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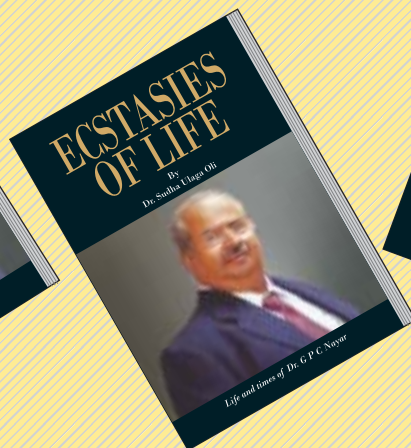
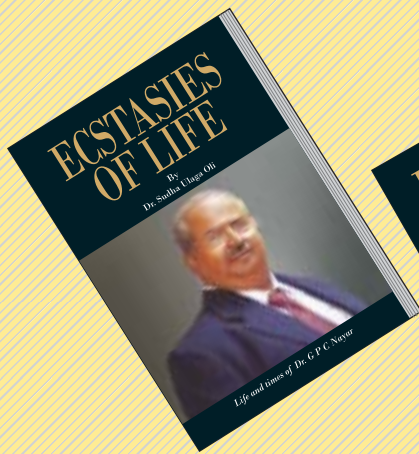
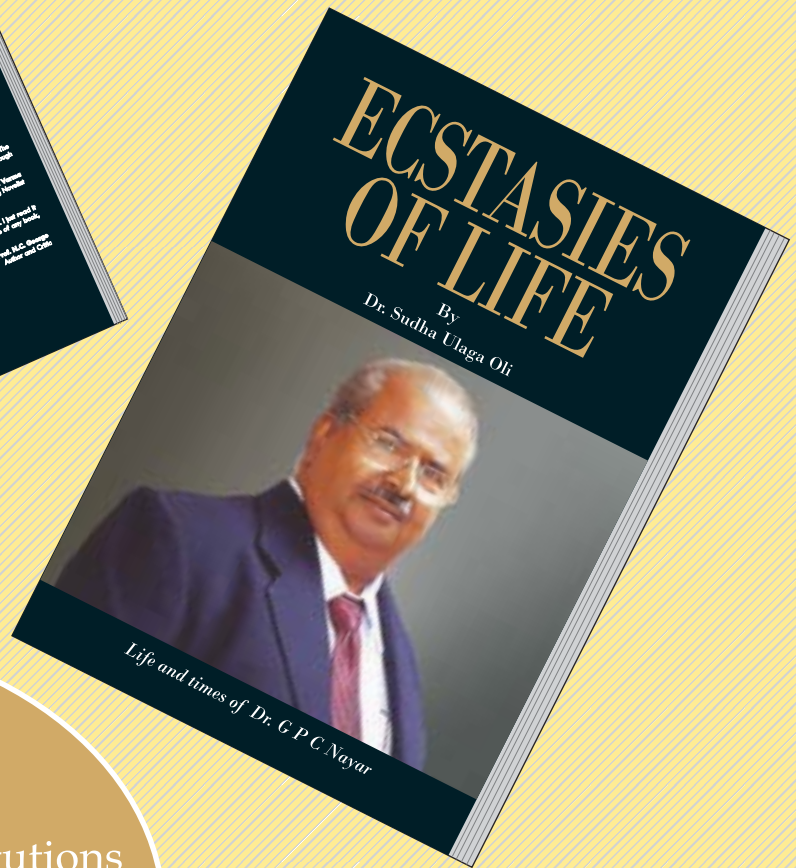
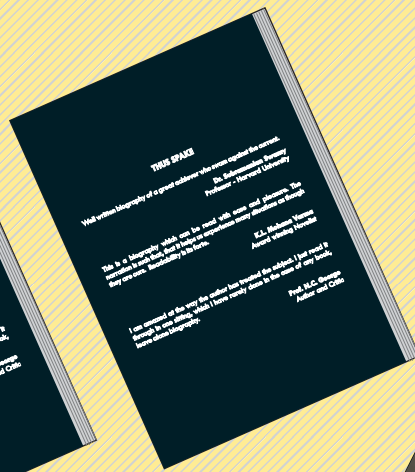
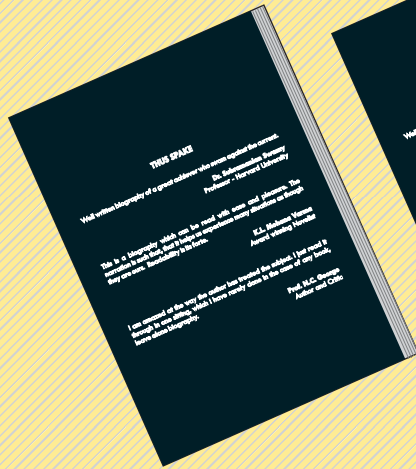
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Here's an entrepreneur who has created some excellent academic institutions in an unfriendly environment. It is a saga of trials and tribulations in an extremely readable manner by a consummate writer in English.

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Overview

The *SCMS Journal of Indian Management* has completed a decade of its publication. The accolades received both from the academia and the corporate vindicate its acceptability among a wide spectrum of professionals. The credit for this goes to the contributors of articles, their evaluators, and the well-known editorial board members.

Organizations should clarify and make known the roles of board and management to provide stakeholders a chance to give the accountability. The management should implement procedures to verify and safeguard the integrity of the company's financial reporting. Disclosure of material matters should be timely and balanced to ensure that all the investors have access to clear, factual information. The author, Pankaj M. Madhani in the first article, "Corporate Governance and Disclosure Practices: Private Sector" has meticulously scanned the corporate governance and disclosure practices firms belonging to different sectors. He observes that despite the differences that exist between them, there is no significant difference between their corporate governance and disclosure practices. This is due to the public sector reforms, implemented time and again in India.

The second article: "Unit Root Properties of Interest Rate Swaps" takes us to another field; financial innovations to manage financial risks and states that swaps can be used as active liability management tools to hedge against interest rate risk.

Demographic factors in public sector, corporate organizations and community relations, supply chain management components, interplay between culture and buying decisions, climate change in mountain diversity, relationship management and tourism, IPO grading, placebo of doctor patient bond, ICT for sustainable development, and occupational hazards, are the other topics discussed.

I wish the patrons of the journal happy reading experience

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Chairman, SCMS Group of Educational Institutions.

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Editorial



Creativity

Thinking involves a set of mental skills. These skills in a person create, manipulate, and communicate to others the personal symbols of mental life. Thinking is a set of processes whereby people assemble, use and revise mental symbolic models. One can model the layout of a city in the mind's eye in order to plan a route to navigate from one location to another. Or one can model the workings of a car to begin to determine what is causing the frighteningly loud noise under the bonnet.

Thinking occurs internally or mentally, but is generally inferred indirectly through behaviour. The thinking involved in writing, can be inferred by asking the writer to think aloud and analyzing the text produced. Thinking is a process that entails manipulating representations of what we know about the world.

What we think or know about a topic is often directed at the solution of specific tangible goals. A writer's thoughts must be goal directed, if a text is ever to emerge. Directed thinking specifies a goal to be achieved in the near future, directed thought works towards it. The example is an on-the-job task, an order from the boss to complete a routine memorandum in sales projections.

Undirected thought meanders, without progress toward a clearly identified goal. Dreaming, daydreaming, and artistic thinking are examples. Recurrent thinking is characterized by repetitious thoughts that may occur while awake or asleep.

Creative thinking and critical thinking share many similar components. But they take on each a different organization and purpose. Traditionally, a creative act is one that is original, useful in some sense, and dependent on special training, education, and abilities. Creative thinking focuses more on the product. Process and product creativity are two different concepts. Process creativity refers to the ability to apply relevant knowledge inventively to problem at hand. It is normal like remembering. Product creativity refers to the quality and quantity of works judged by others as original, innovative, useful, and important. People are creative in the process sense; few are creative in the product sense. Anyone can create symbols, but the genius creates symbols that others pay attention to time and again. Product creativity depends not only on individual ability but also on the cultural and societal support available to the individual. It occurs only when the right individual lands in the right discipline at the right place and at the right time. A b-school student acquires skills of thinking and will be a master in both process creativity and product creativity.

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Corporate Governance and Disclosure Public Sector vs Private Sector

Pankaj M. Madhani

A b s t r a c t

This paper discusses evolution of public sector corporate governance reforms and provides legal and institutional framework for corporate governance practices in Indian public sector. Corporate governance and disclosure practices of private sector and public sector firms listed in S&P BSE sectoral indices have been studied. The sample firms represent different sectors viz. Metal, Oil & Gas, Power, FMCG, Health Care, Consumer Durables, Capital Goods, Auto and IT. There is no significant difference in the corporate governance and disclosure practices of Indian firms across public and private sector firms. Hence, this research emphasizes that public sector reforms have lessened the differences between the two sectors, particularly with regard to corporate governance.

Key words: *Corporate Governance, Private Sector, Public Sector, Disclosure, Clause 49.*



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Usually, focus of corporate governance research is associated more with private sector entity. Although, study of private sector corporate governance practices, is a common research theme, we need to pay attention to corporate governance practices in public sector. Public sector and private sector units are two different entities with different management philosophy, responsibility and structure. In relation to corporate governance and disclosure practices, despite of the differences, there are corporate governance principles, such as accountability, transparency, and ethical business conduct, are equally applicable for both entities. This research works in this direction and focuses on private and public sector firms across various sectors listed in Bombay Stock Exchange (BSE), to study their corporate governance and disclosure practices.

Corporate governance involves a diverse set of relationships between management of firm, its board, its shareholders and other stakeholders. Corporate governance provides an ethical

process as well as well defined structure through which the objectives of the firm, the means of attaining such objectives, and systems of monitoring performance are also set. Corporate governance is about commitment to values, ethical business conduct, and transparency and makes a distinction between personal and corporate funds in the management of a firm. Corporate governance stands for responsible business management geared towards long-term value creation. Good corporate governance is a key driver of sustainable corporate growth and long-term competitive advantage (Madhani, 2008).

In recent times, corporate governance has received increasing attention both in academic research and in practice (e.g., Blue Ribbon Committee Report 1999; Ramsay Report 2001; Bebchuk and Cohen, 2004). A system of corporate governance needs a good level of disclosure and an adequate information to eliminate (or at least reduce) information asymmetries between all parties, making corporate insiders accountable for their actions. Disclosure is an important component of corporate governance since it allows all stakeholders of firms to monitor performance of the firm. It is the quality of financial reports that determines the quality of corporate governance. Financial disclosure plays a twin role, firstly by allowing investors and other outsiders to monitor firm performance through information presented in the financial reports. Secondly, an efficient disclosure system also brings clarity to the boards regarding the strategy and risk appetite of the firm (Bushman and Smith, 2001).

According to Mallin (2002), information to shareholders is one of the most important aspects of corporate governance as it reflects the accountability of the firms towards their shareholders. 'Good practices in corporate governance disclosure; a guidance issued by OECD (2006) also states that all material issues related to the corporate governance of a firm should be disclosed in a timely manner. Hence, disclosures have to be clear, concise and precise and governed by the substance over form principle. Disclosures indicate the quality of the firm's business model, its growth strategy, and the risks it is facing (Chahine and Filatotchev, 2008). Disclosure thus plays a decisive role in helping the shareholder assess firm's performance. According to Ho, Tower and Barako (2008), exhaustive disclosure by firms enabled investors to make better investment decisions.

Several authors [(Cooke (1989) and (1991), Chow and Wong Boren (1987), Firth (1979), and Buzby (1975)] have examined the factors influencing the disclosure levels in different countries. These studies examined the influence of size, country, industry, leverage, multi nationality (extent of multi-

national operations), profitability, institutional and other block shareholding and international listing status on disclosure. Fewer studies seek to identify specific characteristics determining the variation across firms (Hidalgo, Garcia-Meca and Martinez, 2011). This study aims to contribute to the understanding of this issue by analysing the specific firm characteristics such as ownership of the firm. The ownership (private or government) of the firm and its impact on corporate governance and disclosure practices is the core theme of this research and accordingly this research identify and test the empirical evidence for such relationship for select listed public and private sector Indian firms.

The collapse and scandal of many big US corporate houses such as Enron, Tyco, and WorldCom etc. trigger the emergence of Sarbanes-Oxley Act (SOX) showed there is a need to improve a corporate governance practice. Although, there is no example of spectacular governance failures in public sector firms, the importance of governance in public sector is still very vital. Majumdar (1998) analyzed the performance of state-owned, privately-owned, and mixed ownership firms in India over the period 1973-1989 and found that privately-owned firms exhibit greater efficiency than state-owned or mixed-ownership firms and that mixed-ownership firms exhibit greater efficiency than state-owned firms. Sanan (2011) studied private and public sector firms for the financial year 2008-09 and found that private sector firms adhere to higher standards of corporate governance disclosure practices than public sector firms.

Key to better practice of public governance lies in the effective integration of the main elements of corporate governance within a holistic framework, which need an effective communication throughout the entire organization and supported by a corporate culture of accountability, transparency, commitment and integrity (Barrett, 2002). There has been increasing worldwide attention to corporate governance studies in the public sector (Ryan and Ng, 2000). India, UK and Australia, for example, issued a framework of corporate governance in the public sector units and guideline of how to apply principles and practice of corporate governance in the public sector units.

Private Sector versus Public Sector: Major Differences

Prior literature on corporate governance highlights that corporate governance framework must be tailored to each organization based on their types, as there is different need between one and another organization. The difference between private sector and public sector firms is given below in Table 1.

Table 1: Private Sector Versus Public Sector Firms: Major Differences

| Variable | Private Sector | Public Sector |
|---------------------------|---|---|
| <i>Mandate</i> | Profit maximisation, considering corporate interests only | Welfare maximisation, considering community interests, involving trade-offs |
| <i>Goal</i> | Generally clear | Often vague to satisfy different stakeholders |
| <i>Efficiency</i> | Technical efficiency basic requirement | Economic efficiency is often at cost of technical efficiency. |
| <i>Costs</i> | Firm's own costs used for decision-making | Community costs, including externalities, deadweight losses |
| <i>Prices</i> | Generally constrained by market | Dependent on policy |
| <i>Revenue</i> | From sales | Also from some natural monopolies |
| <i>Financial controls</i> | Cash flow crucial to survival | Cash not an operating constraint, as government has a macro monetary role |
| <i>Product choice</i> | Decided by corporation | Mandated by government |
| <i>Ownership</i> | Partially owned entities | Relation to assets remains complex |
| <i>Other stakeholders</i> | Employees, creditors, suppliers, communities | Same set of stakeholders, but weighting of communities much heavier |
| <i>Governance</i> | Directors and managers | Agency heads, ministers, parliament – tensions between loci of authority |

(Source: Compiled by author from Edwards and Clough, 2005)

Private sector corporate governance is often relatively more straightforward as the roles and responsibilities are more clearly defined. As evident from Table 1, the complexity arises in public sector corporate governance as there will be more complex relationships between those with primary accountability responsibilities (parliament, ministers) as opposed with private sector. It was perceived that, public sector units have less incentive for enhanced corporate governance and disclosures. Hence, this research focuses on this area to identify whether corporate governance and disclosures practices of public sector firms are substantially different from private sector firms

Corporate Governance Reforms in Public Sector: A Timeline Analysis

Unlike some of the developed markets like the US, UK and Canada, public sector in India continue to play an active role

in running commercial business establishments. There are about 240 CPSEs in India (KPMG, 2010). Till recently, a major feature of the Indian economy was the dominance of the government dominated firms also called the central public sector enterprises (CPSEs). For CPSEs, Government of India (GOI) as the principal shareholder and promoter should be setting the bar on corporate governance standards and practices.

It is essential that ethics, probity and public accountability are maintained in the functioning of all public sector enterprises. In other words good corporate governance practices should be inbuilt in the management system of CPSEs. The GOI has taken a number of steps over the years to improve the efficiency and performance of its CPSEs.

Corporate governance has been an important part of GOI's broader CPSE and economic reforms, aimed at improving the performance and competitiveness of some of India's most significant national assets, allowing firms easier access to the capital markets, and making firms more transparent and accountable. The primary goal is to reorient the state's role away from a market player to a market regulator and away from routine management of CPSEs towards exercising its ownership rights based on sound corporate governance

principles. The GOI issued guidelines on corporate governance for central public sector undertakings in June 2007 (Guidelines on Corporate Governance for CPSEs, 2007). The government emphasized the need for public accountability of the public sector regarding its duties and responsibilities and hence it was considered crucial to formally adopt guidelines on corporate governance for the CPSE. Following is timeline for major reforms undertaken by GOI for CPSEs (Table 2).

Table 2: Corporate Governance Reforms in CPSEs

| Reforms Process | Time Period | Key Reforms | Results |
|--|----------------------|---|---|
| <i>Phase 1: New Industrial Policy</i> | July 1991-May 1996 | <ol style="list-style-type: none"> 1. "De-reservation" involving liberalization of hitherto closed sectors dominated by state monopolies 2. "Disinvestment" involving limited and partial sale of government shares 3. "Memoranda of understanding", a performance evaluation system, expanded 4. "Sick" CPSEs referred to the Board for Industrial and Financial Reconstruction (BIFR) | <ol style="list-style-type: none"> 1. Number of state monopolies decreased from 17 to 6 within a couple of years 2. State raised Rs 195 Bn between Dec 1991 to Nov 1995 through disinvestment 3. Failed to improve performance significantly |
| <i>Phase 2: Empowerment of Enterprises</i> | June 1996-March 1998 | <ol style="list-style-type: none"> 1. Operational autonomy granted to very large CPSEs 2. Professionalization of the "Board of Directors" in CPSEs 3. "Disinvestment Commission" set up 4. Dramatic reduction in state compliance guidelines and requirements | <ol style="list-style-type: none"> 1. "Navaratna package" for 11 CPSEs and "Mini-ratna package" for 97 PSEs created 2. Government abolished 695 guidelines governing CPSEs, retained 105 and modified 25 |
| <i>Phase 3: Open Privatization</i> | April 1998-May 2004 | <p>More open privatization policies made apparent through:</p> <ol style="list-style-type: none"> 1. The buy-back and cross holding of some shares 2. Downsizing, restructuring and professionalization of CPSEs and governing boards 3. Shutting-down selected sick CPSEs | <ol style="list-style-type: none"> 1. Open mention of privatization in government policy documents and budget papers 2. Indian government raises Rs 51.90 Bn through the deals of shares of CPSEs. 3. Volunteer Retirement Scheme (VRS) initiated in the first phase extended beyond sick enterprises to marginally profitable companies 4. Eight chronically sick companies shutdown |

(Source: Compiled by author from World Bank Report, 2010)

| Reforms Process | Time Period | Key Reforms | Results |
|-----------------|------------------|---|--|
| Phase 4 | May 2004-Present | <ol style="list-style-type: none"> 1. Cautious attitude to privatization driven by political support and considerations 2. Corporate Guidelines for CPSEs introduced in year 2007 | <ol style="list-style-type: none"> 1. Restructuring and modernizing sick companies 2. Induction of the private sector in turning around sick companies 3. Less reliance on ownership changes and more on internal governance and management reform to improve performance |

Since 2002-03, listed CPSEs have had to comply with corporate governance requirements introduced by SEBI through Clause 49 of the listing agreement. More recently, the CG guidelines issued in 2007 endorsed SEBI's requirement on independence of boards and has stipulated that, for listed CPSEs, at least half the board needs to be independent and for unlisted CPSEs at least a third needs to be independent. The guidelines also call on public sector units to develop a code of conduct for board members and senior management and a formal board charter to clarify roles and responsibilities. After some initial resistance in implementing these requirements, listed CPSEs are now gradually improving compliance with corporate governance norms and training of existing and potential directors is getting underway.

These are all steps in the right direction, and have led CPSE boards to become more serious in adhering to corporate governance norms. Since the process of economic reforms was initiated in 1991, CPSEs have increasingly focused on becoming more efficient and profitable. When India started its reforms journey, doubts were expressed about whether the CPSEs can transform themselves and compete. Now, two decades later, we are seeing vibrant CPSEs that came out with flying colours during the worst phase of the economic as well as financial crisis on several fronts.

Corporate Governance Reforms for CPSEs: Major Challenges

DPE guidelines for PSUs have delegated decision making powers to the firms and improved CPSE governance through the induction of independent directors and also contributed to improvements in the performance monitoring system.

Clause 49 of the listing agreement has been instrumental in putting listed public sector units on the same footing as private firms. Hence, governance challenges still remain and further reforms for CPSEs are needed to build on the substantial gains that have already been achieved.

The main challenge for GOI lies in making a complex ownership framework more effective in striking the right balance between CPSE autonomy and accountability. The present arrangements combine the conflicting roles of policy-making and ownership in some ministries, allow political interference in board appointments and commercial decision-making to continue, and weaken board powers. Strengthening the ownership arrangements of CPSEs to minimize these problems while, further improving the accountability is thus a key challenge going forward. As an integral part of business strategy and ethical value creation, improved corporate governance of public sector units should help achieve higher levels of CPSE performance, bring capital market discipline, and achieve higher levels of transparency and accountability, improve economic efficiency, increase investments, and achieve economic growth.

Overview of Corporate Governance Framework for CPSEs

CPSEs are governed by a complex legal and institutional framework (World Bank Report, 2010) as described below:

Legal Framework

CPSEs generally fall under the same legal framework as the Indian Private Sector, although some laws contain special provisions or exemptions for state-owned firms. They are mainly governed by the Companies Act, Clause 49 of the

Listing Agreement, and various Department of Public Enterprises (DPE) guidelines issued over the years.

In addition CPSEs are subject to various other laws and regulations. The main laws include:

1) Companies Act 1956 (CA):

CPSEs and other companies in which the government, directly or indirectly, holds 51% or more of the paid-up share capital are incorporated under Section 617 of the CA as “government companies.” Their governance form and structure are prescribed by the Act and the companies’ articles of association.

The principal difference between private firms and CPSEs is that in the latter the auditor is appointed by the Comptroller and Auditor General (CAG) instead of the government as shareholder. All other processes are more or less the same except for mergers and amalgamations of CPSEs where the same procedures are followed but where the power of the High Court is exercised by the government.

2) Securities regulation/Clause 49 of the Listing Agreement:

Listed CPSEs fall under securities regulation and the listing agreement issued by the Securities and Exchange Board of India (SEBI). This includes basic disclosure requirements and Clause 49, which contains important corporate governance norms. Introduced in 2000 and revised in 2003-04, Clause 49 has both mandatory as well as voluntary provisions. Mandatory provisions relate to board composition, audit committees, board procedures, management discussion and analysis in the annual reports, certification of financial statements and internal controls, and corporate governance reporting.

3) DPE guidelines:

In addition to the 1997 circular on delegation of powers, DPE guidelines determine many of the practices and procedures of CPSEs, including those related to finance, human resource development (HRD), operation of CPSEs, functioning of boards of directors, and the performance monitoring system. Exhaustive guidelines have been issued over the years. In the mid to late-1990s, with a view to streamlining, GOI abolished nearly 700 guidelines, while retaining 105 and modifying another 25. Some guidelines are binding, while others are voluntary.

4) Guidelines on Corporate Governance for State-Owned Enterprises (CG Guidelines):

Issued by DPE in 2007, these guidelines are voluntary and are applicable to all CPSEs. The main focus of the CG Guidelines is on the board of directors and audit committees but they also touch on disclosure and subsidiary companies. While the CG Guidelines are voluntary, CPSEs are expected to note their compliance and explain areas of non-compliance (comply or explain). These guidelines cover issues like composition of Board of Directors, setting up of Audit Committees, role and powers of Audit Committees, issues relating to subsidiary companies, disclosures, accounting standards, risk management, compliance and schedule of implementation, etc. The compliance with these guidelines requires to be reflected in the Directors’ report, Annual Report and Chairman’s speech in the Annual General Meeting.

5) Other laws and regulations:

Various other laws and regulations have impact on CPSE governance. Main among these are:

a) Right to Information (RTI) Act 2005:

RTI is a landmark initiative by GOI for enhancing transparency and governance of the PSUs as a whole. The Act requires that various CPSE reports be made available to the public. Hence, many CPSEs have established websites to meet the law’s requirements. Under RTI act, documents that are not regularly disclosed to the public may also be demanded from CPSEs.

b) Labour laws:

Most of the Labour laws related to employee relations and protection apply to CPSEs, though there are some special provisions and exemptions.

c) Insolvency laws:

CPSEs fall under the same insolvency and liquidation laws as other companies, including: the Sick Industrial Companies Act which governs restructuring for all industrial companies (private and public); the CA for liquidation; and the general civil procedure law which contains provisions for the appointment of receivers.

Institutional Framework

GOI shareholding in CPSEs is held by the President of India, ex-officio. His powers as a shareholder are delegated to 38 administrative ministries, each with its own portfolio of CPSEs. DPE serves as the nodal agency. In addition, a number of other governmental bodies have oversight, regulatory, and recommendatory roles. Hence, such structure highlights the complexity of the CPSE ownership arrangements.

The specific roles of the major bodies for structure oversight are explained below:

1) Administrative ministries:

Currently 38 ministries and departments administer the 244 operational CPSEs. They consult other ministries and departments on various matters and obtain Cabinet approval as needed. As delegated owners of shareholder powers, administrative ministries represent GOI in the AGM, participate in board selection, approve major decisions, monitor performance, and restructure sick or loss-making units.

2) Department of Public Enterprises (DPE):

DPE was established in 1965 as the Bureau of Public Enterprises, and became a department in 1990 and is headed by a secretary reporting to the Cabinet Minister and Minister of State. DPE has five divisions - financial policy, management policy, MOU division, administration and coordination, and the permanent machinery of arbitration (PMA) - with 121 positions, of which 90 are filled. DPE is located in the Ministry of Heavy Industries and Public Enterprises and is the nodal agency for all CPSEs. DPE sets policies and guidelines for CPSEs and acts as an interface between administrative ministries and CPSEs. It also manages the MOU system, supports the board appointment process, conducts an annual survey of CPSEs, and provides reports to parliament and the public.

3) Cabinet:

The Cabinet approves a range of major decisions through the High-Powered Committee chaired by the Prime Minister, and finalizes the choice of CPSE board directors through the Appointment Committee of Cabinet (ACC).

4) Ministry of Finance (MOF):

It reviews many CPSE finance and investment decisions, as does the Public Investment Board (PIB) for investment plans over Rs. 100 crores.

5) Oversight and control bodies:

CPSEs are accountable to a number of different bodies, including:

a) *Parliament:*

As the main oversight body, a number of parliamentary committees routinely review CPSE performance and related issues.

b) *Comptroller and Auditor General (CAG):*

CPSEs with more than 50 percent of ownership are subject to CAG oversight. An independent body established by the Constitution of India, CAG: (1) appoints the statutory auditor and oversees and supplements their work; (2) conducts regular transaction audits of CPSEs; (3) conducts performance audits of CPSEs that focus on particular topics and sectors; and (4) reports the findings to parliament.

c) *Central Vigilance Commission (CVC):*

CVC has a mandate to deter corruption and malpractice in CPSEs through observance of procurement matters and clearance for all board positions.

d) *Judiciary:*

CPSEs are subject to judicial review by the Supreme Court of India and the High Courts.

6) Regulatory bodies:

These bodies oversee CPSEs in much the same way they oversee private sector companies. They include: (i) SEBI, which enforces securities rules for listed CPSEs; (ii) Ministry of Company Affairs (MCA), which oversees compliance with the Companies Act; and (iii) sector regulators, which regulate pricing and other sector specific issues for relevant CPSEs.

7) Recommendatory bodies:

These include: (a) the Public Enterprises Selection Board (PESB), which manages the process for selecting board members, including tenders and advertising, interview panels, and preparation of short-lists. The PESB is overseen by an independent board and supported by the Ministry of Personnel; and (b) SCOPE (Standing committee on public enterprises), a membership body for CPSEs and other state companies. It acts as an interface between GOI and CPSEs, and organizes conferences and training, including on corporate governance, for its members.

Research Methodology

Research methodology comprises objective of the study, nature of data (primary or secondary), research tool applied etc. Data source for this descriptive research was primarily secondary data. The research methodology adopted for this research is given below:

Objective of the Study

1. To study overall corporate governance and disclosure practices in sample of private sector and public sector firms.
2. To measure extent of corporate governance and disclosure practices of sample firms with the help of an appropriate instrument as an evaluation tool.
3. To know that to what extent firms from private and public sectors disclosed their financial activities to their existing and prospective investors and regulators at large through their annual reports.

Scope of the Study

This study will help us to understand that whether corporate governance and disclosure practices of CPSEs are comparable with private sector firms. As it is perceived that government firms has fewer incentives to disclose information.

Sources of Data

For the purpose of study, data of the sample firms collected from the annual reports of the same for the year 2011-12. The year taken for this study is the financial year ending 2012, which was the latest at the time of this study. Annual

reports are important documents for assessing and analyzing the company performance in regard to corporate governance standards and compliance. Annual reports of firms were collected from various sources. The annual reports of 54 firms for the period ending March 2012 or December 2012 (based on the firms' financial year) have been downloaded from the Ace Equity database software maintained by the Accord Fintech Pvt. Ltd as well as from the company websites.

Sampling Technique Applied

Stratified sampling was used for obtaining data of firms listed in BSE and is constituent of S & P BSE sectoral indices.

Sampling and Data Collection

The sample for the study was collected from the firms listed in BSE in the form of S&P BSE sector indices. Sectoral indices at BSE aim to represent minimum of 90% of the free-float market capitalization for sectoral firms from the universe of S&P BSE 500 index. This sector index consists of the firms classified in that particular sector of the BSE 500 index. From these sectors, banking sector (Bankex) was eliminated, as the disclosure requirements for these firms are specialized and regulated by other regulatory authorities. Likewise, realty sector was also not considered because of specific issues of governance. Hence, remaining all nine sectors from S&P BSE sectoral indices were studied for this research. In each of these 9 sectors, top 6 firms as per market capitalization are selected for sample. These 54 firms selected from 9 different sectors represent more than 91% of overall sectoral index weight. Hence, these samples of 54 firms truly represent selected 9 sectors.

As this research compares corporate governance and disclosure practices of Indian firms, i.e. public sector versus private sector firms, 13 foreign firms are excluded from the sample. Hence, after exclusion of subsidiaries of MNCs (i.e. foreign firms) our sample is reduced from 54 to 41 firms. As no CPSEs is listed in foreign market (Europe or USA) private sector firms with overseas listing are also excluded from the study for the meaningful comparison of private and public sectors. Oxelheim and Randoy (2003) suggest that foreign exchange listing signals a firm's commitment to the higher disclosure standards prevailing in the market in which it lists, as such firms have had to meet disclosure requirements of two countries - the host country and new country of listing. As 15 Indian firms of the sample are listed in US/European

market, they are excluded from the study. Hence, resultant final sample size for the research is reduced to 26 firms. Out of these 26 firms, 9 belong to CPSEs while rest belong, to private sector.

The Research Instrument: Measurement of Corporate Governance Disclosure Score

Researchers have used various methods of computing disclosure score for determining the level of disclosures. The disclosure index provides a reasonable method for measuring

the overall disclosure quality of a firm. In this study, corporate governance and disclosure practices of firms are measured by using index developed by Subramaniana and Reddy (2012). Accordingly, corporate governance and disclosure (CGD) scores of firms were calculated by thoroughly scrutinising annual report of firms. One point is awarded when information on an item is disclosed and zero otherwise. The CGD score was calculated for all 26 firms of sample and is tabulated in Annexure-I.

ANNEXURE – I

| Sr. No. | Company | Sector | Industry | CGD Score |
|---------|--------------------------|---------|-------------------|-----------|
| 1 | BHEL | Pubic | Capital Goods | 24 |
| 2 | ONGC | Pubic | Oil and Gas | 31 |
| 3 | IOC | Pubic | Oil and Gas | 28 |
| 4 | GAIL | Pubic | Oil and Gas | 20 |
| 5 | Bharat Petro | Pubic | Oil and Gas | 24 |
| 6 | NTPC | Pubic | Power | 28 |
| 7 | NHPC | Pubic | Power | 29 |
| 8 | Power Grid | Pubic | Power | 25 |
| 9 | Coal India | Pubic | Metal | 24 |
| 10 | Pipavav Defence | Private | Capital Goods | 21 |
| 11 | Reliance power | Private | Power | 27 |
| 12 | Jindal Steel and Power | Private | Metal | 17 |
| 13 | JSW Steel | Private | Metal | 35 |
| 14 | Lupin | Private | Health Care | 24 |
| 15 | Glenmark Pharmaceuticals | Private | Health Care | 23 |
| 16 | Godrej Consumer Products | Private | FMCG | 36 |
| 17 | Bajaj Auto | Private | Auto | 24 |
| 18 | Hero MotoCorp | Private | Auto | 22 |
| 19 | Titan Industries | Private | Consumer Durables | 26 |
| 20 | TTK Prestige | Private | Consumer Durables | 15 |
| 21 | Gitanjali Gems | Private | Consumer Durables | 24 |
| 22 | Rajesh Exports | Private | Consumer Durables | 15 |
| 23 | BlueStar | Private | Consumer Durables | 20 |
| 24 | HCL | Private | IT | 34 |
| 25 | TCS | Private | IT | 33 |
| 26 | Mahindra Satyam | Private | IT | 21 |

(Source: Calculated by author using research instrument)

Testable Hypothesis

The study aims to find out if corporate governance and disclosure scores of CPSEs and private sector firms are

significantly different. In the research sample of 26 firms, 9 firms are public sector firms, while 17 belong to the private sector firms (Table 3).

Table 3: CGD Scores of Various Sectors across Industry

| Sr. No. | Industry | PublicSector | PrivateSector | MeanCGDScore |
|---------|-------------------|--------------|---------------|--------------|
| 1 | Power | 3 | 1 | 27.25 |
| 2 | Oil and Gas | 4 | - | 25.75 |
| 3 | Metal | 1 | 2 | 25.33 |
| 4 | Health Care | - | 2 | 23.5 |
| 5 | FMCG | - | 1 | 36 |
| 6 | IT | - | 3 | 29.33 |
| 7 | Consumer Durables | - | 5 | 20 |
| 8 | Capital Goods | 1 | 1 | 22.5 |
| 9 | Auto | - | 2 | 23 |
| | Total | 9 | 17 | 25 |

(Source: Calculated by author from Annual Report of Firms)

On the basis of in-depth analysis of extant literature review, the following hypothesis has emerged to make this research more reliable and conclusive:

Null Hypothesis (H_0): *There is no significant difference in corporate governance practices between public and private sector firms.*

Research Procedures for Testing Hypothesis

This research conducted an inferential statistical analysis for testing the hypothesis. In order to test the significant differences in the corporate governance disclosure of private and public sector firms, parametric *t*-test was used.

Summary of Findings and Empirical Results

A detailed analysis of the CGD score for sample firms is presented in Table 4. Values of minimum, maximum, average and standard deviation of CGD score for public sector and private sector firms have also been reflected. Results show that there is a difference between mean and standard deviation of CGD score for public sector and private sector firms. According to ICAI Research Committee Report (1985) public sector firms disclosed more information than private sector firms. Analysis of the result shown in Table 4 indicates that mean of CGD score is higher for public sector firms at 25.88. Also, the standard deviation of CGD score is higher at 6.63 for private sector firms when compared to public sector firms in the sample.

Table 4: Descriptive Statistics of Dependent Variable – CGD Score

| | No. of Firms | Minimum CGD Score | Maximum CGD Score | Mean CGD Score | Std. Deviation |
|----------------|--------------|-------------------|-------------------|----------------|----------------|
| All Firms | 26 | 15 | 36 | 25 | 5.67 |
| Public Sector | 9 | 20 | 31 | 25.88 | 3.37 |
| Private Sector | 17 | 15 | 36 | 24.52 | 6.63 |

Source: Computed by author from company annual reports by applying Research Instrument

For the purpose of this study, the firms have been taken from nine different sectors for making meaningful comparison of public and private sector firms. The reason behind this classification is to find out the extent of disclosure in public sector and private sector firms. The sector-wise disclosure is shown in Table 5 for public sector firms and in Table 6 for private sector firms.

Public Sector

Table 5 shows that public sector firms are related to Oil and Gas, Power, Metal and Capital Goods sectors. The power

sector comprising three firms is found to have highest level of corporate governance disclosure score of 27.33 than other sectors in this category. In the sample of 26 firms studied for this research, 9 firms (34.6%) belong to public sector firms. The government holdings in public sector firms range from 54.93% (Bharat Petroleum Corporation) to 90% (Coal India) in the sample firms of this research study as the government has now disinvested in many of the companies. The aggregate government holdings for sample firms were 72.10%.

Table 5: Sector-wise Breakup of CGD score of Public Sector

| Sectors | No. of Firms | Minimum CGD Score | Maximum CGD Score | Mean CGD Score | Std. Deviation |
|---------------|--------------|-------------------|-------------------|----------------|----------------|
| Power | 3 | 25 | 29 | 27.33 | 2.08 |
| Oil and Gas | 4 | 20 | 31 | 25.75 | 4.78 |
| Capital Goods | 1 | 24 | 24 | 24 | - |
| Metal | 1 | 24 | 24 | 24 | - |

Source: Computed by author from company annual reports by applying Research Instrument

Private Sector

For the private sector firms, Table 6 indicates that it is FMCG firm which is found to have the highest corporate governance

disclosure. IT firms are second highest with mean CGD score of 29.33 which is considerably higher than mean score of 24.52 reported for private sector.

Table 6: Sector-wise Breakup of CGD score of Private Sector

| Sectors | No. of Firms | Minimum CGD Score | Maximum CGD Score | Mean CGD Score | Std. Deviation |
|-------------------|--------------|-------------------|-------------------|----------------|----------------|
| IT | 3 | 21 | 34 | 29.33 | 7.23 |
| FMCG | 1 | 36 | 36 | 36 | - |
| Health Care | 2 | 23 | 24 | 23.5 | 0.70 |
| Power | 1 | 27 | 27 | 27 | - |
| Metal | 2 | 17 | 35 | 26 | 12.72 |
| Capital Goods | 1 | 21 | 21 | 21 | - |
| Consumer Durables | 5 | 15 | 26 | 20 | 5.05 |
| Auto | 2 | 22 | 24 | 23 | 1.41 |

Source: Computed by author from company annual reports by applying Research Instrument

The hypotheses have been tested on SPSS 20, using the univariate *t*-test. Group statistics and independent sample test output is given in Table 7 and Table 8 respectively.

Table 7: Group Statistics

| Type of Firms | | No. of Firms | Mean | Std. Deviation | Std. Error Mean |
|---------------|---------|--------------|---------|----------------|-----------------|
| CGD score | Public | 9 | 25.8889 | 3.37062 | 1.12354 |
| | Private | 17 | 24.5294 | 6.63436 | 1.60907 |

Table 8: Independent Samples Test

| CGDScore | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|---------|
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | Lower | Upper |
| Equal variances assumed | 2.941 | .099 | .573 | 24 | .572 | 1.35948 | 2.37275 | -3.53765 | 6.25660 |
| Equal variances not assumed | | | .693 | 23.997 | .495 | 1.35948 | 1.96251 | -2.69097 | 5.40993 |

Results of parametric test, as indicated in Table 9, show that significance value is greater than 0.05, therefore at 5% level of significance; null hypothesis of equality of means fails to

be rejected. Thus, there exists no significant difference between corporate governance disclosure scores of public sector firms and private sector firms.

Table 9: Results of Univariate Test

| Null Hypothesis | <i>t</i> -Value | SignificanceLevel |
|--|-----------------|-------------------|
| No significant difference between corporate governance disclosure scores of public sector and private sector firms | .693 | .495 |

Source: SPSS output

Corporate Governance Performance of CPSEs: Major Findings

CPSEs corporate governance performance in terms of audit committees, remuneration systems, evaluation systems, board composition and structure is explained below:

1) Audit Committees

Audit Committees establish assurance about the quality, validity and reliability of financial statement and information used by the board and by the outside world. An independent and effective audit committee is one of

the most important tools to ensure sound financial reporting and risk management and to strengthen accountability of firms. The role of the audit committee is well recognized in the CPSE governance framework. Listed CPSEs are required to set up an audit committee whose status, composition and responsibility are defined as per Clause 49. The audit committee is also mandated by the Companies Act in case of public companies with prescribed paid-up capital of not less than Rs. 5 crores. As per CAG report, audit committees existed in all listed companies as of June 2007. However, companies were non-compliant with respect to the composition of the committee: (i) in seven companies the committee did not consist of the required number of independent directors; and (ii) in nine companies there was no independent director in the committees. Although, this research found compliance of Clause 49 for requirement of audit committee for all 9 CPSEs, there is need for more transparency in selection of audit committee members.

2) Nomination Committee

To have a proper mixture of skills, experience and objectivity on the board of a firm, nominations are required from various stakeholders for maintaining everyone's interest. For this purpose they control and monitor the function of the corporate unit and evaluate the strategy of the business units in the viewpoint of their stakeholders. Firms should develop transparency in the appointment of the nominee directors. According to this research, nomination committee did not exist for sample of all public sector units in this study.

3) Remuneration Systems

Shareholders of a firm are entitled to expect directors' remuneration to be sufficient to attract, retain and motivate them but not more than are necessary for that purpose. For this purpose the directors' remuneration and rewards should be linked with their performance and efforts. All the corporate governance code across the globe recommends firms to have remuneration committee to establish rigorous and transparent procedures developing remuneration policy for the directors (Shukla, 2008).

Board remuneration of CPSEs is not competitive with the private sector, and incentive-based or performance

based pay is lacking. There is also no systematic process for evaluating CPSE boards and, as such, board evaluations are rarely if ever done. Pay scales of the CEO and full-time functional directors of CPSEs are fixed by GOI every five years based on the size and status of the companies (the compensation package for all other executive levels is uniform). Fees and compensation for part-time directors are fixed by the board according to DPE guidelines and the Companies Act, with previous approval of shareholders in the case of listed companies. As per this research study, all 9 CPSEs were having remuneration committees; however, board remuneration was far below the rate prevailing in private sector. Revamping board remuneration practices would help attract and retain professional board members and improve board performance.

4) Evaluation Systems

There is no systematic process for evaluating CPSE boards. At present the only requirement is that the performance of directors be reviewed by the administrative ministries at the end of the first year before confirming the remaining part of the tenure. A board member who fails to perform satisfactorily in the performance review can be removed by GOI. There is no system for evaluating the performance of full-time directors or of independent directors. However, Clause 49 in its non-mandatory requirements provides for the evaluation of non-executive directors by a peer group comprising the entire board of directors, excluding the directors being evaluated. Such evaluations are rarely, if ever, done. For independent directors, performance indicators could include meeting attendance, participation in the audit committee, and participation in board deliberations.

5) Board Composition and Structure

DPE guidelines and Clause 49 have led to steady improvements in board composition and structure of PSU over time. The level of state representation in board through the two nominee directors has been in line with countries such as Sweden, Germany, and Finland which also have one or two such directors. However, countries with a centralized ownership model such as Denmark, Norway, the Netherlands, the UK, and Australia have no state representative on the boards. DPE guidelines and Clause 49 on independent director requirements are

also similar to the requirements in such OECD (Organization for Economic Cooperation and Development) countries as Greece, France, and Korea.

In reality, however, boards composition of Indian PSUs still lack the requisite number of independent directors. Full-time or functional directors reportedly comprise more than half the board in many CPSEs, while posts of many independent directors remain vacant. According to, Comptroller and Auditor General (CAG) performance report submitted in March 2007, compliance with independent director requirements in CPSEs was not satisfactory. CAG found that:

- a) 30 of the 44 listed CPSEs had not constituted their boards as per Clause 49.
- b) As per the study, 70% of these 30 companies (21 in all) did not have the required 50 percent of independent directors, while the remaining 9 companies had no independent directors at all.
- c) The lack of independent directors also resulted in non-compliance with Clause 49 requirements for independent directors in the Audit Committee, independence of the Chairman of the Audit Committee, and requirement of quorum of meeting of the Committee;

According to this research study also, 5 out of 9 PSUs have not satisfied requirement of Clause 49 of listing agreement for independent directors during period of this research study (Financial year 2011-12). These companies are given below:

1) BHEL

There were two vacancies of Independent Directors on the board of directors of the BHEL. The matter of filling up of these vacancies was under consideration of Department of Heavy Industry, Ministry of Heavy Industries and Public Enterprises, GOI, but decision was not taken during the period of study.

2) Bharat Petroleum Corporation

There were three vacancies of Independent Directors as required under revised Clause 49 of the listing

agreement, the company has taken up the matter with the GOI but decision was not taken during the period of study.

3) NTPC

The listing agreements with stock exchanges stipulate half of the Board members to be independent directors. As such, NTPC board must have nine Independent Directors as against eight Independent Directors on the Board, appointed during study period. The appointment of one more Independent Director was being done by the GOI for which names have been forwarded to DPE. Also, during period of January 30, 2012 to February 27, 2012, there were only 5 independent directors and hence not fulfilling clause 49 of listing agreement.

4) ONGC

During financial year 2011-12, ONGC was not in confirmation for Clause 49 all the time. As for the periods from 1st April, 2011 to 19th June, 2011 and from 10th November, 2011 to 13th December, 2011, the Board of Directors did not comprise the required number of Independent Directors as per the terms of the Clause 49 of the Listing Agreement.

5) Power Grid Corporation

As on 31st March, 2012, the board of Power Grid Corporation comprised eight directors out of which only two directors were Independent Directors, hence, creating vacancies for two Independent Directors on the board of directors of the company. Accordingly, for the Financial Year 2011-12 the requirement of Independent Directors as per this clause 49 was not fully met.

Corporate Governance and Disclosure Practices: Top 5 Firms

The research was able to identify the top five firms as regards corporate governance and disclosure score. These firms are Godrej Consumer Products, JSW Steel, HCL, TCS and ONGC. The list of top five firms is dominated by private sector firms, as four out of five firms belong to that sector as shown below in Table 10. Also, IT sector dominates the list as 2 out of top 5 firms are from IT sector.

Table 10: Top 5 Firms with Highest CGD Score

| Sr. No. | Name of Firm | Industry | Sector | CGD Score |
|---------|--------------------------|-------------|---------|-----------|
| 1 | Godrej Consumer Products | FMCG | Private | 36 |
| 2 | JSW Steel | Metal | Private | 35 |
| 3 | HCL | IT | Private | 34 |
| 4 | TCS | IT | Private | 33 |
| 5 | ONGC | Oil and Gas | PSU | 31 |

(Source: Tabulated by Author)

An analysis of the private sector indicates that corporate governance disclosures vary considerably across sectors as within the sector; IT sector is having the highest CGD score with mean of 29.33 while Consumer Durables is having lowest score with mean of 20. Out of 9 sectors studied in this research, Health Care, Consumer Durables, Capital Goods and Auto represent lowest mean score for corporate governance and disclosure. There is a need for the firms listed in these sectors to undertake financial reporting with more extensive coverage and provide better quality information to all its stakeholders. Such firms should view corporate governance as a tool for enhancing competitiveness rather than viewing it as compliance mechanism.

