in the future, then choose a best-response strategy accordingly to maximize their expected payoffs. However, due to the payoffs of historical strategies, some players also may repeat successful strategies and abandon failed strategies. That is reinforcement learning. (Note 1) Experience-weighted attraction learning model (we called EWA learning later), designed by Camerer and Ho (1999), combines the most appealing elements of reinforcement and belief learning models. Learning models can explain game players' behavior better, however, the learning process forecasted by it is slower so that the strategy equilibrium can't be converged to fast.

Rabin, who developed the Fairness model, pointed out that player's utility is not just equal to material payoff, but depends on others' payoffs (Rabin(1993)). That is to say, people may often respond to others' intentions on their certain

behavior: people are willing to return kindness to those who they think are kind, and retaliate to those unkind, regardless of cost. Rabin defined a “kindness function” to measure others’ kindness or behavioral intention in his model. However, there may be multi-equilibriums forecasted by his model. For example, there may be multi-equilibriums when material payoff is smaller but psychological payoff is more important relatively. The model can’t forecast which equilibrium will emerge at last, when both fairness equilibrium and unfairness equilibrium exist and meet self-fulfilling prophecy.

Players don’t represent only learning behavior but also fairness thinking in games. As the learning models don’t take player’s fairness thinking into account, it forecasts player’s learning process slowly so that they can’t make strategies converge to equilibrium fastly. This paper attempts to incorporate fairness factor into learning model to form the game learning model based on fairness (ab. FGL model). Our purpose is to enhance the veracity of the forecasted equilibrium results, to improve player’s slowly learning process and solve the problems such as the imperfect learning effect and so on.

2. The Game Learning Model Based on Fairness (FGL Model)

We incorporate the fairness factor into the EWA learning model to form the FGL model. In the EWA learning model, every strategy has an “attraction” (Note 2), which implicates the choice probability of a certain strategy. The basic ideas of this model are as follows: for player i , there are m_i strategies (indexed by k) which have an initial attraction denoted $A_i^k(0)$. Denote i ’s k th strategy by s_i^k , strategies chosen by i and other players (denote $-i$) in period t by $s_i(t)$ and $s_{-i}(t)$, and player i ’s payoffs of choosing s_i^k by $\pi_i(s_i^k, s_{-i}(t))$, and the attraction and experience weight of i ’s k th strategy in period t by $A_i^k(t)$ and $N(t)$. Obviously, both $A_i^k(t)$ and $N(t)$ vary with the time t , that is, $A_i^k(t)$ and $N(t)$ are updated after every period. The EWA attraction $A_i^k(t)$ and the experience weight $N(t)$ (Note 3) updating equations from Camerer and Ho^{[21]-[23]} are:

$$A_i^k(t) = \frac{\phi N(t-1)A_i^k(t-1) + [\delta + (1-\delta)I(s_i^k, s_{-i}(t))]\pi_i(s_i^k, s_{-i}(t))}{N(t-1)\phi(1-\rho) + 1} \quad (1)$$

$$N(t) = N(t-1)\phi(1-\rho) + 1 \quad (2)$$

Parameter ϕ reflects the decay of previous attractions owing to forgetting or deliberating shedding of old experience when the learning environment is changing. ϕ is between zero and one. $N(t-1)$ is the experience weight of period $t-1$.

Function $I(s_i^k, s_{-i}(t))$ is an indicator function of the model which equals to 0 or 1 under different conditions, as

follows: $I(s_i^k, s_{-i}(t)) = \begin{cases} 1 & s_i^k = s_i(t) \\ 0 & s_i^k \neq s_i(t) \end{cases}$. In the equation 1, the term $[\delta + (1-\delta)I(s_i^k, s_{-i}(t))]$ implies that a weight

of one is put on the payoff term when the strategy being reinforced is the one the player chose ($s_i^k = s_i(t)$), but the

weight on forgone payoffs from the other strategies ($s_i^k \neq s_i(t)$) is δ . The parameter δ is the weight placed on forgone payoffs, which is presumably affected by imagination and the reliability of information about forgone payoffs, when $0 < \delta < 1$. The parameter ρ controls the rate at which attractions grow. It also captures influences of different models on attractions growing in the process of game learning.

Attractions can be mapped into choice probabilities using a logit response function by Camerer and Ho. The choice probability of player i ’s strategy k in period $t+1$ is:

$$p_i^k(t+1) = \frac{e^{\lambda A_i^k(t)}}{\sum_{k=1}^{m_i} e^{\lambda A_i^k(t)}} \quad (3)$$

Where λ is the response sensitivity.

We can learn that this learning model has taken history experience and the beliefs of players which have effects on game behavior. We can also learn that the material payoffs $\pi_i(s_i^k, s_{-i}(t))$ remain the same during the whole game process. However, people’s beliefs change with the game moving, then the payoffs of strategies change. Moreover, we believe that game players have fairness thinking. They adjust their strategies according to whether their opponents’ behaviors are fair or not. They may choose retaliatory strategies, even at a cost to themselves, a bad belief given on their opponents. However, if their opponents are kind, as “gift exchange”, they may choose some strategies which benefit both or even more to their opponents.

Well then, we replace material effect $\pi_i(s_i^k, s_{-i}(t))$ (Note 4) with fairness effect function $U_i(a_i, b_j, c_i)$ (Note 5) to measure psychological effect changes which are brought by the changes of game opponents' beliefs. Denote player i 's strategy by a_i , the strategy player i believes player j is choosing by b_j , while the strategy that player i 's belief about what strategy player j believes i is choosing by c_i . Then, denote the fairness effect function as follows:

$$U_i(a_i, b_j, c_i) = \Pi_i(a_i, b_j) + \tilde{f}(b_j, c_i)[1 + f(a_i, b_j)] \quad (4)$$

$\Pi_i(a_i, b_j)$ is the material effect when both game players choose strategies a_i, b_j respectively. $f_i(a_i, b_j)$ (ab. f_i) measures the degree of kindness and generosity player i to player j . $\tilde{f}_j(b_j, c_i)$ (ab. \tilde{f}_j) measures the degree of kindness which player i believes j to himself, while $\tilde{f}(b_j, c_i)[1 + f(a_i, b_j)]$ represents the psychological effect function brought by fair motivation.

Then the strategy attraction (Note 6) of FGL model is:

$$A_i^k(t) = \frac{\phi N(t-1)A_i^k(t-1) + [\delta + (1-\delta)I(s_i^k, s_i(t))][U_i(s_i(t), s_{-i}(t), s_i'(t))]}{N(t-1)\phi(1-\rho) + 1} \quad (5)$$

Here, $s_i'(t)$ represents the third belief about what strategy player i believes player j believes what strategy he is choosing. Other symbols have the same meaning as above.

According to our model, we can calculate the attraction of each strategy in every period. Then these attractions can be transformed into the choice probabilities according to equation (3).

3. The Compare of the Simulation to the Ultimatum Game

To verify the astringency and forecast ability of FGL model, we carry out a computer simulation to the ultimate game, and compare our results with the results simulated by EWA learning model.

The ultimatum game is a game about dividing some amount of money or goods. There are two participants in the game: a proposer and a responder. At first, the proposer makes a take-it-or-leave-it offer $(1-x, x)$. x is the money for the responder, while $(1-x)$ is left for himself. The responder responds to the offer then. If he accepts the division, then both people earn the specified amounts and the game is over. If he rejects, they both get nothing. Also, the game is over.

Suppose 100 yuan is divided between the two participants in the ultimatum game. The proposer's strategy set composed of ten strategies what are the proportion offered to the other $\{0-10\%, 11-20\%,$

$21-30\%, \dots, 91-100\%\}$, symbolized by $\{S_1, S_2, \dots, S_{10}\}$. While the strategy set of the responder is $\{\text{accept, refuse}\}$. Suppose the offers from proposer obey the uniform distribution, then the average payoff of each strategy is corresponding to $\{95, 85, 75, 65, 55, 45, 35, 25, 15, 5\}$. When the Proportion offered to the responder from the proposer is lower comparatively, the responder rejects at most time. Otherwise, offers are rarely rejected. Using the experiment results of Camerer, the expected payoffs of the proposer of every strategy are listed as Tab.1.

As Tab.1, the strategies with lower offer such as S_1 and S_2 have higher mean payoffs, but the expected payoffs of the proposer are quite low due to the high rejection rate. The rejection rate decreases with the increasing division proportion, which leads to increase the expected payoffs. The expected payoff reaches maximum at S_5 but then decreases. So, S_5 should be the optimal strategy according to the expected payoffs. But people may not choose the optimal strategy due to the temptation of the average payoffs at first. They may adjust their strategies gradually through learning and fair thinking to reduce the choice probability of strategy S_1 or S_2 , and increase the choice probability of fair strategy such as S_5 relatively. So S_5 becomes the equilibrium strategy of the game.

We use EWA learning model and FGL model to simulate the ultimatum game separately. Suppose in the first period ($t=0$), the choice probabilities of the strategies (S_1, S_2, \dots, S_{10}) of proposers are $(65\%, 25\%, 5\%, 3\%, 2\%, 0, 0, 0, 0, 0)$. When the division proportion is lower than 40%, the responder refuses the propose, (supposed by the experiment results of Roth). Thus the initial attractions of the strategies are: $A^1(0) = 136.371$, $A^2(0) = 115.027$, $A^3(0) = 79.0786$, $A^4(0) = 67.6683$, $A^5(0) = 58.629$, $A^6(0), \dots, A^{10}(0) = 0$, and the response sensitivity $\lambda = 0.0407$.

All the values of parameter δ, ρ, ϕ are between 0 to 1 but they all depend on the actual circumstances.

When the players are changed, the parameter will change. According to the documents of Camerer, δ is the weight placed on forgone payoffs. In the ultimatum game, the opportunity payoffs of the forgone strategy is low, as the strategy's expected payoff is lower. Suppose $\delta = 0.36$. ρ controls the rate at which attractions grow, which implicates the learning ability of participants. While in general, it is between 0.65 and 0.85, here we suppose $\rho = 0.82$. ϕ reflects the decay of previous attractions, which decays slowly in general. Also we suppose $\phi = 0.97$. $N(0)$ is the strategy's initial weight, supposing $N(0) = 1$.

We calculate updated attraction of each strategy by the EWA learning model and FGL model in period 2 ($t=2$). Under the EWA model, according to the initial values and the parameters' values above, taking the expected payoffs in Tab.1 as

the material payoffs, we calculate attractions and choice probabilities of strategies by equation (1), see Tab.2. We can get the choice probabilities of strategies in ten periods through iterative updating calculation, see Fig.1.

The processes simulated by our model are as follows. We can calculate each strategy's fair payoffs as equation (4) due to the expected payoff as Tab.1 at first.

Using the fair payoffs instead of the expected payoffs, we update each strategy's attraction by equation (5), and then calculate its choice probability by equation (3). see Tab.4. We can get the choice probabilities of the strategies in next nine periods through iterative updating calculation, see Fig.2.

From Fig.1 and Fig.2, we find both models reflect the decrease of S_1 's choice probability and the increase of S_5 's with the game. Figure 1 shows that, under the EWA learning model, the choice probability of S_5 exceeds the choice probability of S_1 for the first time in period 6. However, Fig. 2 shows that, under the FGL model, the choice probability of S_5 has exceeded the choice probability of S_1 for the first time in period 4, and the proposer has no more tendency to change the strategy from this on. The choice probability of this strategy becomes higher. The results show that both models can simulate the changing process of choosing strategy. But FGL model converges to equilibrium strategy S_5 earlier than EWA learning model, which implicates our FGL model has stronger forecast ability.

<Insert Figure 1 here>

<Insert Figure 2 here>

4. Conclusion

As participants have both learning and fair thinking in repeated games, put the fair factors into learning model can predicate equilibrium more accurately, and solve the problem that the players learn slowly and disefficiently in learning models. The main conclusions of this paper are as follows:

- (1) Putting the fair factor into EWA model, and replacing material payoffs with psychological effect function, FGL model revise strategies' payoffs and attractions.
- (2) Compared the EWA model with FGL model through the simulation results of ultimatum game, the latter model can predicate the choice probability of each strategy and equilibrium more accurately.
- (3) Comparing FGL with the EWA according to the experiment results, both of the models can capture players' decision process accurately. The equilibrium converges to strategy S_4 simulated according to experiment 1, and which is S_5 according to experiment 2. However, the decision process simulated by our model is closer to the actual process of players, so FGL model has stronger explanatory and forecasting power than the EWA learning model.

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Notes

Note 1. See Gale,Binmore and samuelson (references[16]), Rothand Erev (references[16]).

Note 2. Attractions represent the degree of strategies attracting players to choose, and it is positive correlative with the choice probabilities of strategies.

Note 3. Camerer denoted $N(t) = \rho N(t-1) + 1$ in References [18][21], but $N(t) = N(t-1)\rho(1-\rho) + 1$ in References [22][23]. The later is adopted in our paper.

Note 4. As fairness model can only be applied to games with two players, but EWA learning model can be applied to multiplayer games($n \geq 2$), we only take $n=2$ into account to keep the consistence of both models, that is, there are only player i and j .

Note 5. See [20]: Rabin,Matthew(1993). Incorporating Fairness into game theory and economies. American Economic Review.83

Note 6. For Rabin's fairness model just applies two players only, I just choose the EWA learning model where $n=2$ to construct the fairness equilibrium learning model.

