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JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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SIGNIFICANCE OF COST MANAGEMENT TECHNIQUES IN DECISION MAKING: AN EMPIRICAL STUDY ON ETHIOPIAN MANUFACTURING PRIVATE LIMITED COMPANIES (PLCs)

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ABSTRACT

The manufacturing industry plays a key role in Ethiopian economy due to its labour advantage, generating jobs, contributing to social and political stability, and adding high value exports to help the balance of payment. As Ethiopia becomes more and more active in its pursuit of global economic integration, the entry of many foreign as well as domestic companies into its own domestic market will surely intensify the competition. Recognizing the importance of cost management accounting techniques to the company's performance will help the company improve its decision making, competitiveness, reduce its operating costs and maximize its profitability. Cost Management is concerned with gathering and reporting internal financial information to facilitate decision-making process. As cost management is not required to conform to national accounting standards, it allows business to customize the cost management techniques as per demand of company. As a process of this customization, some advanced quantitative as well as number of qualitative techniques accompany with the traditional techniques, have been emerged to provide the information need in decision making. This study attempts to measure the significance of cost management techniques in decision making of the selected manufacturing Privated Limited Companies (PLCs) in Ethiopia. In doing so, a total of 33 manufacturing PLCs have been surveyed with a structured questionnaire by using 5 point Likert Scale measurement from different categories of manufacturing companies. A total of 33 questionnaires were distributed. Consequently 31 questionnaires were collected at gross response rate of 94%. Findings reveal that Budgetary Control followed by Funds Flow Analysis, Absorption Costing, ABC Analysis, Segment Reporting, and finally Total Quality Management (TQM) have been frequently high-ranking techniques. Secondly, the authors have recognized five factors to calculate the variability in decision-making with the help of rotated component matrix which shows that 68.262 % of the total variability has found in the usage of cost management techniques. Finally, it is also found that by using multiple regression model only 25.9% of the variation in decision making of manufacturing PLCs is explained by the 21 independent variables. So, manufacturing private limited companies have to think about production at lowest possible cost. On these circumstances, using only traditional cost and management accounting techniques are not giving the fruitful result to response to the keen competition. Management has to realize also the need for adopting the modern techniques and methods of cost management accounting techniques to evaluate outcomes associated with their operations and various problems, such as, asset utilization management, operating at reduce cost, improve profitability and optimizing the value/wealth of the firm. Therefore, manufacturing companies have to adopt advanced cost and management accounting techniques. Both traditional and advanced techniques affect the planning, control and decision making.

KEYWORDS

Cost Management Techniques, Manufacturing Companies, Mean Score, Factor Analysis, Regression Analysis.

I. INTRODUCTION

Decision making is a comprehensive process that comprises with identifying the problem and decision criteria, allocating weights to those criteria, moves to developing, analyzing and selecting an alternative that can resolve the problem, implementing the alternative and ending with the evaluating the decision's effectiveness. Cost Management is concerned with the use of information in facilitating managers to make informed business decisions effectively. Cost Management is not required to conform to national accounting standards. This allows business owners to adapt the management accounting techniques as per demand of the company. As a process of this customization, some advanced quantitative as well as number of qualitative techniques accompany with the traditional techniques, have been emerged to provide the information need in decision making.

Managerial accounting techniques and practices have changed in response to the challenges of global and domestic competition, international markets, technological advances, and complexity of business. Adoptions of these innovations by the future management accountant will need to be knowledgeable of production, quality control, marketing, and management strategy. The results also indicate a broadening of management accounting and a trend toward the integration of management accounting information with strategic planning, production, marketing, and financial management suggesting the emergence of the integrative area of cost management.

The changes that will be necessary for management accounting to be useful in the 21st century are different from the changes that have occurred in the past. In the past, the focus has been on "how can we improve what we do?" The focus for the future should be "how can we make accounting information more useful for decision making?" (Hoque, Zahirul AKM 1991)¹. The last two decades have been a period of wrenching change for many businesses and their decision making techniques. Many managers have learned that cherished ways of doing business do not work anymore and that major changes must be made in how organizations are managed and in how work gets done. These changes are so great that some observers view them as a second industrial revolution. This revolution is having a profound effect on the practice of managerial accounting. Since the early 1980s, many companies have gone through several waves of improvement programs, starting with Just-In-Time (JIT) and passing on to Total Quality Management (TQM), Process Reengineering and various other management programs. When properly implemented, these improvement programs can enhance quality, reduce cost, increase output, eliminate delays in responding to customers and ultimately increase profits (Garrison and Noreen, 2004)². Manufacturing Companies has been selected for conducting this study because manufacturing companies in Ethiopia are the one which most needs to implement modern concepts and techniques of cost management.

The aim of this study, therefore, is to outline the current state of the art in cost management accounting practice in manufacturing companies in Ethiopia and then to show the influence of cost management techniques in decision making. The study takes empirical approach. In doing so, the author has presented the study into five broad sections. After introduction section, in the second section the author has reviewed related literature, thirdly set the methodology of the study. Fourth section has been shown discussions and findings and finally conclusion with some research implication has been given in section five.

I.1 RATIONALE OF THE STUDY

Cost Management refers to the activities of managers in short-run and long-run planning and control of costs. Therefore, besides the traditional techniques new methods appear. Global market, international business process, technological innovation and customers' growing needs for high quality with low price focus managers" all these lead to attention to cost management. The new business environment demands relevant information and data about costs and performance within the organization's activities, processes, products, services and customers. Leading companies are using their costing systems to:

- Design products and services that both meet customers' expectations and can be produced and delivered at a profit;
- Signal where either continuous or discontinuous improvements in quality, efficiency, and speed are needed;
- Assist employees in their learning and continuous improvement activities;

- Guide product mix and investment decisions;
- Negotiate about prices, product features, quality, delivery and service with customers; and
- Efficient and effective distribution and service processes to target market and customer segments.

In recent years, the increasing level of global competition has intensified the challenges for the managers' and many experts have warned that if cost management accounting is to maintain its relevance, it needs to adopt to meet the changing needs of managers. To keep pace with this increasing market economy, it becomes imperative for the manufacturing companies to adopt a new cost management accounting techniques.

The cost management accounting literature advocates a decision relevant approach in which selling prices are determined after undertaking special studies that compare incremental revenues with incremental costs. Estimating incremental revenues requires demand estimates to be prepared for a range of possible selling prices. The optimal selling price is the price that maximizes the contribution towards common/unavoidable fixed costs and profit. Because pricing decisions have a direct effect on revenue, they have always occupied a crucial place in strategic planning. Regardless of product or industry, a well established price enables the firm to best capture the value embodied in a product and thereby establish a competitively advantageous position in the market. This can only be achieved by improving specific cost management techniques.

In Ethiopia, the research on Cost Management Accounting Practice (CMAP) is very rare that made the researcher interested to initiate a research in this area. It will enlarge the scope of further researches benefiting the practitioners to come up with feasible solutions to the problems identified in the research.

1.2 STATEMENT OF THE PROBLEM

In today's competitive world of business, having accurate information may be the key factor in distinguishing between the loser and the winner. Using more accurate cost information while determining the optimal product mix of a company put together management to make better decisions; and as a result, may have a greater effect on the success of a company. The potential for cost reduction via product cost management techniques is enormous. However, it is assumed that there is an enormous gap between the need for and supply of cost management information from product development up to its disposal through sales in the case of Ethiopian manufacturing companies. Thus, the purpose of this study is to assess the extent to which manufacturing private limited companies have altered their cost management practices along these lines, the perception of its success and their association with several contextual factors important for effective decision making.

1.3 RESEARCH QUESTIONS

The study tried to address the following specific research questions:

- What factors have shaped, and currently influence, cost management accounting practices in manufacturing Private limited companies in Ethiopia?
- Which cost and management techniques are effective on the profit planning decision and the overall satisfaction level of these techniques in manufacturing private limited companies on the basis of perception of managers?

1.4 OBJECTIVES OF THE STUDY

1.4.1: MAIN OBJECTIVE

The overall purpose of this study is to evaluate the "SIGNIFICANCE OF COST MANAGEMENT TECHNIQUES IN DECISION MAKING" by Manufacturing Private Limited Companies in Ethiopia.

1.4.2: SPECIFIC OBJECTIVES

The specific objectives of the study are as follows:

- To show the necessity of cost management and to notify its techniques;
- To assess the significance of quantitative and qualitative cost management techniques;
- To examine the usage level of cost management technique;
- To show the influence of cost management techniques in decision making, and
- To provide the recommendations.

II. REVIEW OF RELATED LITERATURE

II.1 EMPIRICAL STUDIES

The researcher has made an attempt here to review based on a few published studies made to have a picture of the findings, conclusions and suggestions forwarded by these studies with all the degree that it is going to help to identify the gaps in the literature.

Management accounting is a new discipline and is still very much in a state of evolution. Therefore, it comes across the same impediments as a relatively new discipline has to face sharpening of analytical tools and improvements of techniques creating uncertainty about their application. There is always a temptation to make an easy course of arriving at decisions by intuition rather than taking the difficulty of scientific decision making. It derives its information from financial accounting, cost accounting and other records. Management Accounting will not replace the management and administration. It is only a tool of management. Of course, it will save the management from being immersed in accounting routine and process the data and put before the management the facts deviating from the standard in order to enable the management to take decision by the rule of exception. The origins of modern management accounting can be traced to the emergence of managed, hierarchical enterprises in the early nineteenth century (Johnson and Kaplan. 1987)³.

The Industrial Revolution in the early nineteenth century resulted in the emergence factory system that dramatically changed the productions process. (Ashton, D., Hopper, T, & Scapens, R.W., 1991)⁴. This has created a new demand for accounting information for decision making.

A lot of management accounting information is based on quantitative and qualitative data. This interest was initially prompted by a perceived gap between the theory and practice of management accounting, and specially the generally held belief that the traditional wisdom of management accounting textbooks is not widely used in practice.

More than 30 popular cost and management accounting techniques have been introduced, since 1950. According to Smith (1999)⁵, the major developments in management accounting since 1950s can be explained as follows:

- Cost and management accounting innovations in 1950s can be identified as: Discount cash flows, Total quality management, Colum charts and Optimum transfer pricing.
- Cost and management accounting innovations in 1960s can be identified as: Computer technology, Opportunity cost budgeting, Zero-base budgeting, Decision tree, Critical path scheduling, and Management by objectives.
- Cost and management accounting innovations in 1970s can be identified as: Information economics and agency theory, Just-in-time scheduling, Strategic business units, Experience curves, portfolio management, Materials resource planning, Diversification, Matrix organization and Product repositioning.
- Cost and management accounting innovations in 1980s can be identified as: Activity based costing, Target costing, Value-added management, Theory of constraints, Vertical integration, Private labels and Benchmarking.
- Cost and management accounting innovations in 1990s can be identified as: Business process reengineering, Quality functional deployment, Outsourcing, Gain sharing, Core competencies, Time-based competition and Learning organization.

Chenhall H. Robert & Smith Langfield Kim (1998)⁶ have surveyed Australian manufacturing firms to identify the extent to which they have adopted certain traditional and recently developed management accounting practices. The findings indicate that, overall, rates of adoption of traditional management accounting practices were higher than recently developed techniques. However, newer techniques, such as activity-based costing, were more widely adopted.

The evidence suggests that the majority of large Australian firms have adopted a range of management accounting techniques that emphasize non-financial information, and take a more strategic focus.

Adler et al. (2000)⁷ has done a detailed examination of manufacturers' adoption and utilization of advanced management accounting techniques as well as perceived barriers as structural and environmental changes to implementation of new techniques by surveying 165 New Zealand manufacturing sites.

Joshi P.L. (2001)⁸ has done a study which examines the management accounting practices in a sample of 60 large and medium size manufacturing companies in India. The findings reveal that the adoption rate in India for traditional management accounting practices was higher than for the recently developed techniques.

Vergauwen GMC Philip & Kerckhoffs Christian (2005)⁹ have done a case study which showed Activity Based Costing (ABC) and throughput accounting (TA) as accounting tools to "structure" technical (process) insights in an accounting context. The case shows how working-floor insights and production process data can be used in the computation of income statements that are relevant managerial decision making.

Anand Manoj, Sahay BS & Saha Subhashish (2005)¹⁰ have shown that the Balance Scorecard adoption rate is 45.28 per cent in corporate India compared with 43.9 per cent in the USA. The financial perspective has been found to be the most important perspective followed by customers' perspective, shareholders' perspective, internal business perspective, and learning and growth perspective in the performance scorecard of corporate India.

Sarkar Bakul James & Yeshmin Farjana (2005)¹¹ has focused on the application of responsibility accounting as one of the management accounting techniques in 30 organizations. The authors have focused on four responsibility centre as cost center, revenue center, profit center and investment center to show the accountability of the organization. This study has also revealed that the most common technique - budget is using to evaluate the performance.

Cadez Simon (2006)¹² has identified 17 Strategic management accounting (SMA) techniques are reported data from 108 large Slovenian manufacturing companies. This study has revealed that there is a wide range of application rates for the techniques appraised: capital budgeting, quality costing and competitor performance appraisal are the most widely used; valuation of customers as assets, lifetime customer profitability analysis and life cycle costing are the least widely used.

To examine the status of use of management accounting techniques in the manufacturing enterprises of Bangladesh, a list of traditional and modern management accounting tools were identified and the extent of their use was evaluated in the study of Bidhan, C.M (2007)¹³. It was discovered that modern techniques like Activity-Based Costing, Target Costing, Just-in-Time (JIT), Total Quality Management (TQM), Process Reengineering and The Theory of Constraints (TOC) were not used in public and private sector manufacturing enterprises but a few Multinational Corporations (MNC) were using some of techniques like JIT and TQM.

Hart F. J. De & Wet De Johannes (2008)¹⁴ has investigated that how existing management accounting and financial management techniques can be adjusted to incorporate the EVA perspective.

Hoozee Sophie & Bruggeman Werner (2010)¹⁵ has conducted a paper which shows how collective worker participation and leadership style influence the emergence of operational improvements during the design process of a time-driven *activity-based costing* (ABC) system in a case study setting. The case findings suggest that, for operational improvements to appear during the design process of a time-driven ABC system, collective worker participation and appropriate leadership styles are indispensable.

Chand Mohinder & Dahiya Ashish (2010)¹⁶ has investigated and report the importance and usage of management accounting techniques in Indian SMHEs based on a structured questionnaire over 429 Indian hospitality small and medium enterprises. The findings have suggested that management accounting techniques have a great impact on different firm's aspects especially on cost reduction and quality improvement. Further results indicate the major obstacles for application of management accounting techniques in Indian SMEs relating to ownership and size characteristics and extensive high cost.

A recent study (Yeshmin and Fowzia, 2010)¹⁷, aimed to examine the use of the management accounting techniques in manufacturing and service industries of Bangladesh for discharging managerial functions. To achieve this objective, 151 organizations from manufacturing and service industries had been surveyed. By identifying 14 management techniques, three factors had been identified to determine the variability's of the usage level in managerial functions. The findings revealed that management accounting techniques such as financial statement analysis, budgetary control, CVP analysis, variance analysis and fund flow analysis were common 14 both the industries and were used frequently in managerial functions.

The present study has emphasized on the level of usage of twenty-one management accounting techniques in making effective decisions by the different manufacturing private limited companies in Ethiopia. This study would be of particular relevance to Ethiopia, because it would help to assess the significant influence of management accounting techniques in decision-making by manufacturing companies in Ethiopia.

III. METHODOLOGY OF THE STUDY

III.1 STUDY DESIGN

This study has employed empirical research design following a qualitative and quantitative approach to assess the significance of cost management accounting techniques in decision making evidence from Ethiopian Manufacturing Private Limited Companies.

III.2 DATA SOURCE AND COLLECTION METHODS

The data needed for this study is gathered mainly from primary data. In gathering primary data structured survey questionnaire has been used. The primary data was collected from the finance staff and top management of the respected companies. A total of 33 questionnaires were distributed. Consequently 31 questionnaires were collected at gross response rate of 94%. The application of the cost and management accounting technique is measured by the Scaling Technique and are presented in terms of its Mean Value/ Score based on 5 point Likert measurement scale (where 1 represents always, 2 represents frequently, 3 represents some times, 4 represents rarely, and 5 represents never) to each respondent. All have responded and the questionnaires are gathered. Secondary data is extracted from different books, local and international published articles, websites, seminar papers etc.

III.3 SAMPLING DESIGN

The sample frame employed for this study is ERCA list of firms.. A disproportionate stratified sampling design is followed where sample from each stratum is selected using convenient sampling technique. The criterion used to select the sample firms is that those manufacturing PLCs having at least five years capital investment, that is, from 2006/7 to 2010/11. The list was substantially refined and modified to obtain a list of firms consistent with the aims of the study and within the parameters the Ethiopia definition of a Private Limited Companies (PLCs). The study takes a sample size of 33 PLCs who fulfill this criterion. The companies selected as a sample were from both public and private sectors. Total 33 listed manufacturing companies have been surveyed. Among those, 6 textile & wool, 6 building materials, 7 food and beverage, 7 leather products and 5 hides and skin companies have been considered. The companies selected as a sample were from both public and private sectors. Time period of the study was March to July, 2012.

III.4 METHOD OF DATA ANALYSIS

In this study the authors have used three statistical techniques to represent the significance of management accounting techniques in decision making.