Limitations of the Study

The firms which have been included in research may not represent the difference of all industries prevailing in the country. While this study tries to capture some aspects of the corporate governance and disclosures practices of firms, it is not possible to assess or verify the quality of the information provided. Future study may be undertaken with larger sample for validating this research finding.

Conclusion

In this research, the corporate governance and disclosure practices of private sector as well as public sector firms listed in S&P BSE sectoral indices were studied. A clear picture emerges from this study that, there is no significant difference in the corporate governance and disclosure score of firms across public and private sectors. Corporate governance and disclosure practices of public sector firms (CPSEs) is on a par with those of private sector firms

Public sector reforms have lessened the differences between the two sectors, particularly with regard to governance.

Hence, in this context future research on corporate governance practices of Indian firms should focus on other variables such as size of firm, management holding, institutional holding, leverage, profitability, liquidity, size of audit firm and overseas listing in order to explain the emerging behaviour of Indian firms regarding corporate governance disclosure.

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Unit Root Properties: Interest Rate Swaps

Emmanuel Anoruo and Kingsley Nwala

A b s t r a c t

This paper uses the Fourier ADF unit root to examine whether shocks to interest rate swaps, are permanent or transitory. The results from the conventional unit tests of ADF, PP and the KPSS reveal that the interest rate swap series are unit root processes. However, the results from the FADF procedures indicate that the interest rate swap series are nonlinear and stationary. These results suggest that shocks to the interest rate swap series are temporary. The implications of the study are that swaps can be used as active liability management tools and to hedge against interest rate risk.

Key words: *Interest rate swaps, hedging, interest rate risk, Fourier unit root test*

JEL classification: *G11, G12, G32*



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In interest rate swaps are financial innovations to manage financial risks. Since the early 1980s, the popularity and utilization of interest rate swaps as a vehicle to hedge against interest rate risk by financial and non-financial institutions have skyrocketed. In addition to hedging against interest rate risks, many hedge funds are vigorously engaging in interest rate swaps as speculative instruments as well. The wide usage of these swaps in conjunction with the market volatilities in nominal interest rate movements has now resulted to higher interest rate risk for the companies as well as the financial institutions functioning as the intermediaries. Although today, there is no published database accurately reflecting the volumes of interest rate swaps currently floating in the US economy; however, it was at least estimated according to Bicksler and Chen (1986) that over \$150 billion of interest rate swaps had been completed in the United States by the end of 1985. That number continues to rise on a daily basis given the slower economic recovery of the US economy compounded by the degrading of the US credit rating by Moody's. Bicksler and

Chen went further to say that the benefits of interest rate swap contracts depend on the principles of comparative advantage. According to them, there would be no economic incentive for any firm to engage in an interest rate swap without comparative advantage among different borrowers and imperfections in the money and capital markets.

Levy (1999) suggests that interest rate swap is a contract between two counterparties who agree to exchange payments based on the values of one asset in the exchange for a payment based on the value of another asset. In this transaction, as in all economic transactions, both parties expect economic benefits. Differential information and institutional restrictions are the major factors that contribute to the differences in transaction costs in both the fixed-rate and the floating rate markets. It is important to note that since interest rate swaps involve the exchange of two hypothetical securities (derivatives), the equilibrium market value of the swap must be determined by the values of the underlying securities. Levy contends that the choice between two interest rate swaps with different floating rate indices should be based on the stability of interest rate movements, the term structure of interest rate and accurate establishment of the long-run directional trend.

Interest rates are time sensitive variables and are assumed to have high volatility; however, it is still uncertain whether interest rates variables are stationary or not. The mean and variance of a stationary time series remain constant over time. The ability of investors to derive economic benefits in interest rate swap contracts, is dependent on the positions that they take. Making a decision to take floating or fixed position in an interest rate swap contract depends on the goal of the investor and the expected economic gain from the transaction; in addition to other rational expectations about future economic events. As a financial instrument widely utilized by financial and non-financial institutions, this paper will address the stationarity contentions surrounding long term stability of interest rate swaps. The empirical findings will certainly empower the entities using interest rate swaps for risk hedging or speculative motives to make more informed decisions and choices.

The paper is structured as follows. Section 2 provides the literature review. Section 3 discusses the data and the descriptive statistics. Section 4 presents methodology of the study. Section 5 furnishes the empirical results while section 6 presents the conclusions and policy implications.

Review of Literature

Despite the difficulties encountered by economists in trying to accurately forecast and predict the nominal interest rate movements, financial markets are still flooded with variety of interest rates. As financial economists and analysts view them closely, interest rate swaps are related to a particular type of financial asset or liability. The complexity of the market place itself sometimes distorts the real meaning and the role that interest rate swaps play. Campbell (1982) points out that it is important for investor's to abstract from the complications of the real-world markets in order to acquire a precise understanding of interest rate. A simple single period interest rate may be viewed as the price that is paid for postponing payment for that one period. Therefore, interest rate can be thought of as any other price in the market place. In as much as we view interest rate as the price of money, we must understand that there is a difference between money and credit. Money is one form of wealth and refers to a particular type of claim while credit refers to the total stock of liabilities in a particular market. Credit is not a measure of wealth; rather, it sums up all balance sheet liabilities. The price of credit or deferred payment cannot be the price of money. Therefore, interest rate may not be the price of money; rather, the price of money is the inverse of the general price level. Interest rate is the price of postponing payment, or of forging consumption (Campbell, 1982).

Romero-Avila (2007) points out that the investigation of the presence of stochastic trends in macroeconomic time series has become popular among economic researchers. The distinction between stochastic and deterministic trends among most time series represents a major breakthrough in understanding the implications of shocks to macroeconomic variables. Certainly, if a series contains a unit-root, a one-time shock creates a permanent rather than a transitory (temporary) effect in the economic system. A stationary variable or process leads to a temporary impact resulting from any one-time shock to that variable. Such a variable has the tendency to revert back to its pre-shock level as opposed to a permanent new level. Romero-Avila also contended that many studies in the past have shown the existence of a cointegration relationship between nominal interest rates of different maturity periods. Other studies have also found cointegration between short-term and long-term interest rates. According to Romero-Avila these findings have strong implications for monetary policy strategies since the slope of the yield curve produced by the term structure of interest

rates is found to have significant power in forecasting future variations in short-term nominal interest rates. However, there is a strong evidence to support the presence of a unit-root in nominal interest rate variable. Investigating the stochastic properties of long-term nominal interest rate using tests with linear time trend should provide evidence of stronger non-stationarity in the interest rate series. The obtained result is not caused by low power conventional unit root tests; rather, it was due to the existence of permanent movements in the series. The use of panel unit root tests that exploit cross-sectional variability of data rather than univariate tests showed a much efficient way to achieve important power gains.

Osterholm (2009) investigated the issue as to whether nominal interest rates and inflation time series data are mean reverting, or are generated by unit-root processes. He finds that inflation rate is mean-reverting while nominal interest rate is a unit root process. With a foundation in efficient market hypothesis, it can be argued that nominal interest rate should be generated by a unit-root process while real interest rate is either a constant or a stationary process. This implies that nominal interest rate and inflation need to be integrated of the same order for the fisher hypothesis to be empirically relevant. He also found that real interest rate contains unit root.

Chennenko and Faulkender (2011) attempted to ascertain why both financial and non-financial institutions engage in interest rate swaps. Most financial institutions use them for hedging purposes while others employ them for speculation. However, their study revealed that hedging of interest rate risk is concentrated among high-investment firms consistent with costly external finance. At the same time, firms appear to use interest rate swaps to manage earnings and maximize returns. Firms that employ interest rate swaps for speculation, do so when their executive compensation contracts are more performance based. Indeed, interest rate risk management

decisions of nonfinancial firms are determined by both hedging and speculative motives. The decomposition of interest rate risk management activities into cross-sectional and time-series components became possible by applying a panel data methodology. The cross-sectional component identified which firm's characteristics are associated with hedging while the time-series identified those emanating from speculative variation. To correctly identify why a firm uses hedging or speculation motive when engaging in interest rate swap can be easily assessed using panel data approach rather than using pooled data specifications. Also, the decomposition of interest rate swap data into cross-sectional and time-series distinctively will certainly aid in accurately identifying investment motive of firms. In addition, it is also important to say that the sensitivity of interest rate swap usage to term spread is significantly lower for firms with higher discretionary accruals. Therefore, greater interest rate swap usage in a steep term structure environment reduces the need to increase discretionary accruals. These findings are also consistent with short-term earnings' considerations affecting nonfinancial firms' interest rate risk management policy (Chennenko and Faulkender, 2011).

From the preceding literature review, it is obvious that adequate attention has not been paid to the issue surrounding the time series properties of interest rate swaps despite their importance in financial markets as risk management tools. To fill this void, this paper uses the Fourier-ADF (FADF) unit root test advanced by Enders and Lee (2004, 2009) to determine whether the various interest rate swap series are stationary or unit root processes. Stationarity would indicate that shocks to the interest rate swap series are temporary and hence can be used to hedge against interest rate risk. On the other hand, nonstationarity would indicate that shocks to interest rate swap series are permanent and therefore cannot be used as hedging tools against interest rate risk.

Data and Summary Statistics

Table 1: Summary Statistics for Interest Rate Swaps

| Statistics | 1-YR | 2-YR | 3-YR | 4-YR | 5-YR | 7-YR | 10-YR |
|------------|------|------|------|-------|-------|-------|-------|
| Mean | 2.64 | 2.95 | 3.26 | 3.53 | 3.76 | 4.10 | 4.42 |
| Median | 2.37 | 2.89 | 3.28 | 3.54 | 3.82 | 4.21 | 4.60 |
| Maximum | 7.05 | 7.12 | 7.14 | 7.15 | 7.17 | 7.20 | 7.24 |
| Minimum | 0.36 | 0.39 | 0.47 | 0.61 | 0.81 | 1.21 | 1.63 |
| Std. Dev. | 1.92 | 1.78 | 1.67 | 1.57 | 1.48 | 1.34 | 1.23 |
| Skewness | 0.49 | 0.29 | 0.09 | -0.04 | -0.13 | -0.23 | -0.32 |

| Statistics | 1-YR | 2-YR | 3-YR | 4-YR | 5-YR | 7-YR | 10-YR |
|--------------|----------|--------|-------|------|------|------|-------|
| Kurtosis | 1.99 | 1.98 | 2.06 | 2.19 | 2.33 | 2.55 | 2.72 |
| Jarque-Bera | 12.26*** | 8.35** | 5.63* | 4.04 | 3.16 | 2.58 | 2.97 |
| Probability | 0.00 | 0.02 | 0.06 | 0.13 | 0.21 | 0.27 | 0.23 |
| Observations | 147 | 147 | 147 | 147 | 147 | 147 | 147 |

***, ** and * indicate rejection of the normality hypothesis at the 1%, 5% and 10% levels, respectively.

The data consist of monthly observations from January 2000 to September 2012. The data on 1-, 2-, 3-, 4-, 5-, 7- and 10-year interest rate swaps were retrieved from the Federal Reserve Bank System website at <http://www.federalreserve.gov/releases/h15/data.htm#top>. Table 1 presents the summary statistics for the interest rate swap series. The mean values varied from 4.42% (for 10-year) to 2.64% (for 1-year) interest rate swaps. Similarly, the median values ranged from a high of 4.60% (for 10-year) to a low of 2.37% (for 1-year) interest rate swaps. The maximum and minimum values reveal that the interest rate swaps series have fluctuated over the years. For example, the minimum and maximum values for 1-year interest rate swap are 0.36% and 7.05%, respectively. The 10-year interest rate swap with a standard deviation of 1.23% showed the least fluctuation around the mean; while the 1-year interest rate exhibited the most deviation from the mean. The skewness test statistics

reveal the 1-, 2-, and 3-year interest rate swaps are positively skewed. However, the test statistics indicate that the 4-, 5-, 7-, and 10-year interest rate swaps are negatively skewed. The Kurtosis test statistics indicate that the interest rate swap series are normally distributed. The Jarque-Bera test statistics on the other hand suggest that the 1-, 2-, and 3-year interest rate swaps are not normally distributed. However, the normal distribution assumption is rejected for the 4-, 5-, 7-, and 10-year interest rate. In all, the Kurtosis and Jarque-Bera test statistics that most of the interest rate swaps series are not normally distributed. Figures 1A through 1G plot the various interest rate swap variables. From the figures, it can be observed that the interest rate swaps were at their highest levels in the 2000 and lowest in 2012. These graphs reveal that the interest rate swaps have fluctuated over the period under study and hence provide evidence of structural breaks in the data generating process.

Figure 1A: Plot of 1-Year Interest Rate Swap

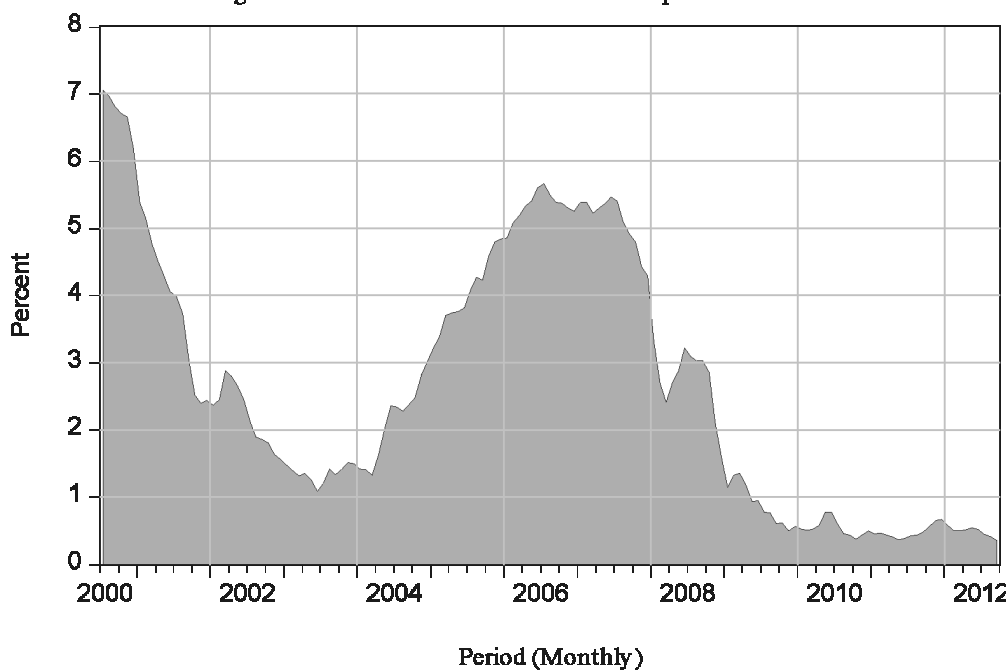


Figure 1B: Plot of 2-Year Interest Rate Swap

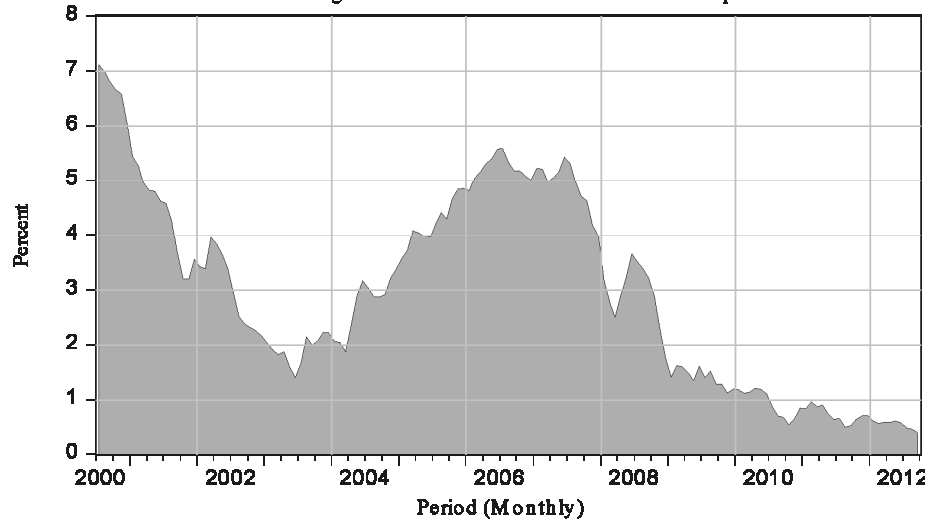


Figure 1C: Plot of 3-Year Interest Rate Swap

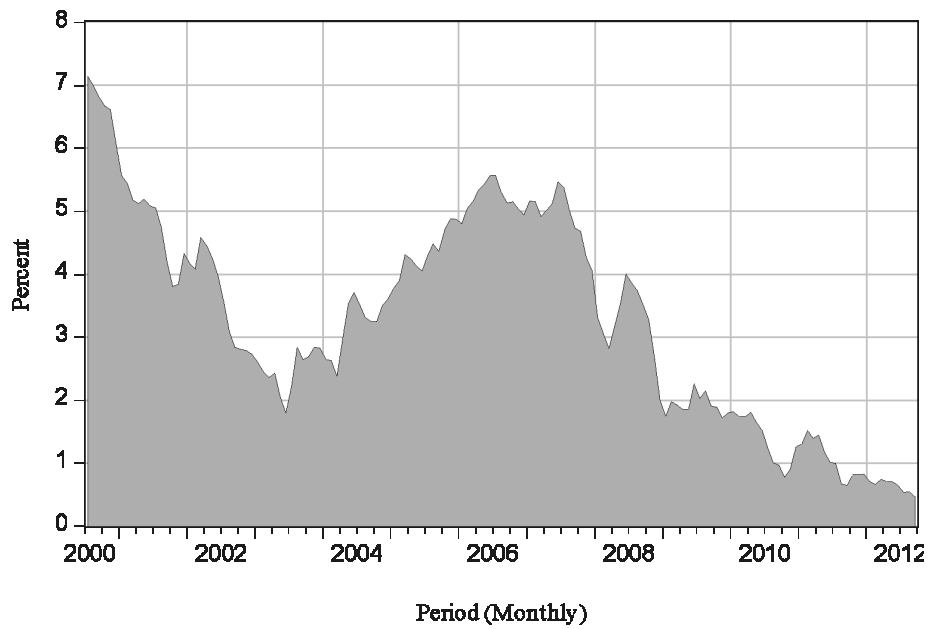


Figure 1D: Plot of 4-Year Interest Rate Swap

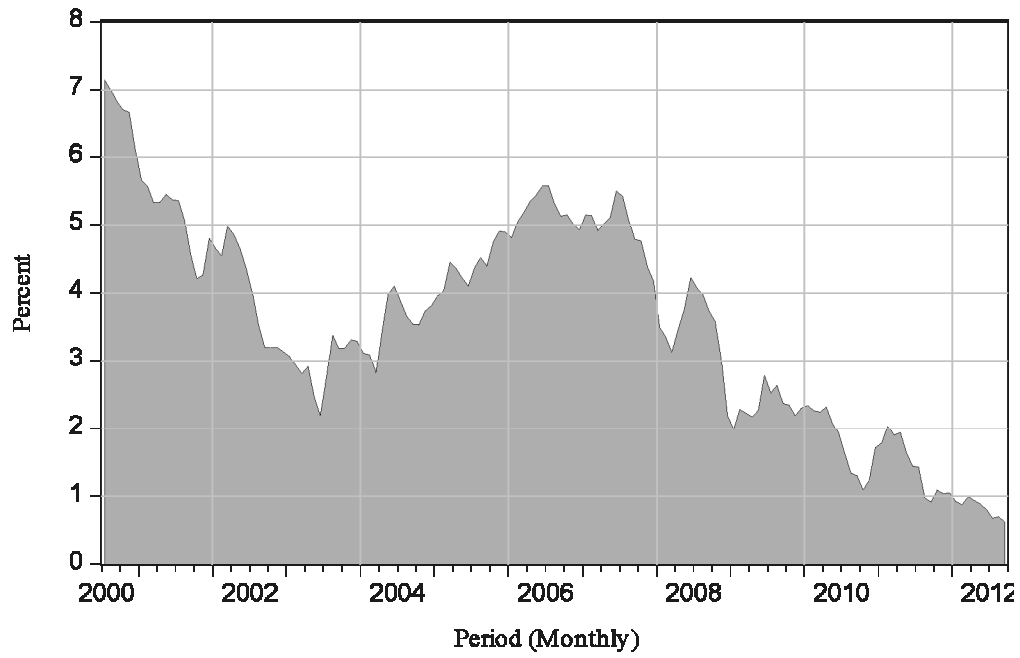


Figure 1E: Plot of 5-Year Interest Rate Swap

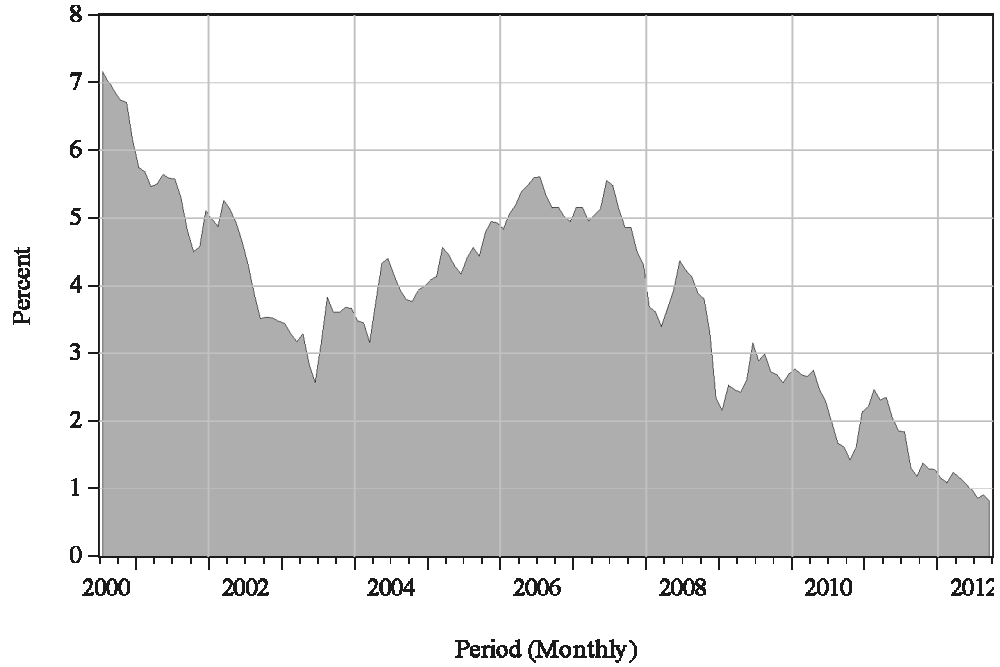


Figure 1F: Plot of 7-Year Interest Rate SWAP

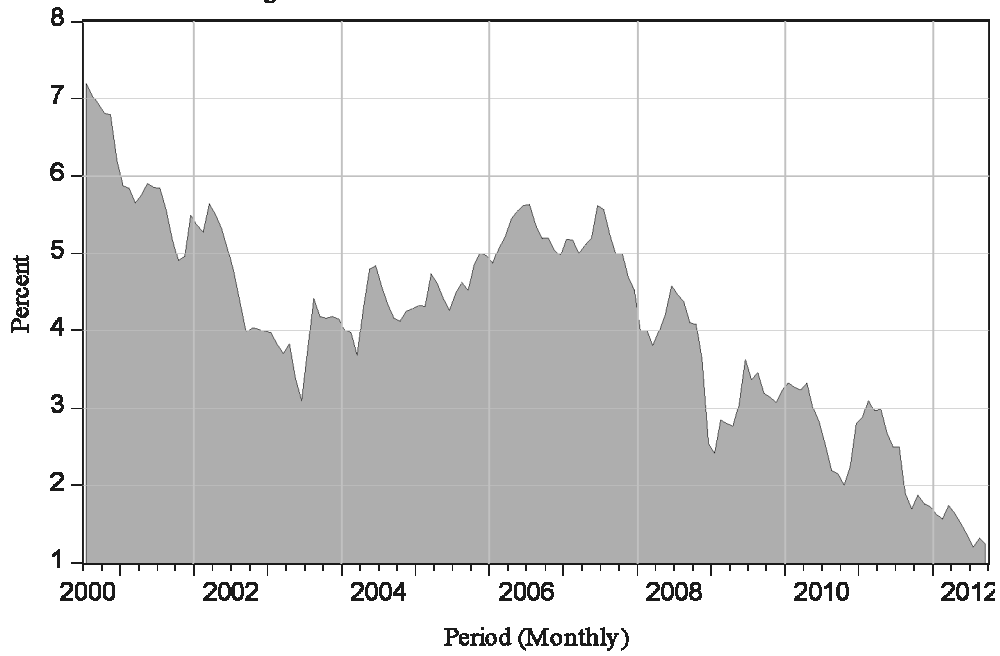
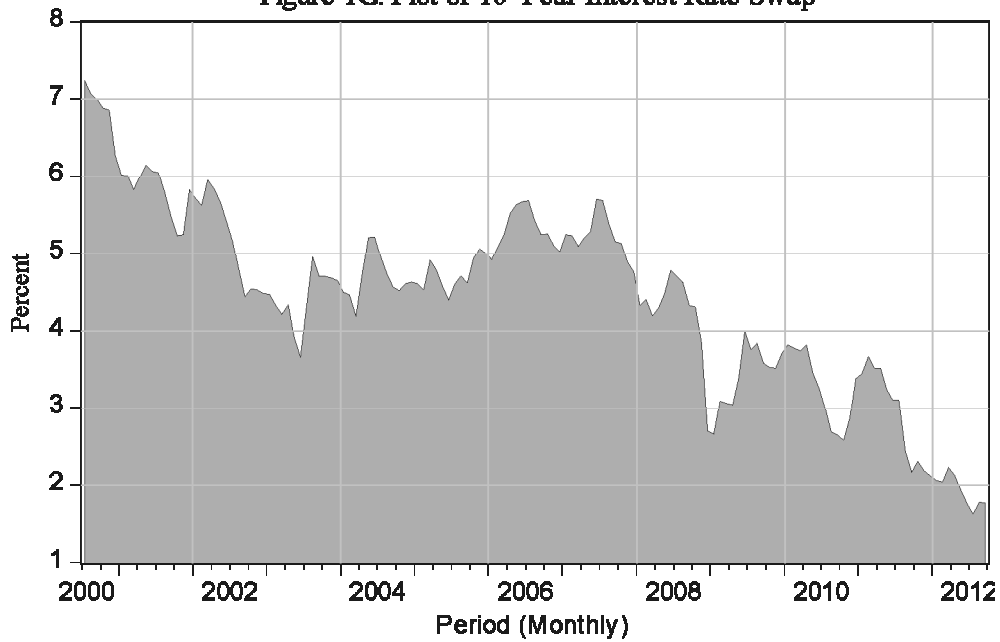


Figure 1G: Plot of 10-Year Interest Rate Swap



Methodology

This paper applies a battery of unit root testing procedures to ascertain the time series properties of the various interest rate swaps. Specifically, the study implements the conventional unit root tests including the augmented Dickey-Fuller (ADF), Philips-Perron (PP) and the KPSS. In addition to the standard unit root testing procedures, the study also implements the Fourier-ADF (FADF) test proposed by Enders and Lee (2004, 2009). Details regarding the conventional unit roots tests will not be discussed in this paper, as they have been extensively applied in the literature. The FADF test utilizes trigonometric variables to capture movements in the mean of the series of interest such as y_t . The FADF procedure involves the following data-generating process (DGP):

$$y_t = \lambda_0 + \lambda_1 \sin 2\pi kt/T + \lambda_2 \cos 2\pi kt/T + v_t \quad (1)$$

$$v_t = \beta_{v_{t-1}} + \mu_t \quad (2)$$

In equation (1), $\lambda_0 + \lambda_1 \sin 2\pi kt/T + \lambda_2 \cos 2\pi kt/T$ represents Fourier function that is designed to capture a number of smooth breaks of unknown form in the series y_t . k represents the number of frequencies of the Fourier function that minimizes the residual sum of squares. T , and t respectively, stand for the sample size and time trend. π assumes the value of 3.1416. The sine and cosine terms are included in equation (1) because a Fourier function has the ability to accurately approximate integrable functions. One of the attractive features of equation (1) is that it reduces to a standard linear expression by setting $\lambda_1 = \lambda_2 = 0$. Another feature of equation (1) is that the presence of at least one frequency indicates the existence of structural break in the data-generating process. Rejection of the hypothesis that $\lambda_1 = \lambda_2 = 0$ indicates that the series of interest (y_t) is nonlinear. The null hypothesis under the FADF procedure involves testing that $\beta = 1$. The alternative

hypothesis on the other hand is that $\beta < 1$. The LM test statistics of Enders and Lee (2004, 2009) is based on the methodology advanced by Schmidt and Phillips (1992) and Amsler and Lee (1995). The LM procedure involves the estimation of equation (1) in first differences as follows:

$$\Delta y_t = \lambda_0 + \lambda_1 \Delta \sin(2\pi kt/T) + \lambda_2 \Delta \cos(2\pi kt/T) + v_t \quad (3)$$

The detrended series are then formulated by using the estimated coefficients of λ_0, λ_1 , and λ_2 as follows:

$$\hat{S}_t = y_t - \hat{\theta} - \hat{\lambda}_0 t + \hat{\lambda}_1 \sin(2\pi kt/T) - \hat{\lambda}_2 \cos(2\pi kt/T), \quad t=2, \dots, T \quad (4)$$

In equation (4), $\hat{\theta} = y_t - \hat{\lambda}_0 t + \hat{\lambda}_1 \sin(2\pi kt/T) - \hat{\lambda}_2 \cos(2\pi kt/T)$, and y_t represents the first observation of the series y_t . The expression of the detrended series is given by:

$$\Delta y_t = \phi \hat{S}_{t-1} + d_0 + d_1 \Delta \sin(2\pi kt/T) + d_2 \Delta \cos(2\pi kt/T) + v_t \quad (5)$$

In equation (5), the LM test statistic (τ_{LM}) is conducted by testing the null hypothesis that $\phi = 0$. The series y_t is a unit root process if the null hypothesis (i.e. $\phi = 0$) is not rejected. However, the rejection of the null hypothesis that $\phi = 0$ would indicate that y_t is a stationary process and hence mean-reverting. The error term in equation (5) meets both the serial correlation and heterogeneity conditions stipulated by Phillips and Perron (1988). In the spirit of Ng and Perron (1995), the remaining serial correlation in the error term can be eliminated by including additional lags of ΔS . According to Enders and Lee (2004, 2009), the LM test statistic depends solely on the frequency (k) and is independent of all the other parameters in the data-generating process. Enders and Lee suggest that the number of frequencies (k) should not exceed 2 to avoid loss of power.

Table 2: Conventional Unit Root Test Results

| Series | CONSTANT | | | CONSTANT AND TREND | | |
|--------|-----------|----------|----------|--------------------|----------|----------|
| | ADF | PP | KPSS | ADF | PP | KPSS |
| 1-YR | -2.04(1) | -2.01(7) | 0.863(5) | -1.95(1) | -1.85(7) | 0.298(5) |
| 2-YR | -1.90 (1) | -1.89(4) | 1.136(5) | -1.97(1) | -1.85(4) | 0.310(5) |
| 3-YR | -1.74(1) | -1.72(4) | 1.340(5) | -2.04(1) | -1.91(4) | 0.322(5) |
| 4-YR | -1.63(1) | -1.57(2) | 1.476(5) | -2.15(1) | -1.96(2) | 0.328(5) |

| | | | | | | |
|------------------------|----------|----------|----------|-----------|----------|----------|
| 5-YR | -1.58(1) | -1.48(1) | 1.574(5) | -2.228(1) | -2.07(2) | 0.327(5) |
| 7-YR | -1.57(1) | -1.35(0) | 1.701(5) | -2.56(1) | -2.26(1) | 0.313(5) |
| 10-YR | -1.61(1) | -1.38(0) | 1.837(5) | -2.94(1) | -2.58(1) | 0.286(5) |
| Critical Values | | | | | | |
| 1% | -3.48 | -3.48 | 0.739 | -4.02 | -4.02 | 0.216 |
| 5% | -2.88 | -2.88 | 0.463 | -3.44 | -3.44 | 0.146 |

Empirical Results

The empirical results of the study are discussed in this section. The empirical analysis begins with the implementation of the conventional unit root tests of ADF (Dickey and Fuller, 1981), PP (Phillips and Perron, 1988) and the KPSS (Kwiatkowski et al., 1992). These unit root tests were conducted with a constant only and with a constant and time trend. Table 2 displays the unit root results from the standard unit root tests. Based on the ADF and PP unit root test results, the null hypothesis a unit root is not rejected at the conventional levels of significance. Similarly, the test results from the KPSS procedure suggest that the null hypothesis of stationarity should be rejected for all the interest rate swap series. Taken together, these results suggest that the 1-, 2-, 3-, 4-, 5-, 7- and 10-year interest rate swaps are not mean reverting.

However, it has been documented in the literature that conventional unit tests have low power when the data generating process is nonlinear. To this effect, the study next applies the FADF unit root procedure advanced by Enders and Lee (2004, 2009). Under the FADF procedure the optimal frequency (k) that minimizes the residual sum of squares is

determined through the grid-search process. In the spirit of Enders and Lee (2004, 2009), the study estimates equation (4) for each integer k=1, ...5. Table 4 presents the results from the unit root test with Fourier function. The residual sum of squares presented in column 1 indicate that the appropriate frequency for all of the interest rate swap series should be one (i.e. k=1). The F-statistics $F(\hat{k})$ displayed in column 4 of Table 4 suggest both sine and cosine terms should be included in the estimation of equation (4). The statistically significant $F(\hat{k})$ statistics also indicate that the null hypothesis of linearity should be rejected in favour of the alternative of nonlinearity in all of the cases. In each case, the test statistic is statistically significant at the 1 percent level. According to the results displayed in column 5, the appropriate number of lags required to remove serial correlation in the residual for ΔSt are 4 for 1-year and 5 for the rest of the interest rate swap series. Column 6 of Table 4 presents the results of the unit root test with Fourier function [i.e. $\hat{\delta}_{LM}(\hat{k})$]. Comparing the test statistics with the critical values presented in Table 4, the results overwhelmingly reject the null hypothesis of a unit root for all of the interest rate swap series at the 1 percent level of significance. These results indicate the seven interest

Table 3: Fourier Function Nonlinear Unit Root Test Results

| Series | RSS | k | $F(\hat{k})$ | Lags for (ΔSt) | $\tau ADF(\hat{k})$ | Bootstrapping Critical Values | | |
|--------|------|---|--------------|--------------------------|---------------------|-------------------------------|-------|-------|
| | | | | | | 10% | 5% | 1% |
| 1-YR | 3.33 | 1 | 3.93** | 9 | -82.83*** | -1.28 | -1.65 | -2.38 |
| 2-YR | 5.06 | 1 | 7.18*** | 7 | -69.89*** | -1.30 | -1.67 | -2.34 |
| 3-YR | 5.99 | 1 | 8.23*** | 7 | -62.08*** | -1.27 | -1.66 | -2.33 |
| 4-YR | 6.59 | 1 | 8.00*** | 7 | -56.90*** | -1.28 | -1.66 | -2.36 |
| 5-YR | 6.76 | 1 | 5.96*** | 9 | -48.96*** | -1.27 | -1.68 | -2.33 |
| 7-YR | 6.88 | 1 | 4.95*** | 9 | -44.77*** | -1.30 | -1.69 | -2.42 |
| 10-YR | 6.82 | 1 | 3.29** | 8 | -42.02*** | -1.30 | -1.65 | -2.32 |

***, ** and * indicate levels of significance at the 1%, 5%, and 10%, respectively. The critical values were obtained by 10,000 bootstrapping replications in the spirit of Enders and Lee (2009). RSS = residual sum of squares.

Table 4: Fourier Function Nonlinear Unit Root Test Results

| Series | RSS | k | $F(\hat{k})$ | Lags for (ΔSt) | $\tau ADF(\hat{k})$ | Bootstrapping Critical Values | | |
|--------|------|---|--------------|-----------------------------|---------------------|-------------------------------|-------|-------|
| | | | | | | 10% | 5% | 1% |
| 1-YR | 3.28 | 1 | 37.15*** | 4 | -79.37*** | -1.29 | -1.66 | -2.36 |
| 2-YR | 4.42 | 1 | 22.89*** | 5 | -65.54*** | -1.27 | -1.65 | -2.30 |
| 3-YR | 5.49 | 1 | 15.34*** | 5 | -57.95*** | -1.29 | -1.66 | -2.40 |
| 4-YR | 6.28 | 1 | 11.64*** | 5 | -52.93*** | -1.28 | -1.65 | -2.32 |
| 5-YR | 6.67 | 1 | 9.64*** | 5 | -49.74*** | -1.29 | -1.68 | -2.34 |
| 7-YR | 6.86 | 1 | 7.69*** | 5 | -45.48*** | -1.32 | -1.67 | -2.37 |
| 10-YR | 6.65 | 1 | 6.65*** | 5 | -42.05*** | -1.31 | -1.67 | -2.32 |

***, ** and * indicate levels of significance at the 1%, 5%, and 10%, respectively. The critical values were obtained by 10,000 bootstrapping replications in the spirit of Enders and Lee (2009). RSS = residual sum of squares.

rate swap series under study are nonlinear mean-reverting processes indicating that shocks to the series have temporary rather than permanent effects.

Summary and Implications

This paper has examined the time series properties of 1-, 2-, 3-, 4-, 5-, 7- and 10-year interest rate swaps for the United States covering the time period January 2000 to September 2012. The study specifically applied a battery of conventional unit root tests, in addition to the FADF procedure proposed by Enders and Lee (2004, 2009). The results from the conventional unit root tests of ADF, PP and KPSS suggest that the various interest rate swap series are unit root processes. However, the results from the FADF procedure indicate that the 1-, 2-, 3-, 4-, 5-, 7- and 10-year interest rate swap series are nonlinear and stationary. These results reveal that the interest rate swap series exhibit mean reversion behaviour. Simply put, the results from the FADF unit procedure indicate that the interest rate swap variables have the tendency to revert back to their pre-shock level as opposed to a permanent new level. This finding implies that interest rate swaps can be effectively used to hedge against interest rate risk.

Acknowledgement

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Demographic Factors: Whistle Blowing in Public Sector

Sowmya S. and H. Rajashekar

A b s t r a c t

Employee reporting wrongdoing at work place is termed as whistle blowing. The public sector enterprise lacks effective public governance system due to the corruption and inefficient management by the top level management people, who are political leaders in the board structure. The whistle blowing by employees is mainly affected by their demographic factors. This paper studies the demographic factors affecting Whistle blowing in Karnataka State Public Sector Enterprises. 54 respondents' data resulted in whistle blowing is associated with being older, male, more job tenure, married, and being getting high income/salary. However education was not significantly associated with the level of blowing the whistle.

Key words: *whistle blowing, demographic factors, Karnataka state public sector enterprise.*



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Employee reporting wrongdoing at work place is termed as whistle blowing. The wrongdoing may be by his superior or even peers. US Academicians Miceli and Near (1984) define Whistle blowing as “the disclosure by organizational members (former or current) of illegal, immoral, or illegitimate practices under the control of their employees, to persons or organizations that may be able to effect action.” The public sector enterprise lacks effective public governance system due to the corruption and inefficient management by the top level management people mainly who are political leaders in the board structure. Employees are the major source of information in detecting the fraud at work place to the extent of 89%, only 3% from shareholders and owner-Rajiv Bhuvu.*

PUBLIC SECTOR ENTERPRISES IN INDIA:

The central and state public sector undertakings have been playing a vital role in the economic and industrial development of the country. A public sector enterprise may be defined as any commercial or industrial undertaking owned and managed

by the government with a view to maximizing social welfare and upholding the public interest. In fact the public sector has come to occupy such an important place in our economy that its effective performance depends largely the achievement of the country's economic and social goals. The public sector is considered a powerful engine of economic development and an important instrument of self-reliance. The public enterprises are under the control of central and state government. A predominantly agrarian economy, a weak industrial base, low savings, inadequate investments and lack of industrial facilities called for state intervention to use the public sector as an instrument to steer the country's underlying potential towards self reliant economic growth. Dr Manmohan Singh, Hon'ble Prime Minister had observed, 'There are hundreds of state level public enterprises with vast sums of public money invested in them. They must also change and adapt to the needs of times. Given the state of State Government Finances, many State Governments are unable to afford luxury of large number of loss making enterprises. We must therefore find viable means to revive and sustain such enterprises and ensure that interests of workers and employees are not hurt due to political interference and bad management.'

These public sector enterprises damage their value by the corrupt practices: lowering the performance and closing some units, and handing them over to private hands. The result is disinvestment of public sector enterprises and privatization which leads in uneven distribution of income and wealth

Literature review:

Janet P. Near and Marcia P. Micelle (1985), in their paper have proposed the individual factors affecting whistle blowing. The authors have considered gender as an individual factor in testing the likelihood of blowing the whistle. The authors have proposed males may be more likely than females to blow the whistle because of the reported case histories which are dominated by males. *End note*Editor- Business today-Dated June 24 2012*

The author justifies the proposition by analyzing the personal characteristics of male such as high self esteem, locus of control, initiative nature and wide opportunities and distribution network and awareness about wrongdoing were strongly associated with male than female.

John P. Keenan (1993), in his study tested the likelihood of blowing the whistle on less serious fraud by the employees at

different managerial level. The demographic factors such as age, gender, level of education, managerial level, and job tenure were the variables used for testing. The finding says the likelihood of blowing the whistle on less serious fraud and wrongdoing is positively associated with upper or middle level managers than lower level managers, where the results are consistent with previous research. The likelihood of blowing the whistle on less serious fraud and wrongdoing is not associated with higher education and gender (male), where the results are inconsistent with previous research. The likelihood of blowing the whistle on less serious fraud and wrongdoing is associated with age (older), and job tenure (more), where the results are mixed in the previous research.

Abhijeet K. Vadera, Ruth V. Aguilera and Brianna B. Coza (2009), the authors discuss the individual antecedents of whistle blowing. The antecedents were categorized as consistent and inconsistent factors. The pay level and education were consistent factors, as gender, age, and job tenure were considered as inconsistent factors. The findings are mainly based on previous literature reviews.

A. J. Brown -2007, the draft report of Australian Research Council Linkage Project about whistle blowing in American Public Sector observes that the demographic variables such as age, gender, education level, employment status, tenure, and income had significant association in blowing the whistle among non-reporters and reporters(role and non-role). Age, tenure, employment status and salary are inter-related and they have stronger association in blowing the whistle. The study also found the significant demographic differences between reporters and non-reporters.

The researcher cannot suggest effective management strategies until the factors affecting whistle blowing are understood (David ra J. C. Greenbergebr, Marci P. Miceli; De Cohen-1987). This finding helps in two ways, firstly to achieve conformity of previous research studies in getting consistent results and secondly in framing effective management strategy especially in public sector enterprise in the Indian context.

The study includes state level public sector enterprises in Karnataka.

Research Question involved is:

What are the demographic factors of employees affecting the likelihood of blowing the whistle in Karnataka State Public Enterprises?

Objective: The study is to know the demographic factors affecting the employees for whistle blowing in Karnataka State Public Enterprises.

The following hypotheses were framed to achieve the objective.

H1: There is a relationship between employee age and the level of whistle blowing in Karnataka State Public Enterprises.

H2: There is a relationship between gender of employee and level of whistle blowing in Karnataka State Public Enterprises.

H3: There is a relationship between employee marital status and the level of whistle blowing in Karnataka State Public Enterprises.

H4: There is a relationship between employee education level and the level of whistle blowing in Karnataka State Public Enterprises.

H5: There is a relationship between employee nature of employment and the level of whistle blowing in Karnataka State Public Enterprises.

H6: There is a relationship between employee experience and the level of whistle blowing in Karnataka State Public Enterprises.

H7: There is a relationship between employee income and the level of whistle blowing in Karnataka State Public Enterprises.

Research Methodology:

The primary data was collected from 54 respondents, who were employees working in selected Karnataka State Public

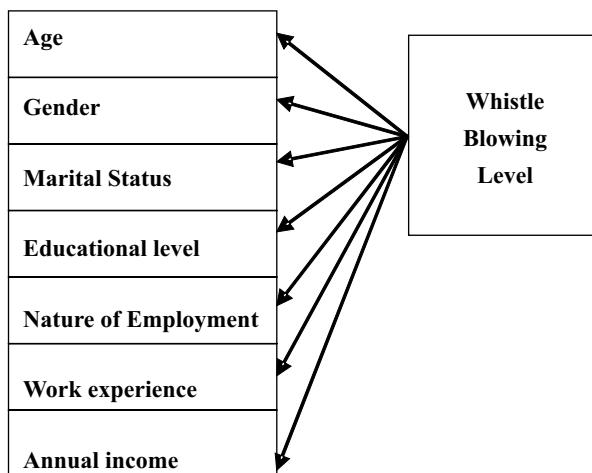
Sector Enterprises. The data was collected by giving unstructured questionnaire followed by an introductory interview with employees to know whether the employees are aware of whistle blowing concept. The concept was explained to the respondents before filling the questionnaire. The employees working at middle and lower level were given the unstructured questionnaire consisting two parts. Part-A included the demographic profile of the respondents and Part-B included the employee perception on reporting wrongdoing at workplace. The multiple choice question was asked to the employees what you would do if you come to know that your superior is involved in wrongdoing, the question followed with four options a) I will report it, b) I don't want to report, c) I will keep silent, d) try to inform him it is not right.

Two enterprises were selected as a part of pilot study to test the achievability of the main study objective. Simple random stratified sampling was selected to select the sample from the population. The employees working in different sections and departments such as accounting & finance, communication, design, production, marketing, human resource and auditing were mainly selected for the study. The population includes total number of employees working in those two state enterprises namely Karnataka Power Corporation Ltd and Karnataka Silk Industries Corporation Ltd.

The data was analyzed using SPSS software. The statistical tools such as percentage analysis, chi-square test (non-parametric) were used to test the hypothesis.

Whistle Blowing Level

Fig: 1- Dependent and independent variables:



In **Fig:1** the level of blowing the whistle is dependent variable and demographic factors such as age, gender, marital status, education level, nature of employment, work experience, and annual income are independent variables.

Demographic Factors influencing on whistle blowing in Karnataka State Public Sector Enterprises.