Table1. The strategy and its corresponding expected payoff

Strategy	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀
Division Proportion (%)	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Average Payoff	95	85	75	65	55	45	35	25	15	5
Reject Proportion of Responders	0.95 ^a	0.78	0.57	0.35	0.07	0	0	0	0	0
Expected Payoff	4.75 ^b	18.7	32.6	42.25	51.15	45	35	25	15	5

Note: a: data come from the experiment of Camerer in 2003;

b: Expected Payoff = Average Payoff *(1-Reject Proportion of responders)

Table 2. Attractions and choice probabilities of strategies of EWA model in period one

Strategy S_k	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}
Attraction value $A^k(1)$	114.07	100.72	75.30	68.83	64.09	13.79	10.73	7.66	4.60	1.53
Choice probability $P^k(1)$	0.54	0.274	0.076	0.054	0.043	0.003	0.002	0.002	0.002	0.001

Table 3. The fair payoffs of strategies of the proposer

strategy S_k	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}
fair income	4.28	18.36	32.19	41.99	51.16	45.52	35.25	25.19	15.5	12.25

Table 4. Attractions and choice probabilities of strategies of FGL model in period one

strategy S_k	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}
$A^k(1)$	113.93	100.62	75.17	68.75	64.09	13.95	10.80	7.72	4.75	3.75
$P^k(1)$	0.539	0.275	0.076	0.055	0.043	0.003	0.002	0.002	0.002	0.002

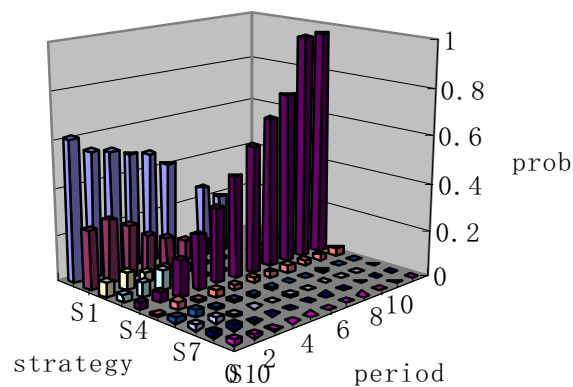


Figure 1. Strategies of proposers simulated by EWA learning model in ultimatum game

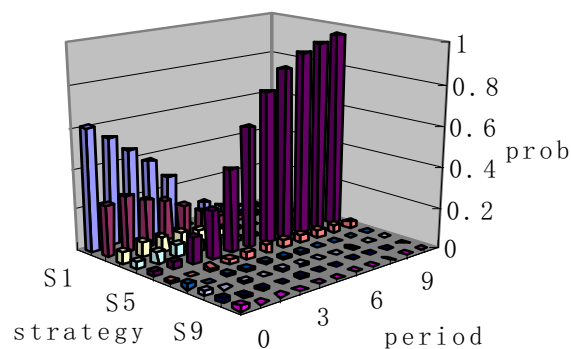


Figure 2. Strategies of proposers simulated by FGL model in ultimatum game



Repositioning the Non-incremental Changes and Business Strategic Windows Correlates

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Abstract

Modern firms assume strategic both in thinking and in action to the extent that they manage change to their own advantage. The market evolutionary trends, especially non-incremental ones that relate to new primary demand, new technology, channel changes, market redefinition and new government policies dealt with in this article often question the adaptability of incumbent firms, transform the mode of competition, and usher in new entrants, who may wish to take advantage of the incumbents' leapfrogs. This article suggests that investment decisions be timed to reflect the moment when the match between a firm's capabilities and the key market requirements is at optimum or when the strategic window is open. Market withdrawals are often contemplated when the market no longer proves profitable for a firm or when the window is shut behind a firm. Strategic market planners follow the trends of market evolution and proactively assess their firm's capabilities for the purpose of making timely decisions on either, and when, to throw in the towel or to beef up the organization to adapt to such changes.

Keywords: Strategic windows, Non-incremental changes, Strategic thinking, Market redefinition

1. Introduction

Almost every modern decision-maker vastly turns strategic and entrepreneurial perhaps because environmental swings rarely allow any opportunities or threats to last forever. Environmental changes often suggest that resource requirements (be it financial, marketing, human, engineering, or whatever) radically change with market evolution. Firm's internal factors as well as its immediate and remote external factors must be anticipated, monitored, assessed, and incorporated into its decision-making process (Thompson and Strickland, 1987; Urieto, 1999; Pearce and Robinson, 2000). Often non-incremental changes relating to new primary demand, new technology, market redefinition, new government policies, etc; question the adaptability of incumbent firms and usher in new cast of competitors, who perhaps use technologies and expertise developed elsewhere to compete favourably. Thus, certain firms are assumed better fitted to compete in certain environmental waves than in others. For these, strategic thinkers believe that firms must manage change to their own advantage though in some cases firm's resources and key market competencies cannot easily be adjusted. Managing change involves anticipation of, and responding to, environmental trends (Abell, 1978) and deployment of decisions and actions that result in the design and activation of strategies to simultaneously achieve corporate, business and functional objectives of an organization (Pearce and Robinson, 2000).

Strategic windows explain the optimum fit and limited time frame between the product-market requirements and the firm's capabilities to compete favourably in an industry. Investments are often timed to coincide with such periods since the logic is that the window is deemed open when such relationship exists. When changes in market requirements outstrip a firm's capabilities to adapt, operational improvement, withdrawal or divestiture will be contemplated because the strategic window is deemed shut behind the firm. Offensive moves (or using strengths to head-off threats) by a firm may close the strategic windows of its rivals, especially if the rivals do not have strong competitive strengths. Awa (2003) opines that predatory and cut-throat pricing, low unit cost, product distinctiveness, high experience curve, distinctive technology, sustainable competitive advantage(s), etc, can easily close the strategic windows behind weaker firms that do not place premiums on environmental analysis and diagnosis.

This paper explores on how such non-incremental changes that relate to new primary demand, new technology, market

redefinition, channel changes, and new government policies can disqualify the competencies of incumbent firms in an industry, change the mode of competition, and in fact usher in new set of competitors. It further x-rayed how such incumbents and new entrants can react to such change(s) in order to remain strategic and competitively balanced.

2. Changes in Marketplace

Change is the only permanent thing on the planet earth. Whether rapid, complex or fundamental, change is a fact of business life (Walton and Gupta, 1995; Koch, 2001). Managers are constrained to keep improving market share, growing corporate profit, and gaining competitive advantage (Chou et al, 2004) amidst many operations-based models for change, including Business Process Re-engineering (BPR), Just in Time (JIT), Just in Case (JIC), B2B, B2C, Web 2.0, Enterprise 2.0, and Total Quality Management (TQM). Irrespective of the philosophy of change used, IT is assumed an agent of change (Walton and Gupta, 1995), especially now we are in a global world. Stamer (2008) and Mancini (2009) opined that the rule of the game is fundamentally disrupted when new ideas and processes bring exponential changes. Though the disruptive effects of change

(especially those brought by Internet) question tried-and-tested business models, ways of working, organizational structures, and accepted truths, business strategists still resort to borrowing the ideas of military theorist, Carl Von Clausewitz; and Military Generals as Julius Caesar, Napoleon, Alexander the Great, and others in their efforts to anticipate, and respond to, environmental change.

Anticipation of change involves using organized framework to identify the sources and directions of the change in a systematic manner, and appropriate response indicates a clear understanding of the alternative courses of action (Bonne and Kurtz, 2004; Thompson and Strickland, 1987; Abell, 1978; Macmillian, 1982) because Osgood (1980) notes that most decisions are mutually exclusive; choice of one precludes the choice of the other perhaps because resources are limited. Awa (2003) reports that decision-makers subjectively evaluate various alternative courses of action and then choose option(s) that promises the highest pay-off provided it is feasible; satisfies all the constraints. Scarce resources and other factors may limit the chances of targeting all the options at a time. For instance, when a fair coin is tossed, the probability of head or tail occurring is mathematically known to be 0.5 (objective probability); indicating that on no accounts would a head and a tail appear at a time in a single toss (mutual exclusiveness).

Making subjective decisions to manage change involves the engagement of strategic market planning. Drucker (1973) explains strategic planning in terms of the continual process of making entrepreneurial (risk-taking) decisions systematically and with the greatest knowledge of their futurity; and measuring the result of these decisions against the expectations through organized systematic feedback. This definition portrays mutual exclusiveness, futuristic tendencies, and the application of the elements of management- planning, organizing, directing, co-ordinating and controlling. The strength of strategic planning as explained by Paul et al (1978) revolves around its simplicity and the apparent promise that organization's destinies can be better controlled and stabilized no matter what may happen in the external environment. Vancil and Lorange (1975) theorize that the acceptance of strategic planning is simple- using a time horizon of several years, top management reassesses its current strategy by looking for opportunities and threats in the environment, and by analyzing the company's resources to identify its strengths and weaknesses (SWOT). Strategic planning involves thinking ahead of time (Mintzberg, 1979) it minimizes surprises, maximizes ability to manage change effectively, and changes management approach from being reactive to proactive (Drucker, 1973).

When environmental changes are merely incremental, perhaps in response to boom and upsurge in demand, firms may successfully adapt themselves by modifying current marketing and/or other functional programmes. But more often changes are so complex and endemic that the competence of many firms to continue to compete effectively becomes doubtful. It is this later situation that the concept of strategic window applies. Abell (1978) notes that the philosophy of strategic windows posits that there exists only limited period during which fit between the key market requirements and the particular competence of firms competing in that industry/market is at optimum. Honesty Furniture Homes in Port Harcourt, for instance, invented snake design upholstery settee and found its investment to coincide with periods when the strategic window was open or when there was a match between the outfit's capability and the market requirements. Although the firm tried to hold the market by making its skeleton secret and by appealing to the affluent society via using expensive thick flowered fabrics, it quickly contemplated divesting when what seemed rosy in the past turns eroded; heavy competition that followed changed the market requirements and ultimately struck-off the outfit's capability to adapt.

Rutex Business Centre at Rumuokwuta junction, Port Harcourt divested into Superstores and Fast Foods when the mid 1990s stringent government regulations on commercial telephone almost made profit impossible or closed the strategic windows behind it. The deregulation of the telecommunications, airlines, and some other industries previously dominated by the government of Nigeria seems to have changed the industry practice and mode of competition, and ultimately closed the strategic windows behind NITEL and Nigerian Airways while firms such as MTN, GLOBACOM, Virgin Nigeria, Chachangi, Sosoliso, etc, are flourishing. In all, environmental changes may place some firms in a better position to tap opportunities and may even introduce firms outside the industry, especially when such firms have

the capabilities to compete effectively. The disadvantaged firms contemplate on whether to quit into a new market now, later or never or to increase, maintain or even reduce expenditure on equipment and marketing support in the current business.

Allocation of investment of this nature requires an objective assessment of the future evolution of the relevant market and a careful appraisal of the firm's capability to successfully meet the key market. Enis et al (1977) observe that strategic window concept encourages dynamic decision, and forces planners to be as specific as possible about future evolutionary patterns of the market and the firm's capability to adapt to them. Unfortunately, the most celebrated growth-share matrix or product portfolio analysis of Boston Consulting Group (BCG), according to Day (1980), has failed to adequately integrate these issues to reflect future states of nature. Thus, many managers routinely classify their businesses as cows, dogs, stars or question marks based on static analysis of the position of the firm and its environment. In the most recent times, strategic conscious managers are generally turning to models that better analyze today's and tomorrow's states of nature. Such models include the General Electric (GE) Strategic Planning Grid, the 15 cell matrix of Hofer and Schendel, Bayesian analysis (its rudiments are quite old but its relevance to modern business is vastly increasing), etc.

The General Electric Multi-Factor, for instance, was reported by Kotler (1984) to show that each business is rated against two major variables- industry attractiveness and firm's business strength, and that each has sub-variables ranked subjectively to reflect today's and tomorrow's events in the environment. Such dynamic analysis unveils non-incremental happenings or changes in the market that may disqualify market leaders, provide opportunities for current low-share competitors, and sometimes even attract entirely new cast of competitors into the marketplace. For instance, the advent of Tokumbo cars in Nigeria disqualified many then dealers, especially those on hire purchase sales, and introduced new contenders as the market evolved because changing market requirements resulted in closing strategic window for incumbents and opening strategic window for new entrants.

3. Evolution of States of Nature in the Marketplace

Depending on the individual product life cycle, the evolution of states of nature has far- more reaching changes and chances of opening or closing strategic windows than the relatively systematic changes in customer behavior and marketing mix. Abell (1978) suggests four major categories of non-incremental changes in the market place. A fifth one is added here.

- The development of new primary demand opportunities whose marketing requirements are completely at variance with those of existing market segments
- The advent of new competing technologies, which may cannibalize the existing ones
- Market redefinition caused by changes in the product-market strategies of competing firms
- Changes in channel structure
- Government policies

3.1 New Primary Demand

The dynamics of states of nature make it imperative for consumer expectations from existing businesses to change overtime, thereby opening or closing strategic windows in the relevant firms/industries. Glueck (1976) records that firms interested in market penetration often expands sales by increasing primary demand and by encouraging new uses for current products in current areas; with the same customers, pricing and products; and with the same organizational arrangement. Unfortunately, such firms face identity crisis and lots of problem of adjustment (Drucker, 1974) and may be committing suicide today or tomorrow (Glueck, 1976). In a typical primary demand growth phase, the incumbent chooses either to spend substantially to protect and fortify market positions already built, or to seek out new development opportunities, which may guarantee low-cost, focus, and/or differentiation and then tap from them. The first option is very much plausible when the business has sustainable competitive advantage (SCA), which it does not want to loose to, or share, with others. Coyne (1986) maintains that SCA exists when:

- Customers perceive a consistence difference in important attributes between the producer's products and those of his competitors.
- The difference is the direct consequence of a strategic gap between the producer and his competitors.
- Both the difference in important attributes and the capability gap can be expected to endure overtime in the strategic triangle or marketplace where producers meet with customers and competitors.

Abell (1978) indicates that in some cases, it is the prime-mover or the original entrant who makes the first moves to respond to the challenges in the marketplace; adjusting his business approach to suit emergent needs of the market. In other cases, it is new-comer who bids to take advantage of the new growth opportunity, most probably, by borrowing the expertise developed elsewhere to see a strategic window and leapfrogs of the original market leader(s). Implicit

from this is that prime-movers who narrowly focus their business activities in the early stages of growth may not only open grounds for opponents but may also have the most difficulty in making the transition to new primary demand growth opportunities later.

The legendary records of how Harley-Davidson Motorcycle of United States of America (USA) built their success stories through a fiercely loyal customer base signify that in most cases the biggest challenge for firms is not generating demand or attracting huge customers, but meeting needs. Harley-Davidson modeled on Japan's Keiretsu- huge vertically integrated companies that foster deep, trusting relationships with suppliers- to form strategic alliances with top-performing vendors. The firm soon learnt that integrating suppliers into the design process leads to innovative design efficiencies that reflect on cost effectiveness and other competitive advantages that would ordinarily not be envisaged if this kind of integration were absent. United Bank for Africa (UBA), Guaranty Trust Bank (GTB), Zennith Bank, and other banks in Nigeria initially made much of their earnings from checking accounts and loan facilities. As the industry developed smartly to new dimensions in barely a decade and half ago, many new activities that were out-rightly outside the sphere of banking followed suit. For instance, the banks launched different financial products and aggressively market them with one incentive or the other. Although operated differently, some of such products, among others, include Premium Save Accounts, Western Union Money Transfer, and Vigo. Premium Save Accounts, for instance, introduced on match 14, 2001 by UBA operates on the premise that customers who maintain a minimum daily balance of N150,000 and N250,000 in a quarter would have the chances of being selected to receive cash awards of N250,000 and N1,000,000 respectively. Okonji (2001) reports that the method of selection is through a faultless computer based random number generation process from the entire bank's branches. Also, the Internet system has changed banking pattern and mode of service to reflect customer expectations and aspirations. In Adkins' (1979) words, by abandoning some of their traditional services and diversifying into businesses with greater profit potentials, banks are showing less dependence on checking accounts and loan facilities and have increased their assets by more than 17%.

In a bid to respond to these challenges, banks are constantly improving their strategic thinking by realizing that their assets include not just money but also the expertise of their salespeople and other personnel. Also in the satellite dish and telecommunications industries, players (My TV Africa, DSTv, Metro-Digital, Daarsat, among others) have used various incentive packages to change industry practice to their own advantage in an effort to stimulate trial, loyal, switching, and viral behaviours amidst stiff competition. These culminated into a radical change in the organizational structure and the engagement of more qualified marketing personnel in order to really appreciate response to environmental changes.