- **Mean Score** is used to measure the relative significance of the Management Accounting Techniques.
- **Factor Analysis** has been conducted to measure the variability of the Management Accounting Techniques in decision making.
- **Multiple Regression Model** has been applied to measure the significant influence of the Management Accounting Techniques in decision-making.

III.5 SCOPE AND LIMITATION OF THE STUDY

The present study has emphasized on the level of usage of twenty one cost management accounting techniques (See Table1) only in making effective decisions by manufacturing companies in Ethiopia and the **Limitations are:**

- The study is restricted to manufacturing Companies who are under engaged in operation for five consecutive years for the period of 2007– 2011 only. Other manufacturing companies' are beyond the scope of this study.
- Since this study was based on the measurement of managers' perception, a bias may occur in the survey. Therefore, the results may observe some nonobjective.
- Several behavioral and organizational variables (structure and Culture) are important to cost management accounting practice but will not be examined here.
- Difficulties in collection of data.

IV. DISCUSSIONS AND FINDINGS

The more the development of the market economy, is the more the significance of the cost and management accounting. To keep pace with this increasing market economy, it becomes imperative for the manufacturing companies to adopt a new cost management accounting techniques. It is also important for the private limited companies in Ethiopia.

Cost management accounting tools are essential to exert control over cost and to appraise management performance in different segments of an organization particularly in manufacturing organizations (Hilton, 2000)¹⁸. The implementation of the total cost management accounting methodology will help top management in their decision making, to select projects and prioritize them, and give the final decision whether to go or not, and if they decide to go whether to make it or buy it. Cost management accounting embraces a range of techniques essential to all phases of an asset life cycle – from providing reliable information for strategic decision making, to managing construction and maintenance costs.

A firm that fails to reduce costs as rapidly as its competitors will find its profit margins squeezed and its existence threatened. The competitive environment demands the development of sophisticated cost management accounting practices to keep cost down. From early on, the Japanese manufacturers recognized that the most efficient way to keep costs down was to design them out of products rather than to reduce costs after products entered production.

Nowadays, companies and managers need cost systems to perform three primary functions:

- Valuation of inventory and measurement of the cost of goods sold for financial reporting - because of the external circumstances with investors, creditors, regulators and authorities;
- Estimate of the cost of activities, products and services and customers – because of the internal managers needs to understand and improve the economics of their operations;
- Provide accurate and timely cost information and economic feedback to managers and operators about process efficiency to make both strategic decisions and operational improvements.

Under these conditions managers need to rethink their managerial practices and in close relation to this they need to reshape their existing cost and management accounting systems.

IV.1 DESCRIPTION OF COST MANAGEMENT ACCOUNTING TECHNIQUES

Table 1 below depicts the description of the twenty one qualitative and quantitative management accounting techniques are observed.

TABLE 1: DESCRIPTION OF COST MANAGEMENT ACCOUNTING TECHNIQUES

| Techniques | Descriptions |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QUANTITATIVE MANAGEMENT ACCOUNTING TECHNIQUE | |
| Budgetary Control | Budgetary control is the system of management control in which all the operations, as sales, purchase, production etc. are forecasted in advance and the results, when known, are compared with the planned targets (Chakraborty, 1977) ¹⁹ |
| Variance Analysis | Differences between standard prices and actual prices and standard quantities and actual quantities are called variances. The act of computing and interpreting variances is called variance analysis (Garrison and Noreen, 2004) ²⁰ |
| Cost-Volume-Profit Analysis(CVP) | Cost –Volume- Profit analysis helps managers understand the relationships among cost, volume and profit (Garrison and Noreen, 2004) ²⁰ |
| Ratio Analysis | Ratio analysis refers to such a treatment of the information contained in the Income Statement and the Balance Sheet so as to afford full diagnosis of the profitability, liquidity and financial soundness of the business (Maheshwari, 1989) ²¹ |
| Fund Flow Analysis | Working capital being life-blood of the business, analysis of fund flow is thus extremely useful. Financial analysts also have an understanding of changes in the distribution of resources between two balance sheet dates by analyzing the fund flow statements. |
| Cash-flow Statement | The statement of cash flows reports the cash receipts, cash payments and net changes in cash resulting from operating, investing and financing activities during a period (Weygandt et. al., 2007) ²² |
| Activity Based Costing | Activity-based costing (ABC) developed to provide more accurate ways of assigning the costs of indirect and support resources to activities, business processes, products, services, and customers (Kaplan and Atkinson, 2001) ²³ |
| Variable Costing | Variable costing is a technique where only the variable costs are considered while computing a cost of a product. The fixed costs are met against the total fund arising out of excess of selling price over total variable cost (Maheshwari, 1989) ²¹ |
| Absorption Costing | Under this technique, both variable and fixed costs are charged to production, i.e. total costs include both variable and fixed cost. |
| Target Costing | Target costing is a cost management tool for making reduction a key focus throughout the life of a product (Horngren, et. al., 2003) ²⁴ |
| Differential Costing | Differential cost is the difference in total cost between two alternatives. |
| Standard Costing | Standard cost is preset per unit and then actual cost is compared with the standard cost and finally a variance is sought out and action is taken accordingly. |
| Segment reporting | A segment is a part or activity of an organization about which managers would like cost, revenue or profit data. Effective decentralization requires segment reporting. In addition to the company wide income statement, reports are needed for individual. |
| Responsibility Accounting | The basic idea behind responsibility accounting is that a manager should be held responsible for those items- and only those items- that the manager can actually control to a significant extent (Garrison and Noreen, 2004) ²⁰ |
| JIT | JIT is a demand-pull manufacturing system in which each component in a production line is produced immediately as needed by the next step in the production line (Horngren, et. al., 2003) ²⁴ |
| QUALITATIVE MANAGEMENT ACCOUNTING TECHNIQUE | |
| MBE | Management by exception means that manager's attention should be directed toward those parts of the organization where plans are not working out for one reason or another. Time and effort should not be wasted focusing on those parts of the organization where things are going smoothly. |
| Total Quality Management | The most popular approach to continuous improvement is known as total quality management. There are two major characteristics of total quality management (TQM): (i)a focus on serving customers and (ii) systematic problem solving using teams made up of front-line workers(Garrison and Noreen, 2004) ²⁰ |
| Theory of Constraints | A constraint is anything that prevents one from getting more of what he/she wants. Theory of Constraint (TOC) maintains that effectively managing the constraint is a key to success (Garrison and Noreen, 2004). |
| Process reengineering | The fundamental rethinking and redesign of business processes to achieve improvements in critical performance measures such as cost, quality, service, speed and customer satisfaction.(Horngren, et. al., 2002) ³⁴ |
| Kaizen costing | Kaizen costing ensures continuous improvement by supporting the cost reduction process in the manufacturing phase. |
| QUALITATIVE &QUANTITATIVE MANAGEMENT ACCOUNTING TECHNIQUE | |
| Balance Scorecard | A balance scorecard consists of an integrated set of performance measures that are derived from the company's strategy and that support the company's strategy throughout the organization. Under the balance scorecard approach, top management translates its strategy into performance measures that employees can understand and can do something about. |

IV.2 DESCRIPTIVE STATISTICS

To examine the status of use of cost management accounting techniques in manufacturing PLCs in Ethiopia, a list of twenty-one traditional and modern cost management accounting techniques are identified and the extent of their usage was measured by the Scaling Technique and are presented in terms of its Mean Values/ scores under Table 1 for 31 sample manufacturing PLCs that have been in operation for the period of 2006/7-2010/11.

To determine the adoption levels of different cost management tools, the author has applied mean analysis. Here, the author has used 5 –point measurement scale where 1 denotes “no adoption” and 5 denotes “highest adoption”.

TABLE 2: RESPONSE TO RELATIVE SIGNIFICANT OF THE TECHNIQUES

| S. No. | Techniques | No. of Respondents | Degree of Application | | | | | Total | Mean Score |
|--------|---------------------------|--------------------|-----------------------|-----------------|----------------|---------------|---------------|--------------|------------|
| | | | SCALE | | | | | | |
| | | | Always 5 | Frequently 4 | Sometimes 3 | Rarely 2 | Never 1 | | |
| 1 | Budgetary Control | 31 | 28 (92.00) | 3 (8.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 31 100.00 | 4.90 |
| 2 | Cash-flow Statement | 31 | 25 (84.00) | 6 (16.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 31 100% | 4.81 |
| 3 | Absorption Costing | 31 | 20 (71.00) | 9 (25.00) | 2 (4.00) | 0 (0.00) | 0 (0.00) | 31 100% | 4.58 |
| 4 | Variance Analysis | 31 | 16 (58.00) | 12 (35.00) | 3 (7.00) | 0 (0.00) | 0 (0.00) | 31 100% | 4.42 |
| 5 | CVP- Analysis | 31 | 12 (47.00) | 11 (34.00) | 8 (19.00) | 0 (0.00) | 0 (0.00) | 31 100% | 4.13 |
| 6 | Ratio Analysis | 31 | 10 (40.00) | 13 (41.00) | 8 (19.00) | 0 (0.00) | 0 (0.00) | 31 100% | 4.06 |
| 7 | Target Costing | 31 | 0 (0.00) | 11 (43.00) | 18 (53.00) | 2 (4.00) | 0 (70.00) | 31 100% | 3.29 |
| 8 | Fund Flow Analysis | 31 | 0 (0.00) | 9 (36.00) | 18 (54.00) | 5 (10.00) | 0 (0.00) | 31 100% | 3.23 |
| 9 | ABC | 31 | 2 (11.00) | 4 (18.00) | 12 (41.00) | 13 (30.00) | 0 (0.00) | 31 100% | 2.84 |
| 10 | Differential Costing | 31 | 0 (0.00) | 7 (35.00) | 14 (52.00) | 1 (2.00) | 9 (11.00) | 31 100% | 2.61 |
| 11 | Variable Costing | 31 | 0 (0.00) | 5 (27.00) | 6 (25.00) | 15 (41.00) | 5 (7.00) | 31 100% | 2.35 |
| 12 | Standard Costing | 31 | 0 (0.00) | 0 (0.00) | 18 (75.00) | 5 (14.00) | 8 (11.00) | 31 100% | 2.32 |
| 13 | Segment reporting | 31 | 0 (0.00) | 0 (0.00) | 0 (0.00) | 17 (71.00) | 14 (29.00) | 31 100% | 1.55 |
| 14 | Responsibility Accounting | 31 | 0 (0.00) | 0 (0.00) | 0 (0.00) | 5 (28.00) | 26 (72.00) | 31 100% | 1.16 |
| 15 | JIT | 31 | 0 (0.00) | 0 (0.00) | 0 (0.00) | 3 (18.00) | 28 (82.00) | 31 100% | 1.10 |
| 16 | Total Quality Management | 31 | 0 (0.00) | 9 (40.00) | 17 (53.00) | 5 (7.00) | 0 (0.00) | 31 100% | 3.13 |
| 17 | MBE | 31 | 0 (0.00) | 0 (0.00) | 6 (37.00) | 6 (24.00) | 19 (39.00) | 31 100% | 1.58 |
| 18 | Process reengineering | 31 | 0 (0.00) | 0 (00.00) | 2 (17.00) | 1 (5.00) | 28 (78.00) | 31 100% | 1.16 |
| 19 | Kaizen costing | 31 | 0 (0.00) | 0 (0.00) | 0 (0.00) | 4 (23.00) | 27 (77.00) | 31 100% | 1.13 |
| 20 | Theory of Constraints | 31 | 0 (0.00) | 0 (0.00) | 0 (0.00) | 3 (18.00) | 28 (82.00) | 31 100% | 1.10 |
| 21 | Balance Scorecard | 31 | 0 (0.00) | 0 (0.00) | 10 (46.00) | 14 (43.00) | 7 (11.00) | 31 100% | 2.10 |

Source: Field survey results

Table 2 above reveals that among the mean score of the 17 numbers quantitative management accounting techniques, The author has found that the manufacturing PLCs frequently apply **budgetary control**, **cash flow statement analysis**, **Absorption Costing**, **variance analysis**, **CVP analysis**, and **Ratio Analysis**. **TQM** is widely used qualitative management accounting techniques. On the other hand, infrequently used management accounting technique is balanced scorecard which includes both quantitative and qualitative measurements.

IV.3 FACTOR ANALYSIS

Factor analysis has been conducted to measure the variability of the Management Accounting Techniques in decision making. Table 3 below demonstrated the results of this analysis.

TABLE 3: FACTOR ANALYSIS OF APPLICATION LEVEL OF MANAGEMENT ACCOUNTING TECHNIQUES

| variables | components | | | | |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|
| | 1 | 2 | 3 | 4 | 5 |
| Budgetary Control | 0.980 | | | | |
| variance analysis | 0.945 | | | | |
| CVP- Analysis | 0.873 | | | | |
| Ratio Analysis | 0.725 | | | | |
| Fund Flow Analysis | 0.632 | | | | |
| Cash-flow Statement | -0.971 | | | | |
| ABC | | | | 0.845 | |
| Variable Costing | | | 0.559 | | |
| Absorption Costing | 0.896 | | | | |
| Target Costing | | | 0.637 | | |
| Differential Costing | | 0.524 | | | |
| Standard Costing | | | | 0.668 | |
| Segment reporting | | | 0.927 | | |
| Responsibility Accounting | | | | | 0.463 |
| JIT | | | 0.875 | | |
| MBE | | | | 0.761 | |
| Total Quality Management | 0.639 | | | | |
| Theory of Constraints | | 0.546 | | | |
| Process reengineering | | 0.789 | | | |
| Kaizen costing | | 0.871 | | | |
| Balance Scorecard | | | | | 0.652 |
| % of variance explained | 41.293 | 8.532 | 7.243 | 6.826 | 4.367 |
| Cumulative % of variance explained | 41.293 | 49.825 | 55.069 | 59.895 | 68.262 |

Source: Regression results

The author has identified five factors in terms of eigenvalue of larger than 1.0 for application level of managerial techniques in making decisions by manufacturing PLCs using the factor analysis of 21 statements. These five factors can explain 68.262 % of the total variability in the application of management accounting techniques in manufacturing organizations.

The *first* factor as the highest loadings can alone explain 41.294% of the total variability of application related to eight variables pertaining as budgetary control, variance analysis, CVP analysis, ratio analysis, fund flow analysis, cash flow statement analysis, absorption costing, and total quality management. The *second* factor exhibits largely loadings for four variables which are relating to differential costing, theory of constraints, process-reengineering & kaizen costing. This factor can alone explain 8.532% of the total variability of application. The *third* factor having defined by four variables is variable costing, target costing, segment costing and JIT. This can settle 7.243% of the total variability. The fourth one extracted three variables as ABC, standard costing and MBE to show 9.826% in the variability of application. And the last factor loaded 4.367% of the variability of application contains two variables as responsibility accounting and balance scorecard. Now the author is trying to find out the level of significance of managerial techniques in decision making. In this regard the author has done multiple regression analysis.

IV.4 REGRESSION ANALYSIS

To investigate the influence of the managerial techniques in decision making on the basis of perception of managers, the researcher has used multiple regression analysis.