Age: H1: “There is a relationship between employee age and the level of whistle blowing in Karnataka State Public Enterprises.”

The likelihood of blowing the whistle is associated with age

(older). 46% of the employees who were in the age group 41-60 were significantly associated with blowing the whistle, whereas only 35% of the employees in the age group 21-40 (who are mainly considered young aged group). The result is consistent with the inconsistent findings by previous research (Abhijeet K. Vadera, Ruth V. Aguilera and Brianna B. Coza - 2009; John P. Keenan -1993). The chi-square calculated value is greater than table value at df=3 at 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted. There is a relationship between employee age and the level of whistle blowing in Karnataka State Public Enterprises

TABLE: 1

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 12.652 |
|--|-------|-----------|------|------------------------------|-------|-------------|--------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Age | 21-30 | 10 | 18.5 | 2 | 20 | df | 3 |
| | 31-40 | 7 | 13 | 4 | 57.14 | | |
| | 41-50 | 7 | 13 | 4 | 57.14 | | |
| | 51-60 | 30 | 55.6 | 13 | 43.33 | | |
| | Total | 54 | 100 | 23 | | | |
| | | | | | | Asymp. Sig. | 0.005 |

Source: Field survey

Gender: H2: “There is a relationship between gender of employee and level of whistle blowing in Karnataka State Public Enterprises.”

The likelihood of blowing the whistle is associated with gender (male). 44% of the male employees are more likely to report the wrongdoing than female (39%). The result is consistent

with the findings of previous research. (Janet P. Near and Marcia P. Micelle -1985; John P. Keenan -1993). The chi-square calculated value is greater than table value at df=1 at 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted. There is a relationship between gender of employee and level of whistle blowing in Karnataka State Public Enterprises.

TABLE: 2

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 4.545 |
|--|--------|-----------|------|------------------------------|-------|-------------|-------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Gender | Male | 36 | 66.7 | 16 | 44.44 | df | 1 |
| | Female | 18 | 33.3 | 7 | 38.88 | | |
| | Total | 54 | 100 | 23 | | | |
| | | | | | | Asymp. Sig. | 0.033 |

Source: Field survey

Marital status: H3: “There is a relationship between employee marital status and the level of whistle blowing in Karnataka State Public Enterprises.”

The likelihood of blowing the whistle is associated with marital status. The married employees (43%) were more likely to blow the whistle than single (33%). Only one respondent, who was a widow, was in the category of likelihood of blowing the whistle, so widow category is not considered for testing

the association. The result could not be compared with previous research since no literature could be found in testing the relationship between the likelihood of blowing the whistle and marital status. The chi-square calculated value is greater than table value at $df=2$ at 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted. There is a relationship between employee marital status and the level of whistle blowing in Karnataka State Public Enterprises.

TABLE: 3

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 29.826 |
|--|---------|-----------|------|------------------------------|-------|-------------|--------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Marital Status | Single | 6 | 11.1 | 2 | 33.33 | df | 2 |
| | Married | 47 | 87 | 20 | 42.55 | Asymp. Sig. | 0.000 |
| | Widowed | 1 | 1.9 | 1 | 100 | | |
| | Total | 54 | 100 | 23 | | | |

Source: Field survey

Educational qualification: H4: There is a relationship between employee education level and the level of whistle blowing in Karnataka State Public Enterprises.

The likelihood of blowing the whistle was not associated with higher education. Graduation and above were considered as higher education group and PUC and below were considered as lower education group. 56% employees who are in lower income are more likely to blow the whistle than 41% employees belonging to high income group. Though it is observed with gap between less education and higher education

employees in likelihood of blowing the whistle, the p value is $>.05$, which indicates there is no significant difference between low and high education group of employees in likelihood of blowing the whistle. The result is consistent with previous study by John P. Keenan (1993). The chi-square calculated value is lesser than table value at $df=4$ at 95% confidence level, therefore, the null hypothesis is accepted and alternative hypothesis is rejected. There is no relationship between employee education level and the level of whistle blowing in Karnataka State Public Enterprises.

TABLE: 4

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 8.957 |
|--|-----------------|-----------|------|------------------------------|-------|-------------|-------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Education Qualification | SSLC | 2 | 3.7 | 2 | 100 | df | 4 |
| | PUC | 3 | 5.6 | 1 | 33.33 | Asymp. Sig. | 0.062 |
| | Graduation | 23 | 42.6 | 9 | 39.13 | | |
| | Post Graduation | 15 | 27.8 | 5 | 33.33 | | |
| | Others | 11 | 20.4 | 6 | 54.40 | | |
| | | Total | 54 | 100 | 23 | | |

Source: Field survey

Nature of employment: H5: There is a relationship between employees nature of employment and the level of whistle blowing in Karnataka State Public Enterprises.

The likelihood of blowing the whistle is associated with permanent workers than contract or temporary employees. 46% of the employees whose job was permanent are more likely to blow the whistle than the contract or temporary

employees (33%). The result is consistent with the findings of previous research (A. J. Brown -2007). The chi-square calculated value is greater than table value at df=1 at 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted. There is a relationship between employee’s nature of employment and the level of whistle blowing in Karnataka State Public Enterprises

TABLE: 5

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 15.696 |
|--|-------------------|-----------|------|------------------------------|-------|-------------|--------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Work Category | Permanent | 46 | 85.2 | 21 | 45.65 | df | 1 |
| | Temporary | 2 | 3.7 | 0 | 0 | Asymp. Sig. | 0.0000 |
| | Contract Employee | 6 | 11.1 | 2 | 33.33 | | |
| | Total | 54 | 100 | 23 | | | |

Source: Field survey

Work experience: H6: There is a relationship between employee experience and the level of whistle blowing in Karnataka State Public Enterprises.

The likelihood of blowing the whistle is strongly associated with higher work experience. 47% of the employees whose job experience is above 25 years are more likely to blow the whistle than 27% of the employees having 0-5 years of less

experience. The result is consistent with the inconsistent findings of previous research. The chi-square calculated value is greater than table value at df=5 at 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted. There is a relationship between employee experience and the level of whistle blowing in Karnataka State Public Enterprises

TABLE: 6

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 33.609 |
|--|----------------|-----------|------|------------------------------|-------|-------------|--------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Work Experience | 0-5 Years | 11 | 20.4 | 3 | 27.27 | df | 5 |
| | 6-10 Years | 2 | 3.7 | 1 | 50 | Asymp. Sig. | 0.0000 |
| | 11-15 Years | 2 | 3.7 | 1 | 50 | | |
| | 16-20 Years | 6 | 11.1 | 1 | 16.67 | | |
| | 21-25 Years | 3 | 5.6 | 3 | 100 | | |
| | above 25 Years | 30 | 55.6 | 14 | 46.67 | | |
| | Total | 54 | 100 | 23 | | | |

Source: Field survey

Annual income (salary): H7: There is a relationship between employee income and the level of whistle blowing in Karnataka State Public Enterprises.

The likelihood of blowing the whistle is strongly associated with high salaried or income group. 71% of the employees whose annual income is above two lakh are more likely to blow the whistle than 31% employees whose annual income

was less than 2 lakh. The result could not be compared with previous research since no literature could be found in testing the relationship between the likelihood of blowing the whistle and employee annual income. The chi-square calculated value is greater than table value at $df=5$, 95% confidence level, therefore, the null hypothesis is rejected and alternative hypothesis is accepted.

TABLE: 7

| Demographic Profile Of the Respondents(N=54) | | | | Likely whistle blowers(n=23) | | Chi-Square | 12.739 |
|--|----------|-----------|------|------------------------------|-------|-------------|--------|
| Characteristics | Items | Frequency | % | Frequency | % | | |
| Annual Income | <1 Lakh | 2 | 3.7 | 1 | 50 | df | 5 |
| | 1-2 Lakh | 11 | 20.4 | 3 | 27.2 | Asymp. Sig. | 0.026 |
| | 2-3 Lakh | 7 | 13 | 6 | 85.7 | | |
| | 3-4 Lakh | 2 | 3.7 | 1 | 50 | | |
| | 4-5 Lakh | 5 | 9.3 | 3 | 60 | | |
| | >5 Lakh | 26 | 48.1 | 9 | 34.61 | | |
| | Total | 54 | 100 | 23 | | | |

Source: Field survey

Discussion: The level of blowing the whistle in Karnataka State Public Enterprise by the employees is positively associated with age (older), gender(male), marital status(married), work category(permanent), job tenure(more), income (high). The level of blowing the whistle was negatively associated with education. However there exists very less or no association, as supported by chi-square test ($p>.05$). The results are consistent with previous research findings.

Old aged employees are associated with likelihood of blowing the whistle, since by their experience and more knowledge they have more persistence in understanding the problem which needs serious attention in the organization. The employees at age group 41-60 are having more concern towards the ethical issues. As age increases, the ethical implementation in life and career increase, this may also be one of the reason why the level of blowing the whistle is associated with older the age of employees.

The male employees are much associated with level of blowing the whistle. This is because they have the qualities of taking initiative, locus of control, courage, and more awareness about the wrongdoing in an organization than the female employees [Janet P. Near and Marcia P. Micelle (1985)]. The awareness

about wrongdoing may be due to the wide network distribution.

Married employees are more likely to blow the whistle than single or unmarried. This result mainly is due to 85% of the married employees belong to the age group 41-60, and we have already discussed the old age employees are more associated with likelihood of blowing the whistle than young employees. The permanent employees are more likely to blow the whistle than contract employees. This may be due to the fear of employer retaliation by contract employees, and permanent employees are more aware of organization happenings than contract employees. The confidential matters and decisions by management may not be made aware to contract employees. 85% of permanent employees belong to age group 41-60, so more age and experience is strongly associated with permanent category of job. Since age is strongly associated with level of blowing the whistle and experience depends on age, experience is also associated with the level of blowing the whistle. The high income groups are the employees who are having more job tenure and who are in permanent job. Therefore one can strongly say age, experience, income and work category are strongly associated with the likelihood of blowing the whistle and these variables are inter-

related (A J Brown-2007). "Employees who feel relatively powerful or respected will be more likely to report perceived wrongdoing."-[Hills Governance Centre (2006)].

Limitation of the study: The study is conducted mainly considering two Karnataka State public enterprises due to the time and cost factor, concentrating Mysore and Bangalore districts.

Conclusion: Finally one can conclude there is strong and positive relationship between the level of blowing the whistle and demographic factors of employees in Karnataka State Public Sector Enterprises. The results are consistent with previous research findings and policy makers can consider these results in framing effective policy for whistle blowing mechanism in public sector enterprise for effective public governance system. A study conducted in Australia, described potential whistleblowers as "mostly model employees." They are "highly valued employees" who are "educated, experienced, efficient, hardworking, honest and perceptive of how their organization functions." The findings of this study prove prospective whistle blowers in Karnataka State Public Enterprises are those who have higher job experience and annual income among old aged male group. The permanent nature of the job is also the factor associated with employees working in public sector enterprises. The job safety plays a very important role in blowing the whistle, which is mainly found in public organization rather private enterprises. The demographic factors play a major influencing factor in blowing the whistle in Karnataka State Public Sector Enterprises.

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Corporate Organizations: Community Relations

K.N.Ajith

A b s t r a c t

Corporate affluence can be sustained only when social development and well-being of communities take place concomitantly. Social performance of companies is fast becoming a benchmark in the business world and CSR has grown as a parameter of this performance throughout the world. The paper examines the different explanations of the concept of CSR, and its strengths and weaknesses. It discusses the shift from CSR to CSV (Creating Shared Value) by enlightened companies across the globe. The paper also focuses on the symbiotic relationship between CSR/CSV and HR practices.

Key words: Corporate social responsibility, creating shared value, employee volunteering, and HR practices.



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Business and community, taken together, consist of an interactive system. Each needs the other. Each can influence the other. They are intertwined so completely that an action taken by one will inevitably affect the other. The boundary line between the two is blurred and indistinct. Community orientation of corporate organizations is an evolving ideology. It is also known as corporate citizenship. Three concepts have arisen the social performance of companies since beginning of the twentieth century. During the 1950s and 1960s, the concept of corporate social responsibility became popular. The concept of corporate social responsiveness emerged during the early 1970s followed by the concept of social rectitude during the mid-1970s (Frederick, 1987). All these concepts now exist side by side. Corporate social responsibility (CSR) is the widely popular

concept globally, replacing corporate philanthropy. CSR is now giving way to CSV (creating shared value).

CONCEPTS OF CSR

Corporate Social Responsibility (CSR) is an umbrella term (Blowfield and Frynas, 2005) used to describe different socially oriented practices. American economist Bowen (1953), known as the father of the modern practice of corporate social responsibility, was the first to bring CSR into the business domain through his book "Social Responsibility of the Businessman." The term CSR "is a brilliant one, it is something but not always the same thing to everybody" (Votaw and Sethi, 1973).

Carroll (1991) proposed a pyramidal structure to explain CSR with four layers of responsibilities: economic, legal, ethical and philanthropic. Economic and legal responsibilities are demanded by the state and society, where as the ethical aspect is expected from business and the philanthropic responsibility is purely discretionary. Ethical responsibility of business, though not codified by legislation, includes activities that are often restricted or prohibited by the governments and society. "A corporation can and should have a conscience. The language of ethics does have a place in the vocabulary of an organization" (Goodpaster and Mathews, 1982). Kautilya, the legendary Indian statesman, economist and philosopher of the third century BC, advocated "business practices based on moral principles" (Frynas, 2006). Holme and Watts (2000) define corporate social responsibility as the "continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large." CSR, to Ward and Fox (2002), is environmental, social and human rights based initiatives of corporations. Small and medium-sized enterprises have limited resources and less brand-related pressure to focus on CSR. Hence, CSR tends to be 'implicit' (informal), rather than 'explicit' (formal). In small companies, "CSR relies more on the moral commitment of the owner and the direct feedback given by the local community and customers" (Visser, 2006).

Strategic CSR¹ is a recent concept suggested by Crawford and Scaletta (2005) as well as by Porter and Kramer (2006). The latter say that "If corporations were to analyze their prospects for social responsibility using the same frameworks that guide their core business choices." corporate social responsibility "can be much more than a cost, a constraint, or a charitable deed – it can be a

source of opportunity, innovation and competitive advantage." Halme and Laurila (2008) suggest the term innovation CSR which converts developmental and social issues to business opportunities to solve the problems. Zadek, et al (2003) describe three generations of CSR. First generation CSR is corporate charity; while second generation CSR is strategic CSR; and third generation CSR is competitive CSR which is based on collective actions of companies and their stakeholders in order to develop markets. "Competitive advantage within one or several sectors arising through interactions between the business community, labor organizations and wider civil society, and the public sector focuses on the enhancement of corporate responsibility" (Zadek, et al. ,2003).

Ajith (2011) is of the view that CSR should aim at a just social order, and sustainability of the eco-system and society should be its core element. The United Nations (1987) define sustainable development as "satisfying the needs of the present without compromising the ability of future generations to meet their own needs."² This definition lacks universal acceptance. Many environmentalists are of the view that sustainable development is a combination of two apparently contradictory ideas because economic activities invariably lead to adverse ecological consequences. Elkington's (1997) "Triple Bottom Line" or TBL consists of three Ps: profit, people and planet, and it captures a spectrum of criteria for measuring organizational success: economic, ecological and social.

CSR is voluntary going beyond statutory compliance. For example, many companies pay unskilled workers more than the legally prescribed minimum wages, so that the employees can have a reasonable standard of living, while ensuring their loyalty. Sometimes the benefit of CSR, according to Cohen (2010), is a sort of defence strategy – business organizations have been attacked for irresponsible practices and CSR then becomes their defence. Most of the Western apparel and fashion businesses were criticized by social activists and consumer groups in the 1990s as their outsourced manufacturing supply chains in countries like Bangladesh, India and China employed women and children in sweatshop³ conditions. CSR, then was their best defence. Now, many of these companies have very strict standards and they closely monitor the suppliers' adherence to these standards. In India, the Government of India made a conscious emphasis on the concept of "responsible business" in the voluntary guidelines for companies (2011).

Bishop and Green (2008) coined the concept of philanthrocapitalism. They recommend it as the remedy for the many social problems that face even the rich societies based on “innovative partnerships between business, non-profits and government.” They assert that “as governments cut back their spending on social causes, giving may be the greatest force for societal change in our world.” The philanthrocapitalist movement led by Warren Buffet and Bill Gates, is spearheading the “Giving Pledge”⁴ campaign among wealthy business leaders to give away at least a half of their wealth. Though a laudable philanthropic initiative, there are many operational limitations in terms of reach and effectiveness as the number of people to be covered is humongous.

Visser sees CSR evolving through five ‘ages and stages’: “defensive CSR in the age of greed, charitable CSR in the age of philanthropy, promotional CSR in the age of marketing, strategic CSR in the age of management, and transformative CSR in the age of responsibility.” He classifies the first four as ‘CSR 1.0.’ and the last age as ‘CSR 2.0.’ “CSR is steadily professionalising, and as it becomes more embedded and transformative, CSR will become more of a force for competitive differentiation and employee motivation” (Visser, 2011). *Cohen (2010) says that CSR is “a way of doing business that is based on ethical principles and structured management controls, and that takes into account social and environmental considerations alongside economic considerations” while making business decisions.*

CSR DEBATE

Business organizations across the globe have come under intense social scrutiny in recent years. Scams, fraudulent practices, growing income inequalities, increasing environmental degradation and depletion of natural resources, often illegally, have dented the images of the companies in India. Forcible acquisition of agricultural and forest land, displacement of millions of families using the “doctrine of pre-eminence” for public interest, and glaring development deficit pushed tribals in India into left extremism and insurgency. Communities across India revolted against corporate policies with government support which marginalized them by dispossession of their land and livelihood.

The Supreme Court of India (2010) stated that “to millions of Indians, development is a dreadful and hateful word, that is aimed at denying them even the source of sustenance.”

Social anthropologist Padel (2010), a crusader against the mining policy of the Indian government, is critical of bauxite mining. He observed that “on the one side, there is ecoside and on the other, displacement and dispossession of adivasis⁵ which is cultural genocide.” About one-third of the districts in India have extremist or naxalite presence according to media reports. Union Minister Chidambaram (2010) cautioned the corporate leaders that people in naxal-dominated areas do not have faith in the good sense of business organizations, and they also lack confidence in the government. Globally today “companies are widely perceived to be prospering at the expense of the broader community” (Porter and Kramer, 2011). A flurry of shocking disclosures about malfeasance in high profit companies, and the concomitant global recession have shattered the myth of capitalism. There is a growing credibility gap and trust deficit on the part of business today. While the “Occupy Wall Street” movement is a protest against corporate greed which triggered the meltdown of Western economies, the exploited and exasperated people in naxal dominated regions have taken to armed struggle against the Indian state itself. In this scenario, Corporate Social Responsibility (CSR) is shifting its emphasis from condescending corporate philanthropy to sustainable activities for the development of communities more often under pressure from the government and civil society. Mahindra (2012), a leading industrialist, says that there is an “outcry across the world for businesses to be more alive to issues larger than profits, especially after the big bad wolf image that business earned during the recession.” Member of Parliament, and industrialist Aga (2012) does not mince words while commenting that in many instances there is only lip-service paid to CSR and sometimes CSR is brazenly used as a short cut to capture mind-space and public imagination. Aga cautions that it would be a terrible mistake if CSR is reduced to a tactic or mere business strategy. CSR spending is often used for tax savings or brand building. Most companies have set up trusts and foundations, which enjoy tax exemption, to channel funds for CSR.

CSR is often used by the government of India to obfuscate the fact that the focus of any business is to do business in a transparent and profitable manner. It is the government’s duty to promote public welfare by taxing private sector profits. The government should not abdicate its responsibilities by trying to make CSR spending mandatory. It is only by offering quality products and services that companies can thrive, and the government cannot depend on the companies to focus on areas where it has failed to perform. While Buffett and Gates make a pitch for corporate charity, Steve Jobs, co-founder of

Apple, was not known to be enthusiastic of corporate philanthropy. Jobs, a highly competitive innovator, built a business empire worth billions, created some of the world's most iconic products for consumers, and generated prosperity for shareholders and workers. That is how Jobs promoted societal good.

Corporations are “amoral legal entities... and the notion of social responsibility is not part of the DNA of corporate structures....if we look back at history the notion of CSR appears to be an oxymoron” (D’Souza, 2011). Nobel Laureate and economist Friedman was not a proponent of CSR. He asserts that “Only people have responsibilities. A corporation is an artificial person and in this sense may have artificial responsibilities, but “business” as a whole cannot be said to have responsibilities.” Social responsibility of business is a “fundamentally subversive doctrine” in a free society, and in such a society, “there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud” (Friedman, 2002).

The recently enacted Companies Bill 2012 wants companies having a profit of INR 50 million to spend 2 per cent of their net profit on CSR. But the mandatory clause misses totally what corporate social responsibility actually is, which is an ethical attitude and voluntary action. Mahatma Gandhi (1947) was a votary of the ethical model of voluntary commitment to public welfare by companies. Economic analyst Aiyar (2012) observes that CSR means observing the highest standards in dealing with health and environmental hazards, and in presenting corporate accounts accurately. He adds that if a company cheats its stakeholders, fiddles its accounts and ignores hazards, then it is grossly irresponsible whether or not it spends 2 per cent of its profit on government approved activities. CSR allocation can even camouflage lack of ethics. Consumers are duped by CSR awards, and they are willing to pay more for products from such award winning companies. Aiyar cites Satyam and the oil multinational British Petroleum⁶ which caused the biggest environmental disaster in history when its Maconodo well exploded in the Caribbean Ocean because of its failure to observe many safety procedures. Corporate spending on CSR, far from being an evidence of business ethics, is often a cloak for gross misgovernance, warns Aiyar.

SURVEY OF EXECUTIVES

Socially responsive executives are more likely to modify their business policies and practices than those who discharge their responsibilities only in an economic context. Executives in socially responsible companies consider not only the interests of their core stakeholders but also the interests of all the stakeholders. Hence studies on the community orientation of corporate executives are a necessity. That is the rationale of the present survey. The objective of the survey was to study the perceptions of corporate executives on corporate social responsibility and related issues.

Methodology

A two-stage sampling design was used for the study. At the first stage, companies were selected and at the second stage, corporate executives were selected from the sampled companies. Business World ranks 500 biggest public limited companies in India every year. Out of the 500 companies, 26 were registered at Chennai, which constituted the sampling frame at the first stage. Out of the 26 companies, four were selected purposively for the study; three with a long tradition belonging primarily to the manufacturing sector and one recently established belonging to the information technology sector. The sampling frame at the second stage comprised 902 executives in the four companies having designations from Assistant Manager to Vice-President, and a sample of around 100 executives was considered statistically sufficient and efficient. Hence it was decided to select around 11 per cent of the universe for the final sample. The primary data was collected from the sampled corporate executives using a structured pre-tested questionnaire, which was mailed to them. The executives selected for the study were asked to rank the factors in order of importance ranging from a score of 1 for the least important to a score of 9 for the most important. The scores are grouped into three categories: low, moderate and high. Scores 1 to 3 fall in the low category, 4 to 6 fall under moderate category and 7 to 9 in the high category.

Perceptions of CSR

The responses to perceptions of CSR were grouped into three categories: charity (60 per cent), business ethics (22 per cent), and environmental protection (18 per cent). Thus corporate philanthropy as CSR is the understanding of the majority. However a significant proportion views CSR as ethical practices and sustainability of natural resources.

Drivers of CSR Awareness

Table 1
Executives by Rating of Drivers of CSR Awareness

| Driver of Awareness | Rating | | | Mean Score |
|---------------------------|--------|----------|-------|------------|
| | Low | Moderate | High | |
| Company's reputation | 3.4% | 16.1% | 80.5% | 7.5 |
| Global standards | 18.4% | 42.5% | 39.1% | 5.7 |
| Corporate group pressure | 23.0% | 40.2% | 36.8% | 5.3 |
| Competition in the market | 48.3% | 27.6% | 24.1% | 4.2 |

The executives, have identified certain drivers that propel increased awareness of corporate social responsibility. The reputation of a company stands out as the most prominent factor causing greater awareness of corporate social

responsibility. Rising international standards is the second-ranked factor. Group Pressure by CII, FICCI and other groups, is rated third. Competition in the market is ranked last as an awareness-enhancing factor.

Stakeholders

Table 2
Executives by Rating of Stakeholders

| Stakeholder | Rating | | | Mean Score |
|-------------------|--------|----------|-------|------------|
| | Low | Moderate | High | |
| Customers | 5.4% | 16.8% | 77.2% | 7.4 |
| Regulatory bodies | 30.7% | 40.6% | 28.7% | 7.4 |
| Shareholders | 3.0% | 20.8% | 76.2% | 7.2 |
| Employees | 6.9% | 43.6% | 49.5% | 6.5 |

The interests of many sections of the society are at stake when a company comes into existence and starts growing. Four main stakeholders are identified by the corporate executives. Customers, including the community, top the list of stakeholders according to the rating of the executives. Regulatory bodies are equally ranked closely followed by

shareholders. Employees get a prominent fourth rank in order of importance of stakeholders.

Advantages of CSR

When a company undertakes socially useful programmes, the resultant benefits to the company are many.

Table 3
Executives by Rating of Advantages of CSR

| Advantage | Rating | | | Mean Score |
|----------------------------|--------|----------|-------|------------|
| | Low | Moderate | High | |
| Social Image | 2.0% | 24.8% | 73.3% | 7.3 |
| Customer loyalty | 14.9% | 34.7% | 50.5% | 6.1 |
| Retention of employees | 16.8% | 37.6% | 45.6% | 5.9 |
| Reduced regulatory control | 36.8% | 49.6% | 13.9% | 4.3 |

Executives are highly sensitive to the social image of their companies and obviously that is ranked first among the advantages of corporate social responsibility. Customer loyalty and allegiance of employees are ranked second and third respectively with only a minor difference. The executives give a low rank to reduction in control by the regulatory bodies because of CSR.

All India CSR Rating

In India, the first systematic rating has been pioneered by Karmayog⁷, a non-profit initiative as a CSR watchdog organization. Karmayog rating of companies ranges from level 0 to level 5 and is based on the main products and services. At present, 500 largest companies in India are being rated. No

company has so far been given the highest rating of 5 from 2007 to 2010. Only 12 companies secured the rating of 4 in 2010; the ratings of the other companies were 3 (13.2 per cent), 2 (32.2 per cent), 1 (29.6 per cent) and 0 (22.6 per cent). Out of the 66 public sector undertakings, the ratings of 58 were between 0 and 2; only 8 could secure level 3 rating. Among the 39 multi-national corporations, only one was given a rating of 4, while the rating of 3 was secured by 9. The aggregate average score is 1.43. Construction, infrastructure and trading sectors are the lowest category with a mean score of 0.6.

The Karmayog* ratings for 2010 are converted for this paper by the author as mean rating scores and presented below.

Table 4
Companies by Mean Rating Scores

| Mean Rating Score | No of Companies | Per Cent |
|-------------------|-----------------|----------|
| Below 1 | 40 | 8.0 |
| 1.0 - 1.4 | 237 | 47.4 |
| 1.5 - 1.9 | 173 | 34.6 |
| 2.0 - 2.4 | 47 | 9.4 |
| 3 or more | 3 | 0.6 |
| Total | 500 | 100.0 |

*Karmayog ratings are available upto the year 2010 only as of now.

Karmayog observes that there has been a trend towards compartmentalizing CSR and turning it a specialized activity. Unless CSR is intrinsic to all aspects of a business enterprise and is reflected in the actions of a company in all aspects, the rating gets lowered. The present ratings are indicators of the distance companies need to cover to reduce the gap between professed goals and reality (Aga, 2012).

CSR TO CSV

CSR and philanthrocapitalism have not made any significant dent on the lives of the people across the world. Economist Stiglitz (2012) warns prophetically : "The top 1 percent have the best houses, the best educations, the best doctors, and the best lifestyles, but there is one thing that money doesn't seem to have bought : an understanding that their fate is bound up with how the other 99 per cent live. Throughout history, this is something that the top 1 per cent eventually do learn. Too late." Prahalad (2004),

management specialist, argues for sustainable solutions to global poverty through a better approach that involves partnering with the poor "to innovate and achieve sustainable win-win scenarios where the poor actively engaged and, at the same time, the companies providing products and services to them are profitable." Such a collaboration between the poor consumers, governments, civil society groups and firms can create the largest and fastest growing markets in the world. The BOP (bottom of the pyramid) markets must become an integral part of the work of the private sector and a component of the core businesses of the firms. They cannot be "relegated to the realm of corporate social responsibility initiatives." Prahalad strongly advocates for a paradigm shift from treating the poor as the wards of the state with aid and subsidies to viewing them as active consumers and entrepreneurs.

The limitations of CSR are reinforced by Porter and Kramer (2011) who state that the more business has begun to embrace

corporate social responsibility, the more it has been blamed for society's failures. Most companies remain stuck in a CSR mind-set in which societal issues are at the periphery, not the core. Porter and Kramer propose the concept of shared value which is defined as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates." Creation of shared value (CSV) focuses on identifying and expanding the connections between societal and economic progress as "businesses have rarely approached societal issues from a value perspective." Rather these have been treated as peripheral matters through CSR obscuring the close links between economic and social concerns. Mahindra (2012) declares that "CSR is dead, long live shared values." Creating shared value (CSV) should supercede CSR in guiding the investments of companies in their communities as CSR programmes focus mostly on reputation. CSV, in contrast, is integral to the profitability and competitive position of companies. CSV utilizes the skills, resources and expertise of the companies to create economic value by creating social value (Porter and Kramer, 2011).

Community work is no longer a voluntary activity instead it is an imperative for business. In future, customers as well as employees would want to be associated with environmentally and socially responsible corporations. Jamsetji Tata, the founder of the Tata conglomerate, said: "In a free enterprise, the community is not just another stakeholder in our business, but is in fact the very purpose of its existence" (Tata Services, 2010). The nature of CSR in the country has evolved over the decades and has seen many changes. Charity-based, short-term social welfare programmes are being replaced by long-term social engagement initiatives aimed at creating shared value for the companies and the communities. There is an increasing realization that business cannot succeed without an effective connect with the society at large and have started considering CSV as an imperative for doing business rather than a choice. There are already some outstanding examples of Indian companies creating shared value.

Fabindia⁸ works closely with artisans across India linking over 80,000 crafts-based rural producers to urban markets. It preserves traditional Indian handicrafts while creating a base for sustainable employment for skilled rural workers. The company claims to promote "inclusive capitalism" through Community Owned Companies (COC) which are value adding intermediaries between the rural producers and Fabindia.

COCs are owned by the communities in which they operate and a minimum 26 per cent shareholding of these companies is that of the craft persons. Fabindia's unique business values of being a profitable retail platform, while also creating a community-led supply chain with artisan shareholders and directors set a high standard of vision, innovation and social commitment. Fabindia has significantly impacted sustainable livelihood in the rural sector, while becoming one of the largest private platforms for products that are made from traditional techniques, skills and hand-based processes.

Amul Dairy⁹, founded in 1946 as a co-operative in Anand in Gujarat (Kaira District Milk Producers' Union), ultimately transformed a milk-starved India as the largest milk producer in the world. The exploitative trade practices by the local trade cartel triggered off the co-operative movement and the government of India formed the National Dairy Development Board. Through the "White Revolution" Amul dairy products—milk, cheese, ice cream and chocolates—have become world class. The milk producers and the communities around them along with the consumers are benefitted by Amul. Over 15 million milk producers in 1,50,000 co-operatives and 22 state marketing federations ensure a better life for millions. Amul successfully competed against global giants like Nestle and Polson.

Hindustan Lever¹⁰ is Unilever's business in India. The company generates around half its business from India's towns and cities, and half from rural areas, where its products are sold in some 100,000 villages with populations of 2,000 or more. By the end of the 1990s, the company came up with *Project Shakti* (which means 'strength' in Sanskrit) to expand its market. It was a bold and innovative solution. The company tapped into the growing number of women's self-help groups in the country. The company provides self-help group women with training in selling, commercial knowledge and book-keeping. The women who are trained can choose to set up their own business or to become distributors or *Shakti Ammas* (empowered mothers) as they have become known. Each woman who becomes a distributor invests INR 10,000 - 15,000 (US\$220-330) in stock at the outset, usually borrowing from self-help groups or micro-finance banks facilitated by Hindustan Lever. Each aims to have around 500 customers, mainly drawn from her village's self-help groups and from nearby smaller villages. Most women generate sales of INR 10,000-12,000 a month, netting a monthly profit of INR 700-1,000 (US\$15-22), which is a far cry from the handful of rupees they earned working in the field. For those with

husbands who work in the fields, this typically doubles the household income.

The successful corporations of the future will be those which align their business with the development of the communities in which they operate. Kanter (2012) is of the view that “institutional logic holds that companies are more than instruments for generating money; they are also vehicles for accomplishing societal purposes and for providing meaningful livelihoods for those who work in them.” The value that a company creates, according to this school of thought, should be measured not just in terms of short-term profits or employee benefits but also in terms of how it sustains the conditions that allow it to flourish over time.

From cheque book philanthropy, some companies have steadily moved over to skill-based employee volunteering to communities around the enterprises. Employee volunteering is not philanthropy. The volunteer contributes skill, time and experience, without any monetary benefits, for the welfare of the community. Volunteering has many benefits for the companies as well as to the employees. It leads to personal growth and development of the employees. It also provides key career experiences and teaches valuable job skills. Tata group companies, and Mahindra and Mahindra are known to have systematically planned employee volunteering programmes. Cappelli (2012) praises some corporations in India that put charitable money behind social missions at a level that dwarfs anything that one would see in the US: sixty-five per cent of the profits of the Tata group companies, for example, go to social development.

HR PRACTICES AND CSR/CSV

Mees and Bunham (2005) subsumed the relationship between CSR and HR as a mathematical equation: $CSR = HR + PR$ (Public Relations). They added that “If employees are not engaged, Corporate Social Responsibility becomes an exercise in public relations. Credibility of an organization will become damaged when it becomes evident that a company is not ‘walking the talk.’” Effective CSR is a matter of attitude which should be fostered by HR. CSR or CSV should be embedded into everything a company does. HR administrators will have to become actively involved in engaging employees and executives so that the CSR mind-set would fully permeate the company. Cohen (2010) prefers the role description as Corporate Social Human Resource Manager.

HR functions of an organization can be instrumental in facilitating a comprehensive approach for creation of a culture

of sustainability and environmental stewardship (Jay,2010). HR has the responsibility to align the companies with the regulatory policies of the government. HR professionals can play a major role in business processes. Managements supported by sensitive HR practices can create enabling conditions to make CSR work as desirable and honoured as meeting the sales targets.

The human rights violations by many companies have created challenges for the working place in developing as well as in developed economies that CSR or CSV cannot address unless it is part of an overall HR strategy of the companies. Companies, particularly in the garment sector, have always been outsourcing work to lower wage locations. So long as profits come from products that are harmful to the planet and people, little shared value can be created. HR practitioners need to respond to this challenge by creating the framework and protocols that are essential to integrate ethics, accountability and governance standards within performance appraisals. Kanter (2012) is of the view that articulating a purpose broader than making profit can guide strategies and actions, open new sources for innovation and help people express corporate and personal values in their day-to-day work.

No company can succeed in the long-term if they do not recruit, train and motivate people who have the ability to respond to and shape the challenges of the future. The recruitment and selection of new employees help demonstrate the intentions of a company, highlighting the skills and attitudes to which it attaches the highest priority. The choice of new recruits also gives an opportunity to the company to communicate the values of the organization, and the opportunities for career growth and community engagement.

Companies operating ethically and demonstrating a keen concern for health, safety and quality of life of the working people are the desired enterprises. Sustainable programmes do motivate employees to perform to their highest potential. If the values of a company and its employees are aligned, then the morale and commitment of the employees will increase. Employees, who participate in community development partnerships and programmes, are highly energized by the experience, and are more likely to recommend the company, stay with it, and be motivated in their jobs.

In common parlance, ESOP means employee stock options programme, but in Mahindra and Mahindra, ESOP stands for employee social options programme. The same business

process used for core business choices is employed by HR in designing employee volunteer opportunities. Employees generate ideas for projects that meet the needs of communities around their place of work. They plan, implement each activity and monitor the results (Mahindra, 2012). "Great Companies assume that they can trust people and can rely on relationships, not just rules and structures. They are more likely to treat employees as self-determining professionals who co-ordinate and integrate activities by self-organizing and generating new ideas" (Kanter, 2012).

Employees are core stakeholders of a company, they need to be engaged intensively in order to ensure that they uphold responsible business practices. CSR or CSV would benefit the business and community by creating opportunities only when HR becomes a core partner. HR should champion a bold and successful CSV initiative.

EPILOGUE

I conclude this paper with the words of Mahatma Gandhi on his trusteeship philosophy: ¹¹ "Suppose I have come by a fair amount of wealth- either by way of legacy, or by means of trade and industry – I must know that all the wealth does not belong to me: what belongs to me is the right to an honourable livelihood, no better than that enjoyed by millions of others. The rest of my wealth belongs to the community and must be used for the welfare of the community."

Notes

1. General Electric (GE), the world's tenth largest corporation, launched 'ecomagination' in May 2005. It is a clear strategic opportunity, and a commitment to imagine and build innovative solutions to today's environmental challenges while driving GE's economic growth.
Source: <http://www.ecomagination.com>.
Accessed on 15 July, 2012.
2. Sustainability was coined by the Brundtland Commission, (World Commission on Environment and Development), known by the name of its chair, Gro Harlem Brundtland, which was convened by the United Nations in 1983.
3. Sweatshop refers to very difficult or hazardous working environment. Sweatshop workers are forced to work long hours for low wages in violation of labour laws. Workers are also often subject to ill-treatment.
4. Started in June 2010, 105 billionaires from the US, India and other countries signed the 'Giving Pledge' as of March 2013.
Source: http://en.wikipedia.org/wiki/The_Giving_Pledge.
Accessed on 10 March, 2013.
5. Adivasis are tribal communities.
6. Sathyam won several CSR awards including a prestigious UK government award. British Petroleum won CSR awards in Malaysia and China, and topped the Fortune Magazine's corporate accountability rating for CSR in 2004, 2005 and 2007. A company, thus, can deceive the stakeholders and still parade as a paragon of corporate ethics and win awards.
7. Karmayog, founded in 2004, is the first non-governmental platform which presents a snapshot of the CSR performance of the largest companies in India through survey and systematic rating commencing from 2007. It also facilitates exchange of information transparently.
Source: <http://www.Karmayog.org/csr> 2010/.
Accessed on 20 July, 2012.
8. Founded in 1960, Fabindia has a large pan- Indian presence.
Sources: <http://www.fabindia.com/company>.
<http://www.fabindia.com/50-years-of-fabindia>.
Accessed on 21 July, 2012.
9. AMUL, under its architect Dr. Verghese Kurien, has become a global brand of Gujarat Co-operative Milk Marketing Federation Limited. Its revenue in 2010-11 was 2.15 billion US dollars.
Source: <http://en.wikipedia.org/wiki/Amul>.
Accessed on 21 July, 2012.
10. Hindustan Lever also trained *Shakti Ammas* to educate village women on hygiene and health.
Source: <http://www.unilever.com/images/es.project-shakti-tcm13-13297.pdf>.
Accessed on 21 July, 2012.

11. Mahatma Gandhi's trusteeship philosophy influenced many business groups in India.
Source: <http://www.gandhi-manibhavan.org>
Accessed on 21 July, 2012.

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Direct And Indirect Effects: SCM Components

C. Ganesh Kumar and T. Nambirajan

A b s t r a c t

This study examines the impact of supply chain management components on supply chain performance constructs of manufacturing industries. The critical supply chain management components are identified and defined: (1) supply chain concerns (2) supply chain competence and (3) supply chain practices. The research model was tested using data from a sample of 255 manufacturing firms of Union Territory of Puducherry, India. The results showed positive direct relationships between supply chain concerns, competence and practices on supply chain performance. The impact of supply chain practices on supply chain performance has great indirect effects through supply chain concerns and competence.

Key words: Supply chain management components; Supply chain performance; Structural equations modeling.



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Liberalisation of our country's economy has offered various challenges and opportunities to our firms. The firms, which were enjoying the protection of covens of the Indian license raj system prior to liberalization, are now subject to cut-throat competition from both local and global players. The frontiers of market for the firms are far expanding and the business environment is changing at a rapid pace. This has inculcated a spirit of competitiveness among the Indian firms. These firms, though enjoy the privilege of operating at the global level, are subject to various challenges, which bring in numerous problems which are intrinsic and typical to the Indian context. Though the firms are subject to problems which are indianised in nature, indianised solutions to these problems are far from being realized. One important challenge confronting the Indian firms relates to Supply Chain Management (SCM), and the nature, scope, problems and opportunities associated with the SCM with an Indianised context (Shah J, 2009). The nature, scope, opportunities and challenges of SCM relevant to Indian scenario constitute the motivation of the proposed research

work. The globalised scenario has led to the evolution of sophisticated technologies which has led to innovative business practices. This has warranted much stronger collaborations between the suppliers, manufacturers and the third party logistics providers. Consequently, SCM has evolved itself into an effective tool, immensely contributing to the perpetual success of the industries.

Suppliers in the current scenario are not merely deemed as silent vendors, catering to the needs of their customers as and when such need arises. Instead, present day suppliers have taken the role of being strategic partners with their client companies, having a strategic alliance with such companies. Consequentially, the long term competencies of such companies have witnessed a drastic enhancement. Such a prototype change in pattern has caused a drastic modification in the mind frame of the Indian industrialists. This has consequentially resulted in the formation of a knowledge chasm. This phenomenon merits detailed and in depth research to derive a well coordinated and integrated approach involving the entities of supply chain. The paper is organized as follows. First, relevant literature is reviewed to identify and define the key constructs of the research model: supply chain management components - supply chain concerns, competence and practices. Supply chain performance and the research model and its key propositions are developed from the literature. Second, the study's methodology is then discussed. Finally, the results are presented and their managerial implications, limitations and scope for further study are discussed.

REVIEW OF LITERATURE AND CONCEPTUAL MODEL

Our attempt to identify the attributes of supply chain management improves performance within and across company boundaries. Vanichinchai and Igel (2011) have conducted research with the object to explore the effect of total quality management practices on supply chain practices and supply chain performance on Thai automotive industry by framing a conceptual model and testing using SEM. Their findings reveal that total quality management practices have direct impact on supply chain practices while supply chain performance and supply chain practices have an indirect impact on supply chain performance and Deshpande (2012) has conducted literature review on supply chain management dimensions and supply chain performance with the object of reviewing and developing a conceptual framework that shows linkage of supply chain management dimension on supply chain performance and linkage of supply chain performance and organizational performance.

Huo (2012) has conducted research with objective to investigate the impact of supply chain integration on organizational capability and performance through structural equation modeling (SEM) based on data collected from 617 Chinese companies. The research findings revealed that supply chain integration have direct and indirect effect on organizational capability while supply chain integration act as partial and full mediating effect on organizational performance and Ou et al, (2010) have investigated the effect of supply chain management practices on firm performance using SEM by collecting sample from Taiwan manufacturing industries. Their conclusion was that supply chain practices have positive effect on performance while it will exert an indirect impact on financial performance and customer value. Vijayarathy (2010) has proposed a research model and tested the proposed hypotheses that supply chain technology affects supply chain performance using the moderating variables of process innovation, partnership quality and uncertainty. Based on the data collected by administering a online questionnaire to 276 manufacturing enterprises and analysed using the statistical tools of factor analysis and ANCOVA model, the research revealed that supply chain technology uses have moderated through process innovation and quality and Cook et al (2011) have explored the linkage among supply chain practices and organizational performance with moderating effect of company role on supply chain by surveying US manufacturing enterprises. The data analysed using Regression reveal that supply chain practices have a significant impact on organizational performance and company role on supply chain has significant difference with respect to supply chain practices.

Kristal et al (2010) have tested a conceptual model exploring the effect of supply chain (SC) strategy on capabilities and organizational performance of 174 US manufacturing enterprises. The data analysed using cluster analysis and Structural equation model (SEM), reveal that combinative capabilities act as mediating variable for supply chain strategy and organizational performance. They conclude that SC strategy have a direct and indirect effect on capabilities and organizational performance and Qrunfleh and Tarafdar (2012) have assessed and tested a conceptual model to find out the impact of supply chain information strategy on supply chain performance and organizational performance by collecting sample data through questionnaire of 205 manufacturing firms and hypotheses were tested using SEM. The results show that there is significant and positive association among supply chain performance and firm performance and supply chain

performance have a mediating effect on supply chain information strategy and organizational performance and Wong and Wong (2011) have conducted research and proposed a conceptual framework on linkage of supply chain management, knowledge management capability and firm performance in the Asia Pacific region. Data analysed using statistical tools of Mediated regression analysis and path analysis reveal that supply chain management practice have positive and

significant impact on knowledge management capability and firm performance. The proposed conceptual model has been portrayed in Figure1. The five constructs presented in the conceptual model are employed to test the causal relationship among supply chain management components and supply chain performance of manufacturing firms located in UT of Puducherry.

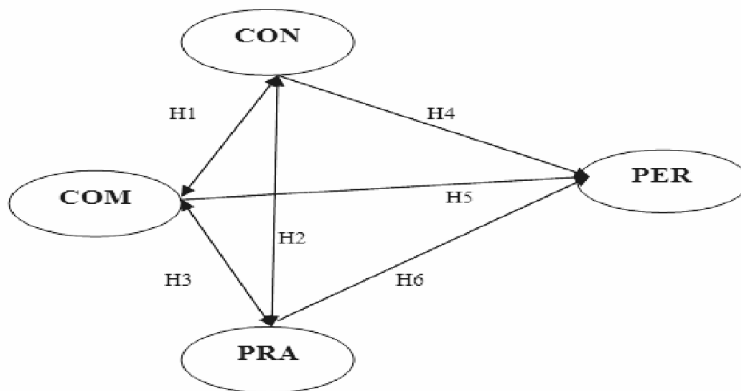


Figure: 1. A model of supply chain management components and performance

Note: * CON – supply chain concerns, COM-supply chain competence, PRA-supply chain practices, PER-Performance, H-Hypothesis

Chow et al (2008) found that organizational performance and supply chain practices and competencies are having association in US and Taiwan manufacturing enterprises. The set of hypotheses tries to study the association among the three important components of supply chain management namely, supply chain practices, supply chain concerns and supply chain competence. (Tan et al.,1999; Gripsrud et al., 2006; Chen and Paulraj, 2004; Burgess et al., 2006; Lee et al, 2011; Schoenherr,2009; and Chow et al., 2008) have argued that SCM is not merely about routine practices. Rather, it has some intricate components that must work with one another to constitute a complete SCM. Based on literature review, the following alternative hypotheses are formulated:

- 1) H₁: Supply chain practices and supply chain concerns are positively associated.
- 2) H₂: Supply chain practices and supply chain competencies are positively associated.
- 3) H₃: Supply chain concerns and supply chain competencies are positively associated.
- 4) H₄: Is performance determined directly by supply chain concerns?