3.2 Technological Break-through

The concept of technology is viewed in terms of the extent of task interdependence, degree of equipment automation, uniformity or complexity of materials used, and the degree of routineness of the task (Szilgyi and Wallace, 1980). This definition indicates that technology goes beyond mechanical objects. Simon (1973) observes that technology is knowledge of how to do things, how to accomplish human goals. Technology is often described as a force for creative destruction (Kotler, 1994) because each breakthrough brings about the life of the other(s) to an untimely end (Awa, 2003) and affects operations, structures, objectives, strategies and virtually every facet of corporate existence (Nnedu, 1996). Today, we are in the world of web technology; specifically knowledge management. Its opportunities include costs reduction and improved operational efficiencies via total cycle time and lead-time compression, communication, inventory holding (JIT), network relationship and search activities (Bakos, 1991; Fernie, 1995; Cottrill, 1997; Chan and Swatman, 2000; Davenport and Brooks, 2004); improved customer service and consistency through transparency, value-added information and new levels of innovation from network externalities and knowledge sharing (Raisch, 2001; de Burca et al, 2005). Such major changes in most industries again raise the question of adaptability of existing firms using the obsolete technology (Lemos and Porto, 1998; Lee and Brookes, 1991) of resistance to information sharing on accounts of using it to build unique competitive edge (Agrawal and Pak, 2001). Changes in the operation of machines that build low-cost advantage or vividly differentiate a product version from others might question the adaptability of conservative firms. The interest of this article is on those technological innovations and diffusion that may create new industries and/or transform existing ones. Cooper et al (1974) conduct an empirical survey of five industries in which a new technology challenged older, established ones. The industries and the new innovations were as follow.

- 1- The steam locomotive industry and diesel electric locomotive.
- 2- The vacuum tube industry and the transistor
- 3- The fountain pen industry and ball point pen
- 4- The producers of boiler for fossil fuel power plants and nuclear power plants.
- 5- The safety razor and the electric razor.

Cooper and his associates found that in many instances, established competitors in an industry stand to be challenged, not by another in that same industry, but by a company, which bases its approach on technology developed outside that

industry. In other words, the nature of technological innovation and diffusion is such that most major innovations originate outside an industry and not within it. Abell (1978) gives three possible explanations to that.

1. Backward or forward integration of firms to own up raw materials supply lines or to develop application for a new component or raw material. Sturdivant (1973) notes that General Motors created companies that make components (such as bodies, spark, plugs, radiators, radios, steering, wheels and transmissions), owned a consumer finance company, and even an engineering school to ensure a steady flow of component of personnel into the organization. These exercises empowered General Motors and enabled it to challenge established competitors in those industries it serves as a new entrant.
2. The application of technology developed in one market to opportunities in another. Dangote Group, for instance, uses technology and expertise developed in food items to venture into cement and since then has transformed the nature of competition in that industry.
3. Break-through in product or process technology may remove traditional barriers to entry in an industry and often attracts a completely new set of competitors. For instance, the glamour for miracles in the forms of financial break-through, breaking of causes or barrenness, healing, etc, have broken the traditional barriers in the church. These developments unleashed the proliferation of churches and broke the traditional monopolies that were hitherto enjoyed by orthodox churches.

Each case of technological innovation and diffusion changes the nature of the market and ushers in an entirely new class of competitors. This is plausible because many existing firms in most markets have a limited capability to understand and master all the technological break-through that might ultimately cannibalize their business. Further, in many cases, technological innovation may also change the nature of the industry's competition dramatically. For instance, the invasion of Indonesia into upholstery fabrics ushered in a number of small, low-overheads and independent organizations that pursue market penetration. Prior to this moment, large manufacturers dominated the market and their approach was largely market skimming strategy. But then the truth remains that the two differ in terms of quality.

The strategic windows concept does not prevent adaptation to change when it is necessary; rather it suggests that certain enterprises may be more suitable to compete in certain technological developments than in others. Abell (1978) notes that often the cost and the difficulty of acquiring the new technology as well as the huge capital commitment to the old serve as formidable barriers to adaptation. IT, for instance, provides all manner of firms great opportunity to build competitive edge. SMEs are to exploit such opportunities more than large organizations because of their limited resources, and operational flexibility leading to faster decisions. All things being equal, IT provides SMEs with opportunities that are largely unexploited (Ramdani et al, 2009) and plausible ways to strengthen competitive capabilities against their larger counterparts (Gengatharen and Standing, 2005; Urwin, 2000; Raymond, 2001; Thong, 1999). But the lack of experience and other resources on the part of SMEs (Chuang et al, 2009; Shiao et al 2009); size, organization form and methods (Federici, 2009); and little awareness of the benefits of some IT infrastructures (Esteves, 2009) demarcate them from large corporations, especially in terms of information-seeking practices (Buonanno et al, 2005; Lang and Calantone, 1997; Ramdani et al, 2009). Perhaps, these explain the accusation against SMEs for responding to environmental changes with short-term planning (Welsh and White, 1981) and ill-fated plans (Awa, 2003), which undoubtedly raises costs and the trauma of risk of failure of IT adoption (Chuang et al, 2009), especially in a global village.

3.3 Market Redefinition

Defining the market a business intends serving is a very difficult but an indispensable task in the strategic market planning process. It relates to definitive statement about the organization's philosophy, character, identity and direction drawn, according to Kotler (1984), from its (organization's) history, current preferences, customer needs, environmental considerations, available resources, and distinctive competence. A serious attempt to know what our business is must start with the consumer, his realities, his situations, his behaviours, his expectations, and his values. Thompson and Strickland (1987) demonstrate it in terms of the customer needs, products to satisfy those needs and the technology to manufacture the need satisfying items. Perhaps this explains why consumer behaviour scientists exploit the ideals of individual difference factors (e.g. motivation, attitude, personality, psychographics, perception, etc), situational factors, and other variables needed to understand, explain, and predict consumption related behaviours.

However, consumer needs and wants change overtime and therefore calls for constant review of market definition and orientation. Strategic thinkers believe that market definition should be appropriately cast to enable full and timely exploitation of unforeseen opportunities and to avoid a firm being guilty of jack of all trade and master of none. Strategic thinkers believe that market redefinition is plausible in response to market changes, which may increasingly shut the strategic windows behind some competitors while opening the windows for others. In advanced economies, for instance, the manufacturers of typewriters and Automatic Teller Machines (ATMs) found their business booming in the few decades ago because there was a match between the key market requirements and the firm's capabilities. But these

firms began losing business to computer firms because the latter stretched its strength to offer banks a complete system, which, though the ATM and typewriting were only components, handles electronic funds transfer needs of banks' customers. Thus the computer firms were able to redefine their market in such a way that forced the strategic windows to shut behind, or disqualify, the manufacturers of ATMs and typewriters. Further, banks currently redefine their market to reflect innovations particularly in the fields of financial products, electronic and Internet banking, collaborative relationship and collection of fees and dues on behalf of clients. The innovations have genuinely transformed the nature and scope of banking by stretching operative muscles to areas that seem ordinarily outside the scope of banking; by inculcating corporate vision and philosophy that portray commitments to market-driven as opposed to banker-driven; and by developing an environment within which innovation can flourish.

3.4 Changes in Channels of Distribution

Changes in the channels of distribution- be it in consumer or industrial goods markets- may create opportunities for new entrants and question the adaptability of incumbent firms. Such changes, according to Abell (1978), in part reflect product life cycle phenomena- the shift as the market matures to a more intensive distribution, increasing convenience, and often lower levels of channel services. Also, changes often take place as a result of new institutional development in the channels themselves. For instance, in an attempts to develop competitive advantage for its food items, Dangote Groups uses trained and smart looking salespeople, in addition to wholesale and retail outlets, to call on accounts and prospects at homes, offices, and market squares. It also sells online to certain class of consumers. Dangote is seemingly successful because it has skills and competencies needed in marketing low priced, frequently purchased package goods, along with its broad distribution channel resources and huge promotion support. Also, the evolution of market for cassette due to increased penetration and new uses in automobile, study, business, letter writing and home entertainment broadened its distribution networks to a multiple one involving drug chains, variety stores, and large discount stores. Multiple channel decisions equally apply to ethical drugs for being sold via physicians, drugstores, hospitals, clinics, veterinarians, etc; and to proprietary drugs as the ultimate consumers are reached through food stores, discount houses, drugstores, department stores, etc. But Gillette shunned market entry because the incumbent strategic window did not offer possibilities of making favourable pay-off. Thus, firms do not just jump into opportunities simply because strategic windows are open, they equally assess the profitability potentials of such opportunities since we indicated earlier that certain firms are better suited to operate in certain opportunities than in others.

3.5 Government Policies

Government and its institutions/agencies-Central Bank Nigeria (CBN), National Agency for Food and Drug Administration Commission (NAFDAC), Standard Organization of Nigeria (SON), National Drugs Law Enforcement Agency (NDLEA), Environmental Protection Agencies, Nigeria Deposit Insurance Corporation (NDIC) and others-through their policies may shut strategic windows behind incumbent firms in an industry and/or open it for new entrants. For instance, the wave of distress in the banking industry in the 1980s forced the Federal Government of Nigeria to promulgate decree on Nigeria Deposit Insurance Corporation (NDIC) in 1988. The guidelines stipulated by NDIC changed the nature of competition, questioned the adaptability of incumbent banks, and ushered in new competitors into the industry. Also, the recent Central Bank of Nigeria's (CBN) directive that banks must beef up their capitalization to N25 billion on or before January 2006 has forced weaker banks to sign Memorandum of Understanding (MOU) or consolidation agreement, thereby reducing the number of banks drastically from 89 to 25. This policy is expected to shut the strategic windows behind some banks, to change the mode of competition among surviving ones, to attract offshore merger, and perhaps to introduce new banks with stronger capabilities to compete.

Governments owe it a duty to improve upon governance by spurring economic development and growth (Jutla et al, 2002) in this digital age, especially via encouraging SMEs not just for their limited resources but also for their strategic position in economic building. SMEs are drivers of diversified socio-economic infrastructures in the forms of employment creations and innovation (Stanyon, 2004; Machacha, 2002; Southwood, 2004; Mutula and Brakel, 2006). The proliferation and hyper-growth of Internet and Internet technologies as creating global and cost-effective platforms for business to communicate and conduct commerce is gradually closing strategic windows behind less strategic firms. With government encouragements SMEs can build and/or strengthen competitive capability against their larger counterparts. For instance, Botswana, Japan, China, Taiwan, among others, promulgate measures to encourage (often in financial terms) SMEs and thereby opening strategic windows for them.

4. Response to Market Changes

Managing environmental changes to take advantage of them is an uphill task involving strategic market planning-anticipation of, and response to, change. Anticipation leads to spotting out the sources and directions of the change(s), and response involves the decision-maker having a clear knowledge of the alternative courses of action. Remember the article dealt with changes that increasingly question the adaptability of incumbent firms (non-incremental) and as such strategies to deal with them tend to differ from those used on firm-to-firm welfare (incremental). Offensive and defensive moves are popular strategies but, to some extent, they show stronger inclination

to firm-to-firm warfare and may not strongly apply here. Any strategy chosen will be effective to the extent that the strategists engage in objective forecasting that foretells its impact on the success of the organization in order to know whether action will be immediate or postponed. Response to environmental changes is very useful to both incumbent firms and new entrants.

4.1 Incumbent Businesses

The following strategic options will be contemplated when changes in the marketplace potentially disqualify a firm from continued successful participation.

- Attempts may be made to quickly assemble the resources needed to close the gap between the new critical marketing/operational requirements and the firm's competencies. For instance, if environmental diagnosis unravels the direction of the closure of the window to be the use of obsolete technology, which makes unit cost and selling price high relative to those of the competitor(s), then effort should be made to beef-up with technological advances. Many business centres that have their technology limited to typewriters, cyclostyling machines, and other orthodox equipment can improve their earning by having the latest models of computer and other equipment, including Internet. Money may be a problem but the recent less stringent loan packages of banks offer opportunities.
- The firm may by-pass its efforts to selected market segments, where the fit between resources and market requirements is still acceptable. Guinness Breweries Plc; for instance, at a time concentrated its market efforts for Harp lager beer in the Western Nigeria since it seemed its strategic window was almost shut in other geographical regions of Nigeria. Harper later regained its national posture when it was reformulated to suit wider customer endorsement.
- The firm may shift to a low profile approach, cutting back severely in all further expenditure on promotion, distribution, Research and Development (R&D), etc; and deliberately milking the business for a short-run profit.
- The extreme case of making decision to throw in the towel, either through liquidation or outright sale to someone else who may want to turnaround the business. The Pabod Breweries of Port Harcourt was recently taken over by a South African brewer who is currently engaging in a turnaround process. Gradually it sales is picking up, especially in the host state and its environs.
- Acquiring patent right for feasible alternative technologies.
- Often when the changes result from government policies and publics, firms may easily respond to them and tactically cope through cooperation (imaginative approach) or they may ignore the threats and try to change them through public relations, lobbying, or advocacy advertising billed to explain the firm's viewpoints (Defensive approach).

4.2 New Entrants

Environmental analysis and diagnosis often help many new entrants to judge the direction, time and scale of their entry activities. There must be careful evaluation of opportunities and threats against one's strengths and weaknesses (SWOT) in order to assess one's capabilities. This involves audits of the entire key resources and key success factors (KSFs) in the firm as well as the various existing programmes of activities because new entrants are expected to come in when they have the capabilities to deal with the incumbents' leapfrogs.

Attention goes directly away from the narrow focus of familiar products and markets to a search for opportunities to put unique competencies to work. For instance, what informed Daewoo, one of the leading names in the electronics industry, to venture into oil and automobile industries was the bid to take advantages of the overall environment-technical and market forces-as well as knowledge of markets untapped by incumbent firms in the two industries. Thus, they used their unique competencies developed in their parent industry to target opportunities in other industries.

5. Conclusion

Fundamental changes in an environment open or close strategic windows for incumbent firms in that industry, transform the mode of competition, and often usher in new market entrants, who may want to use capabilities developed elsewhere to deal with leapfrogs of incumbents. The future and non-incremental evolution of market relating to new primary demand, new technology, market redefinition, new government policies, and channel changes dealt with in this article indicate that some firms have better competitive maneuverability in certain environmental changes than in others. Often strategic market planners make predictions about the sources and directions of future patterns of market evolution and assess the firm's capabilities to favourably respond to such changes as they occur. Such analysis assumes strategic undertone as it foretells any impending misfit between the key market requirements and the particular competencies of firms competing in that industry. For these, the use of product portfolio chart analysis should consider the dynamic, and not static, implications in designating a particular business.

Investment decisions are carefully timed to coincide with when the match between a firm and the market in at its optimum or when the strategic window is open, and withdrawals are contemplated when market changes disrupt the

firm's capability to compete or when the strategic window is closed. Thus, market entry and exit assume greater rapidity, as many firms are poised to deploy their scarce resources to market opportunities that promise greater pay-off. Firms are often slower to develop and change than is the market in which they compete and as such market is assumed a temporary vehicle or instrument for growth; an instrument or a vehicle that can be used and abandoned as circumstances demand. Also, products have limited life cycle and market has greater longevity and as such can provide for a business a steady and growing stream of pay-off if management shuns being myopic about change. Change must be predicted with fair precision to enable a firm to know its present and future capabilities to compete, so that decisions may be timely taken on whether to remain in the same market or to look for opportunities elsewhere. Remember that response in strategic market planning requires a framework that makes alternative courses of action known to the decision-maker.