The model is specified as follows:

$$IDM = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} + \beta_{18} X_{18} + \beta_{19} X_{19} + \beta_{20} X_{20} + \beta_{21} X_{21} + e_i \text{ ----- eq. 1}$$

Where:

- IDM = Influence in Decision making
- β_0 = Constant
- β_1 = Coefficient of Budgetary Control
- β_2 = Coefficient of variance analysis,
- β_3 = Coefficient of CVP- Analysis,
- β_4 = Coefficient of Ratio Analysis,
- β_5 = Coefficient of Fund Flow Analysis,
- β_6 = Coefficient of Cash-flow Statement,
- β_7 = Coefficient of ABC,
- β_8 = Coefficient of Variable Costing,
- β_9 = Coefficient of Absorption Costing,
- β_{10} = Coefficient of Target Costing,
- β_{11} = Coefficient of Differential Costing,
- β_{12} = Coefficient of Standard Costing,
- β_{13} = Coefficient of Segment reporting,
- β_{14} = Coefficient of Responsibility Accounting,
- β_{15} = Coefficient of JIT,
- β_{16} = Coefficient of MBE,
- β_{17} = Coefficient of Total Quality Management,
- β_{18} = Coefficient of Theory of Constraints,
- β_{19} = Coefficient of Process reengineering,
- β_{20} = Coefficient of Kaizen costing,
- β_{21} = Coefficient of Balance Scorecard, and
- e_i = The Error Term

TABLE 4: MODEL SUMMARY

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|----------|----------|-------------------|----------------------------|
| 1 | 0.721(a) | 0.452 | 0.259 | 0.5275 |

Source: Regression results

TABLE 5: MODEL ANOVA

| Model | R | Sum of Squares | Df | Mean Square | F | Significance |
|-------|------------|----------------|----|-------------|-------|--------------|
| 1 | Regression | 12.098 | 21 | 0.573 | 2.668 | 0.012 |
| | Residual | 13.673 | 15 | 0.269 | | |
| | Total | 25.771 | 35 | | | |

Source: Regression results

TABLE 6: SIGNIFICANCE OF COST MANAGEMENT TECHNIQUES IN DECISION MAKING

| Factors | Standardized Coefficients | Mean |
|--------------------------|---------------------------|---------|
| Budgetary Control | 0.695 | 0.100'' |
| Fund Flow Analysis | 0.442 | 0.058'' |
| Absorption Costing | -0.381 | 0.084'' |
| ABC | -0.269 | 0.041' |
| Segment reporting | -0.493 | 0.027' |
| Total Quality Management | 0.377 | 0.031' |

'significant at 5%, ''significant at 10%

TABLE 7: COEFFICIENTS

| Model | Techniques | Un-standardized Coefficients | | standardized Coefficients | t | Significance |
|-------|---------------------------|------------------------------|------------|---------------------------|--------|--------------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 4.762 | 0.367 | | 12.698 | 0.000 |
| | Budgetary Control | 0.294 | 0.189 | 0.695 | 1.779 | 0.100 |
| | variance analysis | 0.115 | 0.189 | 0.281 | 0.783 | 0.522 |
| | CVP- Analysis | -0.061 | 0.136 | -0.137 | -0.451 | 0.564 |
| | Ratio Analysis | -0.175 | 0.256 | -0.453 | -0.531 | 0.549 |
| | Fund Flow Analysis | 0.193 | 0.095 | 0.442 | 1.949 | 0.058 |
| | Cash-flow Statement | -0.218 | 0.391 | -0.362 | -0.511 | 0.661 |
| | ABC | -0.178 | 0.094 | -0.269 | -2.117 | 0.041 |
| | Variable Costing | 0.038 | 0.076 | 0.090 | 0.452 | 0.659 |
| | Absorption Costing | 0.171 | 0.074 | -0.381 | 1.535 | 0.084 |
| | Target Costing | 0.136 | 0.078 | -.353 | 1.470 | 0.124 |
| | Differential Costing | 0.025 | 0.084 | 0.063 | 0.251 | 0.705 |
| | Standard Costing | -0.119 | 0.098 | -0.361 | -1.231 | 0.357 |
| | Segment reporting | -0.142 | 0.075 | -0.493 | -1.654 | 0.027 |
| | Responsibility Accounting | -0.071 | 0.075 | -0.313 | -1.117 | 0.286 |
| | JIT | 0.033 | 0.055 | 0.066 | 0.429 | 0.672 |
| | MBE | 0.044 | 0.078 | 0.078 | 0.425 | 0.641 |
| | Total Quality Management | -0.153 | 0.085 | 0.377 | -1.668 | 0.031 |
| | Theory of Constraints | 0.152 | 0.055 | 0.359 | 0.469 | 0.073 |
| | Process reengineering | -0.015 | 0.087 | -0.048 | -0.164 | 0.848 |
| | Kaizen costing | -0.005 | 0.070 | -0.008 | -0.043 | 0.745 |
| | Balance Scorecard | 0.066 | 0.089 | 0.175 | 0.782 | 0.467 |

Source: Regression results

The regression result shows that the multiple regression model is less significant (Table 5). The coefficient of determination indicates only 25.9% (Table 4) of the variation in decision making of manufacturing organizations is explained by 21 independent variables. It was observed that six factors (Table 6) are significant in decision making by manufacturing PLCs. The result of coefficients (Table 7) shows that among them budgetary control, fund flow analysis, absorption costing, balanced scorecard and TOC are significant at 10% level and ABC, segment reporting and inter firm comparison are significant at 5% level.

From the regression results it can be concluded that among the six influential factors Budgetary Control is the most significant factor for decision making in manufacturing PLCs in Ethiopia context. It can also be noted that other than these six techniques the remaining fifteen factors have insignificant influence in decision making.

V. CONCLUSION AND RESEARCH IMPLICATIONS

V.1 CONCLUSION

From this research, it can be concluded that among the cost and management accounting techniques investigated, manufacturing private limited companies in Ethiopia have been using widely the following techniques: Budgetary Control followed by funds flow analysis, Absorption Costing, ABC analysis, segment reporting, and finally total quality management (TQM)). These were strongly influencing the planning, controlling and decision makings. The remaining other techniques have either slightly been used or never have been used. It is evident from these investigations that the companies are heavily relying on the traditional methods.

Cost management refers to the activities of managers in short-run and long-run planning and control of costs. Therefore, besides the traditional techniques new methods appear. Global market, international business process, customers' growing needs for high quality with low price focus managers' and attention to cost management have contributed for these. At the inception of cost accounting concept, manufacturing companies used traditional cost and management accounting techniques. Now, competition and complexity of the structure of production process of products have become increased. So, manufacturing private limited companies have to think about production at lowest possible cost. On these circumstances, using only traditional cost and management accounting techniques are not giving the fruitful result to response to the keen competition. Management has to realize also the need for adopting the modern techniques and methods of cost management accounting techniques to evaluate outcomes associated with their operations and various problems, such as, and asset utilization management, operating at reduce cost, improve profitability and optimizing the value/wealth of the firm. Therefore, manufacturing companies have to adopt advanced cost and management accounting techniques. Both traditional and advanced techniques affect the planning, control and decision makings.

V.2 RESEARCH IMPLICATIONS

This paper has laid some groundwork to explore the significance of cost management accounting in decision making by Ethiopian selected manufacturing private limited companies upon which a more detailed evaluation could be based. Further work and detailed study is required to assess the application of CMAT in decision making to represent the total population of manufacturing companies. The result of the study is completely empirical one and the availability of data also hinders this study to make more analysis. Lack of awareness about the concept and usability of management accounting techniques of the concerned personnel of manufacturing private limited companies depart that companies from the maximum benefit of usage of management accounting techniques in decision making.

This study is based on few structured questionnaire in survey and some secondary data. Some cost management tools have been considered. But there is huge number of cost management tools. Only usage and application in decision making have been considered but what are the reasons behind it have not been concentrated. If the study considered the qualifications of them, the finding might be different. This study lacks consideration of a good number of cost management tools and also the level of the qualifications of them towards justification of their responses. Also merely manufacturing organization has been considered. The study could consider the usage and satisfaction levels of service organizations also. That prospect is kept open for further research.

REFERENCES

1. Adler, Ralph, Everett, Andre M and Waldron, Marilyn (2000), „Advanced management accounting techniques in manufacturing: utilization, benefits, and barriers to implementation“, University of South Australia Publication, Accounting Forum Business ISSN: 0155-9982.
2. Anand Manoj, Sahay BS and Saha Subhashish (2005), „Balanced scorecard in Indian Companies“, Vikalpa, Vol. 30, No. 2, pp. 11-25
3. Ashton, D, Hopper, T and Scapens, RW 1991, „Issues in Management Accounting“, Prentice-Hall, Hemel Hempstead.
4. Bidhan, CM (2007), „Application of Management Accounting Techniques in Decision Making in the Manufacturing Business Firms in Bangladesh.“, The Cost and Management, Vol. 35 No. 1 January-February, pp. 5-18.
5. Cadez Simon 2006, „The Application of Strategic Management Accounting Techniques in Slovenian Manufacturing Companies“, Zagreb International Review of Economics and Business, Volume: 9, pp: 61-75.
6. Chakraborty, H 1977, „Management Accountancy“, Vol. 1 (Calcutta: Nabavarat Publishers).
7. Chand Mohinder & Dahiya Ashish (2010), „Application of management accounting techniques in Indian small and medium hospitality enterprises: an empirical study“, International Journal of Entrepreneurship and Small Business, Volume 11, Number 1, , pp. 25-41(17).
8. Chenhall, R and Smith Langfield, K (1998), „Adoption and benefits of management accounting practices: an Australian study“, Management Accounting Research, Vol. 9 No. 1, pp. 1-19.
9. Garrison, H. Ray and Eric W. Noreen 2004, „Managerial Accounting“(New Delhi: Irwin McGraw – Hill).
10. Garrison, H. Ray and Eric W. Noreen 2004, „Managerial Accounting“(New Delhi: Irwin McGraw – Hill).
11. Hart F. J. De and Wet De Johannes (2008), „EVA and Innovations in Decision Making and Financial Management, Working paper series
12. Hilton, R, Maher, M & Selto, K 2000, Cost Management: Strategies for Business Decisions. London, Mc-Graw Hill Higher Education.
13. Hoozee Sophie and Bruggeman Werner (2010), „Identifying operational improvements during the design process of a time-driven ABC system: The role of collective worker participation and leadership style“, Management Accounting Research, Volume 21, Issue 3, pp. 185-198.
14. Hoque, Zahirul AKM 1991 „Researching Management Accounting Practice: The Debate about Quantitative and Qualitative Research“, Dhaka University Journal of Business Studies, 12(2): pp.19-32.
15. Horngren, CT, GL, Sundem and WO, Stratton 2002, „Introduction to Management Accounting“, [New Delhi: Pearson Education (Singapore) Pvt. Ltd.]
16. Johnson, HT & Kaplan, RS 1987 „Relevance Lost“, Harvard Business School Press, Harvard, USA.
17. Joshi PL (2001), „The international diffusion of new management accounting practices: the case of India Original Research Article“, Journal of International Accounting, Auditing and Taxation, Volume 10, Issue 1, pp. 85-109.
18. Kaplan, S. Robert and Anthony A. Atkinson 2001, „Advanced Management Accounting“, [New Delhi: Addison Wesley & Longman (Singapore) Pvt. Ltd.]
19. Maheshwari, SN 1989, „Management Accounting for Bankers“ (New Delhi: Sultan Chand & Sons Publishers).
20. Sarker Bakul James and Yeshmin Farjana (2005), Application of Responsibility Accounting: Bangladesh Perspective“, The Cost and Management, Vol. 33, No. 6.
21. Smith, M (1999), Management Accounting for Competitive Advantage, Sydney: LBC Information Services, First Edition.
22. Vergauwen GMC Philip and Kerckhoffs Christian (2005), „Using activity based costing and theory of constraints to enhance decision making at duo graphics b.v.: a case study“, Working Papers series, Management Accounting Research.
23. Wegmann Grégory 2007, „Developments around the Activity-based Costing Method: A State-of-the Art Literature Review“, Working Paper Series.
24. Yeshmin Farjana and Fowzia Rehana (2010), Management accounting Practices: A comparative analysis of manufacturing and service industries“, Journal of Centre for Socio-economic Research, ASA University Bangladesh, Vol. 4, No. 1

TECHNICAL EFFICIENCY ANALYSIS AND INFLUENCE OF SUBSIDIES ON THE TECHNICAL EFFICIENCY OF FARMS IN THE SLOVAK REPUBLIC

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ABSTRACT

Economic efficiency deals with effective evaluation of alteration of company's inputs on its outputs. Measurement of economic efficiency and its value is considerable background for competitiveness estimation of a company. In the paper we aimed at the technical efficiency analysis of farms in the Slovak Republic. For an evaluation of economic efficiency were used model of linear programming - DEA (Data Envelopment Analysis). With applied methods we found out a productivity growth of farms. The results show us that subsidies have a considerable influence on productivity and efficiency of farms. In the followed ten year period was shown high variability of followed input efficiency parameters in the agriculture. The growth of productivity was noticed during this period. The most expressive increase of productivity was after the entrance of Slovakia to the European Union when the subsidies increased and the foreign markets were opened without macroeconomic barriers.

KEYWORDS

Economic efficiency, Farms, DEA model, BCC model, CCR model.

JEL CLASSIFICATION

Q12, Q14, D24

INTRODUCTION

In present conditions of increasing globalisation of world economy and by stronger fight for higher share on markets, the companies should keep the most productive agriculture. The agricultural efficiency is influenced by the different natural conditions. The main factors which have impact on the productive process of companies are soil, granularity of land, steep land, depth of land and climate conditions. Other factors which influence the company are political, economic, social, technical and technological conditions and skills and quality of management of company. The ability of companies to be successful is showed in their results of earnings. For objective development evaluation of efficiency is good to know information from environment in which the companies are operating. It is information about financial situation of competitors, requests of financial and credit institutions and economic measures of government and their impact on company activity.

LITERATURE REVIEW

In connection with appraisal of competitiveness and capital resources of Slovak agriculture after the entrance to the European Union was facility of agriculture deficient and stagnated till 2004. Structural changes were not so marked in agricultural primary production to evocate pressure for changes in the structure of fixed capital. (Grznár, Szabo, 2005).

On the basis of the preliminary analysis were changes in the group of commercial companies, which was in 2004 the most widespread legal form of operating in agricultural primary production. Agricultural cooperatives remained dominance of area and operate on around 50% of agricultural land use. In the group of physical persons continues the increase of subjects and trend of increasing average farm area (Gubová, 2005).

The accession of the Slovak Republic to the European Union influenced operating of the agricultural companies. For the most important thing is considered the change of agrarian policy of Slovakia. In 2004 agriculture reached positive income, which was the highest after 1990. Economy measures, mainly subsidies contributed to this positive result. The value of subsidies was higher as in the years before accession to the European Union (Chrastinová, 2005).

Subsidies for the agriculture are very important and help to reach better income not just for companies but profitability of the commodities branch too. Without subsidies would be the majority of the agricultural producers in loss so in productive areas as in less favoured areas (Kubanková, 2005).

The effect on good results of earning in the branch of agriculture of the Czech Republic had the increasing growth of subsidies. After the first year of the entrance the Czech Republic to the European Union came to the changes in economic and social life. The obvious impact of the entrance Czech Republic to EU was shown in agrarian market and companies earning (Vaňek et al, 2005).

Mathijs (2002) in his studies compared the farm efficiency of different organisation forms of chosen companies from 1998 in Hungary and Bulgaria. The results of Hungarian companies specialized to the crop production showed that the highest average measure of efficiency reached the family farms (58%) then followed

commercial companies (50%) and co-operatives (44%). Analogical analyse in Bulgaria presents that the most effective were commercial companies (51%) after followed the family farms (44%) and co-operatives (43%). In the case of milk farms, in Hungary are the most effective family farms (43%), the same percentage of efficiency as family farms reached commercial companies and the lowest level of efficiency reached co-operatives.

Basic efficiency expression of company is presented by many authors as the relation of inputs which companies produce and outputs which are required to be used on transformation in the productive process.

Efficiency is maximizing output per unit from input, agricultural efficiency reflects a complex relationship among factors of production and the exogenous influence of nature (Macauley, 2007)

Total efficiency of company is created from two components: technical efficiency (TE) – it is called as managerial efficiency and allocation efficiency (AE) which is called as efficiency of input usage to their prices. Allocation efficiency or efficiency of input usage shows the company ability to use the inputs in optimal relation to their prices (Farrell, 1957). The company operates on production possibility frontier. From the point of quantitative analyses is needed this argument to correct.

Lissitsa and Balmann (2003) dealt with analyse of technical efficiency in Germany. They compared the efficiency during 1992 – 1995 and found out that big farms with the goal to be effective were restructured on smaller producing units and smaller farms reached better results as big co-operative and companies which during the transformation process were not restructured. From the point of productive program the companies specialized on animal production did not reach very high efficiency with comparing with companies specialized on crop production. The reason of higher efficiency of crop production was because of higher labour productivity and higher investment subsidies as by companies specialized on animal production.

In Slovakia Fandel (2002) compared the efficiency of companies on the base of agricultural land. According to his results found out that in the chosen size groups were quite the same average values of technical efficiency. The efficiency of companies depends on inputs usage to produce outputs and the regulation of inputs is in the competence of company management. The higher technical efficiency reached private farms in comparison with co-operatives. The co-operatives reached higher measure of efficiency of scale but after testing were not detected statistical proved differences between organisation forms of companies. The average efficiency were different but we can't say expressly which organisation form is the most effective.

Swinnen and Vranken (2005) compared technical efficiency between countries. They compared the efficiency of five countries by aggregate data. On the base of their analyses found out the differences in measures of technical efficiency of companies in country and so differences between countries. Reforms in followed countries have influence on the amount of technical efficiency. Higher measure of technical efficiency was reached by companies in countries with higher level of reforms. In the countries with lower level of reforms were just few effective companies. To the most effective countries belong Slovakia, Czech Republic and Hungary. Albania reached the technical efficiency on the level of 25 %.

Most of literature related to the measurement of economic efficiency has based its analysis either on parametric or on non-parametric frontier methods. The choice of estimation method has been an issue of debate, with some researches preferint the parametric and other the non-parametric approach (Murillo-Zamorano, 2004).

For following of the economic efficiency development is used non-parametric method DEA (data envelopment analysis). This method was used successfully many times by analysis of similar character. The analysis of efficiency by using of this method appears from the theory of efficiency and productivity (Fandel, 2002). The principle of this methodology is determining of linear convex envelopment which characterize the technology of product producing in the sence of production economy. The technology is presented as the reference set for estimation of relative efficiency of all products. Technological relation between inputs and outputs can be expressed as linear input transformation set (Debreu, 1951, Koopmans, 1951).

RESEARCH METHODOLOGY

Quantification of technical efficiency is very demanding on company data. The data which are needed for analyse have to be exact and completely for each year and each company. Panel data has to go out from real data. If there is by input or output not standard value e.g. negative or equal to zero this company can't be analysed. The data we used in this paper we utilised from Research Institute of Agricultural and Food Economics in Slovakia. Total amount of companies was 721 – co-operatives, farmers and commercial companies but after data correction we worked with collection of 490 agricultural companies in Slovakia.

By DEA analysis we used input model which is oriented of inputs by the set point of production. Inputs are: material, number of employers, stocks and not controllable input – tangible fixed assets. Output is revenue. We quantified the technical efficiency (TE) for every company before and after given subsidies with help of Kruskal – Wallis test. We verified if there is statistical arguable change between technical efficiency before and after given subsidies.