- 5) H₅: Is performance determined directly by supply chain competence?
- 6) H₆: Is performance determined directly by supply chain Practices?

The above hypotheses shall be tested for exploring the existence of any causality relationship among the proposed variables using SEM framework.

RESEARCH METHODOLOGY

The research design of the proposed research work is causal in nature. The research work has been conducted mainly based on primary data. The data collection instrument used for this research is a well structured questionnaire using personal interview with managers and executives of manufacturing firm. The sampling frame for the study was collected from a list of manufacturing firm operating in Union Territory of Puducherry, from the Department of Industry and Commerce, Government of Pondicherry. Sample size was fixed 255 based on the pilot study and sampling technique used to extract sample from population is simple random sampling using lottery method. Panel of experts assisted in the development and pre-testing of the questionnaire. The only substantive changes made were to ensure that the definitions of items were meaningful and comprehensive for the sample. This

ensured content validity. The Pilot study was conducted on 30 manufacturing firms in the Union Territory of Puducherry and the initial reliability of the questionnaire was tested using Cronbach's- Alpha value, the values are Supply chain concerns (0.59), Supply chain competence (0.85), Supply chain practices (0.69) and Performance (0.75) which revealed a good reliability result. The main study was conducted using final questionnaire and the reliability of the questionnaire was tested with reliability test that shows the consistency result and the test revealed that the consistency of the questionnaire was improving. The results are represented in tabular and figurative forms. The statistical tool used in this research work is Structural Equation Modeling (SEM) using LISREL software.

RESULTS AND DISCUSSIONS

This research proposed and tested a model of direct and indirect relationships involving four constructs: supply chain concerns, supply chain competence, supply chain practices and supply chain performance. Overall, we found that these four constructs were related to each other in the sequential order specified by the research model. Below we were discussing the main results.

1.1 Structural Equation Modeling (SEM)

SEM framework has been used to test the proposed conceptual model. SEM consists of two components. The first component relates to the using of Measurement Model or confirmatory factor analysis (CFA) which is employed to identify the items of each construct or variable and also evaluate reliability and validity of each variable or construct. The second component relates to structural model or path analysis, which is employed to examine the causal relationship among constructs or variables. Since the validity and reliability results of the data have been dealt in detail in the chapter on research methodology, this section shall confine to the sub models of CFA and path analysis utilizing the LISREL 8.72 software. LISREL (Linear Structural Relations) software was developed by Joreskog and Sorbomin 1989 to use the SEM to explore the relationships among latent and observed variables.

Chi-square goodness of fit results may be used to test whether the data available fit into the proposed conceptual model with the estimated model. There are three kinds of fit index measures. The absolute fit measures evaluates the overall conceptual model fit, while incremental fit measures assesses the conceptual model with null model, and parsimonious fit measures assesses the minimum number of estimate needed to attain a model fit.

Goodness of fit index of chi-square is the widely used fit test that estimates variation among the observed data covariance matrix with estimated or fitted covariance matrix. However, as chi-square goodness of fit test is sensitive to sample size and subject to type II error, some researchers like Joreskog and Sorbomin (1989) suggested that chi-square test results have to be inferred with caution, for which Normed chi-square (χ^2/df) is employed. The value of this Normed chi-square should not exceed 3 (Hair et al. 2010).

Many other fit indexes are available to test the validity of SEM results. Some of such indexes are Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA). GFI specifies comparative quantity of co-variance and variance collectively explained through the proposed model. GFI value should be in the range of 0 to 1.

AGFI is a kind of goodness of fit index which indicates desirable value of degree of freedom, while NFI compares the proposed conceptual model and null model of the study. CFI evaluates the absolute fit index of the proposed model with independence model. The value of GFI, AGFI, CFI, and NFI should range from 0.80 to 0.89 to render the model as absolutely acceptable and if the value exceeds 0.90, the model shall be considered as very good fit (Hair et al. 2010). RMSEA estimates the error in the population and it is based on degree of freedom. The value of RMSEA should not exceed 0.08 (Hair et al. 2010).

1.1.1 Confirmatory Factory Analysis (CFA) or Measurement Model

CFA or measurement model in respect of dimension namely, supply chain concerns, supply chain competence, supply chain practices, and supply chain performance of manufacturing enterprises are shown from Figure 2.

Results of Goodness of Fit Test in respect of the Model have been displayed in Table 1.

The table below displays the values of various goodness of fit indices. The normed chi-square is 2.40, RMESA is 0.074, GFI is 0.86, AGFI is 0.84, NFI is 1.00, and CFI is 1.00. It can be inferred from the above values that the results fall within the generally accepted limits. This confirms that the available data set aptly fits into the proposed structural model.

Table 1 Results of Goodness- of-Fit Test for Model

| Model | Normed Chi-square (x ² /df) | P-Value | GFI | AGFI | CFI | NFI | RMSEA |
|-------------------|---|--------------|---------|---------|---------|---------|----------------|
| Study model | 2.40 | 0.00 | 0.86 | 0.84 | 1.00 | 1.00 | 0.074 |
| Recommended value | Less than 3 | Greater than | 0.8-0.9 | 0.8-0.9 | 0.8-0.9 | 0.8-0.9 | Less than 0.80 |

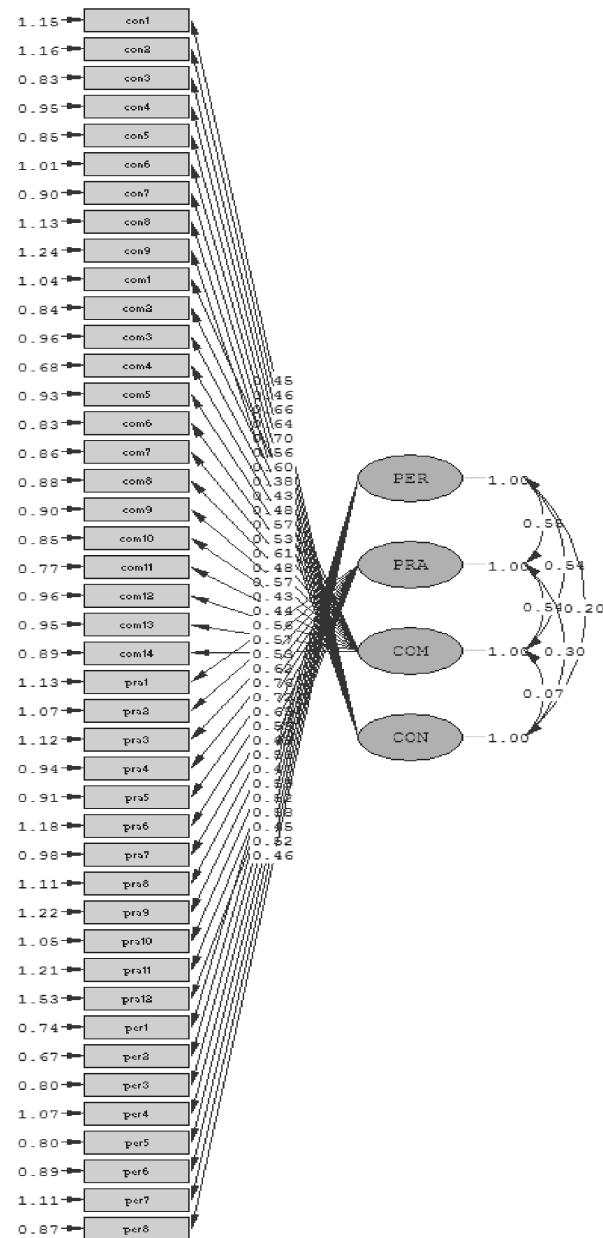


Figure 2 CFA of Supply Chain Management Components and Supply Chain Performance

Results of overall Confirmatory Factor Analysis (CFA) are depicted in Table 2.

Table 2 Results of Overall CFA (Measurement Model)

| Model VARIABLES | Results of Measurement Model (Confirmatory Factor Analysis) | | | | Results of Validity and Reliability Test Value | |
|---|--|--------------|-------------------|----------------|---|-------------------------------------|
| | Factor estimate | t - value | Error variance | R ² | Composite Reliability | Average Variance Extracted (AVE) |
| SUPPLY CHAIN CONCERNS | | | | | | |
| Con1: Lack of sophisticated information system | 0.46 | 14.29 | 1.15 | 0.15 | 0.73 | 0.47 |
| Con2: Lack of ability in managing Supply chain inventories | 0.41 | 12.55 | 1.21 | 0.12 | | |
| Con3: Lack of cooperation among supply chain members | 0.59 | 17.88 | 0.91 | 0.28 | | |
| Con4: Lack of trust among supply chain members | 0.60 | 18.03 | 0.99 | 0.27 | | |
| Con5: Lack of interest among your suppliers or customers | 0.69 | 20.23 | 0.86 | 0.35 | | |
| Con6: Competition from other supply chains | 0.57 | 17.49 | 0.99 | 0.25 | | |
| Con7: Your firm's lack of leverage within your supply chain | 0.67 | 19.94 | 0.93 | 0.33 | | |
| Con8: Your suppliers' geographical distance | 0.72 | 20.50 | 1.03 | 0.34 | | |
| Con9: Your customers' geographical distance | 0.67 | 20.12 | 1.17 | 0.28 | | |
| SUPPLY CHAIN COMPETENCE | | | | | | |
| Com1 : The ability to fill orders with improved accuracy | 0.61 | 22.47 | 1.03 | 0.27 | 0.84 | 0.46 |
| Com2 :The ability to forecasting sales with greater accuracy | 0.39 | 15.17 | 0.83 | 0.15 | | |
| Com3 :The ability to issue notice on shipping delays in advance | 0.41 | 16.10 | 0.97 | 0.15 | | |
| Com4 :The ability to respond to a request in a timely manner | 0.45 | 17.00 | 0.71 | 0.22 | | |
| Com5 :The ability to make high quality products | 0.52 | 19.82 | 0.98 | 0.22 | | |
| Com6 :The ability to deliver high-quality services | 0.50 | 18.88 | 0.86 | 0.22 | | |
| Com7 :The ability to respond to the needs of key customers | 0.59 | 22.16 | 0.88 | 0.29 | | |
| Com8 :The ability to work with key suppliers | 0.47 | 17.79 | 0.88 | 0.20 | | |
| Com9 :The ability to manage supply chain inventory | 0.58 | 22.11 | 0.89 | 0.27 | | |
| Com10 :The ability to meet a delivery on promised date | 0.41 | 15.78 | 0.87 | 0.16 | | |
| Com11 :The ability to enhance supply chain's position in terms of integrity | 0.44 | 17.13 | 0.77 | 0.20 | | |
| Com12 :The ability to enhance supply chain's position in terms of social | 0.48 | 18.51 | 0.96 | 0.19 | | |
| Com13 :The ability to design low-pollution production process | 0.53 | 20.19 | 0.91 | 0.23 | | |
| Com14 :The ability to design low-pollution delivering process | 0.58 | 22.05 | 0.81 | 0.30 | | |
| SUPPLY CHAIN PRACTICES | | | | | | |
| Par1: Close partnership with suppliers | 0.55 | 22.63 | 1.13 | 0.21 | 0.73 | 0.55 |
| Par 2:Close partnership with customers | 0.54 | 21.40 | 1.10 | 0.21 | | |
| Par3:Just in time (JIT) supply | 0.50 | 20.22 | 1.15 | 0.18 | | |
| Par4:Strategic planning | 0.59 | 23.76 | 0.97 | 0.26 | | |
| Par5:Supply chain benchmarking | 0.74 | 28.94 | 0.94 | 0.37 | | |
| Par6:Many suppliers | 0.74 | 29.29 | 1.16 | 0.32 | | |
| Par7:Holding safety stock | 0.69 | 27.52 | 0.93 | 0.34 | | |
| Par8:Subcontracting | 0.55 | 22.35 | 1.11 | 0.21 | | |
| Par9:E-procurement | 0.66 | 25.99 | 1.18 | 0.27 | | |
| Par10:Outsourcing | 0.66 | 25.92 | 1.06 | 0.29 | | |
| Par11:Third Party Logistics (3PL) | 0.57 | 22.61 | 1.18 | 0.22 | | |
| Par12:Few suppliers | 0.18 | 7.54 | 1.53 | 0.02 | | |
| SUPPLY CHAIN PERFORMANCE | | | | | | |
| Per1 : Improvement in Lead time | 0.53 | 18.55 | 0.74 | 0.27 | 0.75 | 0.54 |
| Per2 : Improvement in inventory turns | 0.41 | 14.88 | 0.66 | 0.20 | | |
| Per3 : Improvement in level of inventory write off | 0.54 | 18.93 | 0.86 | 0.25 | | |
| Per4 : Improvement in Time to market (Product development cycle) | 0.55 | 19.91 | 1.04 | 0.23 | | |
| Per5 : Improvement of defect rate | 0.57 | 20.07 | 0.81 | 0.29 | | |
| Per6 : Improvement in order item fill rate | 0.44 | 16.17 | 0.90 | 0.18 | | |
| Per7 : Improvement in stock out situation | 0.52 | 18.65 | 1.11 | 0.19 | | |
| Per8 : Improvement in set-up times | 0.48 | 17.63 | 0.85 | 0.21 | | |

1.1.2 Structural Model or Path Analysis

Structural model or path analysis is employed to estimate the strength of the causal relationship among unobserved or latent variables of dependent and independent variables. The model proposed in the proposed research is discussed at length in

the following paragraphs. Strength of relationships among supply chain concerns, supply chain competence, supply chain practices, and supply chain performance have been portrayed in Figure 3 and the results for the proposed structural model are shown in Table 3.

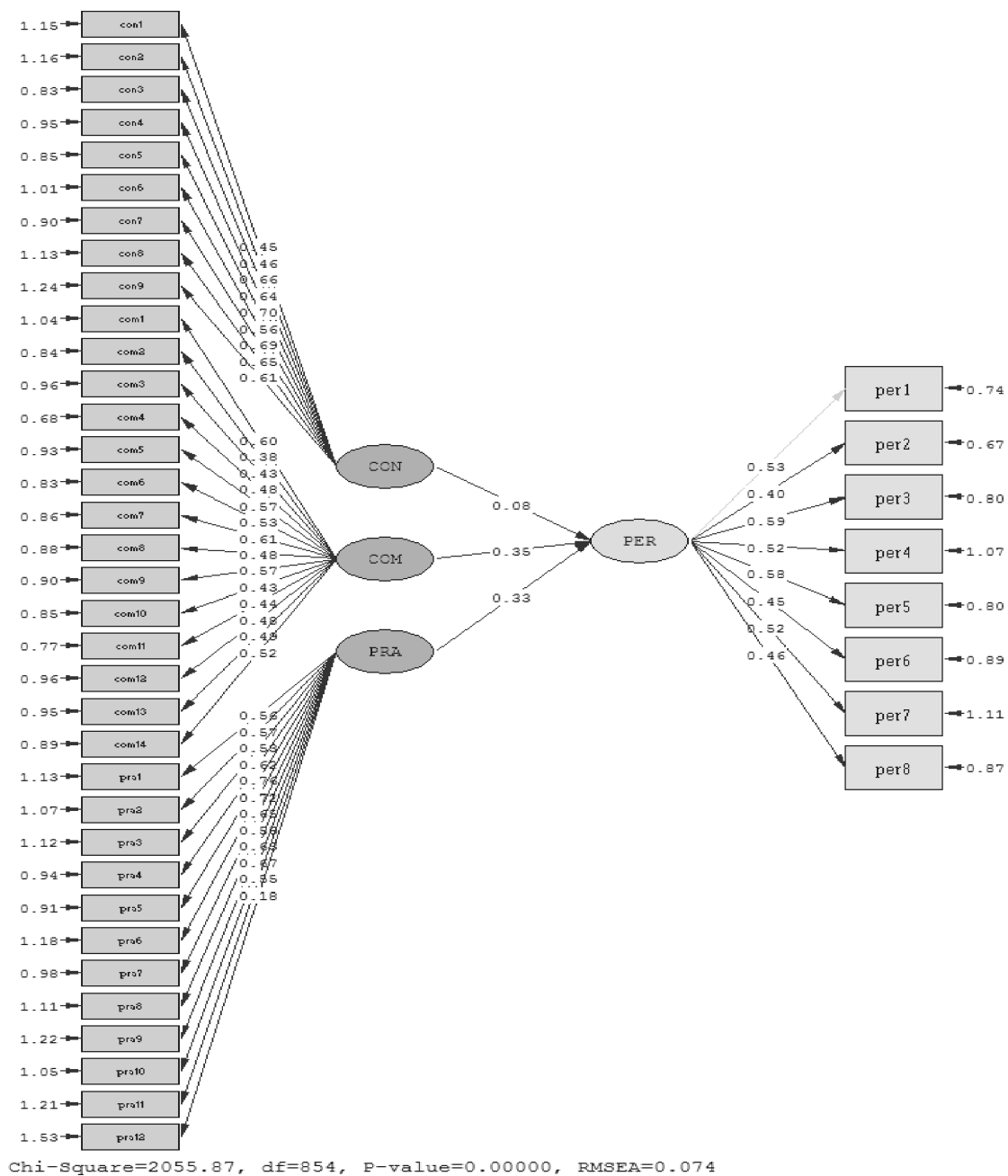


Figure 3 Path model of supply chain management components and Performance

Results of the path model have been shown in Table 3.

Table 3 Results of Model

| Independent Variable | Dependent Variable | Path coefficient | Standard Error | T-value | P-value | R ² |
|----------------------|--------------------|------------------|----------------|---------|---------|----------------|
| S C concerns | S C competence | 0.08 | 0.02 | 4.59 | 0.00 | |
| S C competence | S C practices | 0.54 | 0.02 | 28.91 | 0.00 | |
| S C practices | S C concerns | 0.31 | 0.02 | 16.8 | 0.00 | |
| S C concerns | SC performance | 0.079 | 0.017 | 4.103 | 0.00 | 0.39 |
| S C competence | SC performance | 0.35 | 0.024 | 14.58 | 0.00 | |
| SC practices | SC performance | 0.33 | 0.024 | 13.82 | 0.00 | |

Figure 3 portrays three association and three causal relationships. The three associations explored are the association between supply chain concerns and supply chain competence, supply chain competence and supply chain practices, and the association between supply chain concerns and supply chain practices.

From Table 3, the covariance value, error value and t-value corresponding to the first association between supply chain concern and supply chain competence are 0.08, 0.02 and 4.59 respectively. This serves as proof to accept and support the hypothesis that supply chain concerns are associated with supply chain competence.

Taking the second association, the covariance value, error value and t-value corresponding to the association between supply chain competence and supply chain practices are 0.54, 0.02 and 28.91 respectively. This serves as testimony to accept and support the hypothesis that supply chain competence is associated with supply chain practices.

Taking the third association, the covariance value, error value and t-value corresponding to the association between supply chain concern and supply chain practices are 0.31, 0.02 and 16.82 respectively. This serves as a statistically significant evidence to accept and support the hypothesis that supply chain concerns are associated with supply chain practices.

Figure 3 portrays three causal relationships namely, the relationship between supply chain concerns and supply chain

performance, supply chain competence and supply chain performance, and supply chain practices and supply chain performance. From Table 3, the beta value, error value and t-value corresponding to the first causal relationship between supply chain concern and supply chain performance are 0.079, 0.017 and 4.103 respectively. This serves as testimony to the point that supply chain concerns has a positive causal relationship with supply chain performance.

Taking the second causal relationship, the beta value, error value and t-value corresponding to the relationship between supply chain competence and supply chain performance are 0.35, 0.024 and 14.58 respectively. This proves the point that supply chain competence has a positive causal relationship with supply chain performance. In respect of the third causal relationship, the beta value, error value and t-value corresponding to the relationship between supply chain practices and supply chain performance are 0.33, 0.024 and 13.85 respectively. This provides adequate proof to the point that supply chain practices have a positive causal relationship with supply chain performance.

1.1.3 Direct, Indirect and Total Path Effect of Structural Model

The following equations derived from results of structural or path model portrayed by Figure 4, can be used to assess the degree of direct, indirect and total effects of critical components of supply chain management on supply chain performance of manufacturing enterprises.

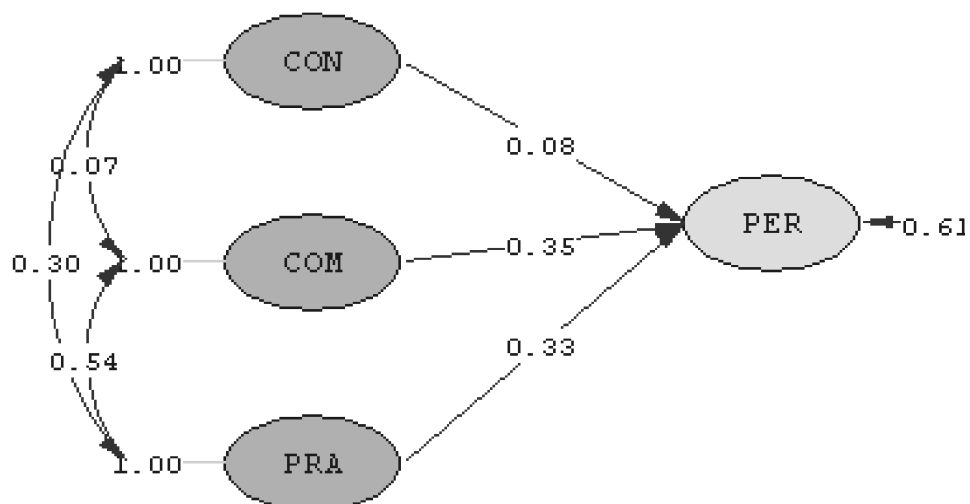


Figure 4 Direct, indirect and Total Path

1.1.3.1: Impact of Supply Chain Competence on Supply Chain Performance

Direct path: Supply chain competence → Supply chain performance = 0.24

Indirect path: Supply chain competence → Supply chain concerns →

Supply chain performance = 0.08 x 0.08 = 0.006

Supply chain competence → Supply chain practices →

Supply chain Performance = 0.54 x 0.34 = 0.18

Total Path = Direct path + Indirect path= 0.24+0.006+ 0.18= 0.43

Results of direct, indirect and total path relationship between supply chain competence and supply chain performance are 0.24, 0.006, 0.18 and 0.43, while the total effect (both direct and indirect) of supply chain competence on supply chain performance is 0.43.

1. 1.3.2 Impact of Supply Chain Concerns on Supply Chain Performance

Direct path: Supply chain concerns → Supply chain performance = 0.08

Indirect path: Supply chain concerns → Supply chain competence →

Supply chain performance = 0.08 x 0.35 = 0.028

Supply chain concerns → Supply chain practices →

Supply chain Performance = 0.31 x 0.34 = 0.11

Total Path = Direct path + Indirect path= 0.08+0.028+ 0.11= 0.22

Results of direct, indirect and total path relationship between supply chain concerns and supply chain performance are 0.08, 0.028, 0.11 and 0.22 and the total effect (both direct and indirect) of supply chain concerns on supply chain performance is 0.22.

1. 1.3.3 Impact of Supply Chain Practices on Supply Chain Performance

Direct path: Supply chain practices → Supply chain performance = 0.34

Indirect path: Supply chain practices → Supply chain competence →

$$\text{Supply chain performance} = 0.54 \times 0.35 = 0.19$$

Supply chain practices → Supply chain concerns →

$$\text{Supply chain Performance} = 0.31 \times 0.08 = 0.025$$

$$\text{Total Path} = \text{Direct path} + \text{Indirect path} = 0.34 + 0.19 + 0.025 = 0.56$$

Results of direct, indirect and total path relationship between supply chain practices and supply chain performance are 0.34, 0.19, 0.025 and 0.56, while the total effect (both direct

and indirect) of supply chain practices on supply chain performance is 0.56.

Table 4 Total, Direct and Indirect Path Analysis Result of Structural Model

| Path | Total Path Coefficient | Direct Path Coefficient | Indirect Effects |
|---------------------------------------|------------------------|-------------------------|------------------|
| Concerns → Supply Chain Performance | 0.22 | 0.08 | 0.030.11 |
| Competence → Supply Chain Performance | 0.43 | 0.24 | 0.0060.18 |
| Practices → Supply Chain Performance | 0.56 | 0.34 | 0.190.03 |

Results of total, direct and indirect path analysis using structural model have been portrayed in Table 4.

From the above table, it can be inferred that supply chain concern directly affects supply chain performance by 8% while this degree of effect reduces to 2.8% in case of influence through supply chain competence and 11% in case of influence through supply chain practices. Hence, the total impact (aggregate of direct and indirect effect) of supply chain concern on supply chain performance is 22%.

It can further be noted that supply chain competence directly affects supply chain performance by 35% while this level of effect is 0.6% in case of influence through supply chain concern and 18% in case of influence through supply chain practices. The total impact (aggregate of direct and indirect effect) of supply chain competence on supply chain performance is 43%.

Furthermore, it can be noted that supply chain practices directly affects supply chain performance by 34% while this

level of effect is 19% in case of influence through supply chain competence and 2.5% in case of influence through supply chain concern. The total effect (aggregate of direct and indirect effect) of supply chain practices on supply chain performance is 56%. Findings based on SEM have been displayed in Table 4. It can be inferred from the SEM results that all the 10 formulated hypotheses stand accepted at 0.01 significance level.

The above table depicts that supply chain concern and supply chain competence have 8% association, while supply chain competence and supply chain practices have 54% association and supply chain concern and supply chain practice have 31% association. Furthermore, 8% of variance in supply chain performance is explained by supply chain concern, while 35% of variance in supply chain performance is explained by supply chain competence, and 34% of variance in supply chain performance is explained by supply chain practice.

CONCLUSIONS AND IMPLICATIONS

Supply chain components are constituted by many variables such as supply chain concerns, supply chain competence,

Results of total path analysis using structural model have been portrayed in Table 5.

Table 5 Total Path Analysis Result of Structural Model

| Path | Coefficient | t-value | Sig Level | Hypotheses |
|--------------------------|-------------|---------|----------------|------------|
| Concerns ↔ Competence | 0.08 | 4.59 | Less than 0.01 | Supported |
| Competence ↔ Practices | 0.54 | 28.91 | Less than 0.01 | Supported |
| Practices ↔ Concerns | 0.31 | 16.8 | Less than 0.01 | Supported |
| Concerns ↔ Performance | 0.08 | 4.40 | Less than 0.01 | Supported |
| Competence ↔ Performance | 0.35 | 14.96 | Less than 0.01 | Supported |
| Practices ↔ Performance | 0.34 | 14.27 | Less than 0.01 | Supported |

supply chain practices and supply chain performance. These variables differ among different manufacturing enterprises. This research has identified that relationship between supply chain practices and supply chain performance is highly mediated by the influences the supply chain concerns and competence of the manufacturing firms. Hence, manufacturing firms concentrating on improving their supply chain concerns and supply chain competence can significantly improve their supply chain practices as the former impacts the latter indirectly through their impact on supply chain performance. Hence, managers should concentrate on improving the supply chain competence and supply chain concerns to enhance the efficiency of their firms.

LIMITATIONS AND SCOPE FOR FURTHER STUDY

Just like most empirical studies, the present study is also subject to certain limitations. The study covers only manufacturing enterprises and does not concentrate on the business firms engaged in services sector. Hence, future research may be undertaken to assess the supply chain competence of business firms engaged in providing services. Furthermore, this study has been conducted at a macro level, ignoring the micro aspects of individual industries. This study reveals the competence of firms engaged in manufacturing, regarding various aspects of supply chain management, not going into the details of every industry. Hence, future research may be undertaken to analyse the supply chain management issues related to specific industries.

The concept of supply chain management is highly complex and exhaustive. Supply chain issues may vary among firms engaged in the manufacture of different products. Different variables have to be used to assess the supply chain management issues related to different firms engaged in different businesses. It is highly difficult, if not impossible, to include all of such variables in one study. Hence, future study can focus on analyzing the total quality management practices, supply chain innovation, etc. of manufacturing enterprises. Thus, the scope of study on supply chain management can be magnified by including more supply chain components and variables related to performance of business firms. Similarly, the supply chain management issues may vary from firm to firm based on their size, nature of business, supply chain position, the length of supply chain in which the firm is a component and structure of the channel. For instance, enterprises with large size will have highly complex supply chain networks due to higher level of SCM practices. This shall necessitate such firms to adopt more effective SCM practices.

The study has collected data from a single executive from each manufacturing enterprise. The executive may be specialized in only a single field such as operations, finance, marketing, etc. the use of a single respondent may lead to generation of inaccurate information. Hence, future research shall focus on multiple respondents from each manufacturing firm using the instrument developed in the study. This will lead to a better investigation of the discrepancies in perception among executives within the same firm and the likely effect of such discrepancies on the overall performance of the firms.

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Culture and Exploratory Buying Decisions: Interplay

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A b s t r a c t

The paper is the result from a survey conducted on a cross section of respondents, from Delhi and Assam States under convenience sampling method from the income groups: between Rs 5 lac p.a. and Rs 10 lac p.a.. Risks related to purchases were identified as culturally sensitive consumer behaviour dimensions: across a broad range of products, services and purchase situations. Therefore, the research questions centered on understanding the influence of culture on exploratory buying behaviour and its dimensions. The research designed is a theoretical study. There exists heterogeneity in purchase behaviours of a nation due to cultural reasons and therefore marketing strategy should address cultural factors.

Key words: Culture, Regionalism, Consumer Behaviour, Hofsted Model.



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It has been long acknowledged by social scientists that culture has a strong impact on the human behaviour. The academicians working in the field of marketing research have now began to acknowledge the influence of culture in market dynamics. Most of the researches in international marketing can be categorized within analyzing the extent to which question of the extent to which consumer behaviour differs cross culturally. At the core of this debate is whether or not consumers in different countries and across cultures vary in their preferences and decision tendencies. The argument that consumers were converging (Levitt, 1983) or, at least, that differences among consumers were fading, gathered wide support among many Marketing theorists and practitioners and evidence has been found in many research studies (Hite and Fraser, 1988; Ohmae, 1989; Czinkota and Ronkainen, 1995) leading to the idea that, in terms of International Marketing management, differences among consumers did not really matter (Levitt, 1983).

The concept of culture, in the past was recognized in Anthropology, Sociology and Psychology, but now has been

gaining importance for Marketing (Ogden, Ogden and Schau, 2004). The 90's witnessed the emergence of theoretical contributions on the application of culture to Marketing (McCracken, 1986; Clark, 1990; Wills, Samli and Jacobs, 1991; McCort and Malhotra, 1993; Costa and Bamossy, 1995; Manrai and Manrai, 1996, Douglas and Craig, 1997; Parker and Tavassoli, 2000, Steenkamp, 2001). Besides, a rich stream of cross-cultural empirical studies has been generated (e.g., Lee and Green, 1991; Alden, Hoyer and Lee, 1993; Dawar and Parker, 1994; Han and Shavitt, 1994; Aaker and Masheswaran, 1997; Steenkamp, ter Hofstede and Wedel, 1999). The contribution of culture for the understanding of international consumer behaviour, either by conveniently replicating studies originally developed in one country (often the US), or by testing Marketing theories and models cross-culturally, has increasingly gained momentum and importance (Malhotra, Peterson and Kleiser, 1999; Malhotra, 2001; Craig and Douglas, 2001). There is however a need to identify new segmentation approaches, to detect opportunities for integrating and coordinating strategies across national borders and "to develop new creative approaches to probe the cultural underpinnings of behaviour" (Craig and Douglas, 2001: 80). From a theoretical approach, the challenge of understanding and capturing the elusive concept of culture hardly needs justification given the importance of cross-cultural encounters in the present global scenario. Understanding is also improved even when a theory is found not to be applicable to another cultural context (Craig and Douglas, 2000: xvi). The increasingly shifting nature of consumer behaviour, a changing global environment and the pervasiveness of culture represent complex challenges to research at this level. Notwithstanding, cross-cultural research has been growing in both theoretical and methodological sophistication (Van de Vijver and Leung, 1997; Craig and Douglas, 2000).

Cross cultural studies find relevance and significance in Indian context because India being a diverse nation culturally needs to be understood in terms of its cultural plurality in designing marketing strategies. There are few and far between researches in the area of culture and consumer behaviour in India and there lies the importance of this research. The research study has been developed on the basis of constructs available in the existing body of work on the subject.

Consistent with the view that cultural differences should be a springboard for cross-cultural studies ("assume differences until similarity is proven" Adler, 1991: 67), this work builds on the question of how culture impacts consumer behaviour in two culturally different areas of the same nation.

RQ1: How does culture influence Exploratory Purchase Behaviour?

RQ2: How can a better understanding of Exploratory Purchase Behaviour be arrived at?

Exploratory and Risk Taking Behaviour has been found to be related to Optimum Stimulation Level (OSL) (Joachimsthaler et al. 1984; Steenkamp and Baumgartner, 1992).

The Hypothesis for the research was based on the above mentioned research evidence and therefore for the purpose of the study it is hypothesized that culture influences Exploratory and Risk Taking Behaviour both directly and through Optimum Stimulation Level.

H 1 – The North India and the East India will display different Cultural Values, such that:

H 1.1 – East India will display a higher level of Long-term orientation than North India

H 1.2 - East India will display a higher level of Power distance than North India

H 1.3 - East India will display a higher level of Uncertainty avoidance than North India

H 1.4 - East India will display a higher level of Collectivism than North India

H 1.5 - East India will display a lower level of Masculinity than North India

H2 A – Culture (Regionalism) can be related with OSL.

H2 B – Cultural Values will be related with OSL, such that:

H2.1 – Long-term orientation (LTO) will be negatively related to OSL.

H2.2 – Power distance (PDI) will be negatively related to OSL.

H2.3 – Uncertainty avoidance (UAI) will be negatively related to OSL.

H2.4 – Collectivism (COL) will be negatively related to OSL.

H2.5 – Masculinity (MAS) will be positively related to OSL.

The framework proposed by Hofstede is a widely applied and validated approach to studying cultural values (1984,

1991, 2001). He used it cross nationally, this study would be using it cross culturally within the same nation. Hofstede defines culture as a broad, collective pattern of cognitions, affects and actions that have important consequences for the functioning of societies, of groups within those societies and of individual members of such groups. This framework is adopted in this research in order to establish the concept of culture. First, cultural values were used to identify North India and East India with opposite scores along these dimensions. The classification of each region (North and East India) in each cultural dimension was hypothesized to have consequences in terms of consumer Optimum Stimulation Level, and Exploratory Purchase Behaviour.

Some scholars favoured the perspective that consumers were converging (Levitt, 1983), which gathered support among theorists (Ohmae, 1989; Yip, 1989). Opponents to standardisation, however, believed that culture maintains a powerful influence on buying behaviour, and that apparent homogeneity of preferences might hide differences in several aspects of consumer behaviour (Walters, 1986; Belk, 1996; Manrai and Manrai, 1996). The social sciences (e.g., Anthropology, Sociology, and Psychology) have long established the influence of culture on human behaviour.

Some of the popular definitions of culture by experts are:

- a. Tylor, 1871 "Culture is that complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habits acquired by man as a member of society" (in McCort and Malhotra, 1993: 97)
- b. Linton, 1936 "the total social heredity of mankind" (in Berry et al. 1992: 165) Herskowitz, 1948 "Culture is the man-made part of the environment" (in McCort and Malhotra, 1993: 97)
- c. Parsons and Shills, 1951 "On a cultural level we view the organized set of rules or standards as such, abstracted, so to speak, from the actor who is committed to them by his own value-orientations and in whom they exist as need-dispositions to observe these rules. Thus a culture includes a set of standards. An individual's value-orientation is his commitment to these standards." (in Erez and Earley, 1993: 41)
- d. Kroeber & Kluckhohn, 1951 Culture consists of "whatever it is one has to know or believe in order to operate in a manner acceptable to its members. It is the form of things that people have in their mind, their models of perceiving, relating, and otherwise interpreting (material phenomenon)." (in Hofstede, 1984: 21)
- e. Kluckhohn, 1954 "Culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i. e. historically derived and selected) ideas and especially their attached values." (in Erez and Earley, 1993: 41)
- f. Triandis, 1972 (culture is) "a subjective perception of the human-made part of the environment. The subjective aspects of culture include the categories of social stimuli, associations, beliefs, attitudes, norms and values, and roles that individuals share." (in Erez and Earley, 1993: 41)
- g. Hofstede, 1984 The collective programming of the mind which distinguishes the members of one human group from another (p. 21)
- h. Sojka and Tansuhaj, 1995 A dynamic set of socially acquired behaviour patterns and meanings common to the members of a particular society or human group, including the key elements of language, artefacts, beliefs and values (p. 7)

Marketing research is awakening to the impact of culture on consumption. The extent to which consumers differ cross-culturally has been gaining importance as a theoretical (Clark, 1990; Costa and Bamossy, 1995; Douglas and Craig, 1997; McCracken, 1986; McCort and Malhotra, 1993; Manrai and Manrai, 1996; Parker and Tavassoli, 2000; Steenkamp, 2001; Wills, Samli, and Jacobs, 1991) and empirical research area (e. g., Alden, Hoyer, and Lee, 1993; Dawar and Parker, 1994; Lee and Green, 1991; Steenkamp, ter Hofstede, and Wedel, 1999). The single pertinent issue in culture study is the degree of standardization of cultures for analyzing the consumer's buying behaviour. This debate touches on one of the most fundamental issues in International Marketing practices, which is the idea that international firms might, or even should, follow uniform, standardised Marketing strategies in different countries (Elinder, 1965; Buzzell, 1968; Levitt, 1983; Walters, 1986; Quelch and Hoff, 1986; Onkvisit and Shaw, 1987; Douglas and Wind, 1987; Hite and Fraser, 1988; Douglas and Craig, 1989; Yip, 1989; Ohmae, 1989; Jain, 1989; Hill and James, 1991; Baalbaki and Malhotra, 1995; Wang, 1996a; Shoham and Albaum, 1994; Shoham 1996a, 1996b, 1999;

Papavassiliou and Stathakopoulos, 1997). The alternative perspective consists of adapting multinational companies' Marketing policies to each national market, known as customization, localization or, more commonly, adaptation strategy.

The overwhelming importance of this question is evident in the volume, recurrence, and implications of research produced to date. Indeed, the debate has inspired many conceptual (Elinder, 1965; Buzzell, 1968; Levitt, 1983; Walters, 1986; Quelch and Hoff, 1986, Onkvisit and Shaw, 1987; Douglas and Wind, 1987; Douglas and Craig, 1989; Yip, 1989; Ohmae, 1989; Jain, 1989) and empirical studies (Sorenson and Levitt's 1983 controversial article "The globalization of markets") constituted an important landmark in the standardization debate but the debate's genesis can be traced to 1965 when Elinder introduced the question in the context of advertising in European countries. Elinder (1965: 9) believed that "for consumer industries considering how best to formulate their messages to European consumers, it is more important to take into account trends in European consumption habits than the 'national traits' and 'traditional characteristics." Buzzell's seminal article (1968: 102) broadened the scope of the debate, raised the question of whether International Marketing could

be standardised, and discussed the benefits of and the barriers/obstacles to standardisation. While recognizing the existence of difficulties in "the application of common Marketing policies in different countries," he concluded that standardisation presented universal and important benefits that should be analysed by multinational companies.

The research analysis started with the reliability testing of the various scales used in the research. Culture is the center point of this research. The identification of culture specific consumer behaviour was the primary research objective. For the purpose of the research a CV Scale of 26 items developed by Yoo, Donthu and Lenartowics (2001) has been used. The scale's 26 items grouped under five dimensions of:

Power Distance (PDI), Collectivism (COL), Uncertainty avoidance (VAI), Masculinity (MAS), Long term orientation(LTO) have been tested on 200 respondents each of North India (Delhi) and East India (Assam). All the respondents were selected under the convenience sampling method, however the only constant criteria was that they belonged to income group between Rs 5 lac to Rs 10 lac per annum. The reliability score of CV scale Dimensions:

The reliability score of CV Scale dimensions:

| Dimensions | No. of items | North India | n | East India | n |
|------------|--------------|-------------|-----|------------|-----|
| LTO | 6 | 0.7309 | 151 | 0.554 | 150 |
| PDL | 5 | 0.7761 | 150 | 0.6022 | 151 |
| COL | 6 | 0.7185 | 150 | 0.7823 | 158 |
| MAS | 4 | 0.7842 | 148 | 0.7231 | 150 |
| UAI | 5 | 0.6632 | 150 | 0.6874 | 151 |

There are two measures used to find the level upto which environment stimulates an individual i.e the Optimum

Stimulation Levels. The Change seeker Index (CSI) and Thrill And Adventure Seeking (TAS).

The reliability of OSL measures are as under:

| Dimensions | North India | n | East India | n |
|------------|-------------|-----|------------|-----|
| CSI | 0.634 | 140 | 0.5406 | 141 |
| TAS | 0.8032 | 150 | 0.6444 | 145 |

Finally the exploratory buying behaviour (EBB) was analyzed with two measures: the exploratory acquisition of products (EAP) and exploratory information seeking (EIS).

| Dimensions | No. of items | North India | n | East India | n |
|------------|--------------|-------------|-----|------------|-----|
| EAP | 10 | 0.7444 | 141 | 0.7662 | 151 |
| EIS | 10 | 0.7342 | 142 | 0.8233 | 150 |

The above values of α Cronbach for each of the given multi-item scale the internal consistency was determined. The North Indian sample presents better internal consistency than the East Indian sample. The coefficients were generally above 0.7 which is the ideal α score. Those few scores which are appearing less than 0.7 have still been retained for the study because of their theoretical significance.

1. Interpretation of various scales

A Cultural values index was formed for each cultural dimension by averaging responses to the corresponding items (Yoo, Donthu and Lenartowicz, 2001). For each it was taken as, 5 representing the maximum and 1 representing the minimum possible scores. Following is the consolidated results of the cultural values.

Comparison of Cultural Values mean scores

| | North India | | | East India | | |
|-----------------------------|-------------|------|-------|------------|------|---------|
| | n | mean | s.d | n | mean | s.d |
| Long-term orientation (LTO) | 150 | 3.76 | 0.572 | 155 | 4 | 0.382 |
| Power distance (PDI) | 149 | 1.94 | 0.67 | 159 | 1.76 | 0.49 |
| Uncertainty avoidance (UAI) | 151 | 3.73 | 0.51 | 157 | 3.73 | 0.49 |
| Collectivism (COL) | 148 | 3.13 | 0.57 | 158 | 4 | 0.38222 |
| Masculinity (MAS) | 150 | 3.34 | 0.93 | 151 | 2.04 | 0.82 |

From the above table it can be found that North India is less long term oriented than East India which is having higher mean and low standard deviation. Both East and North India are having low power distance. Uncertainty avoidance means (3.73) are similar for both samples suggesting high uncertainty avoidance orientation. For data on collectivism, it is revealed that East India is more collectively inclined than North India. Finally East Indian sample represents more orientation towards feminism and North Indian sample is more oriented towards masculinity.

In the case of exploratory risk behaviour Exploratory acquisition of products (EAP) and cognitive stimulation through acquiring consumption-related information out of curiosity - Exploratory information seeking (EIS) (Baumgartner and Steenkamp, 1996) has been used. EAP, for the samples reveal medium tendency to enjoy unfamiliar, innovative, and varied products. However the North India sample are found to be interested in the discussion on the topic of consumption with $p=0.011$

Mean scores for Exploratory and Risk Taking Behaviour measures

| | North India | | | East India | | | t-test | | | |
|-----|-------------|------|-------|------------|------|-------|---------|--------|---------|-------|
| | n | mean | s.d | n | mean | s.d | t-value | mean | s.d | |
| EBB | EAP | 142 | 3.036 | 0.584 | 153 | 3.048 | 0.542 | -0.178 | 286.551 | 0.858 |
| | EIS | 143 | 3.362 | 0.599 | 155 | 3.53 | 0.585 | -2.556 | 292.744 | 0.011 |

2. Hypothesis:

Each of the cultural variable was regressed in order to determine its degree of impact. The results arrived at on solving the regression equation confirm the impact of regionalism on

long term orientation, power distance, collectivism and masculinity. The results are significant in all the cases except in the case of uncertainty avoidance. The impact of regionalism on power distance and masculinity is not however on expected lines as derived Beta is negative value.

Regression Equation Solution

| | | B | β | p-value | R² | Regression F, Regression p-value |
|-----------------------|--|-----------------|----------|----------------|----------------------|---|
| Long term orientation | Regionalism Constant R ² , F, p-values | 0.244 3.652 | 0.245 | 0.000 0.000 | 0.050 | 18.295; 0.000 |
| Power Distance | Regionalism Constant R ² , F, p-values | -0.183 1.946 | -0.153 | 0.007 0.000 | 0.023 | 7.234; 0.007 |
| Uncertainty Avoidance | Regionalism Constant R ² , F, p-values | 0.001 3.632 | 0.002 | 0.965 0.000 | 0.000 | 0.001; 0.965 |
| Collectivism | Regionalism Constant R ² , F, p-values | 0.343 3.140 | 0.273 | 0.000 0.000 | 0.072 | 26.789; 0.000 |
| Masculinity | Regionalism Constant R ² , F, p-values | -0.209 2.251 | -0.118 | 0.037 0.000 | 0.014 | 4.391; 0.035 |

The hypothesis identifying the interrelationships between distinct cultural variables and OSL were assessed using correlation. For OSL indicators as already mentioned Experience Seeking (ES), Thrill and Adventure Seeking (TAS) and Change Seeker Index (CSI) were the parameters of evaluation. The hypothesis 2.1, 2.2 and 2.3 has been established. The hypothesis 2.1 is established for ES at a

significance level of 0.01 level, hypothesis 2.2 is confirmed for CSI at 0.05 level of significance, hypothesis 5.3 is confirmed for ES and TAS at (0.01 and 0.05 level of significance). The impact of factor of Collectivism appears to have negative correlation but is not having a significant impact. Lastly it is derived that a statistically significant correlation exists between factor of Masculinity and OSL.