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On the Improvement of Accounting Information Quality by Perfecting Invoice Management

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Abstract

This paper conducts a statistical analysis on the cheating measures adopted in the financial reports of Chinese quoted companies based on relevant information revealed in the punishment proclamations issued by China Securities Regulatory Committee from 2002 to 2008, revealing fictitious transaction as the main cheating measure. In the end, some countermeasures are put forward.

Keywords: Quoted companies, Cheating measures, Statistical analysis, Invoice Management

Our modern society of knowledge economy will not do without information, therefore, the quality of accounting information seems particularly important due to its significance in the national economy information system. With this issue having been a hot issue in theoretical researches on accounting, a recent series of deceptive information in accounting have further enhance people's attention to it. Currently, the quality of accounting information has become a significant issue for the accounting profession over the world. It is well known that invoices, one of the original evidences in accounting calculation, will lead to deceptive information if fake or not made out at all, hence spoiling the reliability of the accounting material. Providing fake financial information, false accounts serve as a double-edged sword: on one hand, it damages the interests of the receptor (shareholders, creditors, potential investors and so on); on the other hand, they have also been cheated because the false information will cause a disorder in their internal information systems and hence disturb their decisions. Therefore, based on some relevant information revealed in the punishment proclamations issued by China Securities Regulatory Committee from 2002 to 2008, this paper aims at having a descriptive statistics on the cheating measures adopted by some quoted companies in their financial reports and offering some evidences for the improvement of accounting information by taking some measures in invoice management.

1. Literary Overview

After studying the relationship between ownership structure and surplus information quality in 977 companies in East Asia, Joseph P. H. Fan and T. J. Wong (2002) found that the integrated ownership structure as well as the share structure with pyramid pose and cross holdings might lead to agency conflicts between majority shareholders and minority ones. On behalf of their own interests, majority shareholders expose accounting information, which has no reliability in the eyes of those minority ones. Anderson, Deli and Gillan (2003) also found from their empirical research on 1200 American quoted companies in 2001 that independent board of directors might cause increased surplus information, so might the divided posts of chairman of the board and CEO, proving the significance of the board in guaranteeing surplus value relevance. Howe (1999) proved that the violation against GAAP was an inevitable choice in conformity with the cost-profit principle when the administration needed to report higher achievements than their actual ones while they failed to accomplish their target profits even by adopting accounting policies. According to US Treadway Committee (1987), the condition of advanced supervisors, corporate environment and the culture of financial report compilation are the most important elements in the reliability of financial reports. In spite of a set of written regulations and procedures, the loose condition of managers will more probably lead to cheating in financial reports. Feng Liu (2001) claimed that current institutional arrangement was in disagreement with high-quality accounting information and optimized the illegal distortion of accounting information. More relevant legal institutions, instead of only the Accounting Law and corresponding accounting technical standards, should be relied on to solve this problem. In the current institutional environment, it is impractical to wish quoted companies to improve their accounting information and to provide true and reliable information. Jinghua Ma (2005) held that the development of accounting technologies had affirmative and negative effects on the quality of accounting information.

It can be found out from the literature about the researches on improving accounting information quality home and

abroad that both normative and empirical researches have been conducted involving accounting standards, enterprises' supervision structure, accounting techniques, professional ethics in accounting and so on, which offer theoretical basis and research methods for the improvement of accounting information quality in China.

2. Selection of Samples

Here, the sample companies are all those whose cheating actions have been revealed. Two types of frauds in financial report cannot be the object of our research: one is the undetected cheating actions; the other is the detected but unpublicized ones due to some remedial measures conducted within their companies (Kaminski et al, 2004). In this paper, the punishment proclamations issued by China Securities Regulatory Committee from 2002 to 2008 are based on to select samples because these cases are quite typical and representative due to their wide influences over the whole nation and their actions verified by China Securities Regulatory Committee to be frauds instead of mistakes. Those financial reports which are being investigated but haven't been punished and those which have no serious effects are not included in this research. According to the purpose of our research, we sorted out the punished companies during the period as follows: (1) rejecting those companies who have been punished due to their failure to disclose their periodic reports on time or their frauds in capital rating; (2) making every company a different sample who has been punished several times; (3) rejecting illegal transaction, undisclosed information (including illegal transaction, guarantee, connected transaction, prescription and so on), delayed disclosure and fictitious disclosure of the use of funds while only taking the disclosure of fictitious management achievements intended to add some colors to financial reports with capital and profit padding into consideration. Thus, we finally got 55 samples of fictitious financial reports: 9 samples in 2002, 7 ones in 2003, 13 ones in 2004, 5 ones in 2005, 6 ones in 2006, 7 ones in 2007 and 8 in 2008.

3. Statistical Analysis and Its Result

The result of the data analysis on the sample companies is shown in Table 1.

A common characteristic can be found in the 55 sample companies' cheating methods: the most extensively-employed method is "fabricating transactions (using fictitious invoices)", which is employed by 25 among the 55 samples, taking up 45.5%. They fabricate their sales income and profits by fabricating transactions and invoices. For those enterprises with a large volume and a wide range of business, this method will enable them to increase profits effectively and therefore is frequently employed.

4. Conclusions and Suggestions

The following conclusions can be drawn from the above analysis: quoted companies mainly conduct income frauds, especially increasing their income with fictitious invoices.

Accordingly, here are three countermeasures:

4.1 Establishing Strict Invoice Management Regulations

China's Criminal Law lays down different punishments for crimes in plain invoices and VAT invoices. Currently, with the perfect management of VAT invoices, enterprises and individuals have shifted their attention to plain ones, leading to extensive use of fictitious invoices nowadays. Therefore, some articles in Criminal Law have to be amended to strictly strike the crimes in using plain invoices like what was done before on the crimes in VAT invoices due to the vicious and serious nature and bad influence of printing, selling at a profit and buying plain invoices illegally. Only by enhancing the punishment on them will these illegal actions be restricted and China's accounting information quality be really improved.

4.2 Establishing Unified Invoice Management Institution

In order to enhance invoice management, a highly-unified and authoritative Invoice Management institution must be established to conduct their administrative duties in invoices and similar bills. Among the three administration departments, Ministry of Finance and local financial departments at all levels are expected to serve as a lead to establish Invoice Management institutions and national tax as well as local tax departments should conduct Invoice Management in an all-round way. Their main duties include: first, seriously striking illegal crimes such as fabricating, buying and selling invoices at a profit and breaking off the source of illegal invoices; second, conducting serious audit on drawing, issuing and cancelling all invoices to avoid the illegal use of legal invoices and bills; third, further conducting serious administration on VAT with the administrative regulations on VAT invoices and having tracking monitor on general tax-payers by having a network hookup with the national tax department; fourth, having regular check on all invoices involved in enterprises' finance and making greater efforts to investigate and deal with illegal invoices. The business department, the public security department, the audit department as well as the procuratorate and court are expected to have consolidated efforts to administrate the invoice market and strike relevant crimes.

4.3 Further Enhancing Interest-oriented Guidance System of Invoice Management

In those industries with larger proportions of individual consumption and cash consumption, a variety of

scratch-and-win receipts should be introduced; reasonable ways should be designed according to consumers' psychology to increase the chances of winning; reasonable rewards should be given and the rewards-disclosed cycle should be designed in a scientific way; rewards should be given timely to encourage consumers to ask for invoices themselves; a reward system on reporting violations against invoice regulations should be conducted to fully encourage as many consumers as possible to be involved in monitoring invoices, hence increasing the effectiveness of Invoice Management.

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Table 1. The classification of the sample companies' main cheating methods

Disclosure of fictitious management achievements	Cheating methods	Number of sample companies	Percentage (%)
	Fabricating transactions (using fictitious invoices)	25	45.5
	Understating allowance	13	23.6
	Understating allowance for bad debt	13	23.6
	Pre-affirming income	10	18.2
	Increasing or fabricating bank deposits	8	14.5
	Increasing or fabricating investment profits	8	14.5
	Fabricating the recovery of accounts receivable	5	9.1
	Understating debt	5	9.1
	Fabricating projects in construction	5	9.1
	Carrying forward understated cost	5	9.1
	Improper consolidated statement	4	7.3
	Fabricating stock	3	5.5
	Capitalizing expenses	3	5.5
	Employing interrelated deal	3	5.5
	Fabricating overseas investment	2	3.6
	Changing accounting policies	2	3.6
	Not Amortizing equity investment difference	2	3.6
	deferred affirming expenses	2	3.6
	Increasing prepayment	2	3.6
	Increasing or fabricating invisible capital	1	1.8
	Understating impairment provisions for fixed assets	1	1.8
	Fabricating Non-operating income into operating one	1	1.8
	Increasing short-term investment value	1	1.8
	Increasing non-distributed profits	1	1.8
	Writing off the expenses in the current period with windfall profit	1	1.8

These data come from <http://www.csrc.gov.cn>



Influence of Yunnan Railway Network on the Economy of Yunnan Province Based on Location Advantage

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Abstract

Starting from the location advantage, railway actuality and development planning of Yunnan, the meanings of the establishment of Yunnan railway network to enhance the comprehensive competition and promote the development of economy in Yunnan Province are analyzed in this article.

Keywords: Location advantage, Railway network, Yunnan

1. Location Advantage of Yunnan Province

The shortened form of Yunnan Province is "Yun" or "Dian", and it is located at the southwest frontier of China, and its south is traversed by the tropic of cancer. Its total area is 394 thousand sq. km, 4.1% of the whole China. Its east abuts on Guangxi Autonomous Region and Guizhou Province, and its north boundary is Jinsha River, facing each other across the river with Sichuan Province, and its northwest is connected with Tibetan Autonomous Region, and its west is closely related with Burma, and its south and southeast respectively border on Laos and Vietnam, and the land boundary lines of Yunnan are 4060 km.

Yunnan is located at the joint of East Asia, Southeast Asia and South Asia, and its east is connected with Pearl River Delta and Yangtze River Delta, and its south can extend to Hanoi, Bangkok, Singapore and Rangoon by the constructing Trans-Asian Railway from east, middle and west, and its west can directly arrive to the Chittagong of Bengal through Burma to communicate with the Indian Ocean, connect with the Middle East by India, and arrive at the Malatya of Turkey, enter into the Europe from northwest, and enter into the Africa from southwest, and become into the hinge of "three-Asia".

As viewed from the global economic coordinate of Yunnan, there are six great rivers along the Asia, i.e. Dulong River (Irrawaddy), Nujiang River (Salween), Lantsang River (Mekong), Jinshajiang River (Changjiang River), Yuanjiang River (Red River), and Nanpan River (Pearl River), and they all can form natural "international channel" in Yunnan. This new orientation can make Yunnan to possess irreplaceable status and function of central hinge (Li, 2002).

2. Actuality of Railway in Yunnan

Kunming Railway Administration is located as the provincial capital of Yunnan, Kunming, the southwest frontier of China. It dominated railway lines traverse Yunnan, Guizhou and Sichuan, east to the Fenghuangshan Station of Gui-Kun Railway, north to the Yizi Station of Cheng-Kun Railway, south to the Weishe Station of Nan-Kun Railway. The Kun-He Railway is linked with Vietnam in the China-Vietnam Railway Bridge, directly arriving at Hao Phong of Vietnam. It administrates three electrified railway gauge trucks including Gui-Kun, Cheng-Kun and Nan-Kun, two meter-gage trucks including Kun-He and Meng-Bao, and many branch lines. The length of the total administrated railway is 2982.73 km, and the total railway operating kilometrage is 2048.94 km. The length of electrified railway is 1300 km, and 207 stations are included, and the Kunming Railway Administration is the unique railway administration where gauge railway and meter-gage railway exist at the same time in Chinese railway network. In 2003, the daily average gauge loading of the Administration is 1838 trains, and the daily average meter-gage loading is 694 trains, and the fixed assets of the Administration is 23.93 billion Yuan, and the yearly passenger transportation amount is 13.605 million, and the goods transportation amount is 46.343 million tons, and the yearly transportation income is 3.611

billion Yuan.

The total railway mileage of Yunnan Province is 2982 km, and the operating mileage is only 2015 km which only occupies 3.5% of the total railway mileage of China, and the density of railway network of Yunnan is 62.41 km per ten thousand sq. km, which ranks reciprocal second position in the density of railway network of China. The daily average loading demand of Kunming Railway Administration is ten thousand trains, and only 2000 of them can be satisfied, and the satisfied rate is only 20%. The development of the railway construction has been the essential demand to connect with ASEAN (Association of Southeast Asian Nations) for Yunnan. Up to 2010-2015, the yearly amount of foreign and domestic passengers arriving at Yunnan will achieve 50 million-60 million. The goods passing in and out Yunnan each year will achieve 85 million tons to 100 million tons. Thus large transportation can not only depend on highways and aviations, and the railway must exert the dominant function.

As viewed from the transportation cost, the railway is obviously better than the highway in the line-haul. Therefore, the railway construction of Yunnan must be quickened to reduce the trade costs and promote the comprehensive traffic development.

The “bottleneck” of Yunnan railway transportation has occurred, and many matched problems such as deficient and unequal distribution of railway network scale, low technical standard, weak transportation ability, deficient external channels, and weak dot-line ability harmony, should be further perfected.

3. Conflict between Yunnan Railways and Economic Development

3.1 The present railway transportation of Yunnan has been the main “bottleneck” to restrain the development of Yunnan economy

From 2004, the railway freightage of Yunnan continues as the increasing flourish tendency of past freightage demand, i.e. the higher growth level. The main characters of Yunnan railway freightage is that the supply of strategic materials such as energies and foods is in an emergency except that the growth of traffic volume is higher. The traffic volume of many key materials such as coals, fertilizers, petroleum, foodstuff, and materials of “agriculture-countryside-farmer” increases quickly, and the repeated addition of “peaks of freightage demand” and the continually urgent transport of key materials make the normal transportation order broken continually, which not only pricks up the intention of freightage, but make the railway freightage always be in the state of “keeping key materials day by day, and making urgent transports month by month”. Because many materials such as coals, fertilizers, sugars, metallurgy products, vegetables and farming products are all listed in the key materials, so the transportation must incline to them. In the actual condition that the railway transportation can not be increased largely in recent years, most tasks of the railway are to ensure the transportation of key materials. The freightage ability which has too many problems to deal with should not only ensure the transportation of key enterprises and key materials, but ensure the requirements of private economy, and try to fulfill the transportation demand of other various materials. After the “overload control” of highway, 30%-40% materials are transferred to railway, and many enterprises keep long in stock and are forced to stop or limit production. The satisfied rate of railway transportation can not even achieve 20%. The deficient transportation again becomes into the focus concerned by the whole society of Yunnan.

3.2 The influence of Yunnan “less, remote and bad” railway location on the economic and social development of Yunnan

Since 2000, with the growth of economic development of Yunnan, the freightage transportation of large amount and long-distance cargos increases largely, and the conflict between the railway transportation of Yunnan and the transport capacity become more and more obviously. Especially, after the economy of Yunnan grows by the speed of double figure and enters into the fast lane of development, and the growth extent of industrial fixed asset investment has exceeded above 30%, and the output of products increases largely, and the growth extent of key out-province materials output is especially dominant, and the daily average loading request of Kunming Railway Administration remains high and not fall continually, achieving 5000 trains, and the highest daily request achieved 10000 trains, but the actual average loading capacity of the Administration can only fulfill about 20% of the total request, and the capacity of railway transportation is so deficient that some key materials can not be transported but keep long in stock. The development of Yunnan economy can not leave railway, but now, the railway has been the “bottleneck” to limit the development of Yunnan economy, which doesn't accord with the development of Yunnan economy and the start of ASEAN Free Trade Area (Li, 1997).