RESULTS

On the base of the results in table 1 and 2 the minimum value of total efficiency did not change either after subsidies in the collection of agricultural companies. The influence of the subsidies increased and the average efficiency was around 2 % what was statistical affirmed from the P-value. In next years of followed period the minimal efficiency increased after subsidies except of 2003 and 2006, when its value decreased about 1.81 % and 2.41 %. These changes are not statistical affirmed on the base of Kruskal-Wallis test. In 2003 farmers was not sure what will bring the entrance of Slovakia to the European Union. In this year the farmers had access to the bank loans because of not favourable natural conditions which followed into the low yield of crop commodities. The average efficiency increased after the subsidies in each year of followed except 2006. In this year the average efficiency decreased about 3,26 %. In 2005 average efficiency of companies was higher because of subsidies and it was about 4,36 %. In this year the farmers received more subsidies which had impact on the average value of efficiency.

TABLE 1: DESCRIPTIVE STATISTICS 1998-2009 TE WITHOUT SUBSIDIES

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| Min | 3,29 | 10,52 | 15,19 | 13,06 | 13,74 | 16,71 | 17,08 | 16,9 | 11,68 | 8,45 | 12,78 | 9,01 |
| Average | 32,717 | 38,480 | 44,874 | 41,815 | 50,045 | 49,054 | 40,481 | 46,777 | 40,637 | 27,752 | 38,58 | 28,12 |
| Max | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Standard Deviation | 23,213 | 23,830 | 21,397 | 21,960 | 20,830 | 21,223 | 16,042 | 21,360 | 21,088 | 18,374 | 22,01 | 19,26 |

Source: own calculation

TABLE 2: DESCRIPTIVE STATISTICS 1998-2009 TE WITH SUBSIDIES

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--------------------|----------|----------|----------|----------|--------|--------|----------|----------|----------|----------|----------|----------|
| Min | 3,29 | 11,52 | 15,76 | 15,85 | 13,94 | 14,9 | 17,51 | 18,16 | 9,27 | 8,47 | 12,69 | 8,79 |
| Average | 34,788 | 41,237 | 48,163 | 43,450 | 51,213 | 49,114 | 42,577 | 51,132 | 37,376 | 30,610 | 39,67 | 31,05 |
| Max | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| P-Value | 1,97E-07 | 2,80E-07 | 2,66E-07 | 1,84E-07 | 0,235 | 0,723 | 1,69E-07 | 2,12E-07 | 1,77E-07 | 1,66E-07 | 1,69E-07 | 1,65E-07 |
| Standard Deviation | 23,519 | 23,747 | 20,786 | 22,099 | 20,436 | 21,209 | 16,107 | 21,077 | 22,558 | 19,844 | 21,971 | 19,882 |

Source: own calculation

By efficiency evaluation of company is important to tell how outputs will change because of inputs increasing. The return of scale describes this relation. In 1978 authors Charnes, Cooper and Rhodes evolved the model called CCR model. This model informs about that each unit of input produces the same amount of output. It is the constant return of scale. Model CCR can be input oriented – its intention is to decrease inputs by no change of outputs. On the other hand the model CCR can be output oriented – it means that this model increases the outputs without to change the inputs. The key of new approach is a participation of the optimal frontier into three parts to increasing, constant and decreasing returns to scale [Banker, Thrall, 1992].

In 1984 authors Banker, Charnes and Cooper evolved modified model CCR which was marked as BCC model. This model works with variable returns of scale – decreased, increased and constant. By BCC models the canonical form of data is changing on convex what means that models mark higher amount of unit as effective.

By analyse of agricultural companies' collection we used models CCR and quantified the measure of technical efficiency by the constant returns of scale. If this collection of agricultural companies would be evaluated by BCC model on the level of variable returns of scale we detected that all companies which are effective by constant returns of scale are effective too by variable returns of scale. Other way around it is not valid. On the level of variable returns of scale are effective that companies too which transform the inputs on outputs but their size is not optimal.

To quantify if the company is effective according to the size we have to count the efficiency of scale on the base of relation of technical efficiency by the conditions of constant returns of scale and technical efficiency by the conditions of variable returns of scale. If this relation is equal to one then the size of company is optimal.

TABLE 3: CONSTANT REVENUES, DECREASING REVENUES AND INCREASING REVENUES IN AGRICULTURAL COMPANIES

| Indicator/ Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Constant revenues | 26 | 39 | 29 | 34 | 35 | 32 | 13 | 39 | 23 | 24 | 28 | 15 |
| Increasing revenues | 359 | 217 | 358 | 176 | 281 | 327 | 352 | 363 | 304 | 161 | 341 | 302 |
| Decreasing revenues | 105 | 234 | 103 | 280 | 174 | 131 | 125 | 88 | 163 | 305 | 121 | 173 |

Source: own calculation

From total amount of 490 companies in 1998 were on the level of constant return of scale 26 companies and other companies were insufficient. 105 companies were in the area of decreased returns of scale what mean that they should decrease their production to increase the efficiency of scale. 359 companies operated with increased returns of scale what means that unit of input brings higher marginal income and from this reason they should increase their production by rational input usage. To the next year the amount of companies with optimal size increased on 39 companies. In this year the amount of companies in the area of decreased returns of scale grew up and 234 companies should cut down the scale. In 2000 the number of companies in area of increased returns of scale grew up on 141 companies what means that the companies should enlarge their operating activities to be closer with productivity to the most effective companies. In 2001 in the branch were 456 companies which not have the optimal scale of their production. From these companies 280 companies were too big and their efficiency should be increasing if they decreased the scale of their production. 176 companies were in the area of the increasing returns of scale so from rational point of view it means that they should increase the production. In that case the total productivity of branch would be higher about 0.03% above maximum if they would reduce amount of inputs on optimal level. In 2003 from the point of view of scale the optimal structure had just few producers. Constant returns of scale reached just 32 companies so it is at least as was total amount of producers operated on the production possibilities frontier. 131 companies should decrease their production and 327 companies (66.7%) are in the area of increased returns of scale so for more effective production they should the scale of production increase. Companies with growing returns of scale was predominating the companies with decreased returns of scale before 2007. In the last followed ten year period in the area of increased returns of scale were just 161 companies and the decreased returns of scale reached 305 companies. From these results we can say that companies wanted to produce lot of products without to pay attention on efficiency. Majority of companies should reduce their production scale.

TABLE 4: DEVELOPMENT OF TECHNICAL EFFICIENCY IN AGRICULTURAL COMPANIES WITHOUT SUBSIDIES

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0-20% | 186 | 91 | 13 | 33 | 3 | 2 | 5 | 9 | 48 | 193 | 59 | 132 |
| 20,1%-40% | 185 | 245 | 253 | 269 | 183 | 200 | 298 | 226 | 249 | 235 | 218 | 223 |
| 40,1%-60% | 57 | 73 | 130 | 102 | 176 | 179 | 142 | 154 | 121 | 30 | 134 | 62 |
| 60,1%-80% | 26 | 31 | 47 | 43 | 74 | 57 | 23 | 49 | 38 | 13 | 44 | 47 |
| 80,1%-99,9% | 11 | 18 | 18 | 13 | 18 | 18 | 10 | 16 | 9 | 2 | 11 | 14 |
| 100% | 25 | 32 | 29 | 30 | 36 | 34 | 12 | 36 | 25 | 17 | 24 | 12 |

Source: own calculation

TABLE 5: DEVELOPMENT OF TECHNICAL EFFICIENCY IN AGRICULTURAL COMPANIES WITH SUBSIDIES

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0-20% | 156 | 54 | 4 | 15 | 2 | 5 | 3 | 1 | 116 | 119 | 22 | 95 |
| 20,1%-40% | 197 | 252 | 219 | 277 | 168 | 188 | 261 | 187 | 209 | 294 | 189 | 201 |
| 40,1%-60% | 66 | 94 | 159 | 106 | 198 | 179 | 176 | 170 | 93 | 32 | 179 | 106 |
| 60,1%-80% | 31 | 38 | 55 | 47 | 66 | 66 | 26 | 71 | 39 | 20 | 58 | 57 |
| 80,1%-99,9% | 14 | 12 | 25 | 11 | 21 | 19 | 11 | 24 | 10 | 1 | 14 | 16 |
| 100% | 26 | 40 | 28 | 34 | 35 | 33 | 13 | 37 | 23 | 24 | 28 | 15 |

Source: own calculation

In 1998 before reallocation of subsidies the most farms (76%) operated in the interval of technical efficiency 0 – 40%. After reallocation of subsidies grew up the amount of agricultural companies in interval of 20,1 – 40 % about 12 companies. On the production possibilities frontier 25 companies were operating (it is about 5%) before subsidies and this amount increased about 1 company after reallocation of subsidies. In 1999 the most of companies reached the efficiency up to 60%. The efficiency without subsidies reached 91 companies lower than 20 % from total amount of companies' collection. The allocation of subsidies this number decreased on 54 producers. According to this decrease after allocation of subsidies came to increase of companies on the level of efficiency between 20,1 – 40% about 7 companies. In the interval of efficiency from 40,1% up to 60% came to increasing of companies about 21. On the production possibilities frontier begun to produce after subsidies 40 companies what is increase about 14 companies in comparison with year before.

Significant efficiency increase is conspicuously in 2000, where were in the branch only 13 companies on level till 20% and after given subsidies, this share decreased on 4 companies. It was change opposite 1999 about 50 companies. The share of companies with efficiency between 20,1% till 40% decreased. In this interval were around 50% of all production units. Abrupt increase of efficiency was in range 40,1% till 60%, where reached their results of operating about 159 companies. By the subsidies influence one of the company diverted from production possibility frontier to interval till 99,9%.

In 2001 the amount of producers in range up to 20% scaled up after subsidies allocation about 11 producers. The highest number of producers operated in the interval of efficiency from 20,1% up to 40%. Before subsidies it was 54,9% of producers and after subsidies increased this amount about 1,64%. In comparison with 2000 the count of companies increased on the branch level of production frontier on 34 companies. After this came to decreasing of producer's count with efficiency from 80,1 to 99,9 % from current amount 25 companies after subsidies on 11.

Continually increasing of input usage efficiency has impact on the companies which operate in not effective intervals. In the interval up to 20 % (the less effective level) were 3 % of companies without supports and just 2 companies after supports in 2002. The lower count of companies reached the efficiency in the range 20,1 – 40% in comparison with the most effective companies of the last year. We can see the increase of companies in the range from 60,1 to 80% on 74 companies (without subsidies) and 66 companies (after subsidies). Medium increase we can follow by companies which produce on the production possibilities frontier, where the count of companies after subsidies increased on 35 companies.

Year 2003 was not so successful for farmers as other years because of not positive climate conditions. In this year companies reached very low level of profitability and crops. Because of these reasons the companies had better conditions from banks to take loans for their activities and to reach better results

after year 2003. Technical efficiency was in these conditions on the lower level as in the last period. The state support had positive effect but just by few companies because not all companies received subsidies from the state and the subsidies was not in the same amount for each company. Partially the count of companies after subsidies decreased in the range of efficiency from 20,1% to 40 % about 12 companies. Constant count of companies (179) was in the interval from 40,1 to 60%. The efficiency level from 60,1% up to 80% were able to increase just 9 producers after the allocation of subsidies.

Year 2004 was important because of entrance to the European Union and from first May was applied Common Agricultural Policy of EU. CAP adapted approach of subsidies payment. The new rules of agrarian policy had impact on reached efficiency in this branch. In agricultural operated before given subsidies 60,81% companies with efficiency from 20,1% till 40% against 12 companies which operated on the production possibility frontier. After given subsidies this number of companies decreased from 298 on 261 companies and so the number of companies with efficiency from 40,1% till 60% increased from 142 on 176 companies. The number of companies on the level from 60% - 80% increased from 23 on 26 companies because of subsidies. One company reached efficiency till 100% and so the group of producers on production possibility frontier increased about 1 company on final count 13 companies.

In 2005 the amount of companies with technical efficiency from 20,1% to 40% decreased and it came to increasing of companies in the range of technical efficiency from 60,1% to 80% (increase about 45 companies after subsidies in comparison with year before). 37 companies operated on the production possibilities frontier after subsidies what means the growth about 24 producers in comparison with 2004.

According to our results we can say that the share of companies with efficiency 0 – 40% scaled up in 2006. The efficiency in the branch should get worst after allocation of subsidies. This situation is caused by higher amount of subsidies to 23 companies which produced on the production possibilities frontier and to these companies again increased the efficiency and the production possibilities frontier. The companies were not competitive without subsidies what caused the decrease of companies' efficiency. 93,2 % of companies would be not able to reach the production possibilities frontier.

Similar like in 2006 also in 2007 the share of companies with efficiency up to 40% increased. Companies which invested to the technologies used European funds and were not afraid to take loans. In last period companies have production function higher as the average value of low effective companies and it was because of investing activities. The low effective group of companies contains 90,8% of companies. 17 companies produced on the production possibility frontier before given subsidies. After given subsidies this number increased around 7 companies.

Year 2009 is signed by economic crises which hit all branch of agriculture of Slovakia. From total amount of analysed companies operated on the production possibility frontier after subsidies 15 farms what is with comparison with 2008 about 13 farms less. Around 41% of companies were in the interval from 20,1% - 40% after subsidies.

CONCLUSION

On the base of our analyse we detected that the efficiency of companies increased by subsidies allocation in particular years in average about 0,06% up to 4,36%. All these changes were statistical approved except 2003. The reason of this situation was that except of subsidies the companies took special loans from the state for bypassing higher loss caused by worst climate conditions. In general we can say that the subsidies had positive impact on the technical efficiency of companies which reached the values of efficiency up to 40% compared with companies which produced on the production possibilities frontier. It means that financial support was good divided and helped mainly to companies which really needed that help. On other hand these subsidies were for companies very important but in the consequence of subsidies can endanger degeneration of production environment. Some companies are prosperous just because of subsidies and without them they would be not competitive. Except of based company production envoi the agricultural producers have other function too. We are talking about keeping of employment and regional development in many areas which are not interesting for investors from secondary sector.

The allocation of subsidies leaded into decrease of companies which produced on the production possibilities frontier about 1 company in 2000, 2002 and 2003. In 2006 the count of the most effective companies decreased about 2 companies. The opposite effect we can see in 2007. After allocation of subsidies the level of efficiency increased in each year and on the production possibilities frontier started to produce around 24 companies.

From the point of companies size the majority of producers were in the area of increased returns of scale what means that companies were not conveyable in followed period. These companies should increase their scale of production. In the last year of followed period the situation changed and in the area of increased returns of scale was just around 161 companies.

REFERENCES

1. BANKER, R.D. – CHARNES, A. – COOPER, W.W., (1984), "Some models for the estimation of technical and scale inefficiencies in Data Envelopment Analysis." *Management Science* 30,1984, p.1078-1092
2. BANKER, R.D. – THRALL, R.M., (1992), "Estimation of returns of scale using Data Envelopment Analysis." *European Journal of Operational Research* 62. 1992, p.74-84.
3. CHARNES, A. – COOPER, W.W. – RHODES, E., (1978), "Measuring the efficiency of decision making units." *Journal of Operational Research*, 1978, p.429-441
4. CHRASTINOVÁ Z., (2005), "Medium-term vision of integration changes impact in agriculture on the institutional structure of countryside". Bratislava, VÚEPP, 2005
5. DEBREU G., (1951), "The Coefficient of Resource Utilization." *Econometrica Journal of the Econometric Society*, Vol.19, No. 3.1951, p.273-292,
6. FANDEL P., (2002), "Factors of efficiency and profitability of agricultural companies in the Slovak Republic." Bratislava: VÚEPP, 2002
7. FARREL M.J., (1957), "The measurement of productive efficiency." In: *Journal of the Royal Statistical Society*. Vol.120, part III., 1957, p.253-281
8. GRZNÁR, M. – SZABO, Ľ., (2005), "Efficiency and productivity of agriculture and agricultural companies." *Economy of Agriculture V*, 2005, Num.1,VUEPP Bratislava, p.23-28. ISSN 1335-6186
9. GUBOVÁ M., (2005), "The Development of company's structure in agricultural producing." Bratislava: VÚEPP, 2005. ISBN 80-8058-377-3
10. KOOPMANS T.C., (1951), "Efficient Allocation of Resources". *Econometrica Journal of the Econometric Society*, Vol.19, No.4, 1951, p.455-465
11. KUBANKOVÁ M., (2005), "Evaluation of efficiency trends of main agricultural products before and after the entrance of the Slovak Republic to the EU and their expecting development". In study 106/2005. Bratislava: VÚEPP, 2005, 28 p. ISBN 80-8058-408-7
12. LISSITSA, A. – BALMANN, A., (2003), "Efficiency and productivity of farms in post-unification Germany." *Debrecen: Efta* 2003. p. 439-450
13. MACAULEY Molly K., (2007), "Decision Support for Agricultural Efficiency." Sept 2007. <http://www.climate-science.gov/Library/sap/sap5-1/public-review-draft/sap5-1prd-Ch1.pdf>
14. MATHIJS E., (2002), "Microeconomic analysis of farm restructuring in Central and Eastern Europe." *Agricultural Economics* 2002. p.189-196. ISSN 0139-570X
15. MURILLO-ZAMORANO L.R., (2004), "Economic Efficiency and Frontier Techniques". In *Journal of Economic Surveys*. Vol 18, No.1. p.33-77, February 2004
16. SWINNEN, J. – VRANKEN, L., (2005), "Reforms and efficiency change in transition agriculture". Paper prepared for presentation at the 11th Congress of the EAAE (European Association of Agricultural Economists) "The future of rural Europe in the global agri-food system". Copenhagen, Denmark, 24-27 August 2005
17. VAŇEK D. et al., (2005), "Czech Agriculture after Accession to the EU." "Year after" Prague: VUZE, 2005. ISBN 80-86671-29-1

A COMPARISON OF DATA MINING TECHNIQUES FOR GOING CONCERN PREDICTION

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ABSTRACT

Going concern is one of the fundamental concepts concerning auditing and accounting. Since financial statements contain a potentially large volume of diversified information, sometimes firm's going concern status evaluation is a complex and critical process and the complexity of this issue has led to development of numerous models for going concern prediction (GCP). In this paper we proposed a novel approach using Imperialistic Competition Algorithm (ICA). In addition, we have presented more advanced data mining techniques, like Adaptive Network Based Fuzzy Inference Systems (ANFIS) and Support Vector Data Description (SVDD) for GCP. For this purpose, after data collection we have selected the final variables from among of 42 variables based on feature selection method using stepwise discriminant analysis (SDA). In the second stage we have applied 10-fold cross-validation to find out the optimal model. Results of three models statistically have been compared by McNemar test. Our empirical experiment indicates that ICA is more efficient than ANFIS and SVDD, but ANFIS does not significantly differ from SVDD. The ICA model reached 99.85 and 99.33 percent accuracy rates so as to training and hold-out data.