Pearson Correlation Coefficient

| Parameters | → EAS | TAS | CSI | LTO | PDI | UAI | COL | MAS |
|--------------|----------|---------|---------|---------|---------|--------|-------|------|
| EAS ↓ | 1.00 | | | | | | | |
| TAS | 0.392** | 1.00 | | | | | | |
| CSI | 0.312** | 0.394** | 1.00 | | | | | |
| LTO | -0.154** | -0.66 | 0.055 | 1.00 | | | | |
| PDI | -0.014* | -0.015 | -0.126* | -0.107* | 1.00 | | | |
| UAI | -0.133** | -0.126* | -0.010 | 0.172** | 0.052 | 1.00 | | |
| COL | -0.041 | -0.027 | 0.048 | 0.127* | 0.002 | 0.116* | 1.00 | |
| MAS | -0.144** | -0.016 | -0.004 | -0.094* | 0.267** | 0.087 | 0.039 | 1.00 |

** Correlation is significant at 0.01 level (1 tailed)

* Correlation is significant at 0.05 level (1 tailed)

Conclusion


The research evaluated the role of culture in buying decisions and the relevance of the same in marketing strategy formulation. Another important aspect probed by this research was the diversity of consumer choices due to sub-cultural differences within a nation. India is a nation of diversities in terms of language, religion, demographic profile, geography etc. Therefore we cannot have a standardized marketing policy to appeal to entire Indian populace.

The present study encompasses North India and East India which are culturally diverse in nature. This has been proved by the findings in the study. The conclusions derived from the study confirm that sub-cultural diversity has a partially mediated impact on Optimum Stimulation Level and a fully mediated impact on Exploratory buying behaviour.

Optimum Stimulation Level is the predictor of consumer attitude because it impacts the exploratory consumption behaviour. For understanding the correlation between various cultural constructs, the analysis confirmed that long term orientation and power distance were negatively related to Optimum Stimulation Levels. Besides, Power distance and collectivism were negatively related to Exploratory Buying Behaviour. The study can prove to be a basis for the future studies on deriving the correct marketing programme for the markets of North India and East India. Further larger scale research can be carried out to probe the relation between the buyer's orientation in other parts of India.

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Climate Change: Implications for Mountain Biodiversity

Neetu Sharma

Abstract

Climate change is a threat to global biodiversity and ecosystem integrity. The Greater Himalayas hold the largest mass of ice outside Polar Regions. The cascading effects of rising temperatures and loss of ice and snow in the region are affecting water availability, biodiversity ecosystem, boundary shifts, and global feedbacks. Climate change will also have environmental and social impacts that will increase uncertainty in water supplies and agricultural production for human populations. This paper gives an overview of scientific efforts to provide necessary information on ecosystem impacts. A common understanding of climate change needs to be developed so that mitigation and adaptation strategies can be identified and implemented.

Key words: Himalayas, water resources, adaptation, biodiversity, climate conservation.



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Climate and natural ecosystems are tightly coupled, and the stability of that coupled system is an important ecosystem service. Beyond their common characteristics of having high relative relief and steep slopes, mountains are remarkably diverse (Ives et al. 2004) and globally important as centers of biological diversity. The Himalayas is recognized for its ecosystem services to the Asian region as well as to the world at large for maintaining slope stability, regulating hydrological integrity, sustaining high levels of biodiversity and human wellbeing. Mountains, due to their exclusive and inimitable biodiversity, are recently receiving priority for biodiversity conservation in global agendas. The Hindu Kush-Himalayas (HKH) is a dynamic landscape with a rich and remarkable biodiversity. Stretched over an area of more than four million square kilometers, the HKH region is endowed with a rich variety of gene pools and species, and ecosystems of global importance, the region hosts parts of the four Global Biodiversity Hotspots; namely,

the Himalayas Hotspot, the Indo-Burma Hotspot, the Mountains of South-West China Hotspot, and the Mountains of Central Asia Hotspot. The region, with its varied landscapes and soil formation, and variety of vegetation types and climatic conditions, is well known for its unique flora and fauna, and has a high level of endemism and numerous critical eco-regions of global importance. The Greater Himalayan region, also known as the Water Tower of Asia, covers approximately 7 million km², the general area of high mountains and plateaus in Central, South, and Inner Asia. With a highly heterogeneous geography, the region has great climatic variability and forms a barrier to atmospheric circulation for the summer monsoon and winter westerly's average annual precipitation. The region's climatic zones contain a rich diversity of species and ecosystems that exist along a pronounced humidity gradient. Vegetation changes from subtropical semi desert and thorn steppe formation in the northwest to tropical evergreen rainforests in the southeastern Himalayas.

Among the 34 biodiversity hotspots, four are located in the Himalayas, including the mountains of Central Asia, Himalaya, southwestern China, and Indo-Burma. Beyond biodiversity, the Greater Himalayas are the source of 10 of the largest rivers in Asia: Amu Darya, Indus, Ganges, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtze, Yellow, and Tarim. Approximately 39% of the HKH is comprised of grassland, 20% forest, 15% shrub land, and 5% agricultural land. The remaining 21% is made up of other types of land use such as barren land, rock outcrops, built-up areas, snow cover, and water bodies. Elevation zones across the HKH extend from tropical (<500m) to alpine ice-snow (>6000m), with a principal vertical vegetation regime comprised of tropical and subtropical rainforest, temperate broadleaf deciduous or mixed forest, and temperate coniferous forest, including high altitude cold shrub or steppe and cold desert (Pei 1995; Chettri et al. 2008a,b). The survival of the mountain ecosystems and biodiversity sustained are now threatened by various drivers of change such as human activities like timber harvesting, intensive grazing by livestock and agricultural expansion into forest lands, and above all the climate change.

Problems associated with modernization like GHG emission, air pollution, land use conversions, fragmentation, deforestation and land degradation have already crept into the HKH region. The landscapes and communities in the HKH region are being simultaneously affected by rapid environmental and socioeconomic changes. Identification and understanding of key ecological and socio-economic

parameters of the mountain ecosystems, including their sensitivities and vulnerabilities to climate changes, have become crucial for planning and policy making for environmental management and sustainable development of the mountain regions as well as the downstream areas. Besides, the welfare of some 1.3 billion people downstream is inextricably linked to the state of natural resources of the HKH region. We qualitatively examined projected cascading effects of climate change on water resources, biodiversity, and local livelihoods across alpine, mountain, and lowland zones to establish a framework to guide future quantitative assessments and appropriate policy responses. It concludes with the possible options and mechanisms for adaptation in addressing the threats and vulnerabilities associated with climate change attributions. Finally, gaps in our current knowledge and understanding are translated into recommendations for research agendas in the Eastern Himalayas.

Objectives-

- This paper provides a concerted review of climate change assessment with specific focus on biodiversity impact areas on the mountain ecosystems of the Eastern Himalayas.
- The information content is based on credible sources as well as current level of understanding advanced through application of science in climate change and biodiversity assessment.
- The paper follows a logical sequence from climate change exposure to biodiversity resource sensitivity in determining the potential impacts followed by assessment of vulnerability to climatic stresses.

Current Conditions

In the Greater Himalayas, the regional monsoon is a function of distance from the main sources of moisture (the Bay of Bengal, Arabian, and Mediterranean seas), montane aerographic influences, and global atmospheric circulation systems. Currently, however, rainfall measurements are taken primarily in valley bottoms, resulting in significant underestimates of precipitation amounts. Much sub basin variation is masked by current dependence on regional rainfall and temperature data that do not capture local variation. The high Himalayan and Inner Asian ranges have 116,180 km² of glacial ice, the largest area outside polar regions. Throughout the Greater Himalayas, water melts from permanent snow and ice and from seasonal snow packs and is stored in high-

elevation wetlands and lakes. Melting occurs mainly in high summer, but when this coincides with the monsoon, it may not be as critical for water supply as melting in the spring and autumn shoulder seasons. When the monsoon is weak, delayed, or fails to materialize, melted water from snow and ice limits or averts catastrophic drought. The contribution of snow and glacial melt to the major rivers in the region ranges from <5 to >45% of average flows. Melting snow and ice contribute about 70% of summer flow in the main Ganges, Indus, Tarim, and Kabul Rivers during the shoulder seasons (i.e., before and after precipitation from the summer monsoon). The contribution of glacial melt to flows in the Inner Asian Rivers is even greater. Indus River irrigation systems in Pakistan depend on snowmelt and glacial melt from the eastern Hindu Kush, Karakoram, and western Himalayas for about 50% of total runoff. Changes in hydrology can influence biodiversity in a variety of ways; moisture availability governs physiology, metabolic and reproductive processes, phenology, tree-line positions, and the geographic distribution of freshwater and wetland habitats. In turn, these influences affect the ability of biological systems to support human needs.

The region lies between two most populated nations exacting massive demand for input resources to support their impressive economic transformation. Fragmentation of ecosystems is more likely than not as economic development surpasses environmental concerns in the tradeoff conflict. It has inherited multiple bio-geographic origins being at the intersection of Indo-Malayan Realm, Pale Mountain Realm and the Sino-Japanese Region. It also marks the frontier of collision between the monsoonal and mountain systems associated with intense thunderstorms and lightning. Despite

their relatively small surface area, mountains are an integral part of the climate system. As a physical barrier to atmospheric flows, they perturb synoptic patterns and are considered to be one of the trigger mechanisms of cyclones in mid-latitudes. Mountains are also a key element of the hydrological cycle, being the source of many of the world's major river systems. Abrupt changes in existing temperature and precipitation patterns that have led to the present distribution of vegetation, ice, snow and permafrost zones would impact heavily on the unique features of mountain environments. Regional climate change could directly affect the viability and health of commercial timber production and, in an indirect manner, add cost to mining and other mineral extraction and processing activities in mountainous areas.

Climate Change and Implications

Climate has changed in the past and will continue to change in the future. Climate change is a part of Earth's history. The issue is whether or not humans are significantly altering the natural progression of climate change, and if so, will these changes be detrimental to life on Earth, including human life. So we can place more confidence that these are correct in comparison to predictions of future climate change. However, some of the recent climate changes described in the latest IPCC Report is questioned by climate researchers. Please keep in mind that observed changes do not provide strong evidence for why the changes have happened. Mountain sea ice has decreased in coverage since 1980. We are quite certain of that. However, that observation does not prove that the reason for the decrease in Mountain sea ice is human emissions of greenhouse gases. A recurring message is that correlation does not prove cause and effect. Global mean surface temperature has increased by about 0.75°C (1.4°F) since 1850.

Table 1: Climatic effects of the basic controls of mountain climate.

| Factors | Primary Effects | Secondary Effects |
|----------------|---|--|
| Altitude | Reduced air density, vapor pressure; increased solar radiation receipts; lower temperatures | Increased wind velocity and precipitation (mid-latitudes); reduced evaporation; physiological stress |
| Continentality | Annual/diurnal temperature range increased; cloud and precipitation regimes modified | Snow line altitude increases |
| Latitude | Daylength and solar radiation totals vary seasonally | Snowfall proportion increases; annual temperatures decrease |
| Topography | Spatial contrasts in solar radiation and temperature regimes; precipitation as a result of slope and aspect | Diurnal wind regimes; snow cover related to topography |

Source: Anisimov, O. A. (2007)

Attributing Observed Climate Changes to Human Activities

The most recent IPCC report (2007) is now more forceful in its statement concerning the anthropogenic influence on observed climate changes: “Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in greenhouse gas concentrations.” This is different from the previous statement “most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations.” The new assessment is said to consider longer and improved records and observations of climate change, as well as improvements in climate model simulations. Instructor’s note: I wonder if they are putting too much faith in the ability of climate models.

Mountain Biodiversity

Mountains encompass spectacular landscapes, a wide variety of ecosystems, a great diversity of species, and distinctive human communities. The world’s principal biome types—from hyper-arid hot desert and tropical forest to arid polar icecaps—all occur in mountains. Almost every area that is jointly important for plants, amphibians and endemic birds is located within mountains. Mountain areas have been affected by loss of diversity as a result of human activities, largely due to changes in land use. Mountain forests are threatened by uphill expansion of agriculture and human settlements, logging for timber and fuel wood and replacement by highland pastures.

Climate change largely affects mountain biodiversity by reducing available land area for organisms adapted to the cold. The pace of plant species moving uphill, possibly due to climate change, is quite high, increasing the number of species in the upper belts in the short term, but out-competing rare species or those adapted to the cold in the long term. The Convention on Biological Diversity adopted the programme of work on mountain biodiversity has a set of actions addressing characteristics and problems specific to mountain ecosystems. It aims to conserve mountain biodiversity and maintain the goods and services of mountain ecosystems, and contribute to poverty alleviation and to the achievement of the Millennium Development Goals, as well as improve the capabilities of institutions and organizations to promote conservation and sustainable use of biodiversity.

Climate characteristic and vegetation

The main climate characteristics of the tropical savannah are hot summers, very warm winters, intense and prolonged rainfall during the wet summer months and very little rainfall in winter. Vegetation is typically a wide variety of grasses but in regions bordering tropical climate zones the vegetation can be more akin to that of a rainforest.

Temperature Characteristics

The temperature of savannah climates is largely controlled by latitude and movement of the semi-permanent pressure belts and prevailing winds. Throughout the course of the year there is little variation in the length of the day, typically with a photoperiod (daylight hours in which plants grow) of between 11 and 13 hours. There is a marked variation in the angle of incidence at which sunlight strikes the ground, on the pole ward margins of savannah zones the elevation of the sun varies by as much as 45° between the summer and winter solstices. The annual average temperature variation in the savannah climate is between 18°C and 21°C and thus is very similar to that of rainforests. The average monthly temperature varies according to the season and the subsequent change in the amount of sunlight being received (insolation). From one month to the next the temperature can vary by as little as 3°C or as much as 8°C, savannah regions closer to the Equator have less variation than the more pole ward regions and this is due to the incursion of dry continental air masses that provide for differing levels of radiation heating and cooling (insolation again).

Savannah regions do not experience a winter as such; this is because the temperatures never fall low enough. There is no frost or snow and the lowest the temperatures only ever dip to between 13°C and 19°C. During the rainy season there is very little variation in the daytime (or diurnal) temperatures due to the very high levels of humidity, typically the variation can be less than 5°C. This same moderating influence also reduces the variation between day and night temperatures during the rainy season. During the dry season there is a much greater exchange of radiant energy between the atmosphere and the ground, and visa versa, and the diurnal temperatures can vary by about 14°C. As is observed in other tropical climates, the temperature variation between day and night is more pronounced than it is from month to month.

Precipitation and Humidity

Savannah climate zones have a very pronounced seasonal moisture pattern – the rainy season is very wet and the dry

season is very dry; these variations are consequence of the migration of the ITCZ. North of the equator, the ITCZ travels northward during the months of May to September, humidity is high and the system carries substantial quantities of moisture from the seas and oceans leading to a pronounced rainy season. During the months when there is less heating from the Sun, the subtropical high pressure system displaces the more humid air, there is less cloud formation and less rainfall. When there is a tropical maritime air-mass present this is usually accompanied by significant formations of cumulus clouds and during these periods it is unusual to get a day that is clear and dry. At these times of year the dew points vary between 16°C and 22°C whereas during the dry season it is common to have clear days with dew points forming below 7°C. In the drier savannah regions, the annual rainfall total is as little as 250mm but in the regions that borders the rainforests, the annual rainfall can be as much as 10,000mm, the increase in rainfall is further exacerbated by aerographic lifting (elevation).

Geographical Variation

The high-sun induced precipitation in the more equatorial latitudes is as high as in rainforest. Between the ITCZ and tropical desert areas the low-sun precipitation index falls to almost zero. Further from the equator, the high-sun precipitation weakens until it is no longer able to support woodland growth and at this point the savannah gives way to the much drier and more barren tropical steppe regions. If the precipitation level falls even further, then it's not only woodland that can't be supported but smaller plants and grasses as well, in such places the savannah climate gives way to desert climates. Occasionally low pressure systems can intrude and these bring with them more widespread precipitation. Around coastal regions the remnants of tropical cyclones can cause extensive precipitation, this is the factor that primarily affects places near the coast as these storms rarely penetrate any distance inland.

Seasonal Variation

Savannah climates have the most pronounced seasonal variation in respect of precipitation. A good example of such extremes can be found in Rangoon, Burma. Here the winter months produce just 25mm of precipitation but during the summer months this increases to 2,100mm. The greatest seasonality can be found in Cherrapunji, India, winter precipitation is just 25mm but in the summer it is just over 5,500mm. Cherrapunji used to be the wettest place on Earth

but shifting weather patterns have recently seen it loses this distinction. The annual average rainfall is 11,400mm but there have been years where rainfall has exceeded 25,000mm (about 20 times as much as New York). As well as the significant seasonal variation in precipitation, there is also a marked variation from one year to the next. This is a consequence of the variable nature of the migration of the ITCZ across the equator. In turn, these conditions can lead to famine and starvation and this is something that has affected all regions that have savannah climates, most notably in Africa and Asia.

Finding

Although local stressors can entirely be managed by national or local authorities, bilateral or international cooperation on common standards can be beneficial.

- To protect Mountain biodiversity from severe impacts from local development and industrial activity, biodiversity conservation needs to be a cornerstone of natural resource management and land and marine planning.
- Improved monitoring and research is needed to survey, map, and monitor and understand Mountain biodiversity including integrated, repeated data collection following recommended standardized protocols and priorities, and involving Mountain citizens in the survey and monitoring, if we are to move ahead with science-informed decisions in the Mountain. Support for national and international coordinated efforts such as the CBMP and the BAR Code of Life is important to fill critical data gaps on population abundances and trends for many Mountain terrestrial and marine species as well as on changes in the functioning and services of Mountain ecosystems.

Conclusions

On current evidence, as this review shows, we recognize uncertainty in this region on a Himalayan scale: physical manifestations of climate change will include broad, heretofore unknown temperature increases (with decreases in some places), shifts in ecosystems, and increased frequency and duration of extreme events. Certainly, there will be significant changes in volumes and timing of river flows and freshwater sources, but precise responses are unknown. To address data gaps, we recommend more widespread and long-term tracking

of glacial ice volumes, monitoring of alpine flora and fauna, landscape and trans-boundary approaches to biodiversity conservation, open data exchange, and cooperation between all countries in the Greater Himalayas. Given levels of scientific uncertainty, we highlight three critical scales of adaptation: local community, urban and rural, and regional and trans-boundary. For local adaptations, as in much of the less-developed world, rural people in the Greater Himalayas remain divorced from natural resource decision. This complex topic is beyond the scope of this paper, but one thing is clear: if local peoples' successful adaptations to past environmental change are to be learned from, local and regional governments will need to reach out and collaborate more actively with villagers.

At the urban-rural scale, there are inherent differences between city and village dwellers over specific climate-change adaptations. Policies addressing centralized, downstream populations, urban infrastructure, and large-scale agricultural systems must be integrated with those for local peoples living montage livelihoods. Urban demands should not trump the creation of low-cost community-scale adaptations. At the regional-trans boundary scale, current research makes clear that adaptations must be designed for the long term because some climate impacts are already likely irreversible over the next 1000 years even after emissions cease. Regional risk assessment and mapping across the Greater Himalayas would help decision makers select appropriate strategies. Nevertheless, we found no regional or trans-boundary authority addressing the complexities of climate change that we have discussed. This situation must change if climate change adaptations and mitigations are to be successful. China and India play critical roles here because most of the Greater Himalayas are within the boundaries of these two nations. As much as we would welcome the formation of a regional Greater Himalayan climate change authority, we recognize that top-down policy making has a decidedly mixed track record in this region. This status quo can no longer hold; political leaders must act. Whatever the scale or policy arena, the onus is on scientists to generate knowledge to reduce uncertainty.

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Relationship Management: Dimensions for Tourism

Arup Kumar Bakshi

Abstract

Relationship management, as a business analytical process, is gradually gaining ground in tourism operations with an apprehension that it will optimize return on relationship by ensuring value proposition for the visitors. But relationship dimensions compatible to tourism marketing are yet to be specified. This study attempts to develop a tourist relationship management (TRM) framework by assimilating assorted dimensions. The basic foundation of the TRM framework has been anchored on customer relationship management (CRM) model. Additional dimensions were identified and tested. The study confirmed convergence of dimensions with adequate internal reliability and validity. The default model also holds good to lend support to the theoretical findings.

Key words: *tourist-relationship-management, tourist, satisfaction, destination, loyalty, service, quality.*



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The increased significance of tourism as a major contributor to nation's economy, the academic researchers too have started to get involved in identifying its nature, dynamics, dimensions and effects. Tourism has been observed as the aggregate of interactions and relationships between tourists, business houses, host governments and administration and host communities (McIntosh and Goeldner, 1984). The tourism industry is a critical and complex hub-&-spoke network of a number of stakeholders with tourists occupying the position of the hub. As a service sector, tourism has its own criticalities which assume significant proportion while perceiving quality associated with it. The intensive dyadic encounter between a host of tourist-service-providers and the tourists, often, does not allow the services to be homogenized. These, rather heterogeneous, services create ambiguity in perceiving quality of services received from specific tourist-service-providers. But, identifying the perceived tourist service quality becomes

imperative as it was empirically tested to be antecedent to tourist satisfaction (short-term effects) and destination loyalty (long-term effects). From the late 1990s the hospitality and tourism sector started using the philosophy of customer relationship management (CRM) as it proved to be a proactive business process to understand the tourists (customers), segment the tourists on the basis of their psychographic determinants and to design integrated communication with the same. CRM was adopted by the tourism sector with an apprehension that it will help maintain a linear relationship between perceived service quality-tourist satisfaction and destination loyalty. But in most of the cases it was found that the conventional CRM dimensions failed to facilitate the relationship.

The inbound tourism in India registered 6.31 million (5.78 million in 2010) tourists visiting with an annual growth of 9.2% (India Tourism Statistics, 2011, Ministry of Tourism, Govt. of India). This huge influx of tourists boosted the foreign exchange earnings to 77591 crores (in INR terms) with an annual growth rate of 19.6% (India Tourism Statistics, 2011, Ministry of Tourism, Govt. of India). This phenomenal growth rate has catapulted India's share in international tourist arrivals (0.64%), India's rank in world tourist arrivals (38%), India's share in international tourism receipts (1.61%) and India's rank in world tourism receipts (as per RBI estimates—17) (India Tourism Statistics, 2011, Ministry of Tourism, Govt. of India). The reason for this boom can be attributed to a number of factors namely burgeoning Indian middle class, growth of high-spending foreign tourists, augmentation in communication system—both physical and virtual, infrastructure & super structure and the initiatives taken up by the state governments to showcase their individual states as tourist destinations, thereby building up the brands (Gujarat, Odissa, Kerala, Madhya Pradesh etc. are some of the major branded tourism destinations). A study conducted by Federation of Indian Chambers of Commerce and Industry (FICCI) in the area of development perspective of eco and rural tourism indicated that it registered highest employment and investment ratio. Study conducted by McKinsey also revealed that medical tourism had the potentiality to generate as much as 100 billion in INR by the end of 2012. India's cultural and natural heritage is truly incredible. The brand title 'Incredible India' not only projects India as a tourist destination but also promotes the nation as a potential investment hub.

The objectives of this study was (a) to identify the dimensions of Tourist Relationship Management (TRM) framework by identifying new dimensions and modifying the existing dimensions of CRM (b) to assess the correlation between the identified dimensions and to examine the convergence of the identified TRM dimensions and (c) to test the robustness of the proposed research model.

2. Review of literature

Relationship marketing in tourism has taken up the shape of a multi-network entity (Healy, 2001), combining the stakeholders involved in a critical and complex chain of sharing information, knowledge and perception. Customer relationship management (CRM), a strategic application of relationship management, has ensured managing relationship with customers by identifying the changing notions of customer attitudes, perceptions and behavioural manifestations in the context of their apprehension and expectation (Peppers and Rogers, 2004). Conceptually, CRM evolved from three basic foundations of marketing management: (a) customer orientation, (b) relationship marketing and (c) database marketing (Yim et al. 2004). Adoption, practice and implementation of CRM gained momentum among academicians and corporate houses (Gruen et al. 2000; Rigby and Ledingham, 2004; Srivastava et al. 1999; Thomas et al. 2004). CRM has been widely used by the sales personnel in augmenting their relationship with the customers (Widmier et al. 2002) to improve sales forecasting, lead management and customization (Rigby and Ledingham, 2004). In spite of its wide application, CRM, lacked a cohesive definition and identification of its dimensions. Yim (2002) provided some conceptual clarity of CRM by synthesizing the literatures (Crosby and Johnson, 2001; Fox and Stead, 2001; Ryals and Knox, 2001) pertaining to marketing, technology and management and came out with four key focal areas: (a) strategy, (b) people, (c) processes and (d) technology. Day (2003) confirmed that the key focal factors identified by Yim (2002) can create a synergistic relationship value when they work in unison (rather than in isolation), thereby conforming to the objective and realm of CRM. Study of extant literatures revealed that implementation of CRM necessarily involved four specific activities: (a) focusing on key customers (Schmid and Weber, 1998; Srivastava et al., 1999; Sheth et al. 2000; Ryals and Knox, 2001; Armstrong and Kotler, 2003; Vandermerwe, 2004; Srinivasan et al. 2002,

Jain and Singh, 2002) which encompassed the view of a customer-centric organizational structure with dyadic interactive points targeted towards identification of key or valued customers through lifetime value computations, (b) organizing around CRM (Brown, 2000; Homburg et al. 2000; Ahmed and Rafique, 2003) which emphasized on customer-centric organizational functions with an objective to ensure value proposition to customers, (c) managing knowledge (Peppard, 2000; Freeland, 2003; Stefanou et al. 2003; Stringfellow et al. 2004, Yim et al. 2004; Plessis and Boon, 2004; Brohman et al., 2003) whereby customer-information are effectively transformed into customer-knowledge and disseminated across the organizational hierarchy which will equip salespeople with better understanding of customers' requirements and (d) adopting CRM-based technology (Butler, 2000; Pepperd, 2000; Vrechopoulos, 2004; Widmier et al. 2002) to optimize communication with customers, accurate service delivery with back-up and supportive information, managing customer-knowledge by data warehousing and data mining and providing customized services. However, there has been a dearth of research in identifying these CRM dimensions in the context of tourism industry.

CRM philosophy was adopted by the tourism sector as it allowed them to be more proactive in predicting the changing line of customer demands and allowed them to realize the extent to which they can customize their service offer with adequate differentiation. Jain and Jain (2006) delved into CRM practices of hotels in central India to measure the effectiveness against factors like: value proposition, recognition, customer orientation, reliability, relationship orientation, credibility, customization, personalization and gestures. Literature hinted that destination competitiveness can be one of the critical components of a modified relationship management framework which would be compatible to the tourism industry and may be nomenclated as Tourist Relationship Management (TRM). Studies observed that formulation of relationship strategies followed an analytical planning and destination competitiveness which will allow firms to stay ahead of its competitors and to ensure destination sustainability (Ritchie and Crouch, 2000a & 2000b; Mihalic, 2000; Buhalis, 2000; Flagestad and Hope, 2001; Kozak, 2001; Heath and Wall, 1992; Bordas, 1994; Pearce, 1997). Poon (1993) observed that tourist satisfaction can be achieved with proper strategic initiatives to build destination image and that destination

competitiveness can be ensured by virtue of organized form of interactions with tourists. Destination has been apprehended to be pivotal in nurturing relationship between tourism service providers and tourists as Buhalis (2000) listed six major components of tourism attractions towards evaluating tourism destination:

- a. Attraction - natural, man-made, artificial, purpose-built, heritage, special events
- b. Accessibility – transportation system, terminals & vehicles
- c. Amenities – accommodations, catering facilities, retailing
- d. Available packages – prearranged packages by intermediaries and principals
- e. Activities – activities related to tourism products
- f. Ancillary services – banks, telecommunications, hospitals etc.

A review of the consumer behavioural literature revealed that there are relationships among destination image, perceived value, satisfaction, and loyalty. Empirical research has suggested that destination image has both direct and indirect effects (through value propositions) on customer satisfaction (Bigne, Sanchez, & Sanchez, 2001; Lai, Griffin, & Babin, 2009). Perception of destination images also has been found to have significant direct and indirect effects (through satisfaction) on customer loyalty (Back, 2005; Chi & Qu, 2008). In addition, previous research revealed that tourists' involvement and demographic characteristics namely gender, age, annual income, and marital status moderated the perception of destination image and its impact on tourist behaviour (Chen and Tsai's, 2007; Heung, Qu, and Chu, 2001; Walmsley and Jenkins, 1993) and can be considered as effective antecedent to modulate tourist relationship. There has been a few attempt to understand the impact of knowledge management on destination networks (Baggio, 2007; da Fontoura Costa and Baggio, 2008; Scott et al. 2008a, Scott et al. 2008b). While justifying the nodal touch-points of service provider-tourist relationship, a few research works have pointed to partnerships and collaborations (Bramwell and Lane, 2000; Halme, 2001; Tinsley and Lynch, 2001, Tyler and Dinan, 2001). Destination denomination could be an expanded canvas to confirm dyadic relationships between stakeholders of tourism market. The topology of destination

network created by the stakeholder (e.g. tourist) and their formal & informal relationship has proved to be a significant determinant while explaining the dynamics of knowledge transfer in a dyad (Chen and Hicks, 2004; da Costa and Terhesiu, 2005; Lopez-Pintado, 2004). Hall (2008) was of the opinion that networking in tourism reduces risk and share benefits. The success of relationship management in the networks depends on synchronization of key business processes. Sporadic attempts to address knowledge simulation in destination networks through various model propositions, namely, epidemic diffusion model (Heesterbeek, 2000; Hethcote, 2000), natural and artificial complex models (Boccaletti et al. 2006; da Fontoura Costa et al. 2008; Watts 2004), computer simulation (Castellano et al. 2009), Elba model (Olsen, 2004) etc. hinted the researcher to consider destination as a critical relationship dimension in the context of tourism.

In addition to destination, 'purpose' is expected to play an important role in the relationship between the tourism service providers and tourists. Literature revealed a number of issues pertaining to travel purpose and linked it with motivation for travelling sighting satisfying need hierarchy (Maslow, 1954, 1970; Burns and Holden, 1995; Hudson, 1999). Leisure and vacation have been identified as two major purposes of travelling and were linked to satisfying self actualization needs (Miller and Morrison, 2002) and self esteem needs (Pearce, 1993). Pearce (1993) identified five levels of travel purpose hierarchy: relaxation, stimulation, relationship, development and fulfillment. Brown (2010) also identified purpose of travelling as a major deterministic factor in strategizing tourism packages while analysing volunteer tourism facets. Dann

(1977) and later supported by Crompton (1979) identified seven 'Push&Pull' factors driving travelling: (i) escape from perceived mundane environment, (ii) exploration and evaluation of self, (iii) relaxation, (iv) prestige, (v) regression, (vi) enhancement of kinship relationships and (vii) novelty and education. Purpose of travelling allows the service providers to understand the psychogenic profiles of the visitors thereby assist them to prepare the blueprint to establish a dyadic relationship.

2.1 Research gap identified

Much foray into unearthing the relationship dimensions compatible and unique to tourism markets have not been done as per the review of literature. The existing CRM dimensions were extensively used to explain the criticalities involved in tourist relationships, but, in most cases, they were found to be inadequate to develop apt relationship strategies. Added or modified dimensions of CRM were not identified to address the relationship dynamics in tourism. Tourist Relationship Management (TRM) framework, therefore, will be a whole new development for the study.

2.2 Hypothesis development

A single hypothesis was developed to assess relationship between the identified dimensions of TRM:

H_1 : Dimensional correlation exists in the proposed TRM framework.

2.3 Proposed research (default) model

The proposed research (default) model focuses on convergence of the proposed TRM dimensions (Fig.1)

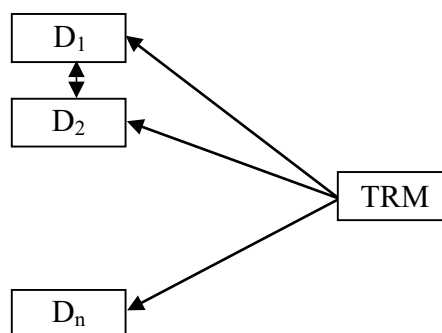


Fig.1- Proposed research model,
TRM- Tourist Relationship Framework, D_1 to D_n represents the dimensions

3. Methodology

The study was conducted in two phases. A structured questionnaire was developed to obtain the primary data. Phase-I involved a pilot study to refine the test instrument with rectification of question ambiguity, refinement of research protocol and confirmation of scale reliability was given special emphasis (Teijlingen and Hundley, 2001). 20 respondents representing tourists of assorted demography and academicians were included to conduct the pilot study through focus group interview technique. Cronbach's α coefficient (>0.7) established scale reliability (Nunnally and Bernstein, 1994). The refined survey instrument focused on collecting data with regard to relationship management initiated and deployed by the service providers A 7 point Likert scale (Alkibisi and Lind, 2011) was used to generate response. The second phase of the study comprising collection of primary data was carried out in selected tourist spots in West Bengal ensuring a broad spectrum coverage of destination types and purpose of visiting those destinations. The tourist destinations that were selected for the study were: Kolkata, Shantiniketan & adjoining areas, Darjeeling & adjoining areas, the Sunderbans, Digha & adjoining areas, Bishnupur & adjoining areas, Murshidabad and Malda. The major service providers identified to participate in the survey were hoteliers, restauraners, tour operators, booking agencies, logistic service providers and guide services. Service employees of the rank of managers, relationship executives etc. were interviewed. Convenience sampling was used. As many as 1863 personnel associated with assorted tourism services in the selected tourist spots were interviewed.

3.1 Factor constructs measurement

The TRM dimensions were scaled on items, initially developed by Yim et al. (2004) to dimensionalize CRM, which were adequately modified to suit tourism platform. The additional constructs to make relationship management compatible with tourism imperatives on the basis of destination denomination and purpose of visit were created after extensive study of literature, with 5 and 6 items respectively and were tested for internal reliability and validity.

3.2 Reliability and validity

To examine the internal reliability and validity of the constructs, exploratory factor analysis (EFA) was deployed using principal axis factoring procedure with orthogonal rotation through VARIMAX process. Cronbach's α was obtained to test the reliability of the data, Kaiser-Meyer-Olkin (KMO) was done for sample adequacy and Barlett's sphericity test was conducted. Cronbach's α coefficient (>0.7) established scale reliability (Nunnally and Bernstein, 1994). The scales used in this study were adapted from established existing measures that have been applied and validated in numerous tourism studies. In addition, the validity of the measurement scales was also assessed via the confirmatory factor analysis. The convergent validity of the scales were measured by tests of composite reliability (CR) and average variance extracted (AVE). Higher CR and AVE values indicate higher convergent reliability of the measurement. The Discriminant validity is established when the AVE values exceed the square of the correlations between each pair of latent constructs (Fornell and Larcker, 1981).

Finally, LISREL 8.80 programme was used to conduct the Structural Equation Modeling (SEM) and Maximum Likelihood Estimation (MLE) was applied to estimate the CFA models.

4. Data analysis and interpretation

The results of the EFA were displayed in Table-1. The Cronbach's Coefficient alpha was found significant enough, as it measures >0.7 (Nunnally and Bernstein, 1994) for all constructs and therefore it is reasonable to conclude that the internal consistency of the instruments used were adequate. Each accepted construct displayed acceptable construct reliability with estimates well over 0.6 (Hair, Anderson, Tatham and William, 1998). Further to this the average variance extracted (AVE) surpassed minimum requirement of 0.5 (Haier et al., 1998). The KMO measure of sample adequacy (0.854) indicated a high-shared variance and a relatively low uniqueness in variance (Kaiser and Cerny, 1979). Barlett's sphericity test (Chi-square=1232.098, df=298, $p<0.001$) indicated that the distribution is ellipsoid and amenable to data reduction (Cooper and Schindler, 1998).

Table-1: Measurement of reliability and validity of the variables

| Items | FL | t | α | AVE |
|---|-------|--------|----------|-------|
| Tourist Relationship Management (TRM) items | | | | |
| Our organization establishes and monitors customer-centric performance standards at all tourist touch points (TRMD1) | 0.654 | 19.432 | .926 | 0.881 |
| Our organization has established clear business goals related to tourist acquisition, development, retention and reactivation. (TRMD2) | 0.671 | 22.661 | .926 | 0.881 |
| Our organization has the sales and marketing expertise and resources to succeed in TRM (TRMD3) | 0.649 | 18.425 | .926 | 0.881 |
| Our employee training programme has been designed to develop the skills required for acquiring and deepening tourist relationships. (TRMD4) | 0.718 | 25.671 | .926 | 0.881 |
| Employee performance is measured and rewarded based on meeting tourist needs and on successfully serving the tourist. (TRMD5) | 0.679 | 18.762 | .926 | 0.881 |
| Our organizational structure has been designed to foster tourist centricity. (TRMD6) | 0.681 | 19.002 | .926 | 0.881 |
| Our organization commits time and resources to manage tourist relationships. (TRMD7) | 0.669 | 17.401 | .926 | 0.881 |
| Our organization has apt softwares to serve our tourists. (TRMD8) | 0.652 | 15.204 | .926 | 0.881 |
| Our organization has required hardwares to serve our tourists. (TRMD9) | 0.672 | 18.110 | .926 | 0.881 |
| Our organization has the proper technical personnel to provide technical support to our relationship management executives. (TRMD10) | 0.691 | 20.028 | .926 | 0.881 |
| Our organization maintains a comprehensive database of our tourists. (TRMD11) | 0.701 | 22.918 | .926 | 0.881 |
| Individual tourist information is available at every point of contact (TRMD12) | 0.684 | 19.278 | .926 | 0.881 |
| Our organization provides customized services to our valued and key tourists. (TRMD13) | 0.664 | 17.217 | .926 | 0.881 |
| Our organization communicates with key tourists to customize our offerings on demand. (TRMD14) | 0.631 | 14.283 | .926 | 0.881 |
| Our organization makes an effort to find out what the key tourist requirements are (TRMD15) | 0.679 | 19.005 | .926 | 0.881 |
| Our employees make coordinated efforts to deliver customize service once a tourist places a demand for such service (TRMD16) | 0.702 | 20.098 | .926 | 0.881 |
| Each and every employee of our organization treats tourists with great care. (TRMD17) | 0.617 | 14.562 | .926 | 0.881 |
| Our organization provides channels to enable ongoing two-way communication between our key tourists and us. (TRMD18) | 0.629 | 15.672 | .926 | 0.881 |

| | | | | |
|--|---|--------|----------|-------|
| Our tourists can expect exactly when services will be performed (TRMD19) | 0.718 | 25.091 | .926 | 0.881 |
| Our organization fully understands the requirements of our key tourists and us. (TRMD20) | 0.663 | 18.782 | .926 | 0.881 |
| Our organization maintains the database of major destination attractions for our key tourists. (TRMD21) | 0.687 | 19.871 | .926 | 0.881 |
| Our organization facilitates tourists in accessing the major destination attractions. (TRMD22) | 0.624 | 15.214 | .926 | 0.881 |
| Our organization provides requisite amenities to ensure safe visit for tourists to destinations. (TRMD23) | 0.609 | 14.009 | .926 | 0.881 |
| Our organization provides adequate packages that cover smooth and hassle-free destination visits. (TRMD24) | 0.672 | 18.918 | .926 | 0.881 |
| Our organization arranges activity supports for tourists as per destination requirements. (TRMD25) | 0.711 | 23.091 | .926 | 0.881 |
| Our organization has networked to provide ancillary services to tourists. (TRMD26) | 0.679 | 20.219 | .926 | 0.881 |
| Our organization understands the purpose of visit of tourists and provides services accordingly. (TRMD27) | 0.683 | 21.201 | .926 | 0.881 |
| Our organization has resources to match the purpose of tourist visits. (TRMD28) | 0.723 | 28.112 | .926 | 0.881 |
| Our organization has necessary tie-ups and networks to synchronize with the purpose of visit of tourists. (TRMD29) | 0.682 | 18.761 | .926 | 0.881 |
| Our employees understand the psychology of the tourists behind the purpose of visit. (TRMD30) | 0.704 | 25.476 | .926 | 0.881 |
| KMO | | 0.854 | | |
| Barlett's Test of sphericity | Chi-square (χ^2) | | 1232.098 | |
| | df | | 298 | |
| | Sig. | | .000 | |

** FL: factor loadings, t: t-value, α : Cronbach's α , AVE: average variance extracted

The dimensions of perceived tourist service quality (PTSQ) and CRM have been nomenclated as per the component-wise factor loadings in Table-2.

Table-2: Identified dimensions of TRM

| Sl. No | Variable | Items as per factor loadings post EFA | Dimension name |
|--------|---------------------------------|---------------------------------------|-----------------------------------|
| 1 | Tourist Relationship Management | TRMD1 – TRMD7 (D ₁) | Organizing around TRM (TRMO) |
| 2 | | TRMD8 – TRMD12 (D ₂) | Integrating TRM technology (TRMT) |
| 3 | | TRMD13 – TRMD17 (D ₃) | Key tourist focus (KFT) |
| 4 | | TRMD18 – TRMD20 (D ₄) | Managing tourist knowledge (TKM) |
| 5 | | TRMD 21- TRMD26 (D ₅) | Destination denomination (DD) |
| | | TRMD 27 – TRMD 30 (D ₆) | Purpose denomination (PD) |

The path-analysis using LISREL-9.1 (Fig.2) confirms the convergence of the observed variables (TRMO, TRMT, KFT, TKM, DD & PD) and the latent variable [(Tourist Relationship

Management (TRMD)] confirming the fact that the identified dimensions of tourist relationship management are adequate to justify the reliability and validity of the same.

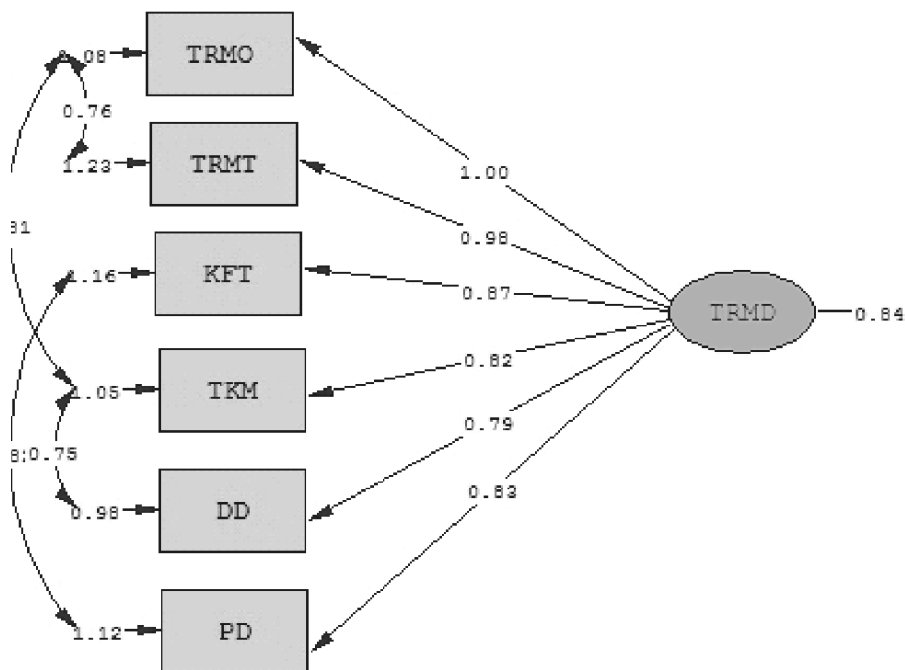


Fig.2: Path analysis depicting observed and latent variables

To test correlation between the identified dimensions of TRM, bivariate correlation was deployed. The mean response score was obtained for each of the variable across the items loaded in EFA for each individual tourist and later on summated and averaged to obtain the composite mean score for each variable. The results of the bivariate correlation analysis were displayed in Table-3. The results revealed strong and significant dimensional relationship: (i) TRMO and KFT ($r=0.246^{**}$, $p<0.001$), (ii) KFT and TRMT ($r=0.168^{**}$, $p<0.001$), (iii) TKM and TRMO ($r=0.196^{**}$, $p<0.001$), (iv)

TKM and TRMT ($r=0.406^{**}$, $p<0.001$), (v) DD and TRMO ($r=0.289^{**}$, $p<0.001$), (vi) DD and KFT ($r=0.154^{**}$, $p<0.001$), (vii) DD and TKM ($r=0.341^{**}$, $p<0.001$), (viii) PD and TRMO ($r=0.368^{**}$, $p<0.001$), (ix) PD and TRMT ($r=0.312^{**}$, $p<0.001$), (x) PD and KFT ($r=0.217^{**}$, $p<0.001$), (xi) TRMT and TRMO ($r=0.234^{**}$, $p<0.001$), and (xii) PD and TKM ($r=0.209^{**}$, $p<0.001$). Moderately positive relationship was observed between (i) TKM and KFT ($r=0.089^*$, $p<0.005$), (iii) DD and TRMT ($r=0.082^*$, $p<0.001$) and (iv) PD and DD ($r=0.088^*$, $p<0.005$).