4. Influences of Yunnan Railway Network Construction on Yunnan Economy

4.1 Planning of railway network

Yunnan is located at the joint of East Asia, Southeast Asia and South Asia, and it has 20 international ports, about 90 exterior channels, and it is the most convenient land channel that China connects with Southeast Asia and South Asia. Since 2004, Yunnan had begun to enter into the golden term of railway construction. The president of Development and

Reform Commission of Yunnan said that in 2009, Yunnan tried to complete the investment of railway construction of 8 billion Yuan to 10 billion Yuan, and construct the “eight-route-in and four-route-out railway network” which is the big international channel from Yunnan to Southeast Asia and South Asia. The “eight-route-in” includes the Dian-Tibet Railway (from Shangri-La of Tibet to Kunming), Cheng-Kun Multi-track Railway, Yu-Kun Railway (from Chongqing to Kunming, and it is the passenger transport line which planning design mph is 350 km/h), Nei-Kun Railway (from Neijiang, Luzhou and Yibin of Sichuan to Kunming), Nan-Kun Railway (from Nanning to Kunming), Gui-Kun Railway (from Guizhou to Yunnan), Yun-Gui Railway (from Nanning to Baise, Wenshan and Kunming), and the Passenger Transportation Line of Hu-Kun Railway (the planned design mph is about 300 km). The “four-route-out” includes the east line of Trans-Asian Railway (i.e. the China-Vietnam international channel, from Kunming, Yuxi, Mengzi and Hekou to Vietnam), the middle line of Trans-Asian Railway (from Yuxi to the Mohan Port in the Xishuang Banna Dai Autonomous Prefecture, and to Thailand by Laos), the west line of Trans-Asian Railway (from Kunming to Ruili, to Burma, and to Indian Ocean), and the north line of Trans-Asian Railway (from Dali to Tengchong, and to India connecting with the South Asia Railway by the Myitkyina of the north of Burma, and Bengal).

4.2 Meanings of “eight-route-in and four-route-out railway network”

The construction of “eight-route-in and four-route-out railway network” will further perfect the function of Kunming railway hinge, largely enhance the transport capacity of railway, largely push the development of west economy, promote the transition of Yunnan from big tourism province to strong tourism province, drive the flourish development of boundary trade, strengthen the national defense construction, effectively enhance the comprehensive competitive force of Yunnan, and offer force for the development of Yunnan and surrounding areas. In recent years, Yunnan continually pushes the construction of the international channel from China to Southeast Asia and South Asia, and the highways and railways from the backlands of China to surrounding countries are continually perfected, and the construction of the China-Burma water-land trough traffic channel to the coasts of India Ocean is being pushed stably, and the status of traffic hinge of Yunan in the big opening to Southeast Asia and South Asia is further prominent, i.e. 11 in-and-out highways, 10 in-and-out railways and 3 in-and-out water sea-routes make Yunnan collect most imported and exported goods from the southwest of China and North China to South Asia and Southeast Asia, and be the most important hinge of the east of the Third Asia- Europe Land Bridge.

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Study on Development Policies of the Special Industries in Ethnic Minority Areas of China

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Abstract

The special industries are based on special resources with distinctive regional characteristics, including rarity, ecological and sustainable development, and the special product system to meet the market demand. To gain a competitive advantage in the market today, ethnic minority areas should nurture and develop these special industries. Based on the analysis of examples and the features of these industries, this study proposes a set of development policies, such as being market-oriented, making use of the special resources and regional advantages, building a recycling economy model, and developing the green industries and nurture the ethnic culture related industries, etc.

Keywords: Special industry, Recycling economy, Green industry, Cultural industry

1. Introduction

The formation and development of an ethnic minority is closely related to its economy. Economic development forms a basis for prosperity. China's ethnic minority areas (referring to China's five minority autonomous regions, as well as Yunnan, Guizhou and Qinghai provinces with large ethnic minorities populations) are located mostly in remote areas with poor infrastructure. The poor infrastructure and a number of historical factors cause widespread poverty. Therefore, it is critical to boost the economic development in these areas and narrow the development gap. This is a starting point for minority policies and the key to solving current problems and issues in these minority areas.

Geographical regions where ethnic minority live, contributes to the world more uniquely. Upgrading and optimizing the industrial structure is the most direct and significant way to develop regional economy. A well-designed industrial structure is a necessary condition for sustainable development. As people shift from survival consumption to a quality-of-life consumption, ethnic minority areas have to develop the special industries to gain competitive advantages. The special industries are based on special resources with distinctive regional characteristics, rarity, ecological and sustainable development, and the special product system to meet the market demand (Wang 2004). Under the conditions of a market economy, regional economic development should follow the principle of differentiated and comparative advantage, allocating resources based on the market and establishing competitive advantages with regional economic characteristics. Special industries are special resource-based, the characteristics of these products are at the core of such an industrial system. Characteristics of China's ethnic areas show broad market prospects. For example, Xinjiang geography and tropical warm climate create unique conditions for products like cotton, fruits, livestock and other species with superior quality; Yunnan's tobacco, rubber, spices, coffee, tropical fruits, etc. are very unique products; Tibet's light and heat resources make its drugs and yak very special; Qinghai plateau's animal and plant resources are also very unique. The rise of tourism for new and special resources in the ethnic areas has enabled the special industries to become their pillar industries.

This study describes the special industry content and features by using the case study method and related theory. It explores the development policies for ethnic areas and provides guidance for achieving competitive advantages and sustainable economic development.

2. Special Industry Content and Features

Special industries are based on special resources and products. They rely on modern technology with a market-oriented approach and focus on the comprehensive development of the formation of a distinct regional, irreplaceable, sustainable and competitive product system to meet the public needs and wants (Guo, 2006). The "special" aspects of the special

products and services are embodied in the differentiated customer values that are irreplaceable and meet the special needs of consumers.

2.1 Regional Characteristics

Special industries rely on the unique characteristics of the people, the natural geographical climate, and the cultural resources. They are all closely related. These characteristics determine the uniqueness of the special industries. In other words, people in the regional areas need to take advantage of these attributes in order to develop the special industries. The regional characteristics of the special industries are always dependent on the geographical space, whose different resource elements and region configurations contribute to the overall economic structure. The regional difference based on natural regional characteristics, can be used as the basis for developing special industries.

2.2 Market Adaptability

Market changes drive the industrial structure changes. Regional economic development must be market oriented. Market demand determines the adjustment of the industrial structure. Whether an industry can be developed and how large its scale of development is depend on market needs, wants, and the size and potential of the market itself. The special industries are different from other industries because they provide unique products and services and are able to adapt to meet the special needs of the market. Therefore, the unique value of products and services forms the core of the special industries.

2.3 Rarity

The survival and development of a special industry depend on its uniqueness and its difficulty of being copied. The significance of its scarcity comes from the nature of the resource scarcity and our insight and ability to seize the development opportunity. Both of these characteristics are critical because the resource is scarce and the opportunity could be gone at any moment.

2.4 Sustainability

Ecological civilization requires human activity and the natural environment to be in harmony. To achieve this purpose, it is necessary to establish a scientific outlook on development, coordination of nature, green consumption, and ecological sustainable development to ensure sustainable economic development. The reason to develop special industries is to promote economic development and resource efficient utilization. Therefore, while considering the economic development and benefits, close attention should be given to the social and ecological environment so that the special industries will continue to stay on the path of sustainable development.

3. Development Policies for the Special Industries in the Ethnic Minority Areas

The core of a special industry is its unique products and services. There must be a compatible match between the regional characteristics and the special industry in order for the development to be realized. To be competitive the special industries must have influence and be supportive of the local economic development. They must display strong presence in the market and become a leader in order to help other related industries achieve a sustainable development.

3.1 Market Orientation

The nature of the market economy is based on the relationship between "supply and demand." The market demand is the direct driving force for industrial development. Market orientation is used to develop the right products and services to meet the needs and wants of both international and domestic customers. Special Industries should strive for the development of excellent and innovative new products and gain a greater market share. Chinese wolfberry from Ningxia Hui Autonomous Region is an internationally recognized product brand name. The upper reaches of the Yellow River are the best place to grow Chinese wolfberry. In addition, the upper reaches of the Yellow River are the world's birthplace of artificial cultivation for Chinese wolfberry. With the growing demand for medical products, health products, and Islamic foods made from Chinese wolfberries, developing Chinese wolfberry products from Ningxia has become the most valuable special industry with growing developmental prospects.

The medicine and health products with special effectiveness made from Chinese wolfberry, including *Lycium barbarum* polysaccharides, wolfberry seed oil and other products are very competitive in the market and maintain a strong competitive advantage.

3.2 Based on Special Resources

Resources are a prerequisite for human economic activities. Resources provide the basis and environment for human survival and economic development. Ethnic minority areas are not only a wealth of ecological resources, but also have abundant natural resources, particularly energy and mineral. These resources objectively constitute an advantage and provide a good economic base for sustainable development. The spatial distribution of natural resources is non-equilibrium, region specific, and exclusive, especially for the special products and services. The features contribute significantly to the formation of the characteristics of the special industries. It has a distinctiveness and "personality"

which is difficult to be duplicated, migrated, or replaced by the relationship of market supply and demand. The cultivation and development of special industries in the ethnic minority areas are shown in the following chart:

< Insert Figure 1 here >

For example, taking the advantage of local, natural, and cultural resources, Lhasa, Tibet develops special tourism. There are more than 100 tourism sites in the Lhasa area, four of which are among the best in the nation (national 4A-class). There are the majestic Himalayan Mountains with their majestic glaciers, the beautiful tranquil grasslands, the boundless expanses of sparkling lakes including that of the Namu Highlands Lake and the spectacular Yangbajing Geothermal (it is called "geothermal Museum"), as well as the large-scale and intricately styled temples towering in Jinding such as Potala Palace, Jokhang Temple, and the Drepung Monastery. Also, contributing to the grandeur of this area are the fantastic murals, statue art of Tangga, the ancient sites of the lasting tribute Qu Gong, the Zhala road caves, and the unique charm of Tibetan songs, dance, and opera. These are just some of the colorful customs of the minority people. All these features make Lhasa an integrated tourist destination. The natural scenery and its beautiful, picturesque, scenic, vivid landscape make it an irreplaceable location for the process of communicating and promoting Tibetan culture.

3.3 Expand Exchanges with Foreign Countries

British classical economist David Ricardo once confirmed his Comparative Advantage Theory through the analysis of two countries with different endowments in their production elements, asserting that as long as the countries have comparative advantages, they will benefit from international trade. China has 22,000 kilometers of land that border foreign countries, including 19,000 kilometers in the minority territories where 107 of 135 border counties are ethnic minorities. The special frontier locations of the minority areas have a unique advantage in today's global economy. Xinjiang Uygur Autonomous Region, is located in the Asia-Europe abdomen with the longest border in China's provinces and autonomous regions. The South-West Asian economic bloc is the fourth largest one after the North American economic bloc, the EU economic bloc, and the East Asian economic bloc. At present, Xinjiang has become a major port along the border with 17 national first-class ports and 12 second-class ports. Adhering to the principle of "keeping the East-West channel open and smooth", they strive to create an environment to nurture, promote, secure, and benefit business activities in Xinjiang. In fact, through economic and trade cooperation and coordination with neighboring countries, Xinjiang achieved \$17.6 billion in border trade in 2008. This accounts for 57% of total border trade, making Xinjiang the largest border trader in China.

3.4 Extend the Industrial Chain and Upgrade High Value-Added Products

Many industries in minority areas are still in the early development stages and lack the backbone of an enterprise. The industrial chain is shorter and most products are low in value. The driving force of special industries in the economy as a whole is not strong. Efforts should be made to extend the industrial chain and build leading industries to improve the capability of R&D and advanced engineering in the special industries. This is so they can provide high value-added products and turn their resource advantages into competitive advantages in the market.

3.5 Based on "Recycling Economy" Model for Industrial Development

The "Recycling economy" model of development is consistent with the nature of the ecological civilization. Its core basis entails the efficient use of resources and recycling. "Reduction-Reuse-Recycling" is the principle for economic development. To achieve the goal of "green minority areas" and "eco-industry", efforts should be made to apply the "recycling economy" model in the development of special industries, achieving harmonious and sustainable economic development for the whole society. Another example, Golmud City in Qinghai Province, is located in the Qaidam Basin which was listed as one of thirteen (industrial parks) circular economy pilot projects of the country in October 2005. It already has "oil and gas - salt chemical", "coal - coke - salt chemical", "Coal Chemical Industry - salt chemical industry - building materials", "non-ferrous metals - natural gas - salt chemical", and "iron ore - coke - steel" five recycling industry chains. All kinds of resources in the park are recycled. Golmud City has vast geographical areas and unique natural conditions. The annual average sunshine time is more than 3300 hours. Its solar radiation is the most abundant in the world. In June 2009, with 200,000 kilowatts of photovoltaic grid power, the plant project started in the city of Golmud in Qinghai, which will become the core of solar energy gathering area. Solar energy will become the next round pillar industry of the Qaidam Basin allowing for another cycle of economic development.

3.6 Develop Green Industry and Nurture the Culture Industry

The green industry is also referred to as the eco-industry. In the production process, it uses resources efficiently and does not damage the ecological balance. It does not pollute the environment, provides quality products to meet the people's health needs, and at the same time maintains the original ecological needs. China's ethnic minority areas should enhance the value of resources and market efficiency through research and development on their rich variety of natural resources. Therefore, the green industries with ecological characteristics will be enhanced within the ethnic minorities. The Inner Mongolia Autonomous Region is another example. It has unique advantages in resources for developing the

green food industry. The region has 130 million mu of grassland, accounting for 1 / 5 of the nation. On the theme, "Half of a brand is the culture", the green grassland culture nurtured the green food brand. Inner Mongolia has established more than twenty successful grassland brands that are influential and have become leading enterprises, such as Yili Group, grassland Hing Fat Group, Mengniu, and Ningcheng Laojiao Group etc. In Inner Mongolia, people often use the metaphor of eating "Prairie Xingfa" and "Small Fat Lamb" food, drinking "Yili" and "Mengniu" milk and "Hetao" and "Mongolian King" liquor, and wearing "Ordos" and "Deer King" clothes.

In the 90's of last century, former U.S. President Bill Clinton put forward a Culture Industry concept. Cultural industry provides the public with cultural entertainment products and services that protect cultural relics and heritage. It is derived from the individual creativity, skill, talent, development, and application of intellectual property rights. The culture industry creates wealth and employment and is recognized as an era of global economic integration or the "sunrise industry" of the 21st century. It is the right time to make use of the advantages of minority cultural resources and encourage ethnic minorities to diversify the cultural industries. For example, "Yunnan Impression" is an integrated large-scale show with Yunnan folk songs and dances. In this show seventy percent of the performers were from the villages of Yunnan's ethnic minority. The clothes and accessories they wore on the stage consist of their every day attire in real life. The famous dancer Yang Liping, the "God of Dance", was the director and leading performer of the show. There were authentic props, apparel, and the singing was not cut down and polished. Instead it contained original and imaginative dance, traditional songs and dances, and cutting-edge modern dance, which was perfectly integrated into the show. It literally "re-created" and showed the fabulous rich ethnic customs in Yunnan. No wonder it won the gold medal at the fourth "Lotus Award" Dance Festival of China. Experts called it the "Enlightenment of Minority Folk Dance" and the audience enjoyed the power of art.