KEYWORDS

Going concern prediction, Feature selection, Imperialistic competition algorithm (ICA), Adaptive Network Based Fuzzy Inference Systems (ANFIS), Support Vector Data Description (SVDD).

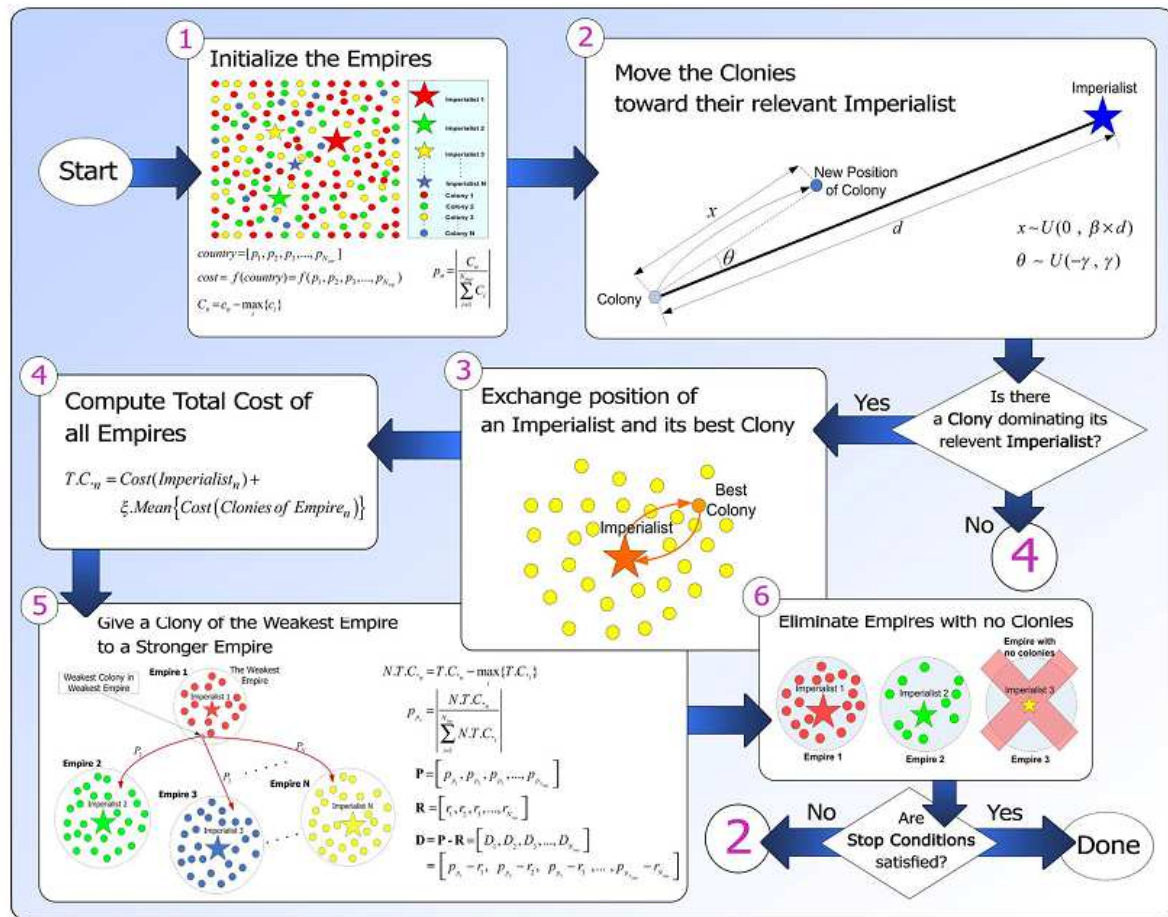
INTRODUCTION

Over the four decades, going concern prediction (GCP) has become an important research in finance areas. In general, the objective of GCP is to develop models that can extract novel knowledge from previous observations and appraise corporate status. Two major factors that are effective in GCP area are: significant predictor variables and the classifier used in developing the prediction model (Lin, Liang, & Chen, 2011). In this study, we have selected effective financial futures by prior studies and stepwise discriminant analysis (SDA). On the other hand, research methodologies used in GCP are divided into two categories: statistical methods and data mining techniques. The first group comprises methods like univariate analysis, multivariate discriminant analysis (MDA) and logistic regression (logit). Nowadays statistical methods because of the restrictive assumptions such as linearity, normal distributed independent variables and functional relations among them are less used today. These assumptions are not often compatible with real-world applications. In recent years, data mining, a novel field of intelligent data analysis established and developed and began to appear and grow promptly in the background of abundant data and poor information. During the last years, data mining plays a key role in financial area. These techniques do not have restrictive assumptions like statistical methods. There are many techniques that can be employed in prediction of financial status of firms (for example, see: Li & Miu, 2010; Mokhtab Rafiei & et al., 2011; Sun & Li, 2011; Harada & Kageyama, 2011; Chen, 2012; Hsieh & et al., 2012; Sun et al., 2011; Tsai & Cheng, 2012; Xiao & et al., 2012). In this paper we have applied three models for GCP using Imperialistic Competition Algorithm (ICA), Adaptive Network Based Fuzzy Inference Systems (ANFIS) and Support Vector Data Description (SVDD). The survey results are useful for following people: 1. Auditors - they can exert these models in the final stages of the audit engagement, as a quality control device or as a benchmark. 2. Managers - they can keep track of firm's performance and these models will help them to identify important trends. 3. Investors, potential clients and stakeholders – these models can be evaluated risk of his loan and apprised viability of companies. The reminder of this paper organized as follows. Section 2 introduces models of this study. Section 3 contains data and method of future selection. Section 4 presents the results of estimated models and the last section is conclusion.

PREDICTION MODELS**IMPERIALIST COMPETITIVE ALGORITHM (ICA)**

Imperialist Competitive Algorithm (ICA) is a recent global search meta-heuristic that applies imperialism and imperialistic competition process as a source of inspiration. ICA considers the imperialism as a level of human's social evolution. ICA by mathematically modeling presents an algorithm for solving problems of optimization. Since its inception this new algorithm has been extensively adopted by researchers for solving various optimization tasks. This method can be applied to design optimal layout for factories, intelligent recommender systems and so on. ICA has divided countries into two categories: imperialist states and colonies. The main part of this algorithm is imperialistic competition and hopefully makes the colonies to converge to the global minimum of the cost function (Atashpaz-Gargari & Lucas, 2008). In Fig. 1, the stages of implementation of this algorithm are described.

FIG.1: OVERVIEW OF IMPERIALISTIC COMPETITION ALGORITHM



ADAPTIVE NETWORK BASED FUZZY INFERENCE SYSTEMS

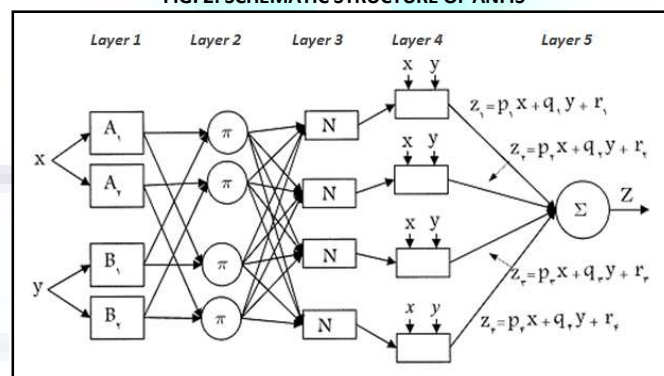
ANFIS is a multi-layer adaptive network-based fuzzy inference system proposed by Jang (1993). This method resembles to a fuzzy inference system except that it uses back-propagation for minimizing errors. ANFIS operates in a manner similar to both artificial neural networks and fuzzy logic. In both of them, by the input membership function the input goes through the input layer and by the output membership function the output is displayed in output layer. Due fuzzy logic applies neural networks, a learning algorithm can be applied to alter the parameters until finding an optimal solution. So ANFIS uses either back-propagation or a combination of least squares estimation and back-propagation to appraise the membership function parameters (Jung & Sun, 1997; Chen, 2011).

Assuming that the fuzzy inference system has two inputs (x and y) and one output (z) (see Fig. 2) a common rule set with two fuzzy if-then rules is as follows :

Rule 1: If x is A_1 and y is B_1 , then $z_1 = p_1 x + q_1 y + r_1$

Rule 2: If x is A_2 and y is B_2 , then $z_2 = p_2 x + q_2 y + r_2$

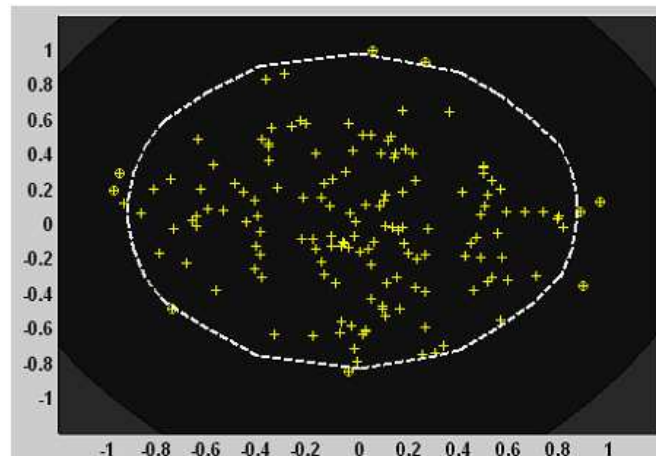
FIG. 2: SCHEMATIC STRUCTURE OF ANFIS



SUPPORT VECTOR DATA DESCRIPTION

The Support Vector Data Description is a one class classification algorithm. It evaluates the distributional support of a data set. A flexible limited boundary function is utilized to separate trustworthy data inside from outliers on the outside (as shown in Fig. 3). finding a minimum quasi-spherical with all the objective samples and none of the non-objective samples is the main purpose of SVDD (Gorgani & et al., 2010; Tax & Duin, 2004).

FIG. 3: MODELING OF GCP USING SVDD AND OUTLIERS DETECTION



RESEARCH DESIGN

DATA COLLECTION

The data set of this research consisted of 146 Iranian manufacturing companies. All of these companies were or still are listed on the Tehran Stock Exchange (TSE). 73 companies went bankrupt under paragraph 141 of Iran Trade Law¹ between 2001 and 2011. We applied “matched” companies and the number of bankrupt companies is equal to number of going concern companies (non-bankrupt) (like Min & Lee, 2005; Etemadi & et al., 2009; Chaudhuri & De, 2011; Chen, 2011; Andrés & et al, 2012; Brezigar-Masten & Masten, 2012; Olson et al., 2012). Due to low number of companies, we could not match two groups by industries completely together. Also size of the firms has been considered as a potential explanatory variable in feature selection steps.

FEATURE SELECTION

By reviewing research literature in the field of financial forecasting status of firm, it is characterized that the most of the researchers selected a limited set of variables recommended by prior studies (including financial and non-financial indicators). This problem often leads to reduce generalization of model (Naes & Mevik, 2001). Feature selection boosts the prediction performance of the predictors and prepares faster and more cost-effective predictors, and provides a better understanding of the underlying process that is stemmed from the data. Moreover, reducing the number of irrelevant or redundant variables reduces the running time of a learning algorithm. There are many advantages of feature selection such as reducing the measurement, facilitating data visualization and understandable data and storage requirements such as: reducing times of training and utilization and etc (Guyon & Elisseeff, 2003; Ashoori & Mohammadi, 2011). Accordingly, the variables selected in this research are based on a combination of all feature selection techniques and experiments. In addition there is no reliable published relevant data about cash flow statement before 2008 and that's why our candidate financial variables do not include indicators directly related with cash flows.

This study applied a three stages process for feature selection. In the first stage, The 42 variables applied in this study as shown in Table 1, were chosen after reviewing the financial and accounting literature dealing with financial status prediction models in Iran. In the next stage, we applied T-test at a significant level of 0.05 and according to this experiment; variables that potentially had the ability of predicting going concern in the model were selected. In the final stage, stepwise discriminant analysis (SDA) selected optimal variables. We have chosen SDA because it is a dominant method in researches conducted in the accounting field (e.g.: Chen & Shemerda, 1981; Taffler, 1982; Altman, 1993; Alici, 1996;).

With significant level set at the 0.05 level, the discriminant stepwise procedure selected 4 variables for t-1 from the 42 candidate variables for the models which could best differentiate the going concern of firms from the non-going concern firms. These selected financial ratios are: Total liabilities to total assets (x_9), Retained earnings to total assets (x_{31}), Operational income to sales (x_{36}) and Net income to total assets (x_{34}).

¹Under paragraph 141 of Iran Trade Law, a company is bankrupt when its total value of retained earnings is equal or more than 50% of its listed capital.

TABLE 1: VARIABLES USED IN THE RESEARCH

| No. | Predictor variable name | Financial ratios | Means of group 1 | Means of group 2 | Sig level |
|----------------------------------------------------------------|-----------------------------------------------------|------------------|------------------|------------------|-----------|
| X1 | Earnings before interest & taxes/ Total assets | EBIT/TA | 0.18 | 0.05 | 0.00 |
| X2 | Long term debt/Shareholders' equity | LTD/SE | 0.20 | 0.56 | 0.06 |
| X3 | Retained earnings/Stock capital | RE/SC | 0.65 | 0.02 | 0.00 |
| X4 | Marked value of equity /Total liabilities | MVE/TL | 1.40 | 0.66 | 0.00 |
| X5 | Marked value of equity /Shareholders' equity | MVE/SE | 2.42 | 2.57 | 0.22 |
| X6 | Marked value of equity /Total assets | MVE/TA | 0.77 | 0.48 | 0.00 |
| X7 | Cash /Total assets | Ca/TA | 0.05 | 0.03 | 0.00 |
| X8 | Log (total assets) | Size | 5.25 | 5.23 | 0.83 |
| X9 | Total liabilities/Total assets | TL/TA* | 0.67 | 0.80 | 0.00 |
| X10 | Current liabilities/Shareholders' equity | CL/SE | 2.27 | 4.76 | 0.00 |
| X11 | Current liabilities/Total liabilities | CL/TL | 0.86 | 0.85 | 0.94 |
| X12 | (Cash+Short term investments)/Current liabilities | (Ca+STI)/CL | 0.11 | 0.05 | 0.00 |
| X13 | (Receivables+Inventory)/Total assets | (R+Inv)/TA | 0.57 | 0.57 | 0.88 |
| X14 | Receivables/Sales | R/S | 0.53 | 0.40 | 0.10 |
| X15 | Receivables/Inventory | R/Inv | 1.18 | 1.00 | 0.93 |
| X16 | Shareholders' equity/Total liabilities | SE/TL | 0.63 | 0.32 | 0.00 |
| X17 | Shareholders' equity/Total assets | SE/TA | 0.35 | 0.22 | 0.00 |
| X18 | Current assets/Current liabilities | CA/CL | 1.31 | 1.07 | 0.00 |
| X19 | Quick assets/Current liabilities | QA/CL | 0.70 | 0.57 | 0.00 |
| X20 | Quick assets/Current assets | QA/TA | 0.37 | 0.36 | 0.73 |
| X21 | Fixed assets/(Shareholders' equity+Long term debt) | FA/(SE+LTD) | 0.60 | 0.91 | 0.01 |
| X22 | Fixed assets/Total assets | FA/TA | 0.22 | 0.24 | 0.63 |
| X23 | Current assets/Total assets | CA/TA | 0.70 | 0.68 | 0.66 |
| X24 | Cash/ Current liabilities | Ca/CL | 0.09 | 0.04 | 0.00 |
| X25 | Interest expenses/Gross profit | IE/GP | -0.02 | -1.21 | 0.48 |
| X26 | Sales/Cash | S/Ca | 35.30 | 44.80 | 0.11 |
| X27 | Sales/Total assets | S/TA | 0.93 | 0.70 | 0.00 |
| X28 | Working capital/Total assets | WC/TA | 0.13 | 0.00 | 0.00 |
| X29 | Paid in capital/Shareholders' equity | PIC/SE | 0.53 | 0.86 | 0.00 |
| X30 | Sales/Working capital | S/WC | 2.87 | 1.73 | 0.96 |
| X31 | Retained earnings/Total assets | RE/TA* | 0.08 | -0.03 | 0.00 |
| X32 | Net income/Shareholders' equity | NI/SE | 0.42 | -0.03 | 0.00 |
| X33 | Net income/Sales | NI/S | 0.16 | -0.02 | 0.00 |
| X34 | Net income/Total assets | NI/TA* | 0.13 | 0.00 | 0.00 |
| X35 | Sales/Current assets | S/CA | 1.34 | 1.07 | 0.00 |
| X36 | Operational income/Sales | OI/S* | 0.20 | 0.06 | 0.00 |
| X37 | Operational income/Total assets | OI/TA | 0.17 | 0.03 | 0.00 |
| X38 | Earnings before interest & taxes/ Interest expenses | EBIT/IE | -5.21 | -0.45 | 0.05 |
| X39 | Earnings before interest & taxes/Sales | EBIT/S | 0.52 | 0.10 | 0.00 |
| X40 | Gross profit /Sales | GP/S | 0.27 | 0.15 | 0.00 |
| X41 | Sales/Shareholders' equity | S/SE | 3.32 | 4.68 | 0.05 |
| X42 | Sales/Fixed assets | S/FA | 6.29 | 6.44 | 0.33 |
| *Final variables selected by SDA. | | | | | |
| Group 1: going concern firms & Group2: non-going concern firms | | | | | |

RESULTS

PREDICTIVE RESULTS

The three models of ICA, ANFIS and SVDD that were constructed based on optimal feature set selected by SDA using 10-fold cross-validation. This method splits the data into two subdivisions: a training set and test set. Quality of the prediction assessed on the test set. In 10-fold cross-validation the data is firstly partitioned into 10. Then, 10 iterations of training and test are done such that in each iteration a different fold of the data is held-out for validating while the rest 9 folds are used for learning and 10 outputs from the folds can be averaged and can produce a single estimation. (Alpaydin, 2010). The predictive results of each models listed in table 2.