Table-3: Bivariate correlation between perceived tourist service quality (PTSQ), tourist satisfaction (TS) and destination loyalty (DL)

| | | TRMO | TRMT | KFT | TKM | DD | PD |
|------|-----------------------------------|--------|--------|---------|--------|----|----|
| TRMO | Pearson Correlation | 1 | | | | | |
| | Sig. (2-tailed) | | | | | | |
| | Sum of Squares and Cross-products | 48.219 | | | | | |
| | Covariance | .598 | | | | | |
| | N | 1863 | | | | | |
| TRMT | Pearson Correlation | .234** | 1 | | | | |
| | Sig. (2-tailed) | .002 | | | | | |
| | Sum of Squares and Cross-products | 42.112 | 49.287 | | | | |
| | Covariance | 5.882 | 7.009 | | | | |
| | N | 1863 | 1863 | | | | |
| KFT | Pearson Correlation | .246** | .168** | 1 | | | |
| | Sig. (2-tailed) | .000 | .000 | | | | |
| | Sum of Squares and Cross-products | 49.124 | 58.221 | 121.156 | | | |
| | Covariance | .764 | .971 | 8.194 | | | |
| | N | 1863 | 1863 | 1863 | | | |
| TKM | Pearson Correlation | .196** | .406** | .089* | 1 | | |
| | Sig. (2-tailed) | .000 | .000 | .003 | | | |
| | Sum of Squares and Cross-products | 41.229 | 49.321 | 67.009 | 97.764 | | |
| | Covariance | .654 | .776 | .964 | 6.296 | | |
| | N | 1863 | 1863 | 1863 | 1863 | | |

| | | | | | | | |
|----|-----------------------------------|--------|--------|--------|--------|--------|--------|
| DD | Pearson Correlation | .289** | .082* | .154** | .341** | 1 | |
| | Sig. (2-tailed) | .000 | .003 | .000 | .000 | | |
| | Sum of Squares and Cross-products | 44.322 | 51.098 | 55.543 | 72.783 | 87.982 | |
| | Covariance | .594 | .645 | .987 | 3.278 | 7.987 | |
| | N | 1863 | 1863 | 1863 | 1863 | 1863 | |
| PD | Pearson Correlation | .368** | .312** | .217** | .209** | .088* | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .001 | |
| | Sum of Squares and Cross-products | 48.983 | 59.096 | 68.562 | 77.834 | 91.983 | 98.712 |
| | Covariance | .554 | .671 | .818 | .897 | .927 | 1.872 |
| | N | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |

** Correlation significant at 0.01 level (2-tailed), *correlation significant at 0.05 level (2-tailed).

Confirmatory factor analysis (CFA) was applied to assess the convergence, discriminant validity and dimensionality for each construct to determine whether all the 30 items (Table 1) measure the construct adequately as they had been assigned for. LISREL 9.90 programme was used to conduct the Structural Equation Modeling (SEM) and Maximum Likelihood Estimation (MLE) was applied to estimate the CFA models. A number of fit-statistics were obtained (Table-4) for the default (proposed) model. The comparative fit indices namely CFI (0.975), NFI (0.989) and TLI (0.978) were found significant enough to accept the fitness of the default (proposed) model (Schreiber et al, 2006). The Parsimonious fit indices (PNFI=0.774, PCFI=0.797, PGFI=0.782) also confirmed robustness of the model and indicated an absolute fit (Schreiber et al., 2006). The GFI (0.979) and AGFI (0.975) scores for all the constructs were found to be consistently >0.900 indicating that a significant proportion of the variance in the sample variance-covariance

matrix is accounted for by the model and a good fit has been achieved (Hair et al. 1998; Baumgartner and Homburg, 1996; Hulland et. al. 1996; Kline, 1998; Holmes-Smith, 2002, Byrne, 2001). The CFI value (0.975) for all the constructs were obtained as > 0.900 which indicated an acceptable fit to the data (Bentler, 1992). The expected cross-validation index was found to be small enough (ECVI=0.0022) to confirm the superiority of the default model to the saturated and independence model. The RMSEA value obtained (0.051) is < 0.08 for an adequate model fit (Hu and Bentler, 1999). The RMR value (0.003) is small enough (close to 0.00) to assure a robust-fit of the model. The SRMR value was also indicative of good fit (0.0299 which is ≤ .08) (Schreiber et al. 2006, Anglim, 2007). The probability value of Chi-square ($\chi^2=106.11$, $df=62$, $p=0.000$) is more than the conventional 0.05 level ($P=0.02$) indicating an absolute fit of the model to the data and the χ^2/df value is ≤ 2 (1.71) suggesting its usefulness to justify the default model as the nested model.

Table-4: Fit indices for the default model

| Absolute predictive fit | | | | Comparative fit | | | Parsimonious fit | | | Others | | | | |
|-------------------------|----|------|--------|-----------------|-------|-------|------------------|-------|-------|--------|-------|-------|--------|-------|
| χ^2 | Df | P | ECVI | NFI | TLI | CFI | PNFI | PCFI | PGFI | GFI | AGFI | RMR | SRMR | RMSEA |
| 106.11 | 62 | 0.01 | 0.0022 | 0.989 | 0.978 | 0.975 | 0.774 | 0.797 | 0.782 | 0.979 | 0.975 | 0.003 | 0.0299 | 0.051 |

To construct the nomological network structural equation modeling (SEM) was used to test the nomological validity of

the proposed research model. Composite TRM dimensional scores across individual items were obtained by summing

the ratings on the scale provided in the survey instrument items which were used as indicators of their latent version.

Structural Equation Modeling (SEM) was used to test the relationship among the constructs. All the 24 paths drawn were found to be significant at both $p < 0.01$ and $p < 0.05$ levels. The research model holds well (Fig.2) as the fit-indices supported adequately the model fit to the data. The double-

curved arrows indicated correlation between the exogenous and endogenous observed variables which was found significant. The residual variables (error variances) are indicated by $\epsilon_1, \epsilon_2, \epsilon_3$, etc. The regression weights are represented by λ . The relationship between the exogenous variables was represented by β . One of the factors loading was fixed to '1' to provide the latent factors an interpretable scale (Hox & Bechger).

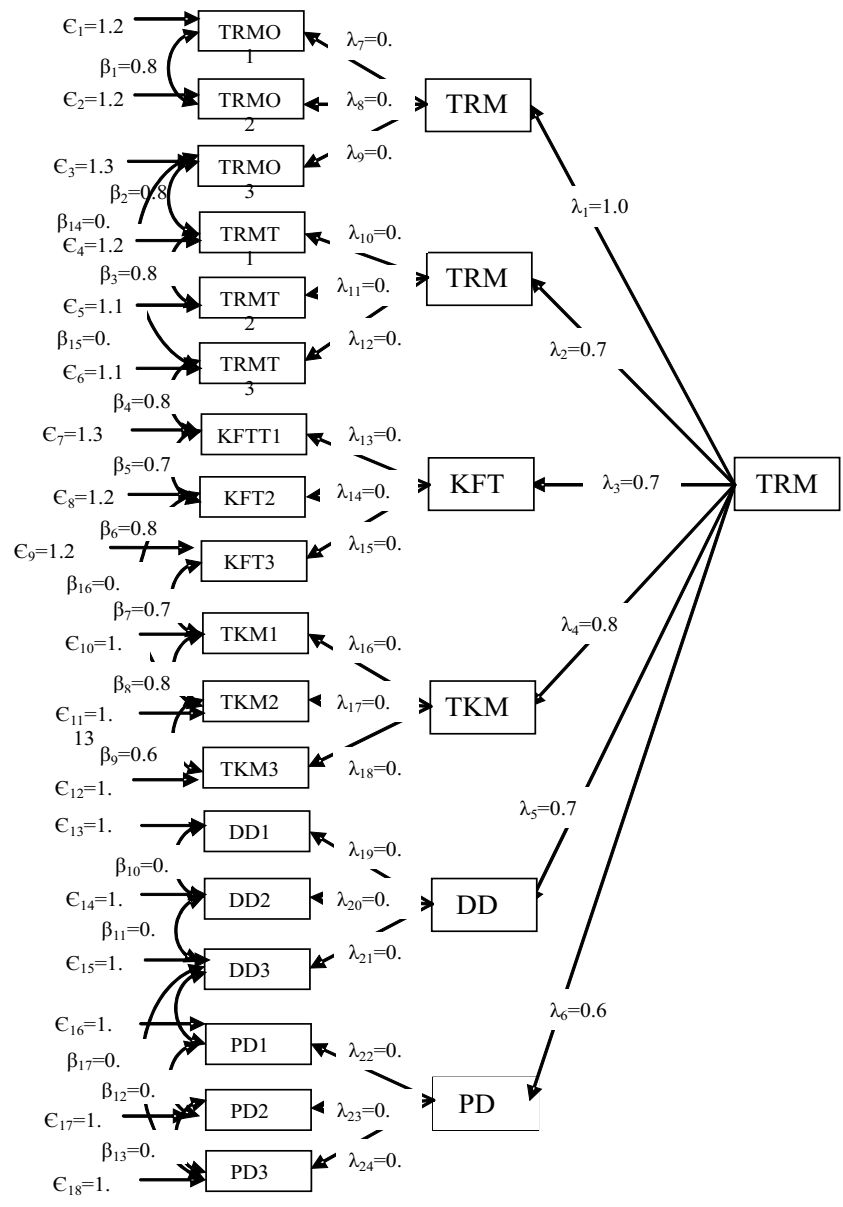


Fig.3: Structural model showing the path analysis

5. Implications for theories and practice

The study will provide the impetus for the researchers to delve deep into the dimensionalities of relationship management in the context of tourism operations and functionalities and shall provide the practitioners with strategic inputs to strengthen the pivotal relationship with their major stakeholder-tourists. The present study will also add up to the extant literature by providing the foundation of tourism relationship management framework (TRM), an offshoot to customer relationship management model, with validated dimensions like destination denomination and purpose denomination.

The tourism phenomenon in the selected tourist spots for the study is not new, but it has changed its dynamics with the rapid changes in demographic, psychographic, cultural, ethnic and most importantly technological factors. With the communication system to the destination improving by leaps and bounds the influx of both domestic and international tourists has also increased. The hotels, restaurants, tour-arrangers and other down-the-line service providers underwent a serious make-over as they updated themselves to meet the specific demand and quality perception of both domestic and foreign tourists. The tourism service providers of the area under study are well aware about the tourist behaviour based on the destination dynamics and purpose of their visit. The results of the study indicated that destination and purpose can be major dimensions of relationship management for tourism markets and the convergence of these two dimensions alongwith the conventional relationship management dimensions affirmed the TRM framework. The identified dimensions of TRM exhibited significant correlation too. Technology has played a pivotal role towards allowing the tourists to avail services on virtual platform and the two new dimensions are utilizing the same for better information search. The study had managerial implication as the changing rural psychogeodemography of Santiniketan may pose challenges to the managers of tourism service providers to analyse tourist demand and personalize tourism products accordingly. TRM framework is likely to provide tourism managers with analytics to segregate tourists on the basis of identified dimensions particularly the destination denomination and purpose denomination which will enable them to strategise their approach towards satisfying the tourists.

The study had geographical limitations as it has been restricted to selected tourist destinations in West Bengal, which in future, can be widened to obtain a more generalized conclusion. Future extrapolations of the study can be done by considering other service variables into consideration to understand the capacity of TRM to influence tourism service quality, behavioural pattern of tourists and economic return to service providers.

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IPO Grading: Selection and Under Pricing?

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Abstract

IPO Grading was made mandatory by the Indian Capital Market Regulator (SEBI) in 2007. There are five Credit Rating Agencies, registered with the regulator, and entrusted with the grading of the IPO bound companies. One of the expected outcomes of the IPO grading is efficient price discovery. Post listing, if the price settles higher than the offer price, the issue is under priced. This paper explores whether IPOs graded by various credit rating agencies, have the same extent of under pricing. The statistical analysis has shown that there is no significant difference in under pricing, as far as different companies graded by the different credit rating agencies are concerned.

Key words: IPO Grading, Under Pricing, Credit Rating Agencies

JEL Classification:G12,G14



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Grading of fixed-income instruments, is a universally accepted feature. However Indian Equity Market Regulator, Security Exchange Board of India (SEBI) is credited with, coining a new concept, i.e. grading of equity instruments. Stock markets play a major role in the development of national economies (Bohnstedt, 2000).

Indian equity market has seen complete transformation, from the days of Controller of Capital Issues (CCI) to setting up of SEBI (Securities Exchange Board of India) in 1988, to abolition of CCI in the post reform years of early 1990s.

In the reforms initiated under SEBI, centralised power to determine pricing of equity issues gave way to information dissemination in the public domain. These led to stricter information disclosure norms, Book Building (BB) of Issues and finally IPO Grading.

Financial performance of the company preceding the issue plays an important role, to signal investors regarding the

quality of the issue. There are other formal and informal certification processes available to investors, to enable them to take an informed decision.

Some of these are reputation of the underwriter of the issue, venture capital firm affiliation, shareholding pattern of decision makers (board of directors), reputation and track record of the lead manager of the issue, promoter group affiliation, analyst recommendation etc.

Unique features of the Indian Equity Market

Number of investors in the equity market, compared to the total population is minuscule in India (about 1%). There is a significant mistrust among the risk averse investors as far as the equity market is concerned. The reasons for this trust deficit are manifold. Securities Exchange Board of India (SEBI), the statutory body that governs the stock exchanges in India, has taken several initiatives to bridge this deficit. Initial Public Offer (IPO) grading is one such initiative. The primary equity market in India is also characterised by huge over-subscription of issues, sometimes running into hundreds of times. Until recently there were very few instance of IPOs getting withdrawn or cancelled. Retail investors (investors who put less than Rs. 2 lakh in an IPO) lack capability to analyze, the relevant financial information disseminated in the public domain. “The unsophisticated investors either do not read

the disclosure documents or lack the analytical sophistication to understand them. Furthermore, inferior investment decisions may occur due to the limited information processing capabilities of lay investors and the ‘information overload’ produced by the information disclosure” (Jain and Sharma, 2008).

IPO Grading:

SEBI introduced IPO grading on voluntary basis in April, 2006. It was optional till 30th April, 2007. However, the experiment was not successful as borne out by the relevant data; although around 40 companies tapped the primary market in that time frame, only 4 companies approached Credit Rating Agencies (CRAs) for grading. These 4 companies also did not accept the grade assigned to them. Reviewing the result of the optional IPO Grading, SEBI made Initial Public Offer Grading mandatory with effect from May 1, 2007. Credit rating agencies like CRISIL, CARE, ICRA, FITCH and Brickwork Rating are entrusted with the job of IPO grading. The rating scale used is 1 to 5, with 1 being the worst, and 5 being the best. There were many weak as well as fraudulent issues hitting the market. The number of such issues hit the roof, whenever the stock market performance is extra ordinary. Some dubious companies also want to bask in the glory of well performing stock market.

IPO Grading Framework:

Table 1: IPO Grading Scale

| Grade / scale | Grading Definition |
|---------------|----------------------------|
| 5/5 | Strong Fundamentals |
| 4/5 | Above Average Fundamentals |
| 3/5 | Average Fundamentals |
| 2/5 | Below Average Fundamentals |
| 1/5 | Poor Fundamentals |

According to SEBI guidelines, Credit Rating Agencies (CRAs) are supposed to analyse companies, for the purpose of grading on the following parameters:

- a. Business Prospects and Competitive Position
 - i. Industry Prospects
 - ii. Company Prospects
- b. Financial Position

- c. Management Quality
- d. Corporate Governance Practices
- e. Compliance and Litigation History
- f. New Projects—Risks and Prospects

The costs of the Grading are to be borne by the IPO bound firm. Therefore there is likely to be conflict of interest between the rating agency (which is supposed to grade the IPO) and

the equity issuing firm, which is bearing the costs of this grading process. However there is a reputational stake for the rating agencies in the long term.

IPO Grading Initiative in Other Countries

India became the first country to make IPO Grading mandatory. The capital market regulator SEBI (Securities Exchange Board of India) is a pioneer in that sense. Following on the SEBI's footsteps, countries like Sri Lanka also initiated discussion in the public domain in this direction. The capital market regulator in Sri Lanka, Securities and Exchange Commission of Sri Lanka has published one discussion paper and sought opinion from various stake holders about the pros and cons of the method.

2. Literature Review

Formal certification may be a new thing introduced by the Indian capital market regulator (SEBI), but informal certification in the form of past performance by the company, group affiliation of the company, reputation of the underwriter, in case of venture capital (VC) backed firms, the reputation of the VC, the reputation of the merchant banker, which is acting as the lead banker, analysts recommendation etc. is available. Informal certification plays an important role as a signal for especially retail investors. There is a plethora of literature available regarding informal certification's effect on a company's IPO.

Barry, Muscarella and Vetsuypens (1990) and Megginson and Weiss (1991) find that under pricing is lower for IPOs of firms with a strong venture capital participation than for those without such investors. That means post listing return of these firms are lesser. Contrary to this, a recent study by Lee and Wahal (2004), based on a much larger sample size concluded that, VC backed firms have a higher under pricing.

Regarding underwriter reputation, there is a vast body of research in the western world, among the prominent studies Logue (1973), Beatty and Ritter (1986), Titman and Trueman (1986), Maksimovic and Unal (1993) and Cater, Dark and Singh (1998) found that the under-pricing of IPOs brought to the market by reputable underwriters is lower than those brought by non-reputable underwriters. Loughran and Ritter (2004) found that during the dotcom bubble, the prestige of the underwriter went hand in hand with leaving more money on the table.

On analyst's recommendation, equity analysts give recommendation regarding Initial Public Offer (IPO) of firms.

However more recommendations are seen post listing. Objectivity of these recommendations is in serious doubt as past studies have shown biased behaviour on the part of the analysts. Analysts can put buy or avoid call on the IPO, but past data shows analysts in majority instances had given buy call. For example, Bradley et al. (2003) find that analyst coverage is initiated immediately for 76 percent of IPOs during 1996 to 2000, almost always with a favourable rating.

As far as the relationship between the IPO grading and the under pricing is concerned, there are conflicting results. For example, IPO grading has no significance in pricing according to Khurshed et al. (2011). However, according to Deb and Marisetty (2010), the grading significantly reduces under pricing. In a later study by Jacob and Agarwalla (2012), it was concluded that the grading process has failed to influence the under pricing phenomena.

3. Objective of the Research

There are five Credit Rating Agencies (CRA), registered with SEBI to grade IPO bound companies. Among these CRAs, CRISIL is an affiliate of Standard & Poor (S&P) a world renowned rating agency, international rating agency Moody's is the largest shareholder of ICRA, India Rating and Research (earlier Fitch India) is the Indian subsidiary of Fitch. S&P, Fitch, & Moody's are recognized as Nationally Renowned Statistical Rating Organizations (NRSRO) of the Securities and Exchange Commission (SEC) in the United States. Whereas CARE and Brick Work (BW) are India based domestic credit rating agencies. There has been no comprehensive research done on, whether under-pricing differs in IPOs, graded by these five different credit rating agencies. In this paper, we intend to explore it.

4. Hypotheses of the Research

Null Hypothesis : There are no differences in the extent of under pricing as far as different IPO bound companies, graded by the different credit rating agencies are concerned.

Alternative Hypothesis : There are differences in the extent of under pricing as far as different IPO bound companies, graded by the different credit rating agencies are concerned.

5. Research Methodology

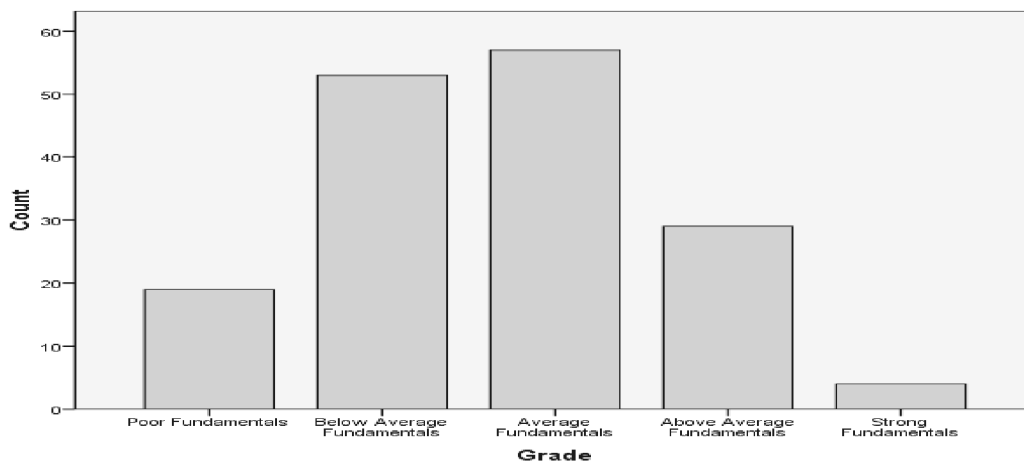
Data is collected from the Capital Market database. SPSS version 16.0 is used for the research purpose. Under pricing is calculated as the difference between the offer price and

listing day closing price, adjusted for the difference in the benchmark index(BSE Sensex, in this paper) between this two dates(Khurshed et al.,2011). Under pricing in terms of percentage for the various companies, are tested for the normal distribution. As the data is not normally distributed, non parametric statistical analysis is employed for the analysis.

6. Empirical Results and Analysis

In this paper 163 companies which went through the IPO process between 2007 and 2012 are analyzed. Grade wise number of companies are as follows:

Figure1:Grade Wise Number of Companies



Out of these 163 companies, maximum number of grading(54) is done by CARE, closely followed by CRISIL(51), next in the pecking order is ICRA(39), India Rating(earlier Fitch India)(9),Brick Work (BW)(6);

4 companies went for more than one credit rating agencies, out of them 1 each was graded by Fitch/ICRA and Fitch/CARE and 2 were graded by CARE/ICRA.

Table2:Credit Rating Agency Wise Number of Companies Graded

| Name of the Credit Rating Agency | Number of Companies Graded | Percentage of Companies Graded |
|----------------------------------|----------------------------|--------------------------------|
| ICRA | 39 | 23.90 |
| Fitch & ICRA | 1 | 0.6 |
| Fitch | 9 | 5.50 |
| CRISIL | 51 | 31.30 |
| CARE & ICRA | 2 | 1.20 |
| CARE & Fitch | 1 | 0.6 |
| CARE | 54 | 33.10 |
| BW | 6 | 3.70 |

Four companies namely Inventure Growth & Securities Ltd, Jaypee Infratech, IL&FS Transportation Networks and L&T Finance Holdings Limited are graded by two agencies, these

companies are taken for both the Credit Rating Agencies(CRAs).

Table 3: Credit Rating Agency Wise Number of Under-Priced IPO

| Name of the Credit Rating Agency | Number of IPOs |
|----------------------------------|----------------|
| Brick Work | 4 |
| CARE | 37 |
| India Rating(Fitch) | 8 |
| ICRA | 24 |
| CRISIL | 32 |

In the following figures output from SPSS is put.

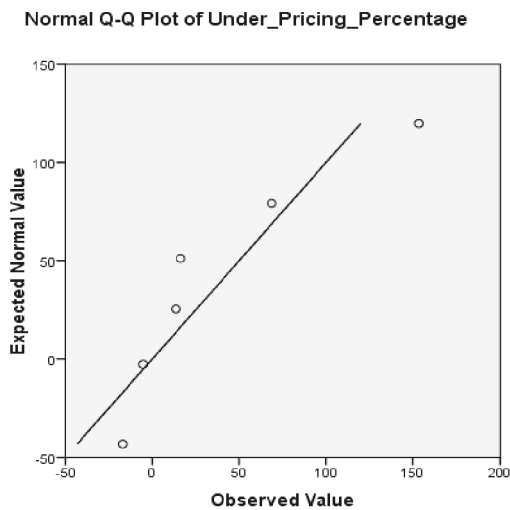


Figure2:First Day Return(in %) of the IPO’s Graded by Brick Work Plotted in Normal Q-Q Plot

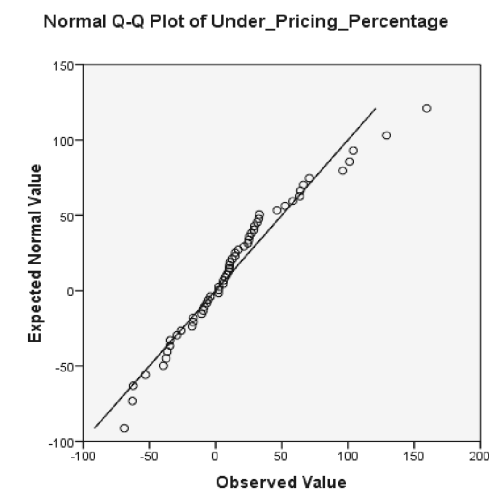


Figure3:First Day Return(in %) of the IPO’s Graded by CARE Plotted in Normal Q-Q Plot

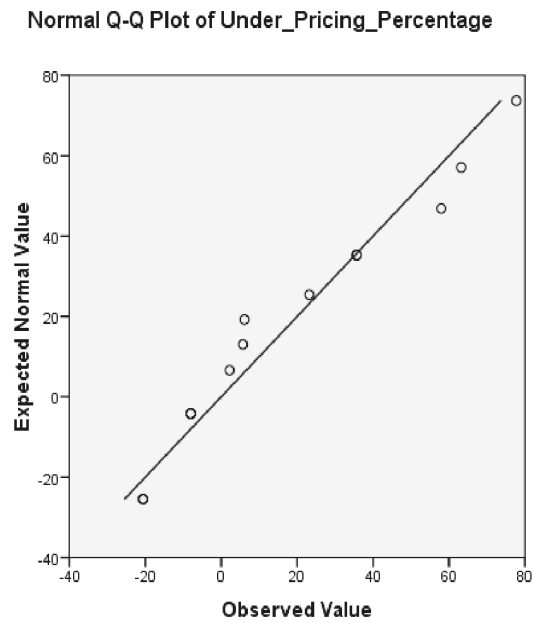


Figure4:First Day Return(in %) of the IPO's Graded by India Rating(Fitch) Plotted in Normal Q-Q Plot

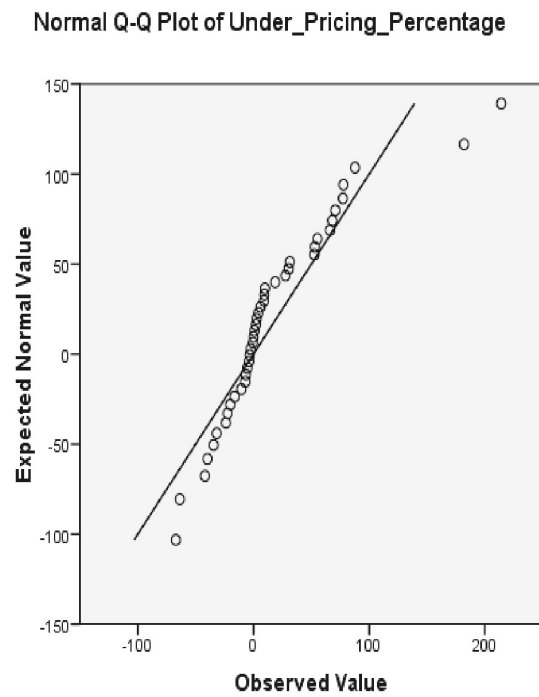


Figure5:First Day Return(in %) of the IPO's Graded by ICRA Plotted in Normal Q-Q Plot

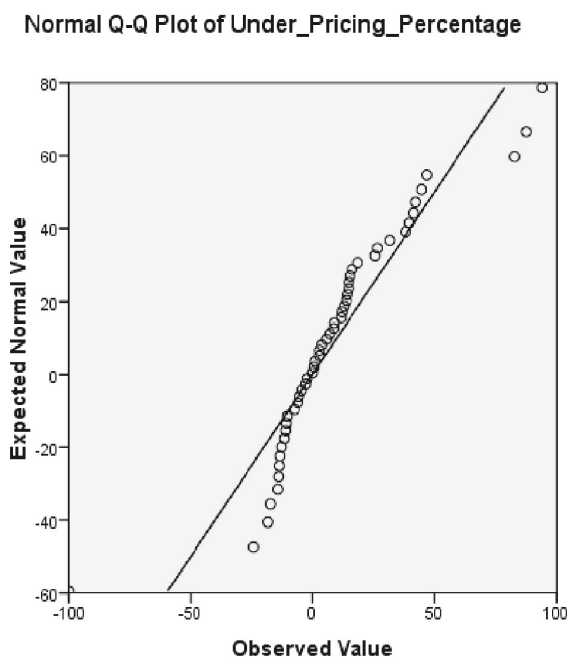


Figure 6: First Day Return(in %) of the IPO’s Graded by CRISIL Plotted in Normal Q-Q Plot

Following Are The Output of Mann-Whitney Test Conducted using SPSS 16, Taking Under Pricing of IPOs Graded By Two Credit Rating Agencies At A Time:

Mann-Whitney

| | | Ranks | | |
|-------------------------|-------|-------|-----------|--------------|
| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
| Underpricing_Percentage | BW | 6 | 37.50 | 225.00 |
| | CARE | 57 | 31.42 | 1791.00 |
| | Total | 63 | | |

| Test Statistics ^b | |
|--------------------------------|-------------------------|
| | Underpricing_Percentage |
| Mann-Whitney U | 138.000 |
| Wilcoxon W | 1791.000 |
| Z | -.773 |
| Asymp. Sig. (2-tailed) | .440 |
| Exact Sig. [2*(1-tailed Sig.)] | .456 ^a |

a. Not corrected for ties.

b. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|-------|----|-----------|--------------|
| Underpricing_Percentage | BW | 6 | 8.83 | 53.00 |
| | Fitch | 10 | 8.30 | 83.00 |
| | Total | 16 | | |

Test Statistics^b

| | Underpricing_Percentage |
|--------------------------------|-------------------------|
| Mann-Whitney U | 28.000 |
| Wilcoxon W | 83.000 |
| Z | -.217 |
| Asymp. Sig. (2-tailed) | .828 |
| Exact Sig. [2*(1-tailed Sig.)] | .875 ^a |

a. Not corrected for ties.

b. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|-------|----|-----------|--------------|
| Underpricing_Percentage | BW | 6 | 29.00 | 174.00 |
| | ICRA | 42 | 23.86 | 1002.00 |
| | Total | 48 | | |

Test Statistics^b

| | Underpricing_Percentage |
|--------------------------------|-------------------------|
| Mann-Whitney U | 99.000 |
| Wilcoxon W | 1002.000 |
| Z | -.842 |
| Asymp. Sig. (2-tailed) | .400 |
| Exact Sig. [2*(1-tailed Sig.)] | .418 ^a |

a. Not corrected for ties.

b. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|--------|----|-----------|--------------|
| Underpricing_Percentage | BW | 6 | 35.00 | 210.00 |
| | CRISIL | 51 | 28.29 | 1443.00 |
| | Total | 57 | | |

Test Statistics^b

| | Underpricing_Percentage |
|--------------------------------|-------------------------|
| Mann-Whitney U | 117.000 |
| Wilcoxon W | 1443.000 |
| Z | -.936 |
| Asymp. Sig. (2-tailed) | .349 |
| Exact Sig. [2*(1-tailed Sig.)] | .365 ^a |

a. Not corrected for ties.

b. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|--------|-----|-----------|--------------|
| Underpricing_Percentage | CARE | 57 | 55.81 | 3181.00 |
| | CRISIL | 51 | 53.04 | 2705.00 |
| | Total | 108 | | |

Test Statistics^b

| | Underpricing_Percentage |
|------------------------|-------------------------|
| Mann-Whitney U | 1379.000 |
| Wilcoxon W | 2705.000 |
| Z | -.458 |
| Asymp. Sig. (2-tailed) | .647 |

a. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|--------|----|-----------|--------------|
| Underpricing_Percentage | Fitch | 10 | 36.85 | 368.50 |
| | CRISIL | 51 | 29.85 | 1522.50 |
| | Total | 61 | | |

Test Statistics^b

| | Underpricing_Percentage |
|------------------------|-------------------------|
| Mann-Whitney U | 196.500 |
| Wilcoxon W | 1522.500 |
| Z | -1.140 |
| Asymp. Sig. (2-tailed) | .254 |

a. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|--------|----|-----------|--------------|
| Underpricing_Percentage | ICRA | 42 | 46.81 | 1966.00 |
| | CRISIL | 51 | 47.16 | 2405.00 |
| | Total | 93 | | |

Test Statistics^b

| | Underpricing_Percentage |
|------------------------|-------------------------|
| Mann-Whitney U | 1063.000 |
| Wilcoxon W | 1966.000 |
| Z | -.062 |
| Asymp. Sig. (2-tailed) | .951 |

a. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|-------|----|-----------|--------------|
| Underpricing_Percentage | CARE | 57 | 33.32 | 1899.50 |
| | Fitch | 10 | 37.85 | 378.50 |
| | Total | 67 | | |

Test Statistics^b

| | Underpricing_Percentage |
|-------------------------|-------------------------|
| Underpricing_Percentage | |
| Mann-Whitney U | 246.500 |
| Wilcoxon W | 1899.500 |
| Z | -.677 |
| Asymp. Sig. (2-tailed) | .498 |

a. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test

Ranks

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|-------|----|-----------|--------------|
| Underpricing_Percentage | Fitch | 10 | 30.75 | 307.50 |
| | ICRA | 42 | 25.49 | 1070.50 |
| | Total | 52 | | |

Test Statistics^b

| | Underpricing_Percentage |
|-------------------------|-------------------------|
| Underpricing_Percentage | |
| Mann-Whitney U | 167.500 |
| Wilcoxon W | 1070.500 |
| Z | -.987 |
| Asymp. Sig. (2-tailed) | .324 |

a. Grouping Variable: Credit_Rating_Agency

Mann-Whitney Test**Ranks**

| Credit_Rating_Agency | | N | Mean Rank | Sum of Ranks |
|-------------------------|-------|----|-----------|--------------|
| Underpricing_Percentage | CARE | 57 | 50.77 | 2894.00 |
| | ICRA | 42 | 48.95 | 2056.00 |
| | Total | 99 | | |

Test Statistics^b

| | Underpricing_Percentage |
|-------------------------|-------------------------|
| Underpricing_Percentage | |
| Mann-Whitney U | 1153.000 |
| Wilcoxon W | 2056.000 |
| Z | -.312 |
| Asymp. Sig. (2-tailed) | .755 |

a. Grouping Variable: Credit_Rating_Agency

7. Conclusions:

India Rating (earlier Fitch India) has the highest proportion of IPOs with under pricing and corresponding figure with ICRA as the lowest. However, while comparing the extent of under pricing, it is found that, the differences among the various Credit Rating Agencies, is not statistically significant. As the lowest p value is [Asymp. Sig.(2-tailed)] .254, for the IPOs graded by India Rating(Fitch) and CRISIL, signifying, that there is 25.4% chance that, the difference in the under pricing is due to chance. For the IPOs graded by the other CRAs, this is much higher. As a result, at 5% level of significance, the null hypothesis is accepted. So it is empirically proved, that there is no difference in the extent of under pricing among the IPOs graded by the various Credit Rating Agencies.

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Placebo of Doctor Patient bond: Influential Parameters

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Abstract

Placebo makes a positive impact on the immune system leading to better prognosis of the disease. Doctor-patient bond forms one of the foundations of contemporary medical ethics. Maintaining the trust with the doctors and creating the bond with the patients, is important for health care system. Factors such as gender, educational qualification and employment status of patients create a wide communication gap between patients and doctors. The awareness of the human limitation is vital in instituting the trust and faith between doctors and patients. The Placebo of Doctor Patient bond is determined by the human relationship.

Key words: Doctor-patient bond, Placebo, Communication gap, medical ethics, human relationship



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The doctor patient bond is central to the practice of doctors be it physicians, surgeons, radiologists or dentists, which is nucleus for the delivery of high-quality health care, diagnosis and treatment of the disease. Maintaining the trust with the doctors and creating the bond with the patients is all the more important for both patients and doctors as morality of health care system can be protected. Regrettably due to various related factors such as gender, educational qualification and employment status of patients there seems to be a wide communication gap between patients and the doctors, which is injurious to the health and well being of our society. The effect of Placebo makes the very presence and care by the doctors to heal the patients psychologically that makes a positive impact on the immune system which in turn leads to better prognosis of the disease. Article analyses the influence of gender, educational qualification as well as the employment status of the patient in determining the doctor-patient bond. The brief literature on doctor patient bond enables us to understand the nuances of this sacred relationship.

A brief Literature review

An insight into the available literature in the field throws light on improving the doctor-patient bond selected for study. West (1990) conducted research on directive-response speech sequences to examine how physicians formulated their directives to patients and how patients responded to those directives. Author's analysis of encounters between patients and family physicians indicated that women and men physicians issued their directives in dramatically different ways, and that their alternative formulations had consequences for patients' responses. Some directives were more likely than others to elicit compliant responses, and women physicians employed these more often than men did. **Fochsen, et al. (2006)** gave an explanation to explore health care providers' experiences and perceptions of their encounters with male and female patients in a rural district in India with special reference to tuberculosis (TB) care. Findings reveal that doctors adopted an authoritarian as well as a consumerist approach in the medical encounter, indicating that power imbalances in the doctor-patient relationship is negotiable and subject to change. Gender was identified as an influencing factor of the doctor's dominance. This seemed to be especially important for female patients, whose voices were not heard in the medical encounter. The doctor-patient relationship and the medical consultation are important resources for the health work of people living with chronic illness. Liza McCoy, (2005) examined physician-based outpatient health care from the standpoint of women and men who live with HIV in conditions of economic and social marginality. Using the approach of institutional ethnography, she offered a close reading of patients' descriptions of what they considered good doctoring. Areas of best practice that enhanced access to health care examined here included doctors' interactional styles, ways of providing treatment options and treatment information, and ways of addressing the specific needs and life circumstances of patients living in poverty and social marginality. The introduction of information and communication technology (ICT) into the patient-doctor relationship represents a significant change in modern health care. **Moore et al. (2004)** took a community sample of 1106 adults and examined to assess the impact of the doctor-patient relationship on participants' avoidance of treatment for a recognized medical or psychological problem. Of five aspects of participants' previous experience with their physicians, all but waiting time predicted participants' self-reported treatment avoidance. In two logistic regression models participants who felt their physicians listened more to their

concerns were less likely to avoid treatment for both medical and psychological problems suggested that patients' perceptions of how they were treated by physicians.

Broom (2005) explained that in the context of health service delivery, de-professionalization denotes a trend towards a demystification of medical expertise and increasingly skepticism about health professionals, suggesting a decline in the power and status of the medical profession. This process has been linked to increasing consumerism, the rise of complementary medicine and the emergence of the Internet. According to Andreassen, et al. (2006), communication via computers, e-mediated communication was affecting the context of patient-doctor interaction, touching core elements of the relationship. Broom (2005), explored the complex effects and contradictory roles of the Internet as a source of empowerment and control, and as a site of 'risk management.' However, it was also clear that some medical specialists viewed Internet-informed patients as a challenge to their power within medical encounters and, as a result, employed disciplinary strategies that reinforced traditional patient roles and alienated patients who use the Internet. Nwosu and Cox (2000) presented the results of a study of 300 randomly selected obstetricians and gynecologists in the United Kingdom to assess their perception of the effect of Internet usage by patients on the doctor-patient relationship. Results showed that respondents accepted that the Internet might lead to patients being better informed than themselves, with 40 per cent feeling that this might damage the doctor-patient relationship. Most respondents think all doctors should be Internet trained, but only a minority had training programmes in their hospitals. Kivits (2006) investigated how individuals' use of the Internet for finding health information may affect the relationship between health professionals and patients. According to policy makers, telemedicine offers huge opportunities to improve the quality and accessibility of health services. This mediation was explored through Mort et al. (2003), ethnography of a U.K. tele-dermatology clinic. Diagnostic image transfer enabled medicine at a distance, as patients were removed from knowledge generation by concentrating their identities into images.

A high-value doctor-patient relationship is based on a set of parameters which include the interpersonal relationship between the patient and the doctor. Kirshner (2003), based on the Primary Care Assessment Survey model, stated that measures of the interpersonal relationship were associated with communication, interpersonal care, contextual knowledge

of the patient, and trust. Despite the proven value of the doctor-patient relationship, current trends indicate that the quality of these relationships is on the decline. The advent of communication and information technologies has greatly affected the way in which health care is delivered and the relationship between doctors and patients. Hart et. al. (2003) assessed hospice patients' attitudes regarding the discussion of spiritual issues with their physicians. They conducted in-depth interviews using open-ended questions on living with illness, spirituality and religion, and physician-patient relationships. The dominant themes identified were; (1) treating the whole person, (2) treating with sensitivity, (3) favorable attitudes toward religious or spiritual discussions with doctors, and (4) no 'preaching.' Their findings suggested that patients did not expect physicians to be their primary spiritual advisors; however, physicians should be aware of and comfortable communicating with patients about religious or spiritual issues. Besides specific technical skills, successful encounters with patients require an understanding of the many ways in which patients may express themselves. This qualitative study by Hellstrom et al. (1998) reported on the clinical experiences of doctors when meeting patients with fibromyalgia (FM). Ten strategically chosen rheumatologists and ten GPs in central Sweden were interviewed. The analyses indicated that doctors tried to comply with the wishes and demands of patients, and at the same time avoided perceptions of personal frustration. As per Carlsen et al. (2008) general practitioners (GPs) who were positive toward shared decision making referred less to secondary care. Study concluded that congruence of attitudes toward shared decision making between GPs and patients influenced referral decisions, indicating that matching attitudes may enhance the effort to solve the medical problem through doctor-patient interaction. Fox et al. (2009) stated that work-related pressures and susceptibility to health problems mean that many general practitioners (GPs) will, at some stage, experience the role of patient. The findings highlight the relationship between empathy and empowerment and explore the role of self-disclosure of GP status by GPs in consultations. They made suggestions as to how empathy in doctor—patient relationships can be developed through consideration of power and status as well as through interaction with patients from similar backgrounds. Caccavo(2000), tried thirty audio taped and transcribed general practice consultations which were used to develop a classification scheme to code the content of doctor—patient communication in primary care. Open coding was used to

identify subject matter discussed by general practitioners in consultations featuring commonly presented problems such as respiratory, psychological and musculoskeletal complaints. Arborelius (1992) studied to describe and understand patients' positive and negative experiences of General Practitioners (GPs). Forty-six consultations were videotaped in four primary health care centres in Sweden. Afterwards the patients commented on the recorded consultations. The comments were categorized and analyzed using an exploratory qualitative approach. An image of the 'good' GP emerged that had two major characteristics: that of being a caring human; an individual who listens, understands, and is concerned. At the same time, the good GP acts like an ordinary person and treat the patient as an equal. The personal relationship with the GP also influenced the choice and course of medical interventions. A typical experience of a bad GP was that the GP appeared unreachable as a person. An example is when the patient feels that the GP was not taking his or her symptoms seriously. Another characteristic of the bad GP is failure to communicate to the patient his or her standpoint on issues rose during consultations. Jones et al. (1990) selected randomly one hundred and six general practitioners and interviewed regarding their attitudes to health education in primary care. There was a high level of motivation amongst general practitioners towards health education of their patients and yet honesty about the difficulties they encountered in carrying this out.

Cocksedge and May (2005), conducted a study to understand family doctors' constructs of long-term therapeutic relationships with patients in primary care. Participants laid emphasis on personal and continuing relationships with patients who had diffuse needs connected with the experience of complex and chronic problems, and their accounts intimately connected life events with health status. Silber (1980) stated that Doctors get in touch with their adolescent patients on many different levels and with varying degrees of intensity. The fact is that any interpersonal experience contains a moral element that acts as an ethical dimension to the physician-adolescent patient relationship. Shaw (2004) used information from research into the phenomenon of 'revolving-door' psychiatric patients, and explored general practitioners' perceptions of difficult patients and the consequences for patient management. He presented the evidence of medical irritation with patients from interview data and explored the rationalizations for the way in which patients were subsequently managed. In line with previous studies, the author argued that the construction of patients as

difficult and the subsequent dynamics of exclusion lie in the breakdown of the normal doctor-patient relationship coupled with the doctor's need to get on with the day's workload. Perloff et. al. (2006) presented an integrative perspective on the role that doctor-patient communication and cultural competency training in health care disparities. Communication between minority patients and physicians is characterized by doctors' biased expectations, patients' perceptions of discrimination, linguistic asymmetry, and self-fulfilling prophecy spirals. Cultural competency training, which had been put forth as a remedy, was itself a complex construct and methodological variations in cultural competency research made it difficult to reach simple conclusions about its effects. Werner and Kirsti Malterud, (2005), in their study explored how doctors can help patients transform vulnerability into strength, instead of increasing a feeling of disempowerment. The authors analyzed their findings based on qualitative interviews with ten women with chronic pain, comparing the reported negative consultation experiences with the beneficial effects of good treatment experiences, in order to identify potentials for change. The blame was then put on the medical discipline instead of the individual patient who presented bodily symptoms or revealed help-seeking behaviour that did not fit with biomedical expectations of what illness is and how it should be performed. The authors concluded by telling that although doctors might feel helpless or puzzled in the consultation, they must take the responsibility for turning the consultation into a space for empowerment of the patient.

Benedetti (2002), stated clinicians have long known that context was important in any medical treatment and that the words and attitudes of doctors and nurses could have great impact on the patient. There was experimental evidence indicating that the medical context influenced specific neural systems. Because the placebo effect was a context effect, its study had been useful in clarifying that complex issue. Moreover, a placebo treatment was capable of affecting many brain regions in depressed patients. Author stated the factors that lead to a neurobiological understanding of the events occurring in the brain during the interaction between the therapist and his or her patient.

Gao (2009), expressed that the racial and ethnic disparities existed in both incidence and stage detection of colorectal cancer (CRC). Authors hypothesized that cultural practices (i.e., communication norms and expectations) influence patients' and their physicians' understanding and talk about CRC screening. Authors found that interpersonal relationship

themes such as power distance, trust, directness/ indirectness, and an ability to listen, as well as personal health beliefs, led to patient effective communication. In addition, they found that in discordant physician-patient interactions (when each is from a different ethnic group), physicians did not solicit or address cultural barriers to CRC screening and patients did not volunteer culture-related concerns regarding CRC screening.

The doctor-patient bond is one of the most privileged relations. The only relation, which stands above this, is the mother-child bond. A patient to a doctor is at once a dependent child, an eager student, a friend and a person needing advice, help, sympathy, understanding and hope (Sharma, 2001). There may be differences in opinion between the doctors and patient in how formal or casual the doctor-patient relationship should be. For instance, according to a Scottish study (McKinstry B. 1990), patients want to be addressed by their first name more often than is currently the case.

The above research studies enrich us with lot of knowledge and practicalities with respect to Doctor-Patient bond, which is sacrosanct beyond any boundaries. Analysis of above literature corroborates the fact that not many studies have been conducted to understand the loyalty and comfort factor of the patients in 'Doctor- Patient bond.' India is a multi ethnic society with diverse demographic profile comprising of extremely rich, poor and different community and religions. Majority of the population comes from lower middleclass strata. A micro study in the Indian context will throw abundant light in the field of knowledge to enhance the Doctor- Patient bond as not many studies have been conducted so far.

Statement of the Problem

Though the doctor patient relationship has become more sophisticated, it is mired with certain intervening variables. The intervening variables such as gender, educational qualification and employment status are the greatest influencers in affecting the doctor-patient bond, that in turn leads to communication gap more so of the psychological nature. The communication gap between the doctors and patients mars the emotional bond between them which is detrimental to the health of the society. Taking in to view this perspective, the study takes in to account the research question, 'Is the Doctor-Patient bond emerging to be just business oriented and mechanical by superseding emotional content in it?'

With a view to understanding research gap, and also to find the answer to the research question the micro study was taken up with the following objectives.

Objectives

The micro study, DNA of Doctor Patient Relationship had the following objectives to fulfill:

1. To know the influence of gender in doctor-patient relationship,
2. To measure the influence of employment status on different variables of doctor-patient relationship,
3. To understand the influence of qualification on different variables of doctor-patient relationship,
4. To evaluate the disparity between the responses of doctors and patients on various parameters of Doctor-patient affiliation, and
5. To observe whether there is any discrimination by the doctors of different specialties with respect to different patients handled by them.