4. Conclusion

China's government proposes "build ecological civilization, adjust industrial structure, keep economic growth, and construct harmonious society." As the frontier border of the country with a green screen, the ethnic minority areas have the advantages of geographic and ecological resources, cultural diversity, and political autonomy. They should turn these advantages into real economic ones, promote the natural ecological environment, nurture the ethnic culture and inheritance, and achieve the goal of sustainable development and social progress.

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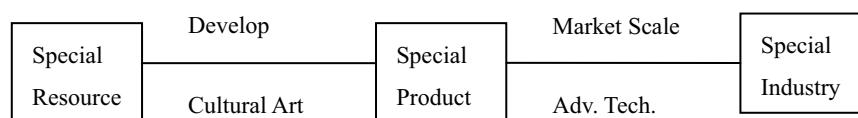


Figure 1. Process of Special Industry.



The Construction of Assistant Decision Supporting System for Project Investment Based on Real Option Theory

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Abstract

Project investment decision has been drawing much attention from investors and decision makers due to its complex process and its profound influences. Generally speaking, a scientific project investment decision process should be based on mathematical methods and relevant data models. Beginning with analysis on project investment decision, the paper then further offers a general decision supporting model and verify its practicability with examples.

Keywords: Project investment decision, Decision supporting system, Investment decision based on Real options

1. Introduction

Involving a large sum of capital, a long period and many other factors, project investment is a dynamic system with multi-objectives, multi input and output as well as multi-interferences. As a result, its decision-making analysis is of obvious pertinence and timeliness. If conducted by human, such an analysis process is quite tough and its results may not be so scientific. Therefore, the computer should be employed to assist the decision-making process in order to guarantee its scientific effects. From the perspective of application, any decision supporting system is a subject-oriented system involving man-computer interaction, therefore, clear subjects are essential. Only when a subject has relevant mature theoretical models and detailed historical data will it be possible to develop a decision supporting system in conformity with the decision maker's demands. Starting with analysis on real option theory, this paper constructs an investment decision model and conducts relevant application analysis based on some mature decision supporting system models as well as project investment decision practice.

2. Advantages of the Real Option Method of Decision Making and Its Application Environment

The real option method is a decision-making method for enterprises' project investment generating in 1980s. What distinguishes it from those traditional methods lies in its claim that managers' project decision elasticity is of great value. Following this idea, Trigeorgic put forward the extended NPV method, which had the formula *extended NPV = traditional NPV + the value of real options in the project*. In this method, the calculation of the value of real options is critical, which can be conducted with the binomial option pricing model or the Black-Scholes option pricing model. Then extended NPV can be worked out easily and decisions on project investment can be made with the method similar to traditional NPV.

The real option method is not a simple rejection of the NPV method but its development and perfection because the traditional NPV method only takes the potential cash flow of the investment project into consideration while neglecting the value of the real options of the project and hence needs to be amended according to its theory. As a result, some projects to be abandoned according to the NPV method should be accepted if based on the real option method. That is to say, this method helps enterprises to avoid missing some favorable investment opportunities.

Currently, this method is extensively applied to many fields, such as biological technology, development of natural resources, R&D of new technologies, risk investment, purchase and annex and so on. Because the real option method is different from the traditional NPV method in its consideration of the value of a project's real options (decision flexibility), only in those projects with high risks can it have its advantages fully revealed and help decision makers to make wiser decisions with the value of real options increasing with the growth of uncertainty. Many cases in international academic research field (Myers, S, 1984; McDonald, R&D. Siegel, 1986; Dixit A&R. Pindyck, 1994) and investment practice field (HP, a production and sales decision, 1990; Exxon, a natural gas development project, 1996; Airbus, abandoning option, 1996) have shown that real options can help to precisely analyze the uncertainty in project investment and reveal its value. Due to the complexity of the binomial option pricing model and the Black-Scholes option pricing model and the large amount of time and resources devoted to them, the computer can be employed to assist the decision-making process of those complex and risky projects based on real options in order to greatly improve

the quality and efficiency of decision making.

3. The construction of DSS Model Based on Real Options

3.1 Project Evaluation Indicators

DSS for project investment is generally composed of human-computer interaction system, database system, model base system and method base system. And in real practice, knowledge base system can be added to those complex and important investment projects to improve the reliability of project decisions.

a. Database System

The database in the investment decision model based on real options is constructed according to the characteristics of specific investment projects, including the market inventory, the cash flow statement, the income statement, the balance sheet, the accounting and financial parameter table, the investment estimation and schedule table, the cost expense table, the loan repayment table, the project evaluation result table and the prediction of the volatility of indefinite cash flow and datasheets relevant to risk-free rate of returns. With the original input data fixed, the decision makers will get the result easily by changing the value of variable parameters.

During the process of data collection, a decision needs to be described in the written form first of all to explain what the potential decisions are, what factors may cause the changes of decisions and who has the right to implement decisions and so on. In addition, the source of uncertainty should also be predicted, including market and non-market risks as well as the forms of uncertainty. And finally, the financial market needs to be inspected to distinguish the uncertainty caused by market factors from those caused by non-market factors and to see whether there is any other framework in which financial market information can be utilized in the better way.

b. Model Base System

Generally speaking, model base system is composed of the model of capital demands prediction, the model of investment estimation, the model of uncertainty analysis, the model of financial profit earning ability analysis and the model of scheme comparison and so on. What is to be established in the paper is a model based on real options, which regards an investment project as a combination of a lot of real options (An, Zhang, 2001). Accordingly, real options become the object for decisions instead of projects, that is to say, the evaluation of investment projects is turned into setting price on real options.

According to the above, the investment decision model based on real options can be established as follows:

$$\begin{aligned}
 ENPV &= NPV + OP \\
 OP &= SN(d_1) - Ke^{-rt} N(d_2) \\
 d_1 &= \frac{\log(S/K) + rt + \sigma^2 t / 2}{\sigma \sqrt{t}} \\
 d_2 &= \frac{\log(S/K) + rt - \sigma^2 t / 2}{\sigma \sqrt{t}}
 \end{aligned} \tag{1}$$

In this model, $ENPV$ is the real value of the project or the extended net present value, NPV is the net present value of the project, OP refers to some flexible values or option premium, $N(d)$ refers to the density function of cumulative normal distribution, K is the executive price of options, S refers to the present value of the investment project, σ^2 is the variance of the investment profit rate during a period, t is the vesting period of options and r refers to the risk-free interest rate.

It is shown in the above model that the real value of an investment project refers to that of the real options included in the project, that is, the sum of NPV and OP . Certainly, as different real options have different option premium, different value composition is resulted. Particularly, for those real options with the null value of OP , the value of NPV is equal to that of $ENPV$ (Fang, Wu, 2001).

Decision makers are supposed to select different decision indicators when facing different investment schemes. Besides, static investment payoff period and the profit rate can be used as assistant indicators to evaluate investment projects. However, it must be pointed out that when the conclusion from the assistant indicators doesn't agree with that from the major ones (such as the net present value), the latter should be referred to. In this model, because real options are employed to assist investment decisions, $ENPV$ is the major indicator, including NPV and OP . In addition, during the process of fixing the price of real options, the present value of the underlying assets, cash flow, the holding period return and the fluctuation ratio of a variety of uncertainty also need to be calculated.

c. Method Base System

In this system, investment decisions need to be made and corresponding results need to be examined according to the pricing result. First all the method subprograms are classified according to the classification of models, then a multi-level nested menu should be formed which will enable evaluators to select the operating path as well as the system to employ some method subprograms to realize model combination and finish evaluation decisions. Here, relevant programs are compiled with Visual Basic according to the calculation formula of different indicators.

d. Man-Computer Interaction System

When designing this system, the computer skills of different decision makers have to be taken into consideration. As a result, difficult jargons should be avoided; detailed explanations should be provided; information feedback should be given timely; the function of accepting and correcting errors should be included; assistance should be provided when it is required; solutions to some decision-making problems should be given automatically and the corresponding results can be given in the form of visual diagrams, reports or words.

4. Analysis and Calculation of the Decision Model Based on Real Options

Supposing Enterprise A developed a new product in 2008 with the initial investment of 2,500,000 yuan, this project could be conducted in two steps: producing, selling the product and having R&D on its functional and technological updating in the first step (to be finished by the end of 2011); establishing new production lines to realize the renewal of products in the second step.

According to the DDS model based on real options, decision analysis can be conducted in the following steps:

First step: collecting data and establishing database

In this specific case, according to the result of market survey and analysis on the investment project, the cash flows in several successive years are respectively 400,000 yuan, 450,000 yuan, 500,000 yuan, 650,000 yuan, 600,000 yuan and 800,000 yuan. In addition, according to relevant prediction analysis on the financial market, K has the value of 2,000,000 yuan, T has the value of 3 years, σ is equal to 40% and the expected return rate is not less than 10%. All these data are input into the database for future use.

Second step: having decision analysis based on the established real option model

First of all, NPV is calculated. According to relevant Visual Basic program, its value proves to be -120,900 yuan < 0 .

Second comes the calculation of OP . This project is conducted in two steps: with the sales in the first step, the new product has got certain market share; its market share is expected to be expanded due to its second-generation product and the final NPV is expected to be over 0 because of the sharp growth of cash flow in the last 3 years. Therefore, this chance can be viewed as a European call option whose value can be calculated with the B-S real option pricing model. Here, still with the help of the compiled Visual Basic program, S can be figured out, that is, the net present value of the cash flow created by the product from 2012 to 2015, to be 2,964,700 yuan ($d_1=1.1746$, $d_2=0.4818$). Finally, OP has the value of 1,464,700 yuan.

After that, with relevant Visual Basic program, $ENPV$ is calculated to be 1,343,800 yuan > 0 , hence proving that this project is feasible.

Seen from the result of the real option model, this project is non-executable with only the net present value is considered ($NPV = -120,900$ yuan < 0). However, it is proved to be executable with the real option model ($ENPV = 1,343,800$ yuan > 0). Therefore, this model is able to exhibit the decision-making ability of investors more effectively and evaluate the profits brought about by the flexible and dynamic operation strategies in the risky condition correctly. In addition, the establishment of DSS enables decision makers to select decision schemes with the help of computer system more effectively, hence improving the efficiency and reliability of decision making.

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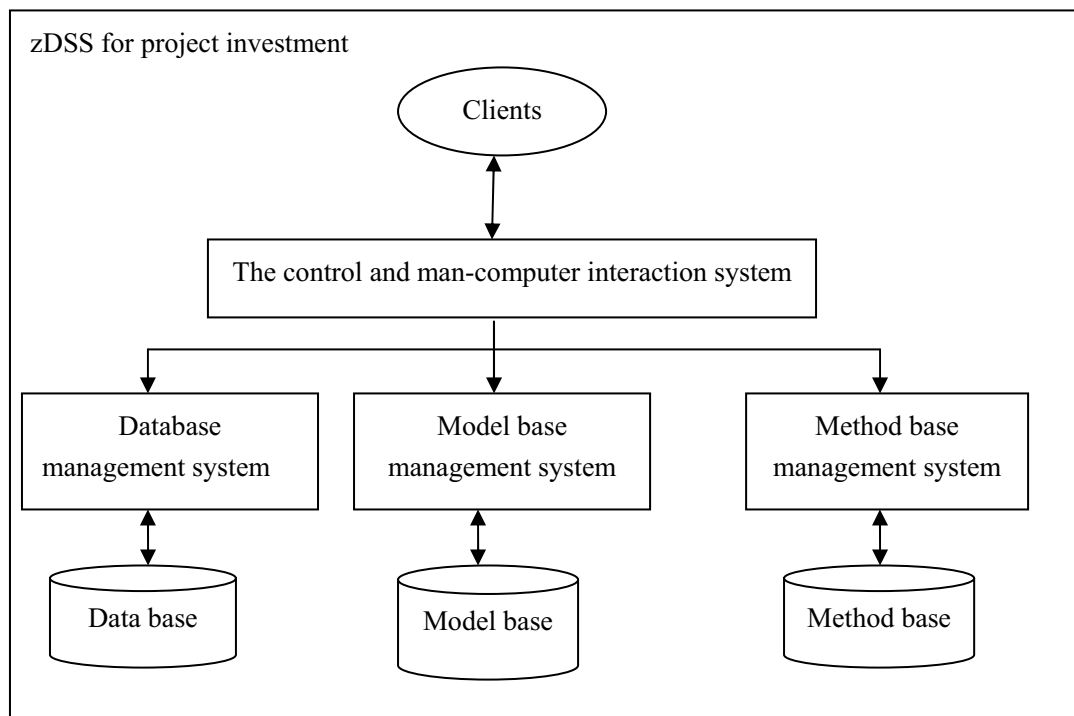


Figure 1. The Structure of DSS for Project Investment



A Study on the Influences of Financing on Technological Innovation in Small and Medium-Sized Enterprises

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Abstract

As the most vigorous part in the national economy, small and medium-sized enterprises exert an active role in increasing employment, training entrepreneurs, invigorating economy, cooperating with large enterprises and improving market competition and so on. What's more, S&T enterprises of this kind also take an active role in technological innovation. In view of the poor technological innovation ability of small and medium-sized enterprises in China, such an analysis will be helpful for their sound development.

Keywords: Small and medium-sized enterprises, Technological innovation, Difficulties in financing

1. Causes for Poor Technological Innovation in SME in China

1.1 Imperfect Policies and Regulations Promoting SME's Technological Innovation

Ever since the reform and opening-up, some regulations and policies relevant to technological innovation have been established and implemented in China, such as On Strengthening the Construction of Service System for SME's Technological Innovation and The Law of SME Development, and have exerted favorable effects in promoting S&T development and technological innovation. However, some problems also exist: (1) relevant laws and regulations seem empty with some contents repeated, omitted and contradicted. (2) Most of the current policies and regulations relevant to technological innovation in SME support those S&T enterprises, especially the technological innovation programs in high-technology enterprises, such as Torch Program, SME incubators and funds for the technological innovation of small and medium-sized S&T enterprises. However, insufficient importance has been attached to SME in the manufacturing industry, especially the technological innovation of SME in the tertiary industry. (3) In relevant policies, more emphasis is put on the favorable terms for enterprises in the late period of their industrialization than on R&D of technological innovation, the incubation of the achievements in the early period of industrialization, relevant experiments and so on.

1.2 Having not Established Effective Industry-University-Research Cooperation System

Currently, it is very difficult to construct an innovative system focused on enterprises and sticking to the combination of industry, university and research. Due to relevant system in China, industry, university and research have long been separated from each other, scientific research funds and staff are over concentrated in national scientific research universities and institutions and the value of scientific achievements is evaluated according to the funds they gain, the number of issued essays, the academic status of the participants and the level of awards they win. Such an evaluation system succeeds in reflecting the academic value of scientific achievements while neglecting their market value, hence leading to the failure to lead the market or the infeasibility of industrial production. This is a source of scientific resource waste as well as one of the main reasons for Chinese enterprises' poor innovative abilities.