TABLE 2: PREDICTIVE ACCURACIES (%) OF HOLD-OUT DATA

| Data sets | ANFIS | | | ICA | | | SVDD | | |
|------------------------------------|----------|--------------|---------------|----------|--------------|---------------|----------|--------------|---------------|
| | Accuracy | Error type I | Error type II | Accuracy | Error type I | Error type II | Accuracy | Error type I | Error type II |
| 1 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 86.67 | 0.00 | 28.57 |
| 2 | 93.33 | 11.11 | 0.00 | 100.00 | 0.00 | 0.00 | 93.33 | 0.00 | 16.67 |
| 3 | 100.00 | 0.00 | 0.00 | 93.33 | 0.00 | 12.50 | 80.00 | 0.00 | 37.50 |
| 4 | 86.67 | 25.00 | 0.00 | 100.00 | 0.00 | 0.00 | 86.67 | 12.50 | 14.29 |
| 5 | 93.33 | 0.00 | 12.50 | 100.00 | 0.00 | 0.00 | 86.67 | 0.00 | 25.00 |
| 6 | 92.86 | 12.50 | 0.00 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 |
| 7 | 92.86 | 20.00 | 0.00 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 |
| 8 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 92.86 | 0.00 | 14.29 |
| 9 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 92.86 | 0.00 | 12.50 |
| 10 | 92.86 | 14.29 | 0.00 | 100.00 | 0.00 | 0.00 | 92.86 | 0.00 | 14.29 |
| Min | 86.67 | 0.00 | 0.00 | 93.33 | 0.00 | 0.00 | 80.00 | 0.00 | 0.00 |
| Max | 100.00 | 25.00 | 12.50 | 100.00 | 0.00 | 12.50 | 100.00 | 12.50 | 37.50 |
| Mean | 95.19 | 8.29 | 1.25 | 99.33 | 0.00 | 1.25 | 91.19 | 1.25 | 16.31 |
| Median | 93.33 | 5.56 | 0.00 | 100.00 | 0.00 | 0.00 | 92.86 | 0.00 | 14.29 |
| Variance | 20.93 | 91.29 | 15.63 | 4.44 | 0.00 | 15.63 | 39.42 | 15.63 | 137.09 |
| Times of achieving best Statistics | 1 | 1 | 4 | 5 | 5 | 5 | 1 | 2 | 1 |

FIG. 4. THE MAP OF MIN, MAX AND MEAN ACCURACY OF THE THREE METHODS

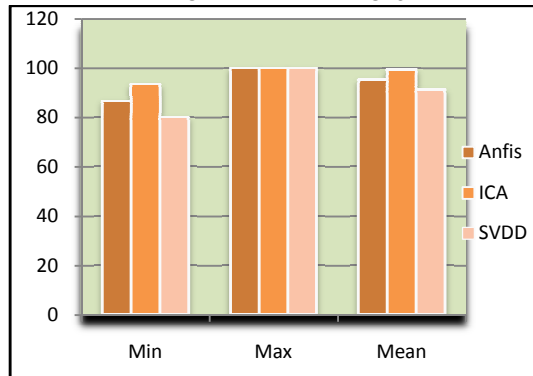
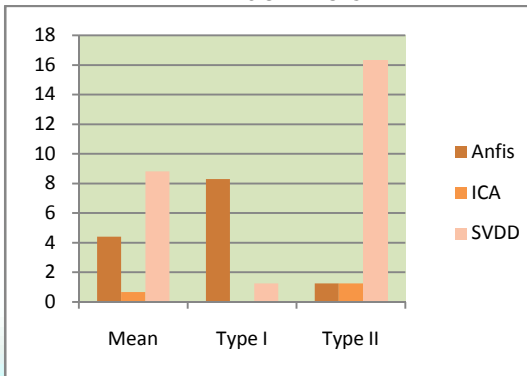


FIG. 5. THE MAP OF MIN, MAX AND MEAN OF DIFFERENT TYPES OF ERRORS



RESEARCH HYPOTHESES TEST

Determine which of the models that are more applicable than others in GCP, we make the following three hypotheses:

H_1 : There is no significant difference between the two methods of ICA and ANFIS for GCP of Tehran listed companies.

H_2 : There is no significant difference between the two methods of ICA and SVDD for GCP of Tehran listed companies.

H_3 : There is no significant difference between the two methods of ANFIS and SVDD for GCP of Tehran listed companies.

To test the research hypothesis, we applied a nonparametric test. McNemar test examine whether or not the classification performance of each pair of methods is significantly different from other methods (see table 4-6). Results of McNemar test are presented in Table 3.

From Table 3, we can be understood that ICA outperforms ANFIS on the mean accuracy. The significance level on the hypothesis shows that there is significant difference between ICA and ANFIS. Thus, the hypothesis of H_1 is rejected by the result. It means that ICA outperforms ANFIS significantly in statistic when they are used to predicting going concern of Tehran listed firms. The second hypothesis is interpreted in the same way. From table 5, we can find that ANFIS is outperformed by SVDD on the mean accuracy. McNemar test shows that there is no significant difference between ANFIS and SVDD and H_3 is accepted.

TABLE 3: RESULTS OF SIGNIFICANCE TEST BETWEEN EACH PAIR OF MODELS

| Methods | ICA | SVDD |
|---------|-------------------------------------------|----------------|
| ANFIS | -2.058 ^a (0.040 ^b) | -1.205 (0.228) |
| ICA | - | -2.536 (0.011) |

^a t statistic, ^b p value.

TABLE 4 : RESULT OF MCNEMAR TEST OF ANFIS AND ICA

| Methods | Mean accuracy | Significance test on difference | Hypothesis |
|---------|---------------|---------------------------------|--------------|
| ANFIS | 95.19 | Significant at the level of 5% | Reject H_1 |
| ICA | 99.33 | | |

TABLE 5: RESULT OF MCNEMAR TEST OF CART AND ICA

| Methods | Mean accuracy | Significance test on difference | Hypothesis |
|---------|---------------|---------------------------------|--------------|
| ICA | 99.33 | Significant at the level of 5% | Reject H_2 |
| SVDD | 91.19 | | |

TABLE 6: RESULT OF MCNEMAR TEST OF ANFIS AND SVDD

| Methods | Mean accuracy | Significance test on difference | Hypothesis |
|---------|---------------|---------------------------------|--------------|
| ANFIS | 95.19 | No significance | Accept H_3 |
| SVDD | 91.19 | | |

DISCUSSION AND CONCLUSION

This study demonstrated feasibility of using ICA, ANFIS and SVDD to GCP from view of significance test and predictive accuracy with data collected from Iran. This paper considered a set of financial and non-financial futures that include 42 variables proposed in prior literature dealing with predicting of financial status in Iran and applied SDA to identify potential futures for entry into the GCP model and eventually four financial ratios were chosen and constructed GCP models based on selected variables. What results can be understood from this research show that ICA > ANFIS > SVDD from the view of mean accuracy. The empirical tests show that ICA model has achieved 99.33 and 99.85 percent accuracy rates respectively for training and hold-out data. Since 1988 no guidelines have not been issued for evaluation of going concern and from 1988 to today, SAS No.59 is authoritative guidance available for investigation of going concern status of an entity (Bellovary & et al., 2007), seems proposed models of this study would be useful in this regard.

REFERENCES

1. Alici, Y. (1996), "Neural networks in corporate failure prediction: The UK experience," Working Paper, University of Exeter, Exeter.
2. Alpaydin, E., (2010), "Introduction to machine learning," Cambridge, Mass, MIT Press.
3. Altman, E.I. (1993), "Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting & Avoiding Distress and Profiting from Bankruptcy," John Wiley & Sons.
4. Andrés, J., Landajo, M. and Lorca, P. (2012), "Bankruptcy prediction models based on multinorm analysis: An alternative to accounting ratios," Knowledge Based Systems, doi: 10.1016/j.knosys. 2011.11.005.
5. Ashoori, S. and Mohammadi, S. (2011), "Compare failure prediction models based on feature selection technique: empirical case from Iran," Procedia Computer Science, Vol. 3, pp. 568–573.
6. Atashpaz-Gargari, Esmail and Lucas, Carl (2007): "Imperialist competitive algorithm: An algorithm for optimization inspired by imperialistic competition", Paper presented at IEEE Congress on Evolutionary Computation, Singapur, 25-28 Sept.
7. Brezigar-Masten, A. and Masten, I. (2012), "CART-based selection of bankruptcy predictors for the logit model," Expert Systems with Applications, doi:10.1016/j.eswa.2012.02.125.
8. Chaudhuri, A. and De, K. (2011), "Fuzzy Support Vector Machine for bankruptcy prediction," Applied Soft Computing, Vol. 11, pp. 2472–2486.
9. Chen, J.H. (2012), "Developing SFNN models to predict financial distress of construction companies," Expert Systems with Applications, Vol. 39, pp. 823–827.

10. Chen, K.H. and Shimerda, T.A. (1981), "An empirical analysis of useful financial ratios," *Financial Management*, Vol. spring, pp. 51–60.
11. Chen, M.Y. (2011), "Predicting corporate financial distress based on integration of decision tree classification and logistic regression," *Expert Systems with Applications*, Vol. 38, pp. 11261–11272.
12. Etemadi, H., Anvary Rostamy, A.A. and Farajzadeh Dehkordi, H. (2009), "A genetic programming model for bankruptcy prediction: Empirical evidence from Iran," *Expert Systems with Applications*, Vol. 36, pp. 3199–3207.
13. Gorgani, M.E., Moradi, M. and SadoghiYazdi, H. (2010), "An Empirical Modeling of Companies Using Support Vector Data Description," *International Journal of Trade, Economics and Finance*, Vol. 1, No. 2, pp. 221–224.
14. Guyon, I. and Elisseeff, A. (2003), "An introduction to variable and feature selection," *Journal of Machine Learning Research*, Vol. 3, pp. 1157–1182.
15. Harada, N. and Kageyama, N. (2011), "Bankruptcy dynamics in Japan," *Japan and the World Economy*, Vol. 23, pp. 119–128.
16. Hsieh, T.J., Hsiao, H.F. and Yeh, W.C. (2012), "Mining financial distress trend data using penalty guided support vector machines based on hybrid of particle swarm optimization and artificial bee colony algorithm," *Neurocomputing*, Vol. 82, pp. 196–206.
17. Jang, J.S.R. (1993), "ANFIS: adaptive-network-based fuzzy inference system," *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 23, pp. 665–685.
18. Jang, J.S.R. and C.T. Sun (1997), "Neuro-Fuzzy and Soft Computing: A Computational Approach to Learning and Machine Intelligence," Prentice Hall, Englewood Cliffs.
19. Leon Li, M.Y. and Miu, P. (2010), "A hybrid bankruptcy prediction model with dynamic loadings on accounting-ratio-based and market-based information: A binary quantile regression approach," *Journal of Empirical Finance*, Vol. 17, pp. 818–833.
20. Lin, F., Liang, D. and Chen, E. (2011), "Financial ratio selection for business crisis prediction," *Expert Systems With Applications*, Vol. 38, pp. 15094–15102.
21. Min, J.H., & Lee, Y.C. (2005), "Bankruptcy prediction using support vector machine with optimal choice of kernel function parameters," *Expert Systems with Applications*, Vol. 28, pp. 603–614.
22. Mokhtab Rafiei, F., Manzari, S.M. and Bostanian, S. (2011), "Financial health prediction models using artificial neural networks, genetic algorithm and multivariate discriminant analysis: Iranian evidence," *Expert Systems with Applications*, Vol. 38, pp. 10210–10217.
23. Naes, T. and Mevik, B.H. (2001), "Understanding the collinearity problem in regression and discriminant analysis," *Journal of Chemometrics*, Vol. 15, No. 4, pp. 413–426.
24. Olson, D.L., Delen, D. and Meng, Y. (2012), "Comparative analysis of data mining methods for bankruptcy prediction," *Decision Support Systems*, Vol. 52, pp. 464 – 473.
25. Sun, J. and Li, H. (2011), "Dynamic financial distress prediction using instance selection for the disposal of concept drift," *Expert Systems with Applications*, Vol. 38, pp. 2566–2576.
26. Sun, J., He, K. Y., & Li, H. (2011), "SFFS-PC-NN optimized by genetic algorithm for dynamic prediction of financial distress with longitudinal data streams," *Knowledge-Based Systems*, Vol. 24, pp. 1013–1023.
27. Taffler, R. (1982), "Forecasting company failure in the UK using discriminant analysis and financial ratio data," *Journal of the Royal Statistical Society, Series A*, Vol. 145, pp. 342–358.
28. Tax, D. and Duin, R. (2004), "Support Vector Data Description," *Machine Learning*, Vol. 54, pp. 45–66.
29. Tsai, C.F. and Cheng, K.C. (2012), "Simple instance selection for bankruptcy prediction," *Knowledge-Based Systems*, Vol. 27, pp. 333–342.
30. Xiao, Z., Yang, X., Pang, Y. and Dang, X. (2012), "The prediction for listed companies' financial distress by using multiple prediction methods with rough set and Dempster-Shafer evidence theory," *Knowledge-Based Systems*, Vol. 26, pp. 196–206.

DETERMINANTS OF CONSTRAINTS TO LOW PROVISION OF LIVESTOCK INSURANCE IN KENYA: A CASE STUDY OF NAKURU COUNTY

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ABSTRACT

Insurance companies today are embracing livestock insurance as a means of improving the overall performance of the livestock sector in the country. However, there are a number of insurance companies that still do not provide livestock insurance cover. The purpose of this study was to explain the causes for low provision of livestock insurance in the insurance market in Kenya. This study focused mainly on the supply and demand related challenges. The target population comprised all insurance companies that operate in Nakuru. Primary data was collected from the underwriting personnel of the insurance companies under consideration. Hypotheses were tested using Chi-square at 95% degree of confidence. The major findings of this study were that low levels of training of personnel and complex constraints of supply and demand related issues are responsible for low provision of livestock insurance. Based on the study findings, two key recommendations were made; there is need for insurance providers to increase their market share in the insurance product through innovation of new ways to facilitate their underwriting process and also encourage shared ownership of potential buyers so as to make the product affordable to them.

KEYWORDS

Livestock Insurance, index based, Underwriting, Kenya.

INTRODUCTION

BACKGROUND

Livestock insurance is a type of insurance whereby the livestock is insured against communicable and non-communicable diseases, as well as fire, natural disasters, theft, malicious acts of third persons and other risks. Livestock (also cattle) refers to one or more domesticated animals raised in an agricultural setting to produce commodities such as food, fibre and labour. Dairy and livestock farming generally account for the utilisation of 30% of the high to medium potential land and 8% of the Arid and Semi-arid Lands (ASAL). Livestock related production alone accounts for nearly 421 million hectares out of a national total of 484 million hectares used mainly for crop and livestock production. Kenya's livestock and poultry production sector is dominated by dairy, dual purpose and beef cattle. Commodities from cattle that are beef and milk account for more than 75% of marketed livestock production from the national stock of nearly 12 million cattle (Ephraim, 2010).

LITERATURE REVIEW

LIVESTOCK INSURANCE

Livestock insurance is a type of insurance where livestock is insured against communicable diseases and non-communicable diseases as well as fire, natural disasters, theft, malicious acts of third persons and other risks (Livestock refers to domestic animals such as cattle or horses raised for home use or profit especially on a farm).