Methodology and Sample Design:

The study is a micro study and has been confined to Mangalore region of Dakshina Kannada District of Karnataka state, India. Mangalore has five medical college hospitals in private sector. As a result there is quite a large pool of specialist doctors residing in this region. Patient population is also quite alarming as they float from whole of Karnataka, Goa, and northern Kerala, to avail of improved health care facility. To fulfill the objectives of this study, the patients of Ten different disciplines, viz., Medicine, Surgery, Radiology,

Dermatology, ENT, Gynecology, Orthopedics, Psychiatry, Ophthalmology and Cardiology were chosen for the administering the Likert's 5-point rated structured questionnaire and also for interaction. Stratified proportional sampling technique was adopted and 20 patients from each of the above category were selected from a tertiary teaching hospital leading to the sample size of 202. The survey was conducted for a period of three weeks. The tertiary teaching hospital on an average receives about 2000 patients in three weeks time (as per the data provided by the hospital administration office). Thus the sample size comprised 10 per cent of the population. The study was confined to the patients of tertiary teaching hospital. To identify the opinion of the doctors to effectuate the Doctor Patient Relationship, a structured questionnaire was administered to about 50 specialist doctors in the chosen disciplines of the study, who treated the selected respondent patients from the same hospital that comprised 25 per cent of the patient sample chosen for the study. A face to face discussion was held with them to understand their stance to enhance Doctor Patient Relationship. The data were subjected to percentages, t-test, ANOVA and chi square test.

Findings and Discussion

1. Influence of gender on different variables: With a view to understand the differences between the responses of male and female patients of all the ten specialist doctors, t-test was applied on twenty one variables of doctor-patient bond from the angle of patients. The responses were collected through the structured questionnaire on Likert's 5-point rating scale.

Table 1: Responses and Gender [SA=5, A=4, N=3, DA=2, SDA=1]

| | Gender | N | Mean | Std. Deviation | P value |
|--|--------|-----|--------|----------------|---------|
| Spends enough time in educating/disease | Male | 77 | 4.3506 | .83927 | NS |
| | Female | 125 | 4.3600 | .71165 | |
| Equal TT to all irrespective of background | Male | 77 | 4.2727 | .75457 | NS |
| | Female | 125 | 4.2240 | .59384 | |
| Comfortable if DR of same gender | Male | 77 | 2.3377 | 1.33387 | 0.001 |
| | Female | 125 | 3.0560 | 1.32777 | |
| Dr is caring and concerned | Male | 77 | 4.3247 | .52419 | NS |
| | Female | 125 | 4.3680 | .51644 | |

| | Gender | N | Mean | Std. Deviation | P value |
|--|--------|-----|--------|----------------|---------|
| Personal relationship | Male | 77 | 4.0130 | .91037 | 0.001 |
| | Female | 125 | 4.3680 | .62908 | |
| Feel strong and confident after treatment | Male | 77 | 4.4286 | .69639 | 0.026 |
| | Female | 125 | 4.6240 | .53376 | |
| Dr has good rapport with pts | Male | 77 | 4.1429 | .86928 | NS |
| | Female | 125 | 4.2320 | .64927 | |
| Power and status influence | Male | 77 | 2.2338 | 1.16863 | NS |
| | Female | 125 | 2.0560 | .84533 | |
| Communication enabled to understand my health | Male | 77 | 4.1039 | .86731 | NS |
| | Female | 125 | 4.2160 | .51719 | |
| Telecommunication to contact Dr | Male | 77 | 4.1169 | .68775 | NS |
| | Female | 125 | 4.1600 | .67680 | |
| Long Waiting time as a reason to change Dr | Male | 77 | 1.7273 | .96840 | NS |
| | Female | 125 | 1.7120 | 1.01454 | |
| Do not stick to one Dr | Male | 77 | 1.7662 | 1.13435 | 0.020 |
| | Female | 125 | 1.4480 | .79774 | |
| Pt satisfaction is important Dr/Pt relationship | Male | 77 | 4.4416 | .59590 | |
| | Female | 125 | 4.3680 | .53183 | |
| Dr's skill is important in Dr/Pt relationship | Male | 77 | 4.4026 | .49364 | NS |
| | Female | 125 | 4.4640 | .53195 | |
| I should be allowed to ask questions | Male | 77 | 4.5325 | .59790 | NS |
| | Female | 125 | 4.5120 | .50187 | |
| Dr should not mind if I request second opinion | Male | 77 | 3.8701 | .78389 | NS |
| | Female | 125 | 3.9360 | .84952 | |
| Irrespective of affordability I should be offered best treatment | Male | 77 | 4.4026 | .59071 | NS |
| | Female | 125 | 4.3520 | .51205 | |
| Dr discusses different options | Male | 77 | 4.1299 | .90830 | NS |
| | Female | 125 | 4.2960 | .53917 | |
| Dr encourages pt to learn from internet | Male | 77 | 1.3247 | .61647 | NS |
| | Female | 125 | 1.4240 | .90039 | |
| Dr does not mind if I communicate off regular visits | Male | 77 | 3.8961 | .92600 | NS |
| | Female | 125 | 4.0640 | .75929 | |
| Dr discusses seriousness of disease | Male | 77 | 4.1948 | .82779 | NS |
| | Female | 125 | 4.2400 | .72290 | |

Interpretation of comfort factor with the doctor belonging to the same gender: Table 1 shows that there is not much difference between the responses given by male and female patients with respect to different variables as the P values are more than 0.05. However, there is difference between the responses given by male and female patients with respect to comfort factor of the patients if the doctor is of the same gender, i.e. female patients are more comfortable with lady doctors as the mean value of their response is 3.056 ± 1.327 and male patients prefer gent doctors with their mean score of 2.337 ± 1.333 . The male patients disagree to the comfort factor with the doctor belonging to the same gender compared to the female patients as their mean score $2.337 < 3.056$ with their respective standard deviation $1.333 > 1.327$ which also shows that there is variability in the mean value of Males' response with less reliability. T-test shows that there is high significant difference between the responses of male and female patients with respect to comfort factor with the doctor, as $P=0.001 < 0.05$. This shows that female patients are more particular about the doctor belonging to the same gender.

Interpretation of feeling of strength and confidence after the treatment: There is also a significant difference between the responses of male and female patients with respect to 'feeling of strength and confidence after the treatment' as $P=0.026 < 0.05$ with their mean value on the higher side i.e. male patients = 4.428 ± 0.629 and the female patients = 4.624 ± 0.533 .

Interpretation on relationship with treating doctor: There is a significant difference with respect to gender in responding to relationship with the treating doctor. Female patients strongly feel that 'personal relationship with the treating doctor counts a lot in taking treatment' as $P= 0.001 < 0.05$ with both male and female patients' mean score on the higher side i.e. 4.013 and 4.368 respectively.

Interpretation on the loyalty factor of the patients: It was found out that the patients do not stick to one doctor for the treatment of the same disease, as t-test shows statistical significance ($P=0.02 < 0.05$). Male patients might migrate to different doctors more than the female patients even though their mean score is on the lower side i.e. 1.766 with a high standard deviation of 1.134 which shows a high deviation from the mean score. A similar study by Pandya (1995) stated that it is unethical even for a doctor to take over a patient already under the care of another doctor without a note of referral.

Table 1 shows the results of t-test on different variables of doctor patient bond in connection with gender.

2. Influence of employment status on different variables: With a view to understanding the differences between the responses of employed and non-employed patients of all the ten specialist doctors, t-test was applied on twenty one variables of doctor-patient relationship from the angle of patients. The responses were collected through the structures questionnaire on Likert's 5-point rating scale.

Table 2: Employment status and responses [SA=5, A=4, N=3, DA=2, SDA=1]

| | Employment status | N | Mean | Std. Deviation | P value |
|--|-------------------|-----|--------|----------------|---------|
| Spends enough time in educating/ disease | Employed | 92 | 4.3261 | .82687 | NS |
| | Unemployed | 110 | 4.3818 | .70362 | |
| Equal TT to all irrespective of background | Employed | 92 | 4.3370 | .57945 | NS |
| | Unemployed | 110 | 4.1636 | .71070 | |
| Comfortable if DR of same gender | Employed | 92 | 2.5870 | 1.36802 | NS |
| | Unemployed | 110 | 2.9455 | 1.36022 | |
| Dr is caring and concerned | Employed | 92 | 4.3804 | .48815 | N |
| | Unemployed | 110 | 4.3273 | .54367 | |
| Personal relationship | Employed | 92 | 4.2500 | .73567 | NS |
| | Unemployed | 110 | 4.2182 | .79427 | |

| | Employment status | N | Mean | Std. Deviation | P value |
|--|-------------------|-----|--------|----------------|---------|
| Feel strong and confident after treatment | Employed | 92 | 4.5652 | .63427 | NS |
| | Unemployed | 110 | 4.5364 | .58541 | |
| Dr has good rapport with pts | Employed | 92 | 4.3152 | .72520 | 0.034 |
| | Unemployed | 110 | 4.1000 | .74131 | |
| Power and status influence | Employed | 92 | 2.1413 | 1.10525 | NS |
| | Unemployed | 110 | 2.1091 | .87099 | |
| Communication enabled to understand and my health | Employed | 92 | 4.2935 | .73437 | 0.024 |
| | Unemployed | 110 | 4.0727 | .60136 | |
| Telecommunication to contact Dr | Employed | 92 | 4.2283 | .68103 | NS |
| | Unemployed | 110 | 4.0727 | .67333 | |
| Long Waiting time as a reason to change Dr | Employed | 92 | 1.7391 | 1.04692 | NS |
| | Unemployed | 110 | 1.7000 | .95351 | |
| Do not stick to one Dr | Employed | 92 | 1.6413 | 1.04389 | NS |
| | Unemployed | 110 | 1.5091 | .86465 | |
| Pt satisfaction is important in Dr/Pt relationship | Employed | 92 | 4.4457 | .56187 | NS |
| | Unemployed | 110 | 4.3545 | .55167 | |
| Dr's skill is important in Dr/Pt relationship | Employed | 92 | 4.5000 | .50274 | NS |
| | Unemployed | 110 | 4.3909 | .52629 | |
| I should be allowed to ask questions | Employed | 92 | 4.5543 | .52129 | NS |
| | Unemployed | 110 | 4.4909 | .55431 | |
| Dr should not mind if I request second opinion | Employed | 92 | 4.0435 | .73996 | NS |
| | Unemployed | 110 | 3.8000 | .87577 | |
| Irrespective of affordability I should be offered best treatment | Employed | 92 | 4.5217 | .50226 | 0.001 |
| | Unemployed | 110 | 4.2455 | .54497 | |
| Dr discusses different options | Employed | 92 | 4.3261 | .68112 | NS |
| | Unemployed | 110 | 4.1545 | .71915 | |
| Dr encourages pt to learn from internet | Employed | 92 | 1.3804 | .79618 | NS |
| | Unemployed | 110 | 1.3909 | .81382 | |
| Dr does not mind if I communicate off regular visits | Employed | 92 | 4.0870 | .80728 | NS |
| | Unemployed | 110 | 3.9273 | .84277 | |
| Dr discusses seriousness of disease | Employed | 92 | 4.3370 | .71525 | 0.051 |
| | Unemployed | 110 | 4.1273 | .79111 | |

Interpretation: Table 2 shows that there is not much difference between the responses given by employed and non-employed patients with respect to different variables as the P values are more than 0.05. However, employment status has some impact on patients with respect to giving their opinion on doctor having a good rapport with the patients, i.e. employed patients are more happy as their doctors have a good rapport with the patients and open communication has enabled them to understand their health conditions. The mean values of their responses are 4.315 ± 0.725 and 4.293 ± 0.734 respectively. The employed patients also agree that the doctor discusses the seriousness of disease compared to the non-employed patients as their mean score $4.337 > 4.127$ with their respective standard deviation $0.715 < 0.791$ which also shows that there is less variability in the mean value of employed patients' response increasing the reliability. Employed patients expect more from the doctors that they have expressed strongly that irrespective of their affordability they should be offered the best treatment as the mean value

of their response is very high (4.521 ± 0.502). T-test shows that employment status of the patients has played a role with respect to, 1) doctor having a good rapport with the patients ($P=0.034 < 0.05$), 2) open communication with the doctors ($P=0.024 < 0.05$), 3) irrespective of affordability patients should be offered the best treatment ($P=0.001 < 0.05$).

Table 2 shows the results of t-test on different variables of doctor patient relationship in connection with employment status.

3. Influence of qualification on different variables: With a view to understanding the differences between the responses of patients of educational standards of non SSLC and above SSLC (Below 10th and above 10th) of all the ten specialist doctors, t-test was applied on twenty one variables of doctor-patient relationship from the angle of patients. The responses were collected through the structures questionnaire on Likert's 5-point rating scale.

Table 3: Qualification and responses [SA=5, A=4, N=3, DA=2, SDA=1]

| Variables | Qualification | N | Mean | Std. Deviation | P value |
|---|---------------|-----|--------|----------------|---------|
| Feel strong and confident after treatment | Employed | 92 | 4.5652 | .63427 | NS |
| | Unemployed | 110 | 4.5364 | .58541 | |
| Spends enough time in educating/disease | Non-SSLC | 67 | 4.4627 | .65893 | NS |
| | SSLC or above | 135 | 4.3037 | .80367 | |
| Equal treatment to all irrespective of background | Non-SSLC | 67 | 4.2836 | .51657 | NS |
| | SSLC or above | 135 | 4.2222 | .71931 | |
| Comfortable if DR of same gender | Non-SSLC | 67 | 2.7313 | 1.32095 | NS |
| | SSLC or above | 135 | 2.8074 | 1.40094 | |
| Dr is caring and concerned | Non-SSLC | 67 | 4.3284 | .50417 | NS |
| | SSLC or above | 135 | 4.3630 | .52699 | |
| Personal relationship | Non-SSLC | 67 | 4.0448 | .84267 | 0.014 |
| | SSLC or above | 135 | 4.3259 | .71058 | |
| Feel strong and confident after treatment | Non-SSLC | 67 | 4.5075 | .58706 | NS |
| | SSLC or above | 135 | 4.5704 | .61742 | |

| Variables | Qualification | N | Mean | Std. Deviation | P value |
|--|---------------|-----|--------|----------------|---------|
| Dr has good rapport with pts | Non-SSLC | 67 | 4.2836 | .64681 | NS |
| | SSLC or above | 135 | 4.1556 | .78099 | |
| Power and status influence | Non-SSLC | 67 | 2.0896 | 1.02590 | NS |
| | SSLC or above | 135 | 2.1407 | .96323 | |
| Communication enabled to understand my health | Non-SSLC | 67 | 4.0149 | .66270 | 0.018 |
| | SSLC or above | 135 | 4.2519 | .66600 | |
| Telecommunication to contact Dr | Non-SSLC | 67 | 3.8955 | .74130 | 0.001 |
| | SSLC or above | 135 | 4.2667 | .61329 | |
| Long Waiting time as a reason to change Dr | Non-SSLC | 67 | 1.6567 | .91374 | NS |
| | SSLC or above | 135 | 1.7481 | 1.03461 | |
| Do not stick to one Dr | Non-SSLC | 67 | 1.7313 | 1.09520 | NS |
| | SSLC or above | 135 | 1.4889 | .86272 | |
| Pt satisfaction is important in Dr/Pt relationship | Non-SSLC | 67 | 4.3433 | .56548 | NS |
| | SSLC or above | 135 | 4.4222 | .55270 | |
| Dr's skill is important in Dr/Pt relationship | Non-SSLC | 67 | 4.4627 | .55945 | NS |
| | SSLC or above | 135 | 4.4296 | .49687 | |
| I should be allowed to ask questions | Non-SSLC | 67 | 4.3582 | .56946 | 0.002 |
| | SSLC or above | 135 | 4.6000 | .50667 | |
| Dr should not mind if I request second opinion | Non-SSLC | 67 | 3.8358 | .84561 | NS |
| | SSLC or above | 135 | 3.9481 | .81331 | |
| Irrespective of affordability I should be offered best treatment | Non-SSLC | 67 | 4.3582 | .51350 | NS |
| | SSLC or above | 135 | 4.3778 | .55807 | |
| Dr discusses different options | Non-SSLC | 67 | 4.1791 | .79631 | NS |
| | SSLC or above | 135 | 4.2593 | .65748 | |
| Dr encourages pt to learn from internet | Non-SSLC | 67 | 1.3433 | .59167 | NS |
| | SSLC or above | 135 | 1.4074 | .89189 | |
| Dr does not mind if I communicate off regular visits | Non-SSLC | 67 | 4.1194 | .64013 | NS |
| | SSLC or above | 135 | 3.9407 | .90408 | |
| Dr discusses seriousness of disease | Non-SSLC | 67 | 4.2239 | .71395 | NS |
| | SSLC or above | 135 | 4.2222 | .78860 | |

Interpretation: Table 3 shows that there is not much difference between the responses given based on educational qualification with respect to different variables as the P values are more than 0.05. However, education has made some impact statistically with respect to patients giving their opinion on ‘personal relationship with the treating doctor counts a lot in taking treatment’ as $P= 0.014 < 0.05$ with both non-SSLC and SSLC or above patients’ mean score on the higher side i.e. 4.044 and 4.325 respectively.

More educated patients (SSLC or above) are happy as their doctors have a good rapport with the patients and communication and health care facilities have enabled them to understand their health conditions. They also feel free to contact the doctor over telephone. The mean values of their responses are 4.0149 ± 0.662 and 4.2519 ± 0.666 respectively. Educated patients expectation is more from the doctors where they feel that they should be allowed to ask clarifications from the doctors regarding the treatment as well as the chances of recovery (4.600 ± 0.506) with t-test showing the significance ($P=0.002 < 0.05$). T-test shows that education of the patients has played a role with respect to communication and health care facilities ($P=0.018 < 0.05$) and enabled them to contact the doctors over telephone ($P=0.001 < 0.05$).

Table 3 shows the results of t-test on different variables of doctor patient relationship in connection with educational qualification of patients.

4. Verification of differences between the responses of Doctor and patient:

With a view to understanding the differences in the responses given by doctors and patients t-test were applied and the differences in the responses of doctors and the patients are depicted in Table 4. With respect to certain variables such as Personal relationship with the treating doctor ($P=0.003 < 0.05$), Feel strong and confident after treatment ($P=0.000 < 0.05$), Communication enabled to understand health care facilities to know health conditions better ($P=0.000 < 0.05$), Telecommunication to contact doctor ($P=0.008 < 0.05$), Long Waiting time as a reason to change doctor ($P=0.021 < 0.05$), Do not stick to one doctor ($P=0.000 < 0.05$), Patient satisfaction is important for doctor relationship ($P=0.000 < 0.05$), should be allowed to ask questions ($P=0.000 < 0.05$), Irrespective of affordability I should be offered best treatment and the factor encourages to learn from the net ($P=0.000 < 0.05$), patients contact outside regular visits ($P=0.004 < 0.05$).

Table 4: T-test with descriptive statistics between the doctors and patients with respect to variables of doctor patient relationship

| Groups | Qualification | N | Mean | Std. Deviation | P value |
|---|---------------|-----|--------|----------------|---------|
| Spends enough time in educating/disease | Patients | 202 | 4.3564 | .76078 | .641 |
| | Doctors | 50 | 4.3000 | .78895 | |
| Equal Treatment to all irrespective of background | Patients | 202 | 4.2426 | .65833 | .494 |
| | Doctors | 50 | 4.3200 | .91339 | |
| Comfortable if DR of same gender | Patients | 202 | 2.7822 | 1.37210 | .055 |
| | Doctors | 50 | 3.1800 | .98333 | |
| Dr is caring and concerned | Patients | 202 | 4.3515 | .51853 | .075 |
| | Doctors | 50 | 4.2000 | .60609 | |
| Personal relationship | Patients | 202 | 4.2327 | .76641 | .003 |
| | Doctors | 50 | 3.8400 | 1.09470 | |
| Feel strong and confident after treatment | Patients | 202 | 4.5495 | .60678 | .000 |
| | Doctors | 50 | 3.8000 | .92582 | |

| Groups | Qualification | N | Mean | Std. Deviation | P value |
|--|---------------|-----|--------|----------------|---------|
| Dr has good rapport with pts | Patients | 202 | 4.1980 | .74004 | .032 |
| | Doctors | 50 | 4.4400 | .57711 | |
| Power and status influence | Patients | 202 | 2.1238 | .98219 | .000 |
| | Doctors | 50 | 3.4800 | 1.38858 | |
| Communication enabled to understand my health | Patients | 202 | 4.1733 | .67262 | .008 |
| | Doctors | 50 | 3.8800 | .77301 | |
| Telecommunication to contact Dr | Patients | 202 | 4.1436 | .67961 | .021 |
| | Doctors | 50 | 3.8800 | .84853 | |
| Long Waiting time as a reason to change Dr | Patients | 202 | 1.7178 | .99480 | .000 |
| | Doctors | 50 | 3.4200 | 1.07076 | |
| Do not stick to one Dr | Patients | 202 | 1.5693 | .95033 | .000 |
| | Doctors | 50 | 3.8400 | .88893 | |
| Pt satisfaction is important in Dr/Pt relationship | Patients | 202 | 4.3960 | .55681 | .005 |
| | Doctors | 50 | 4.1400 | .63920 | |
| Dr's skill is important in Dr/Pt relationship | Patients | 202 | 4.4406 | .51730 | .000 |
| | Doctors | 50 | 3.5200 | 1.16479 | |
| I should be allowed to ask questions | Patients | 202 | 4.5198 | .53912 | .000 |
| | Doctors | 50 | 3.8400 | .84177 | |
| Dr should not mind if request second opinion | Patients | 202 | 3.9109 | .82376 | .579 |
| | Doctors | 50 | 3.9800 | .62237 | |
| Irrespective of affordability should be offered best treatment | Patients | 202 | 4.3713 | .54249 | .000 |
| | Doctors | 50 | 3.9000 | .93131 | |
| Encourage to learn from net | Patients | 202 | 1.3861 | .80385 | .000 |
| | Doctors | 50 | 2.7200 | 1.08872 | |
| Contact outside regular visits | Patients | 202 | 4.0000 | .82859 | .004 |
| | Doctors | 50 | 3.6200 | .85452 | |
| Discuss seriousness of disease | Patients | 202 | 4.2228 | .76287 | .125 |
| | Doctors | 50 | 4.0400 | .69869 | |

5. Differences between doctors of Ten specialities in giving equal treatment to their patients: ANOVA test was used to find out if there is any difference between the doctors of ten different specialities viz., medicine, surgery,

ophthalmology, ENT, orthopedics, dermatology, Gynecology, radiology, cardiology, and psychiatry. The results are depicted in Table 6, followed by the descriptive statistics in table 5. $F = 0.837$ $P = 0.587 > 0.05$ which shows that there is no

significant difference between the specialists giving equal treatment to the patients. This finding supports the research by Sharma (2001) that the doctor needs to pay full attention

towards patient’s symptoms, his story and above all his anguish and sufferings.

Table 5: Descriptive statistics on doctors of Ten specialties giving equal treatment to all the patients irrespective of their background

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---------------|----|--------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| medicine | 5 | 4.0000 | 1.73205 | .77460 | 1.8494 | 6.1506 | 1.00 | 5.00 |
| surgery | 5 | 4.6000 | .54772 | .24495 | 3.9199 | 5.2801 | 4.00 | 5.00 |
| ophthalmology | 5 | 4.6000 | .54772 | .24495 | 3.9199 | 5.2801 | 4.00 | 5.00 |
| ENT | 5 | 4.8000 | .44721 | .20000 | 4.2447 | 5.3553 | 4.00 | 5.00 |
| orthopedics | 5 | 4.2000 | .83666 | .37417 | 3.1611 | 5.2389 | 3.00 | 5.00 |
| dermatology | 5 | 4.2000 | .83666 | .37417 | 3.1611 | 5.2389 | 3.00 | 5.00 |
| Gynecology | 5 | 4.6000 | .54772 | .24495 | 3.9199 | 5.2801 | 4.00 | 5.00 |
| radiology | 5 | 4.0000 | .00000 | .00000 | 4.0000 | 4.0000 | 4.00 | 4.00 |
| cardiology | 5 | 3.6000 | 1.51658 | .67823 | 1.7169 | 5.4831 | 1.00 | 5.00 |
| psychiatry | 5 | 4.6000 | .89443 | .40000 | 3.4894 | 5.7106 | 3.00 | 5.00 |
| Total | 50 | 4.3200 | .91339 | .12917 | 4.0604 | 4.5796 | 1.00 | 5.00 |

Table 6: ANOVA of doctors of Ten specialties giving equal treatment to all the patients irrespective of their background

| | Sum of Squares | df | Mean Square | F | Sig |
|----------------|----------------|----|-------------|------|------|
| Between Groups | 6.480 | 9 | .720 | .837 | .587 |
| Within Groups | 34.400 | 40 | .860 | | |
| Total | 40.880 | 49 | | | |

Inferences from the findings

Inference 1: Indian society is male dominated and women have reservations and limitations due to subtle confinements of the society. The mindset that female feels comfortable with a lady is strongly rooted in Indian society and has no significance with the competence of the doctor.

Inference 2: The patients’ feeling of strength and confidence is due to the fact that doctors have strong rapport with the patients and they spend time in educating the disease also by giving equal treatment to all the patients. The doctors under

study are more caring and they fill in confidence in to the patients. ‘Placebo Effect’ also might have played a major role here as the very personality of the doctor itself might instill confidence and strength in to the patients, may not be necessarily with treatment.

Inference 3: It is natural that good relationship with the doctor yields better understanding and moral support for the patients. These days with the advancement in medical diagnosis and treatment it becomes essential for the patients to have a good relationship with the doctor so as to make

them withstand the agony of complicated treatment (in case of complicated disease conditions) lest they feel lost in the ocean of complex cycle of diagnosis-treatment-follow up.

Inference 4: The reason for patients not sticking to the same doctor could be due to lack of trust factor with the same doctor, long waiting time with a doctor (mean for male patients = 1.727 ± 0.968 and female patients = 1.712 ± 1.014) as the standard deviation of scores is more than 50 per cent of the mean value which shows that the patients are agreeing that the long waiting time is the reason to change the doctor. The loyalty factor of the patients is declining with the increase in the supply of doctors on the market accompanied by the wide choice of treatment.

Inference 5: Working people are more exposed to outside people and they might be better in building a rapport with the outsiders through good communication skill. Thus, the statistical significance between the responses of patients based on the employment status may not be due to the doctors' differential treatment for the patients based on the employment status but due to the capacity of the employed patients to build a better rapport with the doctors and their ability to clarify the doubts with the doctors. Employment status might have given them the confidence and the financial strength to expect a better treatment irrespective of their affordability.

Inference 6: Education levels of the people plays a major role in understanding the disease better. Educated people are more exposed to knowledge about internet and access to health care facilities due to awareness. They might be better in building a rapport with the outsiders through good communication skill, many times level of education and communication skill are not directly related though. Thus, the statistical significance between the responses of patients based on the education level may not be due to the doctors' differential treatment for the patients based on the educational status but due to the capacity of the more educated patients to speak well with the doctors and clarify the doubts. Nevertheless, level of education might have given the patients a push with confidence to understand the consequences of the treatment better and the doctors also might have spared more time with them explaining the disease even though their mean value is less than the non SSLC patients ($4.303 < 4.462$) where the standard deviation of patients with SSLC and above is more than the non SSLC patients ($0.803 > 0.658$), which

shows that even though doctor spends more time with them in explaining about the disease their expectation is very high.

Inference 7: Even though patients have stressed that the personal relationship matters a lot with the treating doctor, doctors do not agree to this. The medical ethics says that there is no difference between the two human beings (patients) of different cadre, religion and status even with or without personal relationship where relationship matters very little though. Doctors strongly feel that the loyalty factor amongst the patients is declining due to more affordability, long waiting hours with the specific doctor, lack of patience amongst the younger generation, lack of trust and also due to unavoidable circumstances like geographical barriers and time constraints. Both doctors and patients have agreed that the patient satisfaction is an important aspect in doctor-patient relationship. Patients these days have a wide choice of doctors, treatment including alternative medicines which they consider to be harmless and less side effective. The doctor - patient ratio is increasing with more doctors coming in to the market and the corresponding patients' ratio is declining as they have more awareness about the management of common sicknesses such as common cold, fever, headache, vomiting as well as diarrhea even when the diseases are increasing. Therefore the patient delight becomes essential to stick to a same doctor in the long run. Medical field has become so competitive these days as the doctors need to strategize their practice with efficiency, effectiveness, communication skill, listening skill, cost consciousness, and curability of the disease. Therefore doctors themselves have almost disagreed that the doctors' skill cannot be the dominant factor in doctor-patient relationship.

Inference 8: Doctors may have to spend different amounts of time with different types of patients due to the type of the sickness and severity and complications in it. It may be the feeling of some patients that doctors are not paying equal attention to the patients irrespective of their background as the mean value of patients responding to doctors giving equal treatment to the patients is less than the mean value of the doctors responding to the same ($4.242 < 4.320$).

Discussion

The medical profession also has become a big business like any other profession. The doctors also will look in to the affordability and status of the patients to administer the treatment due to the several facts such as expensive nature of the treatment, perennial nature of the treatment and follow

up of the medicines. Doctors have become busy to entertain the patients beyond their regular visits unless called for. Therefore, most of the time the doctor patient bond is restricted to pure medical treatment, rather than to instilling the psychological strength in to the patients. However this is not to say the doctor patient bond is overruling the concept of emotional tie up and becoming just business oriented. Doctor patient bond also depends upon the loyalty and trust exercised by the patients. The patients who trust their doctors to the core create a win-win situation as they will be co-operating with the doctors in connection with the examination, diagnosis and treatment. However many patients move from one specialist to another for second, third and several rounds of opinion which is nothing else but indicates the lack of trust in the specialist doctors, which acts as the major barricade for doctor patient bond.

Conclusion:

Maintaining the trust with the doctors and creating the bond with the patients is all the more important for both patients and doctors as morality of health care system can be protected. Human beings, be it doctors or any other professionals, come with lot of limits. The awareness of the human limitation is vital in instituting the trust and faith between the doctors and patients. The Placebo of Doctor Patient bond is determined by the human face and the human relationship irrespective of the doctor's speciality or the patient's sickness. The more placebo effect the doctor is able to create the more strong will be the bond between them and the patients.

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ICT: Sustainable Development

Shubham Goswami

Abstract

As the world economy begins to recover from one of the worst economic crises in decades along with environment degradation and uneven development of society, Information and Communication Technologies (ICT) is bound to play an increasingly central role in ensuring sustainability. The domain of ICT for sustainability (ICT4S) is still fragmented and fairly unexplored research area. The present paper attempts to understand the negative and positive impacts of these new technologies on the environmental, social and economic dimensions, and how we may use them for moving towards sustainable development.

Key words: *ICT, environmental, social, economic and Sustainable Development*



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Along with the rapid growth of population and industrial output, world has also witnessed uneven development and severe environmental consequences of the chosen development paths. Technology plays critical role in achieving the long-term balance between human development and the natural environment that is essential for sustainable development (Souter et al., 2010). The last decade are characterized by triple threats: the worst economic crisis since the Great Depression, continuing food and fuel price fluctuations, and the effects of climate change. All these issues give raise to concept of sustainable development (SD). United Nation (UN) World Commission on Environment and Development (1987) define sustainable development that satisfies the needs of the present without compromising the ability of future generations to meet their own needs (Brundland, 1987).

It is also widely recognized that new technologies, particularly ICTs, are having a major impact on economic and social

relationships among individuals, communities and nations. Its unique function as a key element of infrastructure for efficient industries and a critical productivity enhancer is crucial for sustaining recovery and laying the foundations for economies that are competitive in the long term. As the world economy begins to recover from one of the worst economic crises in decades, information and communication technologies (ICT) is bound to play an increasingly central role in ensuring economic sustain-ability. Digitalization of economies is fundamental changes affecting the relationship between individual, changing our everyday life (such as: shopping, communications, transportation, enter-tainments, education, level and style of consumption), the business models, the way to think and act in policy and economies. Technology is also developing innovative solutions to diminish other sectors' energy consumption and improve environmental sustain-ability across industries. As far as social sustainability is concerned, ICT enables greater access to basic services by all segments of society and improves the ways these basic services (e.g., education, finance, and healthcare) are provided to citizens.

The interaction and development of information and communication technologies and the need for sustainability, is an emerging but still fairly unexplored research area. The domain of ICT for sustainability (ICT4S) sometime overlap with other discipline research including sustainable HCI (Human Computer Interaction), environmental informatics, greening through IT, and cleanweb. This paper does not stay on the differences between them and uses ICT for Sustainability as a general term. The paper improves our understanding of ICT for sustainability, understanding the positive role of ICT and also present the future challenge in deploying sustainable policies. The present research is an attempt to understand the negative and positive impacts of these new technologies on the environment and how we may use them for moving towards sustainability.

LITERATURE REVIEW

a. Information and Commu-nication Technologies

Information and communication technologies (ICT) is an overarching term for the various digital technologies used for manipulating information, such as computers and mobile phones. While ICT is a quite generic term, in this text this term is used mainly to refer to computers (including equivalent mobile devices), and internet (including the network infrastructure). Internet is a decentralized global computer

network used by billions of users. It supports different services, from serving hypertext documents, file systems, email to voice (VoIP) or television (IPTV). Internet has followed a fast growth trend, reaching in 2012 2.2 billion users worldwide (ITU, 2011).

Mobile phones have become the most widespread technological device in human history in a short time, with more than 5.6 billion subscribers or 70% of the global population (ITU, 2011), and still growing. Mobile phones are getting increasingly used to access internet. Computers are getting smaller and adding mobile connectivity option. ICT is also a focus of interaction design and the human-computer interaction (HCI) tradition. Interaction design is the process of deciding and creating the user oriented qualities of digital artifacts. These interdisciplinary areas of research focus not only in the technology, but in how it is used and its consequences, and they also share a practical stance.

It is widely accepted that new technologies are having major positive and negative impacts on economic and social relationship and, especially, on environment. But, the sustainable development cannot be expanding without global communications and knowledge exchange (MacLean, 2007). Cohen et al. (2000) underlies the presence of digital economy in every important domains of the society and suggests the reconstruction of political agenda, integrating the issues of environmental impact of digital economy.

b. Sustainable Development

Sustainability and Sustainable Development (SD) has its roots in the political discussion including UN Conference on the Human Environment, the Brundtland Commission and the Earth Summit in 1992. World Commission on Environment and Development (1987) define Sustainable Development as the development that satisfies the needs of the present without compromising the ability of future generations to meet their own needs. The key point in this definition is bringing together environmental and humanitarian concerns under the concept of equity (between and within generations). It frames the environmental problems not as something external to human society, social and economic systems.

Valentin & Spangenberg (1999) presented a prism of Sustainability Model which defines four dimensional goals of sustainability: 1) social — representing human capital and aimed at strengthening social coherence and justice, 2) environmental — depicting natural capital and aimed at

safeguarding the environment, 3) economic — representing man-made capital and aimed at satisfying material needs, and 4) institutional — depicting social capital and promoting participation and co-decision making. World Conservation Union (2006) presents three pillar of SD Model considering three dimensions of sustain-ability: economic growth, environmental protection and social progress. Adger and Jordan (2009), SD is underpinned by five principles: 1) to contribute to poverty alleviation, 2) to pursue environmental policy integration, 3) to achieve intra- and inter-generational equity, 4) to ensure public participation in decision-making and 5) to address technological and environmental limits to growth. Sustainability usually comprises three main elements:

1. Economic development – reducing and seeking to eradicate income poverty and enabling continued gains in economic welfare.
2. Social development – reducing and seeking to eradicate other dimensions of poverty, improving the quality of education, health, housing and other aspects of the welfare of

individuals and communities, and enhancing the quality of social interaction, engagement and empowerment.

3. Environmental protection – reducing pollution and other negative impacts on the environment, mitigating the effects of industrialization and human activity, and seeking to achieve sustainable use of resources in the interest of future generations.

THE VIRTUOUS TRIANGLE OF ICT FOR SUSTAINABILITY

In 2003, the World Summit on the Information Society (WSIS) declared its challenge “to harness the potential of information and communication technology (ICT) to promote the development goals of the Millennium Declaration” with a “commitment to the achievement of sustainable development.”

This 'Virtuous Triangle' of ICT (figure 1) goes well beyond the simple cost-saving benefits that have always been apparent, evolving the role of ICT to become a key enabler for more sustainable business as a whole.

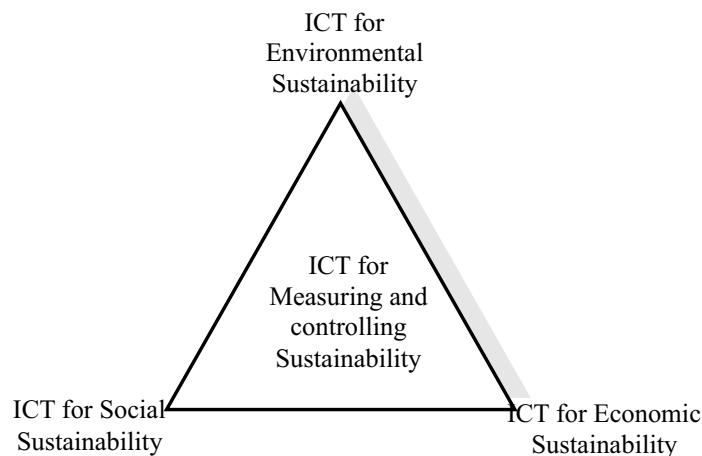


Figure 1: Triangle of ICT for Sustainability

1. ICT for Environmental sustainability

Traditionally, environment policy was considered separate from economic and social development policies. Over last years the perspective of sustainable development and environmental issue has become more comprehensive. Sustainability research has emerged as an interdisciplinary research field.

The relationship between ICT in environmental sustainability can be roughly classified in two areas, the first-order and the second-order impacts (Hilty et al., 2006). The first order impacts of ICT are the negative environmental consequences connected with the Life Cycle related with production, use, disposal of ICT technology. It concerns with the energy and resources used during the production of hardware, the energy

consumed by the equipment (both the personal devices such as computers but also the infrastructure such as network equipment and servers) and the toxicity and social impacts of the disposal of electronic waste. Second order effect includes positive impact of using technology for sustainability. This is the impact of dematerialization, that is, the displacement of physical with virtual activity. ICT reduces the environmental impact of existing services by dematerializing physical assets such as books, bills, music, and activities that used to require physical presence, such as meetings or visits to the bank office. These efficiency measures are also being applied to other fields, such as agriculture. For instance ICT based smart irrigation systems can reduce water usage and carbon emissions by context aware watering schedules? using weather data and/or soil moisture and evapotranspiration sensing (Mutchek and Williams, 2010). Third order effects of ICTs on climate change are those that result or will result from the kind of large scale behavioural and social structural changes. Innovations such as social networking and homeshopping not only have immediate direct impacts on individual behaviour, but also have longer term direct and indirect impacts on the ways in which societies and organizations work. However, third order effects of this kind are difficult to predict (IISD, 2010).

Another dimension of greening through IT is 'Green computing' or 'green IT' which is the study and practice of environmentally sustainable computing. San Murugesan's (2008) definition of 'Green IT' includes "designing, manufacturing, using and disposing of computers, servers, and associated subsystems efficiently and effectively with minimal or no impact on the environment." Green computing can also develop solutions that offer benefits by "aligning all IT processes and practices with the core principles of sustainability, which are to reduce, reuse, and recycle; and finding innovative ways to use IT in business processes to deliver sustainability benefits across the enterprise and beyond" (Donnellan, Brian et al. 2011). Green ICT Strategies also include offering degree and postgraduate programs that provide training in a range of information technology concentrations along with sustainable strategies in an effort to educate students how to build and maintain systems while reducing its negative impact on the environment.

2. ICT for economic reform

ICT enables economic growth by broadening the reach of technologies such as high-speed Internet, mobile broadband, and computing; expanding these technologies itself creates

growth, and the fact that technologies make it easier for people to interact and make workers more productive creates additional benefits. The Global Information Technology Report 2009–2010 shows a positive correlation between ICT readiness—the availability of broadband, computers, and software in a country— and competitiveness with strong recommendations that ICT improves the overall performance of its economy in the long run.

A report by United Nations Environmental Programme (UNEP) on Decoupling Natural Resource Use and Environmental Impacts from Economic Growth (UNEP, 2011) focuses on the issue of decoupling, namely resource decoupling, impact decoupling. Resource decoupling leads to a gradual dematerialization of the economy, because it becomes possible to use "less material, energy, water and land resources for the same economic output" and impact decoupling, means reducing negative environmental impacts per unit of economic activity like extraction of required resources (such as groundwater pollution due to mining or agriculture), production (such as land degradation, wastes and emissions), the use phase of commodities (for example, transport resulting in CO₂ emissions), and in the post consumption phase (again wastes and emissions).

The Indian Tobacco Company, an Indian conglomerate, illustrates ICT productivity gains for an economy. Their agri-business division, one of India's largest exporters of agricultural commodities, created e-Choupal in 2000 as a supply chain management system to reach farmers. These have traditionally sold their products through inefficient physical marketplaces where they are forced to take whatever price is offered because they have limited access to information on market prices. E-Choupal, a kiosk with computers and Internet access, is a virtual marketplace where farmers can sell their products (e.g., soy, tobacco, wheat, shrimp) directly to producers, without paying fees to traders or commissions to agents. The tool also provides information in local languages about the weather, market prices, and farming best practices, as well as general news.

a. From 'Digital Economy' to 'Green economy'

The profound changes in technologies and economics of communications where knowledge and networks play a more pre-eminent role than capital, named *digital economy*. Miller and Wilsdon (2001) propose the concept of sustainable digital economy as a solution for the environmental issues good of economy, environment, and society.

'Digital economy' or 'knowledge economy' is relatively a new concept but basically it is a global network of economic and social activities that are enabled by information and communications technologies, such as the internet, mobile and sensor networks. Beside the economic and social impact, the environmental dimension of the digital economy deserves special attention because it is one of the important aspects of sustainable development (Cohen et al. 2000).

Green economy is seen as a framework for restoring economic growth meanwhile responding to the climate change and other subjects of environmental sustainability. The 'green' economy can be considered synonymous to a 'sustainable' economy. Ecological economics, industrial ecology and environmental/resource economics are the three closely related disciplines to the notion of the Green Economy (Huberman, 2010). In 2010, a UNEP (United Nations Environment Programme) report on Green Economy Report defines the green economy as "*the process of reconfiguring businesses and infrastructure to deliver better returns on natural, human and economic capital investments, while at the same time reducing greenhouse gas emissions, extracting and using less natural resources, creating less waste and reducing social disparities.*"

Opportunities for synergy between digital economy and green economy strategies have been recognized in the developed countries. Many countries have made in broadband infrastructure, smart electricity grids, buildings and transportation systems, and e-health and e-education applications as part of the stimulus packages they adopted to restore growth in the aftermath of the 2008–2009 financial and economic crisis.

ICTs can support the development of the green economy in three principal ways (IISD, 2010):

1. *Direct effects* through improved energy and material efficiency, time efficiency, increased use of renewable energy sources, reduced use of toxic materials and improved recycling (Hilty et al., 2006). Efficiency is usually meant using ICT for optimization of a system or process with a sustainability objective. It argues that by using ICT we can make existing systems smarter and reduce emissions and resource consumption while maintaining or increasing utility (Climate Group, 2008). ICT applications that are suggested to increase efficiency also include inventory reduction, eco-driving, route optimization (Sato, 2008).

2. *Enabling effects* by improvements in the efficiency of production, distribution and consumption of goods and

services throughout the economy and society. Dematerialization is the whole or partial substitution of virtual products and services for their physical equivalents (Berkhout and Hertin, 2004). This decoupling of content from a physical container reduces the energy needed for creating and transporting the product. The environmental impact of reading electronically is less per book versus traditionally in paper (Moberg et al. 2011). Presence dematerialization includes virtual presence, learning, videoconferences, and services such as e-learning, e-banking or e-government.

3. *Systemic effects* that result in the transformation of behaviour, attitudes and values of individuals as citizens and consumers. Information technology is used to visualize and communicate data that is relevant for sustainability such as energy use, water use or carbon dioxide emissions (Froehlich, 2000). This is seen as a precondition for acting and increasing sustainability.

The investigation of synergies between green and digital economy may offer a common solution with long-term effects.

3. ICT for Social development

Beyond economic benefits, the ICT industry is uniquely positioned to help build a more socially sustainable future. Beyond encouraging economic growth, the ICT industry is helping to achieve social sustainability by improving the way societies and governments provide education, healthcare, and services to citizens. ICT is being applied to optimizing existing services for saving resources, making existing systems such as transportation, housing, cities, "smarter" by increasing efficiency

a. Role of Electronic Governance

The inability of nations to sustain growth in most parts of the world also hinders the economic and social progress in respect to poverty reduction. This highlights the importance of governance for development. The governance is the linkage between development with pro-poor policy framework, public administration and civil service reform, and decentralization and service delivery. Since governance is central to any development effort, a good governance and practices are necessary condition in achieving any form of development including sustainable development (Coleman, 2008; Finger, 2005).

Increasingly, governance processes are supported by ICT. This form of Electronic Governance (e-Gov) entails strategic

use of ICT technologies like internet and mobile computing to support governance processes which is transforming the relationships between government and citizens, businesses and other arms of government. Electronic Governance received numerous definitions in the literature, none of them becoming an accepted standard. According to Dawes (2008, pp 586) “e-Governance comprises the use of Information and Communication Technologies (ICTs) to support public services, government administration, democratic processes, and relationships among citizens, civil society, the private sector, and the state.”

In particular, e-Gov helps to deliver public services over electronic and traditional channels, engage various social actors in decision and policy-making processes. Online services are cheaper, faster and more readily available, especially from remote areas with fewer multitudes of human errors than the manual processing. It provide an excellent opportunity for

improve quality government services to people with focus on three broad qualities of good governance like improve transparency, people participation and public services that should be cost-effective and accountable to citizen.

The concept of e-governance also supports the SD domain. This domain focuses on the use of ICT to enhance the efficiency of internal government operations with SD-oriented ICT strategies; applying ICT to support the poor and small businesses; delivering services at the minimum environmental cost; using ICT to increase participation of the poor in government decision and policy formation. Figure 2 depicts a mapping of three primary domains contributing to e-Governance for Sustainable development (EGOV4SD), where the primary domains are Governance (GOV), Sustainable Development (SD) and Information and Communication Technology (ICT).