1.3 Incomplete Protection System for Intellectual Property Rights

At present, the incomplete laws and administrative systems relevant to the protection of intellectual property rights in China have resulted in some problems, such as multifarious administrations, ineffective strike against torts, low cost for torts, high cost for safeguarding legal rights, unscientific evaluation system and so on, hence leading to the current

indifferent consciousness of protecting intellectual property rights all over China, low protection level and unbearably high cost for safeguarding legal rights.

1.4 Lacking in Agencies and Collaborative Networks Beneficial for Innovation in SME

Currently, agencies for technological innovation in China include productivity promotion centers, innovation service centers, engineering technology research centers, information centers, intellectual property rights affairs centers, all kinds of technological consultation institutions, permanent technological markets, human resource markets, technological property rights transaction institutions and so on. In spite of their driving force, these institutions are mainly concentrated in large and medium-sized cities, suffering from low level of specialization, poor collaboration, one-fold service function, poor functions of an innovation service system including feasibility argumentation, financing guarantee, patent agency, mediation of disputes and so on, hence failing to provide excellent all-out services for small and medium enterprises. Besides, because most service institutions are established in governmental departments, only a few of them are directly open to enterprises. What's more, only those large enterprises can be served. The high charges of commercial agencies have also prevented SME from getting necessary guidance in their technological innovation.

In addition, insufficient collaboration and communication among small and medium enterprises, independent production, the shortage of necessary techniques during the development process or of formal and informal communication and the shortage of specialized collaboration and technological and sales networks have increased the cost for the transactions among small and medium-sized enterprises and therefore that for their technological innovation.

1.5 Impassable Financing Channels for SME's Technological Innovation

A common problem is harassing the whole world, that is, great difficulties for SME to finance. It was shown in U.S. in 1999 that those commercial banks with their assets less than \$100,000,000 gave 96.7% of their loans to small and medium enterprises; those with assets between \$100,000,000 and \$300,000,000 gave 85% of their loans to them; the data for those banks with assets between \$300,000,000 and \$10,000,000,000 went down to 63.2%; for those with assets between \$10,000,000,000 and \$50,000,000,000 it was 37.8%; for those over \$50,000,000,000 it was 16.9%. It is also shown in relevant surveys that 62% of small and medium-sized enterprises in China regard difficulties in financing as the top obstacle. Faced with the common problem in gaining capital, most small and medium-sized enterprises regard impassable financing channels as their biggest enemy.

1.5.1 Difficulties in Direct Financing

Small and medium-sized enterprises are restricted from being listed on the main board market while the second market hasn't been opened up; they are also unable to finance by issuing bonds due to some policy restrictions.

Risk investment is a financing channel fit for high-tech enterprises, but in China those established companies specialized in risk investment have also found it hard to run their business in accordance with the given risk investment mechanism due to incomplete systems and laws as well as imperfect mechanism for capital exit. Not like in U.S. where different investment companies invest different quotas in different stages of a project in order to spread risks, one company is in charge of the whole process in China. It is well known that risk investment must be accompanied by risks or even failures. However, this hasn't got fully realized in China, where risk investment companies pursue the zero-failure record and therefore there are not many projects able to gain investment from them finally. In addition, the administrative division of local governments at all levels has also made it hard for investment companies to recover their capital.

Private investment hasn't been started up to now. In spite of the overall resident savings over 17,000,000,000,000, private capital has no access to small and medium-sized S&T enterprises in the form of risk investment funds or Angel Capital due to the shortage of effective financial institutional arrangements. Now, private funds are still forbidden by Chinese policies.

1.5.2 Difficulties in Indirect Financing

This problem is mainly manifested in the great difficulties in getting loans and guarantee. In 2005, the short-term loans for all small and medium enterprises were 1,008,300,000,000 yuan, taking up only 11.49% of the total short-term loans. Compared with their roles and their demands for investment and loans, such a proportion seems too low.

2. The Supportive Role of Financing in SME's Technological Innovation

With capital being an indispensable element for SME's innovation, especially their technological innovation, stable financing channels can provide effective guarantee for their innovation process because their technological innovation is not only of high growth and effectiveness but a highly risky economic behavior and therefore is closely related to their survival in such a society based on knowledge economy. In addition, since technological achievements are transformed into commodities in the innovation process, uncertain factors due to technologies as well as market exert influences on this process. In this case, risk investment comes into being and becomes the major force in SME's innovation as well as

the main channel for SME's financing.

3. Financing Countermeasures to Strengthen Chinese SME's Technological Innovation Ability

3.1 Exerting the role of Fiscal Taxation Policies to Compensate for SME's shortage of capital and to Encourage their Technological Innovation

3.1.1 Increasing Financial Input in Science and Technology

A system of stably increasing financial input in science and technology should be gradually established to guarantee higher growth of the input in science and technology than that of the national regular revenue. Financial allocation should be focused on SME's independent innovation projects.

3.1.2 Establishing SME's Diversified Financing System

Funds for SME's growth should be established to deal with special loans, interest subsidies, financial aids for technological innovation R&D and legal aids for SME; commercial banks' service should be improved and their direction of loans should be adjusted to increase the proportion of loans for SME; private, official or mixed institutions guaranteeing SME's credit should also be established; finance lease should be developed to support SME's facility renewal and technological renovation; risk investment mechanism should be perfected and favorable policy environment should be created to guarantee the sound operation of this mechanism due to the particular importance of risk investment for SME; SME should be promoted to be listed on exchange and in order to do that these enterprises' direct financing system should be perfected; a real SME policy bank should be established to change the current asymmetry between the existing policy bank system and SME's development.

3.1.3 Perfecting Taxation Policies and Strengthening Taxation Services for SME

In order to relieve Chinese SME's heavy burden, the current taxation system should be normalized to transform those unreasonable charges into taxes and maintain enterprises' burden at a reasonable level.

3.1.4 Establishing Preferential Taxation Policies Related to Risk Investment.

Necessary preferences can be given to risk investment from the added value of the transfer gained by high-tech enterprises and private capital should be encouraged to participate in risk investment in order to expand the capital channels for it and therefore for SME.

3.2 Developing Risk Investment and Capital Market

The guiding, demonstrating and leading role of risk investment and capital market for SME's technological innovation should be exerted. The prosperity of the whole risk investment industry should begin with a solution to the exit mechanism which calls for the help of capital market. Capital market is able to offer sufficient capital support for SME, to encourage them to strength their normalized operation and basic management, to promote SME's rapid growth through acquisition and merger and to facilitate the transformation and industrialization of S&T achievements.

3.2.1 Vigorously Pushing the Construction of Multi-level Capital Market System

The carve-out board market should be pushed actively. The current SME board market is a part of the main board market instead of a real carve-out board market. It is helpful to establish investors' confidence in Chinese stock market by encouraging more vigorous and prospective enterprises to be listed through great efforts in establishing the carve-out board market.

Meanwhile, the SME board market should also be innovated with faster pace. According to the latest Act of Company and Securities Law as well as the development rules and features of new small enterprises, new standards of issuance and verification different from the traditional ones should be established with emphasis on small innovative enterprises' abilities in R&D, independent knowledge property rights and their potentials for growth. The role of recommending and guaranteeing institutions and the stock exchanges should be fully exerted to improve the marketization of issuance and verification. In addition, exit mechanism, stock incentive mechanism and small-sum financing mechanism should be established in accordance with the principle of "the survival of the fittest" to promote the innovation of transactions and administration systems in the all-tradable system and form the strong vitality of the SME board market.

3.2.2 Strengthening Guidance for Risk Investment Development and Establishing National Guidance Capital for Risk Investment (Mother Funds)

The significance of this measure can be reflected in two ways: government's demonstrative capital will encourage all kinds of capital to establish risk investment institutions and therefore enlarge the capital source for risk investment and strengthen the capital or cash of Chinese risk investment institutions; guidance capital will draw more investment in small and medium-sized S&T enterprises in seed phase and at the initial stage (especially those enterprises with strong independent innovative ability) and therefore improve Chinese enterprises' independent innovative ability.

3.2.3 Establishing Preferential Policies for Risk Investment

Necessary preferences can be given to risk investment from the added value of the transfer gained by high-tech enterprises to encourage more individuals to participate in risk investment.

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Study on the Management of Intellectual Capital

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Abstract

In the time of knowledge economy, the Intellectual Capital gradually replaces the real capital and changes to the headspring of value enhancement for modern enterprises. To acquire advantages in the market competition, modern enterprises should not only innovate upon products, marketing channels, market and services, but also enhance the research and development ability of market and product, and specially pay attention to the cultivation and management the enterprise Intellectual Capital.

Keywords: Intellectual Capital, Management, Knowledge

When human being enters into the time of knowledge economy, the Intellectual Capital gradually replaces the real capital and changes to the headspring of value enhancement for modern enterprises. In 1990s, the proportion of Intellectual Capital in the total asset of manufacturing of Japan, US and Germany gradually ascended, and the proportion of Intellectual Capital of Japan had ascended from 10.5% in 1990 to 14.5% in 2001, and this number of US had ascended from 30.6% to 46.9%, and this number of Germany had ascended from 15% to 30.7% at the same term. In addition, some literatures recoded the Intellectual Capital of many American high-technology enterprises had exceeded 70% of their total assets. Thus, the importance of Intellectual Capital management is indubitable, and how to effectively manage the Intellectual Capital has been the hot and difficult problem in the management theory circle.

1. Definition and Content of Intellectual Capital

1.1 Definition of Intellectual Capital

The research about the definition of Intellectual Capital came of the west. The concept of Intellectual Capital was first proposed by famous economist of US, James K. Galbraith in 1969. And he thought that Intellectual Capital was not only a kind of static intangible asset in itself, but a kind of dynamic capital without fixed capital form, and it is the process effectively utilizing knowledge, and a kind of measure to realize the target. Stuart defined the Intellectual Capital as the matters which were known by all members in the company and could help the enterprise to acquire the competitive advantage in the market. And he thought that the content of capital knowledge included human capital, structural capital and customer capital. Starting from the measurement of Intellectual Capital, Advinsson and Marlon defined the Intellectual Capital as the part that the market value of the enterprise exceeded the book value. Sveiby thought that the Intellectual Capital was a kind of intangible asset based on relatively infinite knowledge.

For the research about Intellectual Capital, domestic scholars have introduced many western literatures and made many works, and based on that, some opinions have been formed. Yan Ruosen pointed out that the essential of the enterprise Intellectual Capital was to integrate intangible assets existing in organization structure, system arrangement, enterprise culture, employee's quality and enterprise management relationship. But Bai Lianzhi thought that the Intellectual Capital meant that knowledge or knowledge commodity was regarded as the measure to implement value enhancement or offer service in the knowledge economy. And Yuan Li thought that the connotation of Intellectual Capital could be defined from four aspects such as the definition, the representation, the function and the character of Intellectual Capital.

In above research results, Stuart's definition about the Intellectual Capital is agreed in this article, i.e. the Intellectual Capital is the matters which are known by all members in the company and could help the enterprise to acquire the competitive advantage in the market.

1.2 Content of Intellectual Capital

Stuart proposed the H-S-C structure of Intellectual Capital, and he thought that the content of Intellectual Capital should include human capital, structural capital and customer capital. Customer capital means the management assets such as marketing channel, customer loyalty and enterprise reputation. Human capital includes various skills and knowledge possessed by employees for the sustainable development of the enterprise, and they are the important base of enterprise

Intellectual Capital. Structural capital includes the organization structure, the system standards and the organizational culture of the enterprise. Advinsson and Sullivan's opinion is different with Stuart's, and they thought that the Intellectual Capital should include human resource and structural capital. Human recourse includes all factors about human being in the enterprise, and it comes down to owner, employee, supplier and other persons who can bring their ability, knack and skills to the enterprise. Structural capital means all other abilities which don't leech on to the human resource in the enterprise. For the composing of Intellectual Capital, Stuart's opinion is agreed in this article, i.e. the content of Intellectual Capital should include human capital, structural capital and customer capital.

2. Management of Intellectual Capital

The important content of Intellectual Capital management is heterogeneous resource, i.e. the knowledge. The knowledge management is the core of the Intellectual Capital management, and the transfer, the flow, the sharing and the communication with the exterior in the organization all are very important to enhance the Intellectual Capital, but the Intellectual Capital management is not only to manage knowledge, but to manage the expansion of knowledge management expansion, i.e. to manage the expansion, value-enhancement and value evaluation of Intellectual Capital.

The Intellectual Capital management should include three layers as follows.

- (1) The core layer. On this layer, the knowledge management could provide the knowledge platform for the expansion of Intellectual Capital by assimilating exterior knowledge, integrating interior knowledge and creating new knowledge.
- (2) The expansion layer. On this layer, the enterprise Intellectual Capital could realize the value enhancement by the expansion, and accordingly drive the value enhancement of the whole enterprise.
- (3) The strategy layer. As a subsystem of the enterprise management, the management of enterprise Intellectual Capital must accord with the development strategy of the enterprise and make proper adjustment according to the strategy of the enterprise.

As viewed from the content of Intellectual Capital management, it is different with other traditional managements, and the differences are mainly embodied in following aspects.

- (1) Differing with knowledge management. As viewed from the object of management, the knowledge management is to manage knowledge, but the Intellectual Capital is to manage the knowledge that has been converted to capitals. Knowledge management is the base of Intellectual Capital management. For the organizations such as country and enterprise, if knowledge could not be converted into the resources which can not be invested in production (capitals), the actual meaning of management will be lost.
- (2) Differing with information management. Except for managing the explicit knowledge in the enterprise knowledge resource, the Intellectual Capital management is mainly to manage the implicit knowledge of enterprise, and stimulate employees to contribute and share their accumulated implicit knowledge, which is the key for the enterprise development in the time of knowledge economy.
- (3) Differing with asset management. The object of Intellectual Capital management is the intangible Intellectual Capital of enterprise. In the day when the knowledge asset is more and more important, the Intellectual Capital management is more and more practical.
- (4) Influence on financial management. In the implementation of the Intellectual Capital management system, the index control of financial management is assumed by the interior knowledge network of the enterprise, and the superior layer of the enterprise could acquire relative financial data (including traditional accountant data and Intellectual Capital data), know the new trends and make decisions in time.
- (5) Influence on production management. The knowledge sharing platform established by the Intellectual Capital management could effectively harmony the efficiencies of various parts and employees will actively participate in the decisions of the production management system.
- (6) Influence on marketing management. The Intellectual Capital management could weaken the boundaries between the enterprise and the exterior environment, and consumers and dealers are not to passively accept the product supply of the enterprise, but participate in the marketing decisions of the enterprise, and enterprise will more approach to the market and consumers, so the enterprise will largely adopt the marketing measure (such as E-business) giving priority to network.

Intellectual Capital management will bring many benefits to one enterprise, such as reducing the time from development to application, saving costs and investments, or recycling structure capital and organization capital, and producing higher added value because of the improvement of mutual functions, and creating new values by new association and new combination.