Livestock insurance raises a farmer's credit worthiness. Large farms, agricultural processing business and slaughter houses could easily obtain loans but small farmers at the very end of the line. This is because large agricultural farmers could afford insurance covers for their animals (Kuria, 2010).

Other benefits of obtaining livestock insurance include: stabilisation of farmers incomes; guaranteed automatic protection against losses of the farmers stock from accidents or diseases; gives confidence to venture into modern farming methods that increase livestock yields; sharing of losses amongst farmers and price stabilisation of livestock products *Chattered Institute of Insurance* (CII, 2000).

Challenges faced by insurance providers and livestock insurance buyers include: Process issues as a result of high transaction costs where the costs are incurred in identification of an animal, assessment of cattle, claim settlement process and other administrative processes; product issues; premium pricing marked by absence of historical data and hence no actual fair pricing; lack of ability and willingness to pay; lack of awareness and non-standardized risks reducing practices. Insurance products offered are limited to catastrophic death and disability; absence of proper distribution channels as well as low literacy and awareness among the citizens and as a result livestock was below 10% in 2009 (Sharma 2009).

LIVESTOCK INSURANCE IN OTHER COUNTRIES

Around 50 million households in India depend on livestock for sustenance. Livestock acts as insurance for households that depend on agriculture for income for close to 18 million households, livestock is the primary source of income. While the share of agriculture in the Gross Domestic product (GDP) has steadily been on the rise (Sharma, 2009).

Agriculture in Mongolia is dominated by livestock husbandry which accounts for some 87% of agricultural GDP and which employs some of agricultural work force, providing rural households with an important but vulnerable source of income and food security. Livestock's importance to rural livelihoods increased dramatically during the 1990s with the transition from collectivized farming to family based herding and between 1990 and 2000 the number of herding of herding households increased 75000 to 190,000. Mongolian herders are subject to catastrophic weather related shocks, such drought and severe winter spring colds. Between 1999 and 2002, a series of winter, spring colds led to the loss of one-third of the national herd, seriously impacting national GDP. The high levels of livestock mortality in Mongolia with winter-springs had major effects on rural poverty and many of the households that had entered herding during the 1990s

were stripped off their principle assets. Addressing the problem of such severe weather related risk in an effective and sustainable way posed a difficult challenge for the country and for the World Bank. The Mongolian government endorsed a programme of improved pastoral risk management that includes activities from the community to the national level, including increased investment in infrastructure services and hay fodder reserves while these activities can be helpful in the context of the limited, low-level risks, they are insufficient to prevent the kinds of losses incurred in extreme winter cold seasons. The alternative suggested was government intervention such as restoring programmes which have been found to be expensive, insufficient and likely to provide perverse incentives for herders not to take steps to lower herd mortality. It not only revealed problems but was also susceptible to corruption hence to the development of the livestock insurance (Roberts, 2002).

INDEX-BASED LIVESTOCK INSURANCE

In Mongolia the project pilots insurance plans in three provinces: Bayakhogor, UVS and Khenti, which consists of five components. The first provides the mechanism to pilot two index-based livestock insurance (IBLI) products: The *Base Insurance Products* (BIP) which is commercial risk instrument sold and serviced by insurance companies, for which herders pay a fully loaded premium rate. It pays out when a district's mortality rate exceeds a defined "trigger"; The Disaster Response Product (DRP) which is a social safety net product financed and provided by the government that begins payments at mortality rates that exceeds the exhaustion point of the BIP. Herders who purchase the BIP are automatically registered for the DRP on the same species of livestock at no additional cost; those herders who have not purchased the minimum value BIP must pay a contribution to cover DRP administrative costs. The second component of the project entails a variety of targeted promotional and public awareness activities to foster awareness and inform stakeholders about the details of the two products and the IBLI pilot; the component supports the institutional framework and capacity necessary to expand the availability of the insurance products once the viability of IBLI instruments has been established.

The fourth component monitors a variety of stakeholders during the IBLI pilot in tracking access by different social groups, monitoring how the products received and in determining whether herders modify their behaviour in response and if so, how their behaviour changes. The project's fifth component implementation until its management functions (Mahul 2006).

LIVESTOCK INSURANCE IN KENYA

Livestock insurance in Kenya is a recently introduced cover since the collapse of KNAC. It wasn't until 2010 when four insurance companies took up livestock insurance. They include CIC, APA, UAP and ICEA insurance companies.

According to Riungu (2010) the livestock sector contributes about 12% of the National Gross Product and that 42% of the total agricultural GDP employs 50% of agricultural labour force. The sector's contribution comes in form of dairy products, dairy bi-products such as manure and some form of money paid in taxes. Such a source of income needs to be protected against adverse effects through livestock insurance.

The latest statistics from the National Feedlot Accreditation Scheme given in 2009 indicates that only a partly 6.8% of Kenyan populace use insurance products while 91% have never taken any insurance cover. Livestock insurance being lately introduced product, falls even much lower (Ng'aru, 2010).

There is an index based livestock project in northern Kenyan aimed to develop insurance products to protect livestock keepers from drought related asset losses they particularly those in drought prone areas (ASAL). For pastoralists whose livelihoods rely on partly livestock, the resulting high livestock mortality rate has devastating effects on asset levels, rendering them amongst vulnerable populations in Kenya.

Index Based Insurance products represents a promising and exiting innovation that could allow the benefits of insurance to protect the climate – related risks vulnerable rural small holders farmers and livestock keepers face. Because Index Insurance is based on the realization of an outcome that cannot be influenced by insurers or policy holders (such as the amount and distribution of rainfall over a season, it has a relatively simple and transparent structure. This makes such products easier to administer and consequently to more cost effective to develop and track. Indeed the success of several pilot programmes conducted in India, and the feasibility and affordability of such products (Sharma, 2009).

Gold (2010) explains the main challenge faced by pastoralists in Kenya is drought. Sommarat Chantarat, a post doctoral researcher and his colleagues designed the newly launched insurance programme. Chantarat first visited northern Kenya in 2007 and began thinking about the problem as a Cornell graduate working with Chris Barret, a professor of applied economics and management and Andrew Mude, PhD '06, a researcher scientist at the *International Livestock Research Institute* (ILRI) in Kenya, dedicated her PhD thesis to finding a solution, and the product she designed – an index-based livestock insurance plan make payments based on an aggregate index of predicted livestock mortality for the region, instead of on individual losses – which was officially launched in the Marsabit region in January 22, 2010.

As with traditional insurance plan, subscribers in the pilot plan pay premium when they sign up based in the value of the insured livestock and receive an indemnity payment if they experience loss beyond a certain level during the covered time period, but instead of using inspectors to certify the value of insured livestock and verify individual claims – a system that would be impossible to implement due to poor infrastructure. Deficient Northern Kenya – the plan uses an index based on satellite images showing the amount of available vegetation to estimate the aggregate loss in the last 10 years of satellite data with the household survey on livestock mortality collected by researchers in Marsabit over that period.

The outcome was to show whether herders would be able to accumulate more assets and grow their way out of poverty and if this is so, they would expand the programme to other countries in East Africa and beyond (Gold, 2010).

INDEX APPROACHES TO LIVESTOCK INSURANCE

In livestock insurance evidence of damage is needed before an indemnity is paid. However, verifying such damage has occurred is expensive and making an accurate measurement of the loss on each individual insured farm is even more costly. An index policy operates differently with an index policy; measurement is derived not directly dependent in individual loss assessment.

The measurement traits most commonly considered in constructing an index for insurance relates to meteorological events which are expected to be damaging and which can therefore be used as the trigger for indemnity payments. The classic insurance policy replaced with a simple coupon. Instead of the usual policy wording which would give the indemnity payable for livestock mortality for losses from specific causes, coupon merely gives the monetary sum that becomes payable on certification that the named weather event has occurred. It is suited to weather perils that impact over a wide area e.g. drought as than case of Marsabit.

This is a theoretical possibility that indices derived from the events other than weather could be used as triggers for insurance products e.g. as used in Mongolia. The Mongolian authorities and the World Bank recently conducted a study to see whether an index of mortality could be used as a basis for indemnities on an area basis. Facilitating this fact is that there is a well established practice of conducting on annual livestock census in Mongolia. The feasibility study indicated that the concept has merit and may well be taken as steps towards meeting the strict conducting that would accept risk (Roberts, 2002).

RISKS FACING LIVESTOCK FARMERS

Sharma (2009) identifies the risks to livestock dependent livelihood, where he categorised them into two;

Production risk and price risk: production risk include elements such as cattle mortality due to epidemics, natural calamities, non-availability of dry and green fodder animals, stoppage of milk production due to disease like mastitis etc on the other hand, price risks include fluctuations costs of livestock and its product as well as weak rural infrastructure.

Roth et al (2002) categorizes risk that faces livestock farmers into two: Market Related and non-market related. Market related risks are those that relate directly to transactions in the economy. They include availability of inputs, prices of inputs, the price of farm products, availability of farm outputs, the gross margins of agricultural enterprises and the revenue derived from farming operation.

Non- market related risks are those that relate to a variety of events, some involving human intervention directly or indirectly. They include: Group 1 health factors. They are associated with diseases/ epidemics with the risk of consequences including mortality, diminished production through diseases, and ban on sale of animal or animal products due to quarantine or health rulings, government slaughter order and increased on farm costs occasioned by quarantine curative measures. Group 2 climate and seismic events. They include drought, flood, windstorm, freeze, lightning, earthquake and tsunami. Group 3 accidents. They include fire, accident, poisoning and explosion. Group 4 infrastructure and environment problems. They include machinery/ electrical breakdown and power outages, malicious damage, riot, strike and pollution of water supply or water environment. Group 5 management issues. They include infertility loss of normal biological function, malnutrition due to unexpected food deficiencies and rustling, theft prediction escape. Group 6 consequential losses due to livestock losses and food safety considerations.

Candel (2007) points out the various natural perils that cause massive losses in the livestock sector in Latin America. Some of the perils mentioned include hurricanes, floods, droughts, mountain glaciers and winter storms in southern cone. She pointed out that Latin America is particularly susceptible to the consequences of climate change as mentioned above and its low insurance penetration adds to the injury.

As from the project on IBL in Kenya (2010) its evident that drought is most prevalent in the North- eastern part of Kenya which claims more livestock lives due to semi- arid conditions in that area.

RISK MANAGEMENT TECHNIQUES IN LIVESTOCK

Sharma (2009) points out that livestock risk management aims at improving the value of livestock and reducing the vulnerability of low income households. He states that there are two major components of livestock management; risk reduction and risk transfer.

Roth et al (2006) categorizes risk management techniques into three parts: policy based risk management, on farm risk management and financial- based risk management mechanisms.

Policy based risk management includes: site licensing for certain types of production as required in certain jurisdiction as an attempt to minimize pollution; quarantine requirements as an attempt to help manage the risk of the introduction of exotic diseases or organisms that may be detrimental to the health or production of existing species in a given country e.g. foot and mouth disease; compulsory veterinary procedures which are used to ensure that the animals are kept healthy.

On farm risk management is categorized into three groups: Group 1, health factors – they include adherence to Official recommendations for preventing veterinary procedures.

Care also needs to be taken in the citing and construction of livestock handling facilities; Group 2, climate and seismic events – a normal farm management should ensure proper reservations of food supplies (hay or silage); Group 3, accidents – machinery and electrical breakdown can be prevented by appropriate maintenance.

Financially – based risk management mechanisms. These mechanisms according to Roth et al (2006) include shared ownership, marketing arrangements, whereby these mechanisms permit some of the financial burden of losses in livestock to be shared with an entity or individual outside the farm itself.

FORMS OF LIVESTOCK INSURANCE COVER

Green J.W et al (2005) gave main forms of livestock insurance: full mortality and specified risks. They emphasized on the features and conditions of livestock mortality insurance where they stressed that it is important to know that: livestock mortality insurance is written on the purpose of protecting the actual investment of the livestock owner not potential gain or profit; a mortality policy cannot be considered in any way as a maintenance coverage it does include veterinarian or similar expenses; a mortality policy cannot be considered in any way as a maintenance coverage which does include veterinarian or similar expenses; indemnity is payable only as a result of death loss; mortality coverage does not indemnify an insured against loss of an animal's ability to perform the function for which it is kept; death from natural or accidental causes included but mandatory slaughter by government authority or decree or expediency is not included (hence there exist a third type of cover i.e. slaughter policy); the basis for valuing an animal should be an actual sales price of fair and conservative appraisal by competent judges when no actual sales transaction has taken place. These values are subject to acceptance by the company; mortality both insurance is renewable only on censurability both to physical condition and market value;

Cancellation may only be effected by insured or by the company on notice given in conformation with the existing laws; policies may not be transferred from one insured to another subject to acceptance by the company.

NEED OF THE STUDY

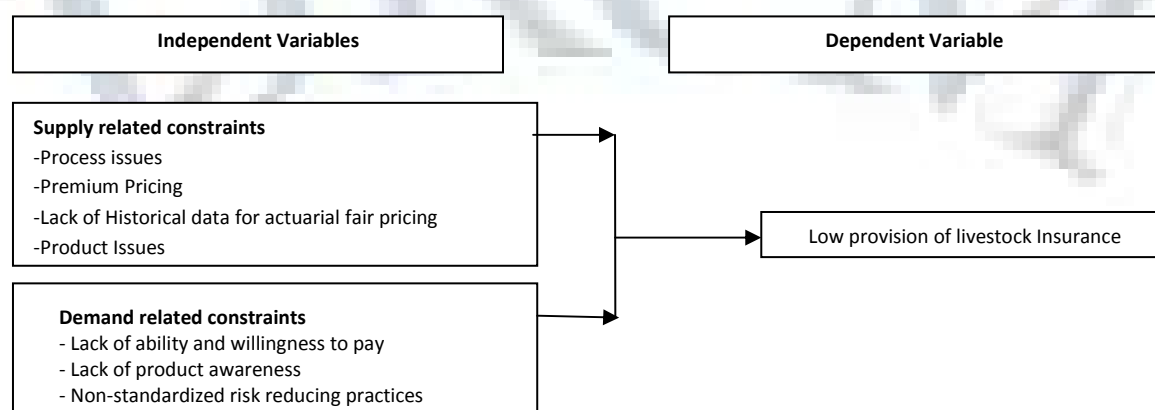
The findings of the study will enabled the gathering of information which reflects the problems and challenges faced by all the insurance companies underwriting livestock insurance in Kenya.

CONCEPTUAL FRAMEWORK

Low provision of livestock insurance cover is marked by two main types of challenges, the first challenge beings, while the second are the demand related challenges. The supply related constraints include process issues due to high transactions cost, premium pricing as well as product issues.

The demand related constraints focus on the perception of insured's lack of ability and willingness to pay lack of awareness and lack of standardized risk reducing practices. If those challenges are solved, it would bring about increased business growth, high penetration of the product into the market as well as development of other livestock insurance products. However, if the challenges are not solved, it would lead to loss of income to livestock insurance providers, low demand for livestock insurance provider.

FIGURE 1: CONCEPTUAL FRAMEWORK



Source: Author (2011).

STATEMENT OF THE PROBLEM

Livestock insurance is a type of insurance where livestock is insured against communicable diseases and non-communicable diseases as well as fire, natural disasters, theft, malicious acts of third persons and other risks. Insurance has remained a recognized essential element of risk mitigation and logical complement to other ongoing pastoral risk management activities. Insurance clearly has the potential to protect herders from unavoidable losses and to mitigate the need for government-sponsored re-stocking progress if innovative solutions to the problems of moral hazards and high verifications costs could be identified. Any such innovations would necessarily spread the risks and costs more evenly among herders, the government and the commercial insurance industry. The benefits that accrue from livestock insurance include raising the farmers' credit worthiness, stabilization of farmers' income, guaranteed automatic protection against losses of farmers stock from accidents or diseases and giving confidence to the farmers to venture into modern farming methods that increase livestock yields. In spite of these benefits, the provision of livestock insurance in Kenya has generally been low with only 4 firms undertaking livestock insurance out of the 43 insurance companies. Extant researches on this topic have focused mainly on challenges of provision of livestock insurance in developed countries (Sharma, 2009). This study however seeks to investigate the reasons for slow growth of livestock insurance in Kenya by examining the effect of supply and demand related factors on provision of livestock insurance in the Kenyan market.

OBJECTIVES OF THE STUDY

The broad objective of the study was to evaluate factors that have led to low provision of livestock insurance in the Kenyan market.

SPECIFIC OBJECTIVES

1. To determine the effect of supply related factors on provision of livestock insurance.
2. To determine the effect of demand related factors on provision of livestock insurance.

HYPOTHESES

H₀₁: Supply related factors do not significantly affect provision of livestock insurance

H₀₂: There is no significant effect of demand related factors on provision of livestock insurance

RESEARCH METHODOLOGY

RESEARCH DESIGN

The research adopted was descriptive survey. It involved fact-finding enquiries of different independent variables that have an impact on the low provision of livestock insurance. These facts were obtained from underwriters of livestock insurance operating within Nakuru town.

A field research was conducted by use of questionnaires. This was considered most appropriate way of collecting information due to the inconveniences of booking appointments and the time available for the researchers to complete the research.