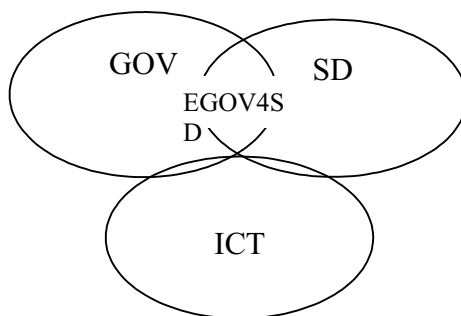


Figure 2: e-Governance for Sustainable development

b. Improving information access and communication

ICT is changing the way people access information (with Google and Wikipedia, for example) and interact with each other (through blogs, social networking sites and so forth). Social networking websites have changed the job recruitment rules. Today these sites are *the* places to find a job and recruit talent. All these examples show new ways in which innovative ICT technologies are having a profound impact on the way people interact and communicate with each other. Many of these technologies will undoubtedly lead to new social benefits.

c. ICT impact on Education and Health

The ICT sector has already dramatically changed the way people study. A wide range of information is available free on

the Internet. Today educational institution has Partnerships with multinational companies such as Microsoft and Cisco have enabled the equipment, with computer labs and broadband Internet putting efforts for providing education to every division of society overriding the constraints of distance and infrastructure resources.

The use of ICT for health (e-health) has the potential to transform healthcare by efficiently connecting people and improving information sharing. Currently, e-health is predominantly seen in developed countries. But as the availability of ICT spreads rapidly in the developing world, there is an opportunity to expand healthcare access to areas where distance, poverty, and scarce resources are currently barriers to even basic care. Doctors can access patients' medical records more easily, have immediate access to test

results from a laboratory, and deliver prescriptions directly to pharmacists.

4. ICT for measuring sustainability

Information technologies allow the analysis, modeling, control and communication of environmental information. One such discipline is environmental informatics, which focuses on using technology for the creation and processing of environmental information in traditional environmental disciplines and in institutions such as environmental agencies. One key advance in this area is the use of satellite images and advanced mapping technologies for the control and visualization of environmental variables such as land use and soil conditions (Hilty et al., 2006).

ICT is used in the work of sustainability research and practice, being central to the measurement, modeling and analysis of the data, for instance when making environmental impact analysis such as Life Cycle Assessment. Hilty et al., (2006) argues that ICT is central to promote life cycle thinking, providing tools for supporting decision making. Complex modeling studies such as life cycle assessments are made possible by the use of computer tools and databases. Modeling software that is widely used for creating environmental impact assessment includes SimaPro, OpenLCA and Umberto.

CHALLENGES

a. Investment Intensive

The economic and social benefits of ICT are clear. However, this impact could be significantly increased if the penetration of ICT, including mobile phones, broadband, and PCs will expand. Increasing the penetration levels of high-speed broadband, mobile, and PCs in developed and developing countries will be extremely costly and is not likely to be profitable for ICT companies alone. Making these investments work will require a concerted approach among all industry stakeholders including government. Initial government financial support to a country's ICT strategy is crucial since economic benefits and demand for some of the new services will necessarily be unclear for industry players.

b. Require Re-engineering

Creating these economic and social benefits will require not only large investments and commitment from different stakeholders but also changes to existing regulatory frameworks, compromises between governments and industries, and strong public engagement.

Further, it is no easy task to align the interests of the various stakeholders when so much is at stake: ICT companies seek revenue, governments seek access to innovative services and tax revenues as well as economic growth, and regulators seek consumer welfare and competition.

c. Adoption issue

However, barriers to adoption of more sustainable IT are still prevalent. Plus, the fact that many products are not even measured for their sustainability credentials. The final hole in the sustainability panacea is that IT buyers are then struggling to get hold of manufacturer information that qualifies whether a product is in line with current green transformation strategies.

d. The rebound effect

Some researcher argues that ICT has been in increasing productivity and efficiency which resulted in increasing output, not in reducing input. This is a classical rebound effect (Brookes 1990). A rebound effect is the lost gains in efficiency of technological progress due to: cost reduction leads to increase consumption of the same service. Like technology help for cars to have increased fuel efficiency, but the total impact of cars has grown as number increases. Some other classical examples of failed dematerialization due to rebound effects are the increase in paper consumption with the introduction of the computer, instead of the promised paperless office (Sellen and Harper, 2001). It means the ICT for efficiency measures is not enough precondition for saving resources, but that sufficiency measures restricting input and output are needed in order to avoid these unwanted rebound effects.

CONCLUSION

It can be concluded that the ICT sector has both a profitable opportunity and a critical role to play with other sectors to design and use solutions needed to create a green economy and society. ICT performance will remain crucial not only for developed countries for sustaining long-term competitiveness and enhancing their innovation potential but also for middle-income and developing countries in fostering structural transformations, increasing efficiency as well as reducing the digital, economic, and social divides within their territories.

Governments around the world are realizing that having an ICT vision matters—they need to understand how their ICT sector can best enable other parts of their economies and

social interests in order to convene industry stakeholders and align them to work toward that vision. Singapore, for instance, has a vision of becoming an information society by 2015. The government should work on stimulating the demand for ICT services by sponsoring a broad range of programs such as e-learning, e-health, and e-government. Moreover, Regulators and competition authorities will need to manage the way they design industry incentives carefully. They must allow the industry to generate enough profits to make their investments affordable while maintaining low carbon footprint. The key to reaping ICT's economic and social benefits is cooperation among the industry, regulators, and government policymakers.

The future research areas can be in the study of sustainable competitiveness of cities; the creation of competitive advantages for firms through driving sustainability; sustainability and the role of chief information officers (CIOs); broadband as an enabler for economic sustainability; cloud computing and its economic effects; and innovation in business models and policymaking to enhance environmental sustainability.

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Occupational Hazards among Medical Laboratory Technicians

D.Rajan

A b s t r a c t

This research is about occupational hazards of medical laboratory technicians. The objectives are to identify the sources of occupational hazards and to compare the sources of occupational hazards. A total of 100 respondents have been sampled using simple random sampling technique. Sources of occupational hazards have been identified under nine dimensions namely organization structure and policy, ergonomics, fear and safety, resources, work load and work shift, environment and hygiene, interruption, patient and communication and training related factors. The study has administered weighted average, mean and standard deviation methods to analyse data. The study offers suggestions to control the factors related to occupational hazards.

Key words: *Medical laboratory technicians, occupational hazards, private hospitals, Tirunelveli city.*



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Health and Safety of the employees are vital aspects for smooth and effective functioning of an organization. Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1946). The factors which disturb health status are called as hazards. It refers to a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impact, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (WHO, 2009). Working condition has strong impact on well being of employee's health. Non supportive working environment can cause harm if not controlled. This non supportive working environment termed as occupational health hazards. Occupational health hazards refer to the potential risks to health and safety for those who work outside the home (Maier 2009). The history of occupational hazard awareness can be traced back to the 18th century when Bernadino Ramazzini, who is referred to

as the 'Father of Occupational Medicine' recognized the role of occupation in the dynamics of health and diseases (Adebola FA, Owotade FJ, 2004).

Paramedical staff is integral part of hospital staff (Mittman et al., 2002). For health care facilities hospitals are reliant on paramedical staff. Paramedics were exposed to occupational health hazards both psychologically and physiologically as working directly with patients (Javed Sadaf and Tehmina Yaqoob, 2011). Medical laboratory technician is one of the important paramedical occupational groups who contribute in a major way for medical, surgical and other paramedical groups to provide the patients effective medical and surgical care. Their nature of job requires both physical and mental works. Their nature of job is to investigate body fluids such as blood, serum, urine, sputum, muscle tissues so as to find bacteria and other problem present in it. To perform these functions, they handle number of instruments and materials such as syringes, microscopes, various chemicals and various electrical equipments in their day to day work life. Prolonged standing, neck bending, focused attention on microscope and pipettes; prolonged sitting in front of computer and microscope and dealing with different nature and infectious patients are some of the nature of activities involved in their profession. It is important for them maintaining good posture and wearing protective devices to carry out these functions and to avoid health related problems such as neck pain, back pain, leg pain and the like.

The study area has attained significant development in health care aspect. Though the number of hospitals, pharmaceuticals and diagnostic centres has increased, poor human resource management system such as inadequate welfare facilities, two shift work system, 12 hours working hours, inadequate training, lack of information about causes of occupational hazards and preventive measures are yet found in almost majority of hospitals. Therefore, it is important to make hospital management aware about the occupational hazards present in all occupational groups in the hospitals. The present research exclusively analyses causes of occupational hazards of medical laboratory technicians.

1.2 Statement of the Problem

Medical laboratory technicians have occupied dominant position in health care sector. The diagnosis and prognosis of the disease is investigated by doctors with help of laboratory investigation of blood, urine, sputum, stools and other body fluids. Thus, medical laboratory technicians are directly

supporting doctors to perform their job effectively. Medical laboratory technicians are exposed to number of occupational hazards in their occupation. Prolonged standing, bending activities, focused attention with high level of attention, dealing with infectious patients, dealing with emotionally unstable, urgency nature and violent patients, long working hours, unhealthy shift work, heavy work load and so on are some of hazards associated with their job. These factors bring about number of effects such as eye strain, pain in neck, back, shoulder, head ache, stomach ulcer and so on. When a medical laboratory technician is performing his or her job with these hazards and effects for long period it will not only affect their health seriously but also it will affect accuracy of results of investigation. Therefore, it is necessary to educate them about hazards involved in their occupation and way of preventing them in order to promote their health and safety of patients. Hence, present study is undertaken.

1.3 Scope of the Study

The study has focused Tirunelveli city, Tamilnadu. The study has focused occupational hazards arising in the work place and it covered the laboratory technicians qualified with Diploma in Medical Laboratory Technicians working in private hospitals. The study has analysed occupational hazards of medical laboratory technicians under nine dimensions namely organization structure and policy, ergonomics, fear and safety, resources, work load and work shift, environment and hygiene, interruption, patient and communication and training related factors.

1.4 Significance of the Study

This research study has a number of significance. The findings of the study will be helpful for the hospital management and similar organizations which are offering same services to identify the deficient factors in terms of occupational hazards and take necessary steps to correct the same. The suggestions given by the researchers will be useful for medical laboratory technicians to take necessary precautions to prevent occupational hazards. The study will be the base and sources of secondary data for future research scholars.

1.5 Profile of the Study Area

This study has been undertaken in Tirunelveli city. Tirunelveli also known as Nellai, and historically (during British rule) as Tinnevely, is a city in the Indian state of Tamil Nadu. It is the headquarters of the Tirunelveli District in Tamil Nadu. It

is situated 700 kilometers (435 miles) southwest of the state capital Chennai. It is located in the southern-most tip of the Deccan plateau. Tirunelveli is an important junction in the National Highway No 7 connecting India from the North to South (Kashmir to Kanyakumari). As of 2011 census of India, Tirunelveli has a total population of 474,838. Males constitute 49% of the population and females 51%.

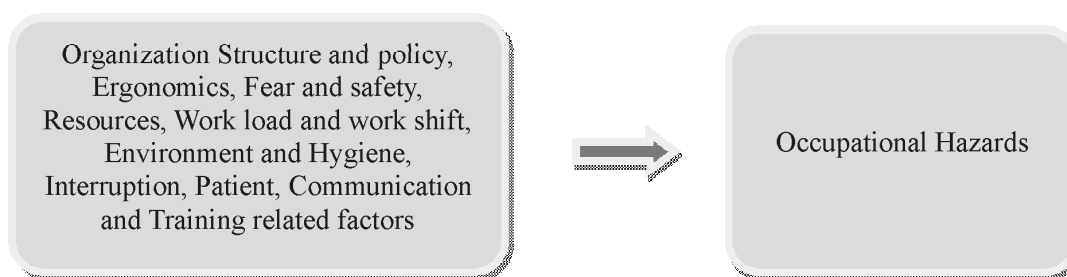
1.6 Objectives of the Study

The following objectives have been established to guide research.

- i. To identify the sources of occupational hazards
- ii. To foresee extent of perception towards sources of occupational hazards
- iii. To compare the sources of occupational hazards
- iv. To offer suitable suggestions to prevent and manage occupational hazards

1.8 Conceptual Framework

The conceptual framework of the study is given as follows. This chart explains independent variables and dependent variables of the study.



2 Literature Review

Occupational hazard can be defined as the risk to the health of a person usually arising out of employment. It can also refer to work, material, substance, process or situation that predisposes or itself causes accidents or disease at work place. Occupational hazard is defined as a risk accepted as a consequence of a particular occupation (Oxford Dictionary). In the present research the researchers defined occupational hazards that all the factors which affect both physical and mental health of the medical laboratory technicians.

Awosile B., O. Oseni and E. Omoshaba (2013), examined hazards exposures of workers of animal related occupations in Abeokuta South Western, Nigeria. Zoonotic diseases, animal bites, animal kicks, bird pecking and scratching and dog bites were the commonest occupational hazards of exposure. Majority of the workers were known of the term occupational hazards and various hazards associated with their job. Physical stress due to work or body fatigue and back or waist pain was the commonest physical hazards. Dust and animal dung were the allergic hazards of exposure and allergic rhinitis and conjunctivitis were the most common allergic conditions. Fumigants, insecticides and pesticides were the

common chemical hazards and respiratory irritation was the most commonly reported clinical condition. Skin diseases and respiratory diseases were the most common occupational diseases. Tuberculosis, avian influenza and brucellosis were the most common zoonotic diseases. Diseases, infections and death were the common possible implications of zoonoses perceived by the workers. Less than 50% of the workers were aware of various preventive measures against work related zoonotic diseases. Use of protective coverings, good hygienic practices, washing of hand after work period were the most common preventive measures against work related zoonotic diseases noted by workers.

Ashok D (2012) studied occupational hazards of supportive group of women employees in health care units in Tamilnadu from the samples of 197 supportive women employees. The analysis of study explained that lack of supervision and control, lack of training, usage of untrained employees, congested space in working area, use of old machinery and equipments, overloading of employees, violation of safety rules, overloading of employees and poor housekeeping practices were the employees' safety related factors associated with occupational hazards. The study also showed that respiratory diseases and hypertension were in top level

experienced. Skin diseases, diabetes, cardio vascular diseases, menstrual irregularities, sleep disorder were next in level experienced. Around one fifth of respondents had experienced bacterial infections to fungal infections. One fourth of them had experienced various parasitic infections and one third of them had experienced viral infections. Anxiety, mental stress, depression and emotional disorder, ENT related problems, low back pain due to carrying heavy loads of work in a standing posture, head ache and body ache due to work stress, discomfort during travel time, worrying about welfare of children when at work were factors influencing occupational hazards.

Javed Sadaf and Tehmina Yaqoob (2011) studied gender based occupational health hazards among paramedical staff in public hospitals of Jhelum. The results of the study showed that females were more exposed to occupational health hazards as compared to males. There was no difference between male and female paramedical staff in exposure to occupational health hazards. Females are more exposed to psychological occupational health hazards as compared to males. Physiological health hazards are more influencing paramedical staff's health as compared to psychological health hazards in public hospital. The hypotheses of the study reflected that there was a significant effect of age in exposure to occupational health hazards among paramedical staff. No significant differences in exposure to occupational health hazards exist between on the basis of experience in different categories. The study concluded that over burden of work and deficient staffs were enormous hazards in public hospital faced by paramedical staff.

Amosu A.M. et al. (2011) analyzed the level of knowledge regarding occupational hazards among nurses in Abeokunta, Ogun state, Nigeria. The sample consisted of 100 nurses who had been randomly selected from 10 public and 2 privately owned health care facilities. Majority of the respondents were between 21 – 30 years of age, females, married and had 11 years and above in the nursing profession. Majority of the respondents agreed that the nursing profession is associated with occupational hazards. Back injury was the commonest occupational hazards followed by neck and back pain. Prolonged standing, negligence and carelessness, lifting of patients and equipments, failure to observe simple safety rules in the wards, shortage of staff and excessive work load are the foremost predisposing factors of occupational hazards. The respondents suggested that avoidance of lifting of patients and heavy equipments and

proper training and retraining of nurses on safety measures are the ways of preventing occupational hazards.

Saldaria M.A.M. et al. (2012) examined the impact of occupational hazard information on employee health and safety. In the study, global farming, industry construction and services sectors have been focused. Farming and services sector have been given 17.5% hazard prevention communication, global, industry and construction sectors have been provided 16.8% and 14.8% respectively. Farming and construction sectors are experiencing 43.1% and 35.8% musculoskeletal symptoms. Global services and industry sectors experienced 32.3%, 31%, and 30.4% respectively. Services, industry and global sectors experience high psychological symptoms of 10.8%, 10.2%, and 10.1% respectively where as farming and construction sectors experience 8.6% and 7.1% respectively. Construction, industry and farming sector experience high level of occupational accidents in the rate of 13.8%, 13.1% and 10.4% respectively. Farming and services sectors experience low level of occupational accidents at the rate of 9.9% and 9.2% respectively.

Ahmed H.O. and Mark S. Newson Smith (2010) analysed knowledge and practices of cement workers related to occupational hazard in United Arab Emirates. The study sampled 153 male workers in a cement factory in Ras Al Khaimah, UAE. The study highlighted that 52.9% of the respondents had known about the hazards associated with current job. The most commonly mentioned hazards were dust, heat, machines such as milling machine and falling materials, chemicals, fire and smoke. Majority of the workers mentioned that exposure to the dust was a serious hazard to their health. Respiratory symptoms (cough and sputum), eye problem have been majorly experienced as dust related problems by respondents. Stomach, liver and heart problems were least experienced as dust related problems. Majority of the respondents indicated that mask was a safety device. Next to it, helmet, safety shoes, and goggles, were the protective devices used by respondents. Moreover, majority of the workers reported that masks were comfortable and not interfering with their communication while wearing them.

Fasunloro Adebola and Foluso John Owotade (2004) assessed the level of awareness of occupational hazards among clinical dental staff at a dental staff in Nigeria and it had sampled 38 respondents. Doctors (59%), nurses (8%), technologist (5%), therapists (10%), and dental surgery assistants (18%) have

been focused in the study. Back ache was the most frequently experienced hazard among 47% of respondents. 68.4% dental personnel had been vaccinated among them more were doctors than non doctors. 35% had experienced an injury from sharp instruments in the past six months. 71% had regular exposure to dental amalgam. Use of eye goggles, proper waste disposal, wash hands with bactericidal soap, wear gloves routinely, change gloves between patients, use of face mask, wash hands before gloving and ensure instrumental sterilization were the mechanism followed by employees to control the cross infection. Amalgam blood level check, periodic check of clinic for amalgam vapour, use of goggles, water spray and suction, confine use to impervious surface, use no touch technique, store amalgam in sealed containers, clean up spilled amalgam, work in well ventilated space and use tightly closed capsules were the safety measures adapted while handling amalgam. The respondents were well known about injury, Hepatitis B, HIV and less known about TB, blindness, back ache, litigation and others.

3 Research Methodology

i) Research design

This survey based research has adopted descriptive research design.

ii) Population, Sampling and Sample Frame

A sample of this study is medical laboratory technicians who have completed one year and two year courses in medical laboratory technology and those who are working in private multi speciality hospitals. The population of this research in the study area is 300. The sample frame of this research is District Employment Office from which the researcher collected the list of private multi speciality hospitals and medical laboratory technicians employed in them. The researcher has sampled one third of the population for the present study using simple random sampling technique.

iii) Methods of Data Collection

The primary data were collected through structured questionnaire prepared by the researcher and personal discussion with respondents. The questionnaires were distributed to the selected respondents in person by the researcher and they were collected from them after a period of two weeks. The researcher also made some discussion with respondents in order to collect primary data. The

secondary data for this study have been collected from various research journals, books and websites.

iv) Instrumentation

The questionnaire employed to collect primary data consists of two parts. Part A talks about profile of the respondents. Part B deals with sources of occupational hazards of medical laboratory technicians. The questionnaire (part B) has been made with Likerts Five Points Scale which range from Strongly Agree, Agree, No Opinion, Disagree and Strongly Disagree. The points have been allocated for them as 5, 4, 3, 2 and 1 respectively.

v) Tools of Analysis

The tools administered to analyse the data are given as follows.

a) Weighted Average

In order to analyse the sources of occupational hazards the weighted average method has been used. The formula of weighted average is given as follows.

Weighted average = $w_1x_1 + w_2x_2 \dots w_nx_n$, where, w is relative weight and x is value.

b) Mean and Standard Deviation

In order to compare dimensions of occupational hazards mean and standard deviation have been employed. Their formula is given as follows.

Mean: $\mu = \Sigma X/n$, where 'Σx' is sum of all data valued and 'n' is number of data items in sample.

Standard deviation: $\sigma = \frac{\sqrt{\Sigma x - \bar{x}}}{N}$ where 'σ' is the standard deviation of a sample, 'ΣX' is sum of each value in the data set, 'X' is mean of all values in the data set and 'N' is number of values in the data set.

c) Extent of Perception

The extent of perception of the respondents towards occupational hazards have been analysed as follows.

- (i) High perception: Scores above (arithmetic mean + standard deviation).
- (ii) Moderate perception: scores ranging from (arithmetic mean – standard deviation) to

- (arithmatic mean + standard deviation);
and
- (iii) Low perception: scores less than
(arithmatic mean – standard deviation).

4 Results and Discussion

The analysed data and its interpretation are presented in this part as follows.

4.1 Analysis and Results

Table 4.1 Profile of the Respondents

| S No | Measure | Item | Frequency | Percentage |
|------|----------------------------|------------------------|-----------|------------|
| 1 | Sex | Male | 30 | 30 |
| | | Female | 70 | 70 |
| 2 | Marital status | Married | 40 | 40 |
| | | Unmarried | 60 | 60 |
| 3 | Age | Below 20 years | 16 | 16 |
| | | Between 20-25 years | 32 | 32 |
| | | Between 25-30 years | 30 | 30 |
| | | Above 30 years | 22 | 22 |
| 4 | Educational qualification | DMLT-1 Year | 60 | 60 |
| | | DMLT-2 Years | 40 | 40 |
| 5 | Year of working experience | Below 1 year | 18 | 18 |
| | | Between 1 and 3 years | 43 | 43 |
| | | Between 3 and 5 years | 25 | 25 |
| | | Above 5 years | 14 | 14 |
| 6 | Income level (Rs) | Below 5000 | 17 | 17 |
| | | Between 5000 and 8000 | 35 | 35 |
| | | Between 8000 and 10000 | 30 | 30 |
| | | Above 10000 | 18 | 18 |

Source: Primary data

It could be known from the Table 4.1 that majority of the respondents are females 70(%) and unmarried (60%). Most of the respondents are in the age group between 20 and 25 years (32%) and more number of respondents have been qualified with Diploma in Medical Laboratory

Technology 1 year course (60%). Majority of the respondents (43%) are between the working experiences of 1 and 3 years and more number of respondents remain between the income level of Rs.5000 and Rs.8000 (35%).

Table 4.2: Organization Structure and Policy Related Factors

| S No | Organization Structure and Policy | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Rigid leadership style (in terms of off, leave and shift schedule) and strict supervision by higher authorities | 280 | 16 | 68.33 | 15.67 |
| 2 | Criticism (harsh words) by higher officers such as managers and doctors in front of co workers, patients and their relatives | 279 | 24.33 | 55 | 20.67 |
| 3 | Disparity in treatment of the employees in terms of salary, promotion, shift schedule and recognition | 278 | 19.33 | 61.67 | 19 |
| 4 | Lack of concern by staffs on safety guidelines of the department | 272 | 14.33 | 68.33 | 17.33 |
| 5 | Food which is inadequate to meet over long working hours and it is contaminated in nature (especially for hostellers) | 271 | 16 | 70 | 14 |

Source: Primary data

It could be understood from Table 4.2 all factors of organization structure and policy have been given major importance. In the light of importance given to these factors it could be known that they may be dissatisfied with management practice in terms of leadership style, policies related with promotion and safety guidelines. It could also be understood they may be working under stressful

circumstances. It could be understood from their response that the staffs need necessary changes in practices of management such as motivating and participating leadership styles, fair promotion policies and sound safety guidelines which will enhance their motivation level and reduce stress level. It could also be noted that all organization and policy related factors are perceived at medium level.

Table 4.3: Ergonomics Related Factors

| S No | Ergonomics | Total Score | Extent of Perception (%) | | |
|------|---|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Long sitting in front of computer | 282 | 14.33 | 70 | 15.67 |
| 2 | Long standing and focused concentration for long time | 280 | 19.33 | 70 | 10.67 |
| 3 | Frequent walking and climbing in steps | 278 | 12.67 | 68.33 | 19 |
| 4 | Prolonged bending of neck to see microscope | 276 | 10.67 | 71 | 18.33 |

Source: Primary data

It could be understood from Table 4.3 which talks about ergonomic related factors of occupational hazards that laboratory technicians are facing more difficulties in terms of inadequate posture. It may be due to absence of adequate

infrastructure such as long chair, lift and health education related to postural corrections. In view of importance given to these factors, it is indicated that they are in need of fulfilment of essential requirements such as chair in accordance

with the equipments operated and lift facilities and health hazards are perceived at medium level. education. All ergonomics related factors of occupational

Table 4.4: Fear and Safety Related Factors

| S No | Fear and Safety | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Inadequate safety in the work place (working alone at night especially on Sundays) | 282 | 17.33 | 67.67 | 15 |
| 2 | Lack of sterilization | 280 | 15.67 | 66 | 18.33 |
| 3 | Protruded parts of machine and uncovered wires | 278 | 22.67 | 61.33 | 16 |
| 4 | Fear of committing mistakes in work process and report preparation which affect accuracy of the report | 272 | 15.67 | 67.67 | 16.67 |
| 5 | Assault by the patients | 271 | 14 | 71 | 15 |
| 6 | Handling needles and syringes frequently | 260 | 13.67 | 67.33 | 19 |

Source: Primary data

It could be highlighted from Table 4.4 that major preferences have been given to the factors such as inadequate safety in the work place, lack of sterilisation, and protruded parts and uncovered wires in the department. From the importance given to these factors it could be clearly known that work schedule, housekeeping, and maintenance of equipments are poor. It could also be known that self confidence level of the laboratory technicians to deal with angry nature of the patients

and handle needles and syringes is also weak. According to the importance given to these factors, it is indicated that laboratory technicians are in need of improving work schedule and functions of housekeeping and maintenance departments. They are also in need of health education to enhance their self confidence level. It could be known from the Table that all fear and safety related factors are perceived at medium level.

Table 4.5: Resources Related Factors

| S No | Resources | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Shortage of laboratory technicians and supporting staffs (e.g. computer operator and social workers) in accordance with volume of patients | 280 | 19.33 | 70 | 10.67 |
| 2 | Lack of safety materials such as hand gloves, face masks and shoes | 278 | 14.33 | 67.33 | 18.33 |
| 3 | Inadequate equipments (auto analyser, microscope, computer, printer) in accordance with volume of patients | 276 | 16 | 67.33 | 15.67 |
| 4 | Poor functioning of equipments and their poor maintenance (these affect the accuracy of results) to meet over work load | 274 | 24.33 | 55 | 20.67 |

Source: Primary data

It could be understood from Table 4.5 explaining resources related factors of occupational hazards that major importance have been given to shortage of manpower resources and other resources. From the importance given to these factors it could be known that laboratory technicians are highly suffering from high work load because of shortage

of these resources. According to the preference given to these factors it could be known that they are in need of sufficient manpower and resources with good working conditions so as to enable them to work smoothly. It could be highlighted from Table all resources related factors are perceived at medium level.

Table 4.6: Work Load and Work Shift Related Factors

| S No | Work Load and Work Shift | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Two shift work system which are irregular | 282 | 13.67 | 67 | 19.33 |
| 2 | Long working hours and inability to leave duty in time | 281 | 15.33 | 67.67 | 17 |
| 3 | Carrying out multiple work at the same time (e.g. blood sample investigation, report preparation, collection of blood from many wards) | 280 | 10.67 | 72 | 17.33 |
| 4 | Excessive work load | 280 | 15.33 | 70.33 | 14.33 |
| 5 | Missing of food (e.g. breakfast, lunch and dinner) due to excessive work load | 279 | 15.33 | 72.33 | 12.33 |

Source: Primary data

It could be highlighted from Table 4.6 more preference has been given to almost all factors. The major reason for this response may be due to their dissatisfaction towards two shift work system, unsocial working hours, excessive work load and inability to avail the food in time. In view of importance given to these factors it could be

known that the laboratory technicians are in need of appointing manpower to avoid performing multiple works at the same time and changes in work shift and working hours. It could be indicated from Table that all work load and work shift related factors are perceived at medium level.

Table 4.7: Environment and Hygiene Related Factors

| S No | Environment and Hygiene | Total Score | Extent of Perception (%) | | |
|------|---|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Inadequate (congested) space in the work place | 283 | 18.33 | 62.67 | 19 |
| 2 | Consuming air condition for long time which is more susceptible for infection | 283 | 12.33 | 71 | 16.67 |
| 3 | Improper segregation and disposal of medical wastes which is prone for infection | 282 | 13.33 | 68.33 | 16.33 |
| 4 | Inadequate ventilation and poor lighting | 276 | 18.67 | 63.33 | 16 |
| 5 | Inhaling of chemicals during blood and other fluid investigation (e.g. poisonous gas) | 275 | 15 | 73.67 | 11.33 |

Source: Primary data

It could be indicated from Table 4.7 that major importance has been given to all factors of environment and hygiene related factors of occupational hazards. The major importance given to these factors indicate that space facilities, ventilation and system of segregation and disposal of medical wastes and education about precautionary measures to be followed

in work place are poor. In view of their response to these factors it is pointed out that they need sufficient adequate space, ventilation and lighting facilities and infection. It could be pointed out from the Table that all environment and hygiene related factors are perceived at medium level.

Table 4.8: Interruption Related Factors

| S No | Interruption | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Receiving multiple instructions from many authorities (e.g. doctors, nurses, patients and OP assistants) which enhance work pressure | 280 | 17.67 | 64.33 | 18 |
| 2 | Pressure (urgency) from multiple areas (casualty, wards, operation theatre, outpatient departments, dialysis and so on) for quick result of blood and other fluid investigation which enhance stress | 280 | 13.67 | 68.67 | 17.67 |
| 3 | High involvement and advantages of outpatient department and doctors' personal assistants towards reports (e.g. urgency) | 279 | 18.33 | 69.33 | 12.33 |

Source: Primary data

It could be known from total score of Table 4.8 that almost all interruption related factors of occupational hazards are highly perceived by laboratory technicians. According to importance given to these factors it is clearly known that laboratory technicians are receiving orders from multiple areas

which will increase their work load and thereby cause undue stress among them. Through this response, they indicate that they are in need of regulations in system of work pattern. It could be revealed from Table that all interruption related factors are perceived at medium level.

Table 4.9: Patient Related Factors

| S No | Patient | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Dealing with emotionally unstable, angry, urgency and blaming nature of the patients and their relatives | 280 | 14.33 | 67.33 | 18.33 |
| 2 | Dealing with infectious patients (Tuberculosis, HIV) | 279 | 20.67 | 64.33 | 15 |

Source: Primary data

It could be clearly known from total score of Table 4.9 that both patient related factors of occupational hazards have been given almost major importance. This importance may be due to their fear to deal with emotionally unstable and infectious patients and health education, training to face different nature of patients and protective devices

being provided to them may be lacking. The undue fear will produce stress which will further affect their health. It could be indicated from their response that they are in need of sound health education and training. It could be noted from the Table that all patient related factors are perceived at medium level.

Table 4.10: Communication and Training Related Factors

| S No | Communication and Training | Total Score | Extent of Perception (%) | | |
|------|--|-------------|--------------------------|--------|-------|
| | | | Low | Medium | High |
| 1 | Inadequate information about occupational hazards related to job | 282 | 14.67 | 67 | 18.33 |
| 2 | Inadequate training in terms of work processes (e.g. handling of equipments, collection of blood, preparation of report and dealing with patients) and occupational safety | 280 | 16.33 | 67.67 | 16 |
| 3 | Lack of guidelines with regard to handling procedures of equipments and work processes | 279 | 11.67 | 72 | 16.33 |

Source: Primary data

It could be understood from minor difference in total score of Table 4.10, the respondents have given equal importance for all factors in communication and training related factors of occupational hazards. The major importance of the respondents towards these factors clearly shows that information, guidelines, and training in terms of occupational

hazards and its prevention measures are poor and it is also indicated from their major response that they are in need of healthy information, guidelines and training in connection with occupational hazards and its preventive measures. It could be seen from the Table that all communication and training related factors are perceived at medium level.

Table 4.11: Comparison of Dimensions of Occupational Hazards

| S No | Dimensions of Occupational Hazards | Mean | Standard Deviation | Mean Ranking |
|------|------------------------------------|-------|--------------------|--------------|
| 1 | Ergonomics | 23.73 | 2.57 | 1 |
| 2 | Fear and safety | 22.36 | 4.54 | 2 |
| 3 | Work load and work shift | 21.97 | 4.03 | 3 |
| 4 | Environment and hygiene | 21.89 | 3.73 | 4 |
| 5 | Interruptions | 21.73 | 3.82 | 5 |
| 6 | Resources | 20.37 | 3.53 | 6 |
| 7 | Organization structure and policy | 20.28 | 3.26 | 7 |
| 8 | Communication and training | 20.16 | 3.24 | 8 |
| 9 | Patients | 19.23 | 2.22 | 9 |

Source: Computed from primary data

It could be known from Table 4.11 that ergonomics, fear and safety and work load and work shift are the foremost dimensions of occupational hazards producing hazards for medical laboratory technicians. They have occupied the mean score of 23.73, 22.36 and 21.97 respectively. Environment and hygiene, interruptions and resources are the next foremost

dimensions of occupational hazards. They have occupied the mean score of 21.89, 21.73 and 20.37 respectively. Organization structure and policy, communication and training, and patients are next in line with the mean score of 20.28, 20.16 and 19.23 respectively. The comparative analysis of dimensions of occupational hazards is illustrated below in Figure 4.1.

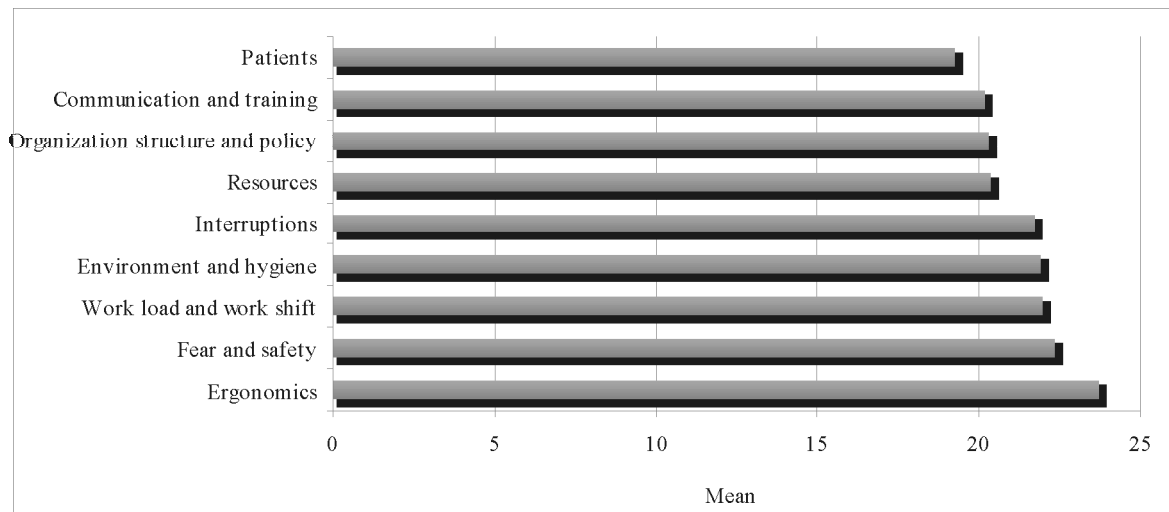


Figure 4.1: Comparative Analysis of Dimensions of Occupational Hazards

4.2 Discussion

The present study has indicated that lack of protective devices and inadequate guidelines are the causes of occupational hazards of medical laboratory technicians. These findings go in par with the study of Kripa et al. (2005) who highlighted that in India, the reasons for not using personal protective equipment by 61.5 % of the salt workers were financial, non-availability or being not provided by the employers. These findings also go along with the study of Yassin et al. (2002) who reported that carelessness, discomfort, cost or unavailability as reasons for not using protective equipment among farm workers in Gaza. The result of the present study has shown that exposure to infectious patients and using lack of sterilised materials are the causes of occupational hazards. These findings are consistent with the study of Haiduven DJ et al. (1999) who stated that the infection risk after accidents involving contaminated blood contact depends on various factors, such as type of exposure, inoculum size, host response, infectious material involved, and the amount of blood. These findings also go in line with the result of Gestan (1987) who advocated that paramedics had direct interaction with patients which made them more vulnerable to occupational health hazards and danger of contracting with Hepatitis B was more common in departments where there is frequent interaction with blood at hospitals. The present research has indicated that inadequate training and environment are the sources of occupational hazards. These findings provide support for the evidence of Gimeno et al.

(2005) who showed that there was strong link between organizational factors (lack of safety training, low level of safety climate, practices in exposure to occupational health hazards) and important impact on work related injuries among healthcare workers.

The findings of the present study indicated that high work load, inadequate staffs and pressure are some of the factors producing occupational hazards among medical, laboratory technicians. These findings are in agreement with the study of Verbrugge (1985) who explained that overburden of work and deficient staffs were enormous hazards in public hospital faced by paramedical staff. He also highlighted that in developing nations where health facilities are not developed and recourses were limited staff is often vulnerable to these hazards and stress was common occupational health hazard for paramedics at hospital. The same findings are also corroborated with the study of Landsbergis (1988) who identified that identified job strain and stress, physical exertion, hazard exposure among health care workers. He also reported that jobs in hospitals were combined with high level of job demand and excessive work load which produce job strain and stress among health care workers. The results of the present study have pointed out that inadequate equipments, work environment and poor posture are the sources of occupational hazards. These findings are consistent with the studies of Hamann C et al. (2001); Miller D.J. (1987); Lehto T.U. (1991); Rucker L.M. et al. (2002) and Boal et al. (2008) who highlighted that insufficient or inappropriate

equipment, inappropriate work-area design, direct injuries, improper body posture; physical hazards from light, noise, and trauma, biological risks from irradiation and microorganisms, chemical detrimental sources, repetitive movements from working with dental instruments or sitting for extended times with a flexed and twisted back are sources of occupational hazards and they cause pain in neck, low-back and other musculoskeletal problems among dentists.

5. Suggestion and Conclusion

In this part, the researcher has presented suggestions, limitations of the study, future research directions and conclusion.

5.1 Suggestions

The following suggestions are given by the researcher based on findings of the study to deal with occupational hazards and prevent them.

1. Clear and sound job description should be provided to enable them knowing their duties and responsibilities and expectations of the hospital from them clearly. It will prevent them from performing unnecessary activities and thereby reduce their work load.
2. The managers should not follow rigid leadership style with medical laboratory technicians. They should be flexible and follow empathetic manner in terms of providing leave, off and shift schedule so as to reduce stress and extend support. Moreover, higher officers should not criticise the employees in front of patients, co workers, patients and their relatives so as to prevent them from stress and depression. The hospital management should educate them how to treat the employees in front of others.
3. Sufficient manpower in terms of both technical staff and supporting staffs should be appointed in accordance with volume of the patients and work load so as to save them from high work load which will affect their health. Performance appraisal, salary fixation, salary hike, promotion should be done fairly and disparity in these policies should be avoided so as to prevent the technicians from undergoing depression and worry.
4. Information about hazards in medical laboratory professions and guidelines to be followed when dealing with infectious patients, inhaling of chemicals, handling syringes, viewing microscope and chillness (air-conditioning) should be given and also displayed in the department in written and pictures format.
5. Hygienic food with sufficient quantity should be provided for the employees who are staying in the hostel which is attached with hospital as they are looking after night shift with long working hours in order to prevent tiredness and stomach ulcer.
6. Training and counselling should be provided to enable them dealing with different nature of the patients such as emotionally imbalanced, complaining and angry nature of the patients. Ergonomics training in terms of sitting, standing, climbing and bending activities and relaxation techniques like breathing and stretching exercises which can be done during working hours should be taught so as to enable them to perform their work without physical strain, stress free and tired less.
7. Shift work system and working hours should be regularised. Two shift work system should be converted into 3 shift system along with 8 hours duty. Female employees should not be allowed to work alone at night shift. They should be accompanied with any other technicians and supporting staffs in order to ensure their safety. The duty schedule should be prepared to fulfil these objectives.
8. Safety materials such as hand gloves, face masks and shoes should be provided to protect them from infections. Hepatitis B and TT vaccines should be given as per the schedule recommended so as to prevent them from infections.
9. Sufficient equipments required to perform their job should be made available. Their working conditions should also be checked at frequent intervals in order to enable them to work smoothly and safe from high work load. Their sterilization conditions should be enriched and ensured in order to safeguard them from infections.
10. The protruded parts of the equipments and uncovered electrical wires should be covered

properly so as to prevent them from physical injuries and dangers.

11. The space in the department should be adequate to accommodate all personnel, equipments and the patients who are coming to the department. Ventilation, well equipped chairs and lighting facilities should be enriched so as to prevent stress, eye strain and head ache.
12. The segregation and disposal of medical wastes within the department and hospital also should be performed properly and clearly so as to avoid the medical laboratory technicians undergoing infections.
13. All other departmental staffs should be instructed to follow proper system in receiving investigation report unless it is an emergency one in order to prevent the employees undergoing stress.

5.2 Limitations of the Study

The present study has been limited to Tirunelveli city only and it has not focused entire district. The study has included medical Laboratory technicians who are working in private multi speciality hospitals and those who have studied 1 year and 2 year diploma courses in Medical Laboratory Technology. The study has not focused laboratory technicians working in single speciality hospitals, government hospitals and diagnostic centres. As a result of these limitations, there should be a caution in generalising the results of the study to entire district, other districts and other hospitals such as single speciality hospitals, government hospitals and diagnostic centres as the nature and practice of the hospital vary from organization to organization.

5.3 Directions for Future Research

This study provides various directions for the future scholars to extend their view into the entire district. The future study can be made with large samples and the laboratory technicians who are qualified with bachelor and master degree in medical laboratory technology. More number of variables causing occupational hazards along with impact of occupational hazards can be studied. The future research can also be undertaken in the manner of comparative study i.e., occupational hazards of the medical laboratory technicians can be compared with other paramedical and non medical employees.

5.4 Conclusion

It is clear from the findings of this present research, medical laboratory technicians are exposed to occupational hazards. The study identified that rigid leadership style and strict supervision by higher authorities, long sitting in front of computer, inadequate safety in the work place, shortage of laboratory technicians and supporting staffs in accordance with volume of patients, two shift work system which are irregular, inadequate space in the work place, receiving multiple instructions from many authorities, dealing with emotionally unstable, angry, urgency and blaming nature of the patients and their relatives and inadequate information about occupational hazards related to job are the major sources of occupational hazards of medical laboratory technicians. It is therefore recommended that both employees and employers should take necessary steps to prevent and control occupational hazards. Employees should develop knowledge about the factors in connection with occupational hazards and follow necessary precautions and safety measures in order to avoid exposure to occupational hazards. Similarly, the hospital management should take necessary steps in eliminating and controlling the sources of occupational hazards so as to protect the employees from hazards and improve their safety.

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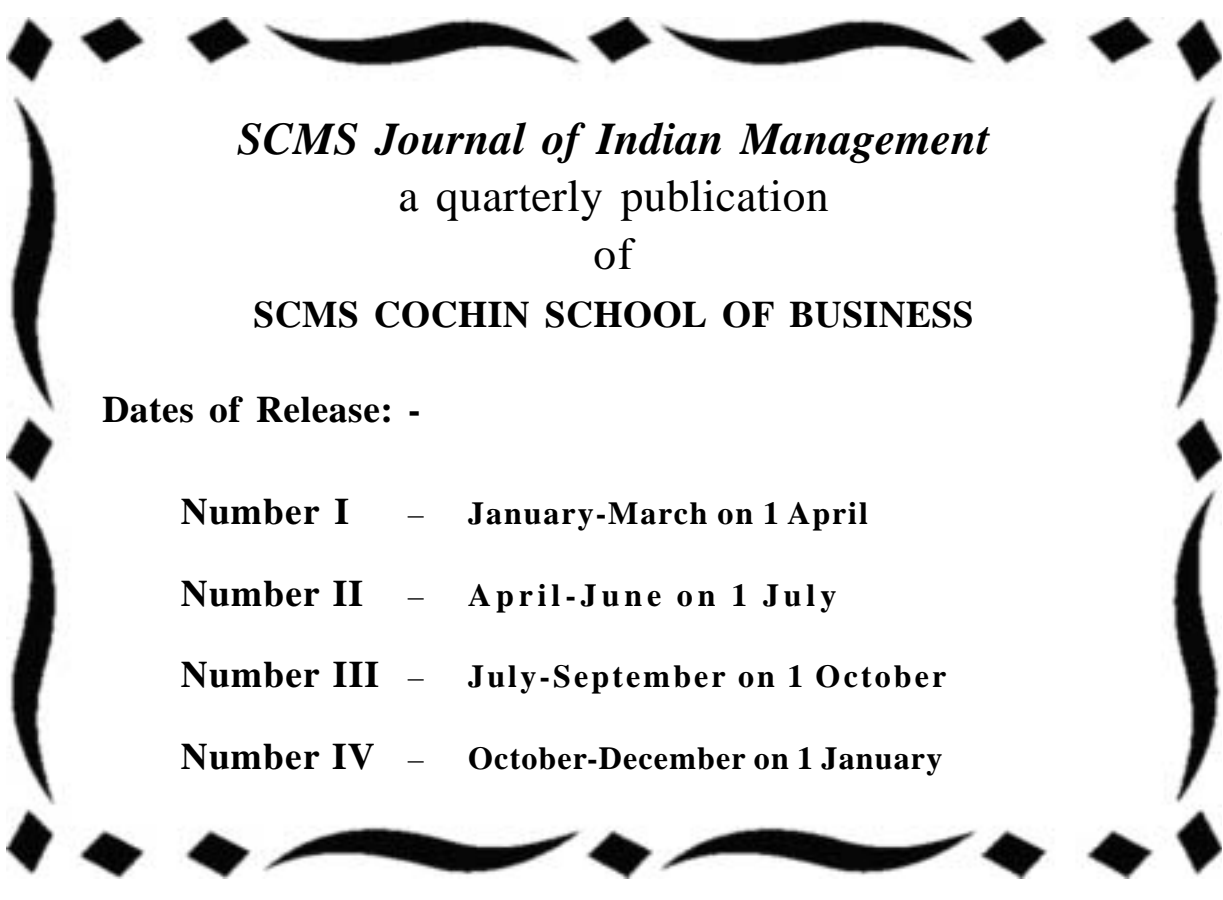
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