Therefore, the Intellectual Capital management can be defined as the management of the expansion, enhancement and value evaluation of knowledge management, taking the knowledge management as the core, taking the enhancement of

enterprise value as the intention under the condition adapting with the development strategy of the enterprise.

3. Management Measures of Intellectual Capital

If enterprises want to acquire advantages in the market competition, they should not only innovate upon products, marketing channel, market and service, but enhance the R&D ability of market and product, and specially pay attention to the cultivation and management of enterprise Intellectual Capital. The target of Intellectual Capital management is to distinguish, acquire, utilize and circle Intellectual Capitals to enhance the value production ability of the enterprise.

3.1 Strengthening the management of enterprise knowledge resources

The knowledge resource of the enterprise means the resources which can be utilized repeatedly by the enterprise, are based on the information and technology, and bring wealth growth for the enterprise. It generally includes three aspects, i.e. the intangible assets created and possessed by the enterprise (such as brand, reputation, channel, technical flow, management mode and method, information network), information resource (various information about enterprise management acquired by the information network), intelligence resource (various knowledge which can be utilized by the enterprise and exist in human resources of the enterprise, and ability which can utilize knowledge in a creative way). It is obvious that the knowledge resource could create large market opportunity and wealth for the enterprise. Because the role of knowledge resource in the survival and development of the enterprise is more and more important, and the management of knowledge resource has turned into the most important content of the enterprise management, and the management of knowledge resource is a kind of comprehensive management, and it comes down to many domains such as human resource management, production management, marketing management, intellectual property protection, establishment of public relations, technology and information management. The intention of knowledge resource management is to offer new technology, method and environment to harmonize, support laborers' creation, distribution and utilization of knowledge, and finally enhance the core competitive ability of the enterprise. The main content of knowledge resource management generally include following aspects, i.e. the organization system and operation standards of generating, utilizing and transferring knowledge resources of enterprise, the investment management of knowledge resources such as the training of human resources, the introduction of information and technology, and the establishment of enterprise image, the establishment of the knowledge repository to improve the sharing of knowledge, the improvement of knowledge innovation to integrate creationary knowledge into products, services and production process, the protection of intellectual property, the output assessment, income distribution, confirmation and evaluation of knowledge resources.

3.2 Strengthening the interior management and the exterior management of enterprise knowledge

As viewed from the range of knowledge management, the knowledge management comes down to the interior management and the exterior management of knowledge. The interior management of knowledge includes the generation, communication, accumulation and application of knowledge in the interior of the enterprise. The interior management of enterprise knowledge should build a loose environment which is propitious to generate, communicate with and validate knowledge for employees, establish an information network in the interior of the enterprise convenient for employees to communicate with knowledge, constitute various encouragement policies for the knowledge communication among employees, utilize various knowledge database and patent database to store and accumulate knowledge, loosen the control of knowledge application and encourage employees to carve out their own careers in the interior of the enterprise and promote the application of knowledge. The intention of the exterior management of knowledge is to effectively manage knowledge by the communication and the cooperation among enterprise, and accumulate more knowledge for the enterprise and acquire more benefits. The exterior management of knowledge should make the enterprise to effectively communicate and share knowledge with other enterprises, and effectively cooperate with other special exterior suppliers of knowledge, and share knowledge, develop and cultivate the market with the competitors together.

3.3 Strengthening the management of explicit knowledge and implicit knowledge

As viewed from the management form of knowledge, knowledge can be divided into explicit knowledge and implicit knowledge. Explicit knowledge mainly means the knowledge existing by the forms such as patents, scientific invention and special technology. And the implicit knowledge means employees' creationary knowledge and ideas, and it only exists in employees' heads, which can not be observed and understood definitely by others. At present, many technologies and methods can be used to manage explicit knowledge, for example, the explicit knowledge such as patent and special technologies which can be stored in the database, and checked and used by the computer network to share them with others. Because electric information can span the obstacles induced by duties and classes in the daily contacts, make the communications among peoples more freely, and make the communication effect more effective. Therefore, enterprises must learn to use this new information and knowledge disposal tool, and grasp the new knowledge, new information and new trends in the world, and utilize all human treasures of knowledge to quicken their development.

Implicit knowledge exists in employees' heads, which can not be observed definitely, and each enterprise has some "knowledge self-seekers" who would not easily share their knowledge with others to maintain their special status in the enterprise. Enterprises can not deprive and capture the ideas existing in these employees' head, and it needs employees to consciously contribute the knowledge to the enterprise and share with most employees, only in this way, employee's implicit knowledge can be converted into strong productivity of the enterprise. Therefore, enterprises must effectively adjust the management mechanism of the enterprise, and form the management mechanism which can encourage employees to cooperate in innovation and share knowledge.

3.4 Enhancing the whole quality of enterprise talent resources by educational training

In the time of knowledge economy, the competition of talents is more drastic, and one important task of human resource management is to attract and hold excellent talents. However, strong flow willing is contrary with that, and employees in the enterprise always more pay attention to their individual growths, not the requirement of the organization. Based on that, enterprises should first pay attention to the investment of human capitals for employees, perfect the talent cultivation mechanism, and offer learning opportunities for employees to accept further education and continually enhance their skills, and make them to possess the ability to obtain employment for life. Employees' requirements for the growth of knowledge, individual and career will exceed the implementation of the organizational target. When employees feel that they are only the "senior employees" of the organization, their absolute loyalty will hardly form. Therefore, enterprises should not only offer the salary according with employees' contribution, and make them to share the wealth created by them, but also fully know employees' individual requirements and wills about their occupation development, and offer the ascending road for employees. Only when employees could clearly see their development futures in the organization, they can try their best to contribute their powers and form the relationship sharing honor or disgrace in long-term cooperation with the organization.

3.5 Establishing reasonable distribution and encouragement system

The distribution mechanism is the key to innovate upon the mechanism of the enterprise, and the original drive to develop the enterprise. Each breakthrough of the distribution mechanism all can encourage employees' working enthusiasm and creativity. In the time of knowledge economy, the production of the society would consume knowledge largely, and people who can accumulate more knowledge and continually create new knowledge will acquire wealth. In this instance, the distribution of social wealth will take knowledge as the axis, and the salary is mainly decided by individual knowledge and skills, more pay for more knowledge.

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Research on China's State-Owned Enterprise Capital Budgeting

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Abstract

Along with the deepening reform of socialist market economy, state-owned enterprises keep in pursuing for self values in the competitive market, in order to gain survival and development. Based on changeable market, state-owned enterprises seek for development by adjustment or adjustment by development. Quite a lot of managers focus on decreasing costs, but seldom on capital budgeting, long-term asset investment, or R&D. Even for the sake of certain needs, random capital expenditure is common. State-owned assets' maintenance and appreciation of values suffer serious threats. Therefore, to strengthen state-owned enterprises' capital budgeting management is an inevitable way for state-owned enterprises improving the economic operation quality.

Keywords: State-owned enterprise, Capital budgeting, Maintenance and appreciation of values

1. Problems for State-Owned Enterprises' Capital Budgeting in Building Modern Enterprise System

The reform of state-owned enterprises mainly faces two kinds of problems, namely the enterprise external economic environment and the enterprise internal economic management. The two issues directly restrict state-owned enterprises (especially some old state-owned enterprises) to participate in market competition, affecting enterprises' long-term development.

1.1 The enterprise external economic environment problem

China has stepped into the socialist market economy for a short while. Lots of problems need to be solved in exploration. To probe into the enterprise external economic environment can help us to be rational in decision-making and make up more practical strategic goals for enterprise development.

(1) Unfair market competition and imperfect market economic order weaken enterprises' external pressures and internal motives for strengthening capital budgeting management. In specific, it includes three aspects:

① For most enterprises, as they enter the market economy road and become competitive enterprises, they are characterized with planned economy and official nature. Due to the special status, they can gain high benefits and enlarge capitals merely by monopoly instead of decreasing costs. However, the advantages of state-owned enterprises are weakening gradually.

② The social security system is imperfect and enterprises have different burden. State-owned enterprises have heavy social burden, such as the medical fees for the retired. In special, the fast increasing medical fees for the retired account for second thirds of total medical fees. Under this circumstance, state-owned enterprises compete with other enterprises at a different starting line as they enter the market. In a sense, it lacks of basic precondition for fair competition. As a result, the market ratio of state-owned enterprises may be decreasing gradually. Their capital accumulation will be slow.

③ The legal system that maintains the operation of socialist economic system is imperfect. As a result, strikes on unfair competition, such as fake products, cheat, and slanders, are weak. Enterprises' business activities can not get strong and effective legal protection.

(2) Macro economy's industrial structure adjustment mechanism is imperfect and lack of monitoring. Repetitive construction affects enterprises' motives for perfecting the investment budget management mechanism.

① In the construction of modern enterprises system, it is impossible for the country performing direct management on enterprises' capital budgeting. However, a new tendency appears, in which the country is supposed to manage certain issues but not. In specific, the monitoring and controlling functions of macro economic structure layout are weakening. Local areas govern by themselves. Repetitive and low-level investments are increasing. Effective social supervision is an absence.

② In the financial accounting system, after the reform, the special funds are not listed in the reports. Capital income and expenditure are not necessarily asked to report for the top management level. Therefore, the country has no relevant information for adjusting enterprises' micro investment management. Even more, because it is not necessary for enterprises sending reports, some enterprises do not compile capital income and expenditure plan. Enterprises do not

pay attention to capital budgeting management. Sometimes, they only pursue for the size of assets, which may lead to a sharp rise of asset-debt ratio.

(3) In order to solve the business difficulties of state-owned enterprises, certain “surgical operation”, such as renting, auction, merger, and bankrupt, has been taken. They seldom focus on “internal surgery” to strengthen the scientific management, build and perfect the business operation mechanism. Due to this tendency, some state-owned enterprises refuse to search for market externally or decrease costs internally. They ask for policy supports, such as tax exemption, low-rate loans, etc. Once enterprise suffer serious loses, external policies will become powerless. Therefore, the two tendencies make state-owned enterprise lose amounts of talents, seriously affecting the construction of modern enterprise capital budgeting management mechanism.

1.2 Problems for enterprise internal business management

Due to the objective existence of enterprise external economic environment, state-owned enterprises should make exercises and strengthen scientific management to achieve survival and development. However, under the operation of long-term planning economic system, state-owned management mode has lots of defects. In detail:

(1) Weak market consciousness, poor cost competition consciousness, and weak environment adaptability. Before the middle and long-term business decision, the essential market survey is simple. Irrationally enlarging capital expenditure will cost a lot and waste resources.

(2) In production the extensive mode is still in action. In other words, it depends on capital investment to increase the output and decrease costs. As lots of products have to be promoted for sales, it may cause a bad circle “capital expenditure --- increase output --- increase sales --- capital stock --- increase loans --- reduce profits”. There is lack of consciousness of effectiveness for production efficiency, work quality, and business decision-making.

(3) Enterprises have not scientific program for technological reform. In execution, some reforms turn into building houses and buying facilities. It lacks of dynamic trace. The feasibility report becomes an “approval” report finally. Interests for enterprises’ capital expenditure are increasing significantly. Enterprises can not pay off loans from banks. Accordingly, the credits of enterprises are ruined. Furthermore, new facilities purchased by enterprises can not be used effectively. Some are even not be equipped till today. For example, a machine was bought eight years ago at a price of 190,000 Yuan but never put in use. If sell it, the enterprise’s interests will be hurt.

(4) The consciousness of capital budgeting management is weak. In enterprises, the performance evaluation focuses on “effects”, which mainly refers to production value and sales, but not cost decrease. For certain period, managers are confused by “high price, high cost, and high effect”. They merely focus on effects but not know where the effects are from. As a result, some enterprises have loose management, low labor efficiency, high production consumption, serious stock, poor quality and preciseness, which will finally lead to decreasing profits, and more loses.

2. Strengthen Capital Budgeting and Controlling, and Improve State-Owned Enterprises’ Economic Operation Quality

In economic operation, state-owned enterprises face a series of external environmental issues. Along with the perfection of reform, some progresses have been achieved. As for enterprises’ internal operations, we can make it perfect by strengthening scientific management.

2.1 Enhance the consciousness of budgeting management and improve the status of budgeting management

Overall capital budgeting management is involved by all members and all processes. Enterprises should pay more attention on overall budgeting management, make all employees, especially the managers, know and understand its importance, drive managers to reform their ideas. All managers should lay stresses on budgeting management in thoughts and behaviors. Re-recognize budgeting management in perspective of enterprise governance and enterprise management innovation. Support enterprises to popularize budgeting management in general. Take the overall budgeting management as the important issue for improving enterprises’ management level and economic benefits.

2.2 Build a state-owned assets operation budgeting reports system

It mainly includes state-owned assets budgeting tables, relevant appendix, and introduction. Thereinto, the state-owned assets budgeting table is mainly to reflect state-owned assets’ capital sources and uses by means of income and expenditure. For different subjects, the tables are different. Even for the same subjects, the contents are different at different time and places. It is a gradual perfect process. In the state-owned assets budgeting tables done by state-owned operation enterprises, the income includes business income, capital financing income, other income, and annual balance. The expenditure includes business expenses, capital investment, debts, and other expenditure. For different operation enterprises, the tables can be adjusted properly. The appendix mainly includes assets-debts tables, balance sheets, and cash flows. The introduction mainly includes the explanations for main indexes.

2.3 Build a equipped system for state-owned assets operation budgeting

① Establish assets managers' financial duties, including duties of financial sectors as investors in fields of assets and financial management and enterprises' duties for investment in state-owned assets and financial management. ② Establish relevant evaluation methods concerning financial duties. Combine rewards, punishments, incentives, and restraints together. Build a set of perfect system for examining and evaluating state-owned assets' maintenance and appreciation of values, and an incentive mechanism for managers, and risk responsibility system. ③ Set up an effective external financial monitoring mechanism. Arrange financial monitors for state-owned assets. Trust agencies to audit, supervise, and reflect enterprises business activities and financial conditions. ④ Standard enterprises' financing and investing activities, including the increase and decrease of state-owned assets, and the arrangement of state-owned stock rights. ⑤ Regulate enterprises' cost management expenses, including wages distribution, treatment fees, bad debts, losses of large fixed assets, and flowing assets, and losses of investments. Research and apply regulated management methods. ⑥ Supervise the property change and financial change in assets reengineering. Regulate enterprises' reengineering activities, including state-owned enterprises' combination, separation, exterior investment, transfer, mortgage, guaranty, and bankruptcy. Emphasize on state-owned assets' optimized allocation. Build an entrance-exit mechanism for state-owned assets. ⑦ Regulate enterprises' distribution policy, including the distribution of after-tax profits, the return from the transfer of property, and the principles of distributing and using profits.

2.4 Strict budgeting assessment and execute the reward-punishment system

Budgeting assessment is the way to supervise, to check, and monitor the budgeting subjects. Tracing, checking, and confirming the performance of managers can help them to execute the budget for a long period. The reward-punishment system must be in action. Only by this way, it can maintain the seriousness of budgeting management.

In a word, under the environment of fierce market competition and economic integration, to dig out enterprises' potentials and decrease costs is the essential guaranty for the effective internal management. Therefore, enterprises should form a long-term mechanism for budgeting management, and execute the mechanism in economic operation and production management.

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