TARGET POPULATION AND SAMPLE SIZE

The target population included all the 4 livestock insurance underwriters within Nakuru town. A complete enumeration of all the items in the population was conducted. This was due to the small population size that was intended to provide first-hand information. Two personnel from each underwriting departments were used as a source of information. It must be noted that this approach is consistent with the practice of surveying key informants knowledgeable about organizational matters by virtue of their positions. This is considered by many researchers as an impersonal method preferably to be used where questions demand a considered rather than immediate answer (John and Weitz, 1988)

DATA COLLECTION

Primary data was collected using questionnaires. The questions included a combination of open-ended, structured and dichotomous questions. Open ended questions provided additional information relevant to the objective of the research. Structured questions allowed standardization of responses where the questions aimed at arriving similar responses within a given parameter of interest. Multiple choice questions aimed at obtaining standard responses and at the same time allowing flexibility of opinion of the respondent.

DATA ANALYSIS AND PRESENTATION

TABLE 1 (A): SUPPLY RELATED CONSTRAINTS

| Variables | Challenges | | No challenges | |
|---------------------------|------------|----------------|---------------|----------------|
| | Frequency | Percentage (%) | Frequency | Percentage (%) |
| Identification of animals | 1 | 16.67 | 5 | 83.33 |
| Assessment of animals | 5 | 83.33 | 1 | 16.67 |
| Claim settlement process | 4 | 66.67 | 2 | 33.33 |

Table 1 a. shows that 16% of the respondents rated identification of the animals as a major challenge linked to the low provision of the product while 84% had proper mechanisms of identifying the animals that is, tattooing, ear tags and Radio Frequency Identification (RFID). However, the respondents who identified it as a challenge said it was due to moral hazards of the insured like removal of ear tags and tagging other animals which are not insured especially during claims. In addition, 67% of the respondents faced challenges when settling claims where moral hazards were also associated to it leading to cancellation of the policies. The assessment of cattle value was also identified as a major challenge with 84% of the respondents linking it to moral hazard of the insured. 67% of the respondents found no challenges in their claim settlement procedures while 33% encountered challenges.

TEST STATISTICS

| | Identification | Assessment | Cattle Settlement Process |
|-------------|--------------------|--------------------|---------------------------|
| Chi-Square | 2.667 ^a | 2.667 ^a | .667 ^a |
| Df | 1 | 1 | 1 |
| Asymp. Sig. | .102 | .102 | .414 |

a. 2 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.0.

The computed p-values for each of the variable were less than 5% degree of significance. Thus we conclude that identification of animals, assessment of cattle value and cattle settlement processes have a significant effect on provision of livestock insurance.

TABLE 1(B): SUPPLY RELATED CONSTRAINTS

| Variables | Yes | | No | |
|--------------------|-----------|----------------|-----------|----------------|
| | Frequency | Percentage (%) | Frequency | Percentage (%) |
| Historical data | 2 | 33.33 | 4 | 66.67 |
| Innovation | 4 | 66.67 | 2 | 33.33 |
| Limited risk cover | 5 | 83.33 | 1 | 16.67 |

Table 1(b) shows that 33% of the respondents indicated that the company did not have enough historical data on different breeds of livestock while 67% had relevant historical data on the breeds. 67% of the respondents saw no current intention of innovating the livestock product as the product was still in its early stages. In support of this 84% of the respondents indicated that the cover was adequate to meet nearly all the needs of the insured's. 50% evaluated the product awareness programme to be fair while the remaining 50% evaluated it as good.

TEST STATISTICS

| | Historical Data | Innovation | Limited Risk Cover |
|-------------|-------------------|-------------------|--------------------|
| Chi-Square | .667 ^a | .000 ^a | .667 ^a |
| Df | 1 | 1 | 1 |
| Asymp. Sig. | .414 | 1.000 | .414 |

2 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.0.

The chi-square value for historical data was 0.667 at 1 degree of freedom with a p-value of 0.414 tested at 95% degree of confidence. Since the p-value is more than 0.05, we conclude that lack of historical data has a significant effect on provision of livestock insurance. Similarly, we found innovation and limited risk cover to have a significant effect on provision of livestock insurance with p-values more than 5% degree of significance.

TABLE 1 (C): DEMAND RELATED CONSTRAINTS

| | Yes | | No | |
|-------------------|-----------|----------------|-----------|----------------|
| Variables | Frequency | Percentage (%) | Frequency | Percentage (%) |
| Ability to pay | 5 | 83.33 | 1 | 16.67 |
| Product awareness | 3 | 50 | 3 | 50 |

The ability and willingness of the insured's to pay premium was evaluated as average with a support of 84% while 16% evaluated it as poor. 50% of the respondents opined that product awareness was good while 50% rated it as poor.

TEST STATISTICS

| | Product Awareness | Ability to Pay |
|-------------|-------------------|--------------------|
| Chi-Square | .000 ^a | 2.667 ^a |
| Df | 1 | 1 |
| Asymp. Sig. | 1.000 | .102 |

The chi-square value for product awareness was 0.000 at 1 degree of freedom with a p-value of 1.00 tested at 95% degree of confidence. Since the p-value is more than 0.05, we conclude that product awareness has a significant effect on provision of livestock insurance. Similarly, we found that ability to pay had a significant effect on provision of livestock insurance as scaled by chi-square value (2.667) and $p < 0.05$ at 95% degree of confidence.

SUMMARY

Livestock insurance being a new product in the Kenyan market has not achieved its target as most farmers have not purchased the product. Some of the reasons that have been identified include low income level among potential buyers, lack of a well established claim settlement process, problems of assessment of cattle value as well as other variables such as identification of animal and insufficiency of cover provided.

RECOMMENDATION

Livestock insurance providers can increase their market share on the livestock insurance product through innovation of new ways to facilitate their underwriting process such as application of index- based on satellite images, so as to eliminate problems associated with poor infrastructure especially in the rural areas. They should also encourage shared ownership of potential buyers so as to make the product affordable to them, engage in micro-financing activities such as providing loans for the purchase of livestock and thus would even improve the performance of the product as well as its competitive advantage over the other insurers. The study did not focus on such issues such as the effect of the different styles of cattle keeping on the provision of livestock insurance. Further research is recommended on the impact of pastoralist, small scale farming and large scale farming on the demand for livestock insurance cover in Kenya (low livestock insurance uptake in Kenya)

CONCLUSION

Livestock insurance product in the market is fair and can only be improved by finding solutions to the various supply related and demand related constraints as already analysed.

REFERENCES

- Barrett, C.B., Chabari, F., Bailey, D., Coppock & Little, P.D (2003). "Livestock Pricing in the Northern Kenyan Rangelands." *Journal of African Economics*. 12, 2:127-155.
- Candel, F.M(2007), "Natural Calamities in America" .Publication of the Geneva Association on climate change32(1) Jan2007 climate change and the global insurance industry
- Gold, L (2010), Innovative Livestock Insurance Programme.
- Green, J.W., Driscoll, J.L & Brunch (2005), "The Economics of Livestock", CABI Publishing 875 Massachusetts Avenue 7th Floor Cambridge, MA 02139 USA (Website: www.cabi-publishing.org)
- Insurance, Chattered Institute of Insurance Tuition text, 2000.
- John, G. & Weitz, B.A. (1988). "Forward integration into distribution: an empirical test of transaction cost analysis", *Journal of Law, Economics and Organization*, Vol. 4, 121-39
- Kuria, N (March 8th 2010), article in Kenyan Daily Nation.
- Mahul, O. & Skees, J.R (2006). "Piloting Index-based Livestock Insurance in Mongolia." Access Finance: A Newsletter Published by the Financial Sector Vice Presidency, The World Bank Group, Issue No. 10, March.
- Mukisira, E (2010), Director, Agricultural Research Institute.
- Ng'aru, I (April 26th 2010), "Insurance talk" Kenyan Daily Nation.
- Riungu, C (2010). "Kenya Livestock Finance Trust", Daily Nation.
- Sharma, A (2009)."Insurance and Risk Management", (www.docstoc.com/.../Centre-for-Insurance-and-Risk-management)
- Skees, J.R & Enkh-Amgalan, A (2002). 'Examining the feasibility of livestock insurance in Mongolia' World Bank Policy Research Work Paper No. 2886. Washington sept 2002

PERCEPTIONS OF ACCOUNTANTS ON FACTORS AFFECTING AUDITOR'S INDEPENDENCE IN NIGERIA

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ABSTRACT

Independence is critically important to an auditor as it is regarded as being one of the fundamental principles underlying the auditor's work. The financial markets must have confidence in the integrity and objectivity of auditors. Without definite independence, audits have little value. This study examines factors affecting auditor's independence in Nigeria. Survey research design was employed in carrying out the study. Data were collected using Likert- rated questionnaire; which was administered to 150 Chartered Accountants in 15 Audit firms in Lagos. Sampled audit firms were selected randomly. Analysis was carried out using descriptive statistics, while the 5 hypotheses formulated were tested for significance using the chi-square test. The results revealed a significant relationship between the variables of: size of audit firm, level of competition in the audit services market, tenure of an audit firm serving the needs of a given client, size of audit fees received by audit firm in relation to total percentage of audit revenue and the provision of non-audit service on one hand; and auditor's independence on the other. The main recommendation is that auditors should remain strictly independent and not to provide audit clients with any other advisory services.

KEYWORDS

Audit Fee, Auditor's Independence, Competition, Firm Size.

INTRODUCTION

Independence is critically important to an auditor as it is regarded as being one of the fundamental principles underlying the auditor's work. The financial markets must have confidence in the integrity and objectivity of auditors. Without definite independence, audits have little value. Recently, researchers, regulators and the public have been concerned about auditors' independence in the current audit environment where severe audit failures like Enron and WorldCom, have emerged. Independence has been the focus of almost constant controversy, debate and analysis (Law, 2008).

REVIEW OF LITERATURE

Abeygunasekera (2010) observed that auditors' independence is a topic that is being discussed throughout the world as an important aspect of the accountancy profession. It is both an ethical and a professional issue, crucial to auditors. Auditor independence is a cornerstone of the auditing profession, a crucial element in the statutory corporate reporting process and a key prerequisite for the adding of value to an audited financial statement (Ye, Carson, & Simnett, 2006; Olagunju, 2011).

With respect to the meaning of the concept of auditors' independence, Abeygunasekera (2010) opines that there are three meanings which can be given. First, in the sense of not being subordinate, it means honesty, integrity, objectivity and responsibility. Second, in the narrow sense, in which it is used in connection with auditing and expression of opinions on financial statements, independence means avoidance of any relationship which would be likely, even subconsciously, to impair the objectivity as auditor. Third, it means avoidance of relationships, which to a reasonable observer would suggest a conflict of interest.

Discussion on auditor's independence evolves around two forms: independence in fact and independence in appearance. The former requires auditors to form and express an opinion in the audit report as a disinterested and expert observer, uninfluenced by personal bias during the audit engagement, while the latter expects auditors to avoid situations that might cause others to conclude that they are not maintaining an unbiased, objective attitude of mind (Hudaib & Haniffa, 2009).

Third party users expect the auditor to find and report all problems with the financial statements while management wants the auditor to ignore financial statements manipulation. Thus, at times, the auditor needs to choose from these conflicting needs (Faraj & Akbar, 2010). The auditor's role conflict may negatively impact the auditor's independence and the ability to conduct a just audit. If the auditor tries to be adamantly ethical in a situation of conflict, management may seek to replace the auditor. As a result, the auditor may buckle under management's pressure, resulting in a compromise of auditors' independence (Alleyne, Devenish & Alleyne (2006).

Previous studies revealed that the most important independence-influencing factors include: audit firm size, competition level, provision of non-audit service, tenure of an audit firm serving the needs of a given client, and size of audit fees (Abu-Bakar, Abdul-Rahman & Abdul-Rashid, 2005; Krishnan, Sami, & Zhang, 2005; Abu-Bakar, 2006; Law, 2008; Salehi, 2008; Abeygunasekera, 2010; Al-Ajmi, & Saudagaran, 2011).

SIZE OF AUDIT FIRM

Larger audit firms are often considered to be more able to resist pressures from management (i.e. higher auditor's independence). This is proven by almost all of the empirical studies that attempted to find the relationship between audit firm size and auditor's independence, whereby they found that there is a positive relationship between them (Alleyne et al., 2006; Abu-Bakar et al., 2005). In fact, it has been argued that certain characteristics inherent in small audit practices may increase the danger of impairment of independence, for example, the tendency toward a more personalized mode of service and close relationship with the client (Robert & Darryl, 2009)). However, one should not conclude that large firms are immune to pressures from their clients.

LEVEL OF COMPETITION IN THE AUDIT SERVICES MARKET

Competition has been identified as the most important environmental change or external factor affecting auditor independence (Law, 2008). Firms operating in an intensely competitive environment may have difficulty remaining independent since the client can easily obtain the services of another auditor. A number of empirical studies have proven that the high level of competition in the audit firm has resulted in less auditor independence (Alleyne et al., 2006; Abu-Bakar & Ahmad, 2009). Krishnan et al., (2005) however, found the opposite. In explaining this, they argued that the existence of competition caused auditors to be more independent and create a favourable image in order to maintain their clientele.

TENURE OF AN AUDIT FIRM SERVING THE NEEDS OF A GIVEN CLIENT

An audit firm's tenure, which is the length of time it has been filling the audit needs of a given client, has been mentioned as having an influence on the risk of losing an auditor's independence. Most writers, who discuss the relationship between tenure and auditors' independence, support this view (Alleyne et al., 2006; Abu-Bakar & Ahmad, 2009). A long association between a corporation and an accounting firm may lead to such close identification of the accounting firm with the interests of its client's management that truly independent action by the accounting firm becomes difficult. It was also pointed out that complacency, lack of innovation, less rigorous audit procedures and a learned confidence in the client may arise after a long association.

SIZE OF AUDIT FEES RECEIVED BY AUDIT FIRM (IN RELATION TO TOTAL PERCENTAGE OF AUDIT REVENUE)

Large size of audit fees is normally associated with a higher risk of losing the auditor's independence. Millichamp (1996) cited in ICAN (2006) considers undue dependence on an audit client as a potential threat to auditor's independence. Public perception of independence may be put in jeopardy if the fees from any one client or group of connected clients exceed 15% of gross practice income or 10% in the case of listed companies (ICAN, 2006). In such event, the only course of action is to refuse to perform or withdraw from the assurance engagement.

PROVISION OF NON-AUDIT SERVICE

Early research related to financial statement users indicated that auditor independence is negatively affected when non-audit services are performed for audit clients (Abu-Bakar et al., 2005; Alleyne et al., 2006; Krishnan et al., 2005). They believe that these collateral services create a working relationship between the auditor and the client that is too close and that the provision of management advisory services negatively affected auditor's independence.

Contrary to the above, some other studies found a positive relationship between management advisory services provision and auditor's independence. They believe that management advisory services provision enhances the auditor's knowledge of the client, thus increasing the auditor's objectivity (Goldwasser, 1999; Ashbaugh, LaFond, & Mayhew, 2003).

IMPORTANCE OF THE STUDY

The audit of financial statements in the corporate sector by an independent auditor is mandatory by statute, which defines his duties, rights and powers (Salehi, Mansoury & Azary, 2009). It is essential because of the separation of ownership of business from the management in the corporate sector as the former needs somebody who can keep an expert watch on the latter and to whom they can depend for the reliability of accounts as the preparation of financial statement is the prerogative of the management. The auditor has not much to suggest on the form and adequacy of financial statement; but to express an opinion on whether the report prepared by management represents a truth and fair view of the business as at that date. Independence is fundamental to the reliability of auditors' reports in this regard. Those reports would not be credible, and investors and creditors would have little confidence in them, if auditors were not independent in both fact and appearance.

STATEMENT OF PROBLEM

Auditor independence has received considerable attention in recent years. This is due to the fact that independently audited financial statements may result in the generation of true and fair accounting information which will help stakeholders to form rational expectations about firms and minimise the agency cost. It can also be argued that lack of independence would lead auditors to collaborate with the management of firms and would produce misleading accounting information.

In recent times, media comments on corporate scandals rocking the Nigeria Corporate organizations, especially the banking industry have tended to focus heavily on the issue of auditor independence (Ajagunna, 2012). These financial scandals had a detrimental effect on the public's perception of auditors. More worryingly, the issues related to independence are threatening the survival of accounting firms of all sizes and indeed it has the power to destroy the accountancy profession as a whole (Abu-Bakar, & Ahmad, 2009). It is therefore, vital that auditors maintain their independence and ensure that they provide a high quality of auditing to ensure the credibility of financial information not only for the purpose of reducing the number of corporate scandals but most importantly the survival of their profession and the development of healthy financial and capital market (Abu-Bakar, 2006). Thus there is the need to examine the factors that affect auditors' independence in Nigeria.

OBJECTIVES

The main objective of this study is to investigate the perceptions of professional accountants in Nigeria on factors influencing auditors' independence. Specifically, the study sets out to:

1. Investigate whether the size of audit firm affects auditor's independence.
2. Examine whether the level of competition in the audit services market affects auditor's independence.
3. Investigate whether the tenure of an audit firm serving the needs of a given client affects auditor's independence.
4. Explore whether the size of audit fees received by audit firm in relation to total percentage of audit revenue affects auditor's independence.
5. Investigate whether the provision of non-audit service affects auditor's independence.

The following research questions have also been developed mainly based on the development of literature on auditor independence:

1. Does the size of audit firm affect auditor's independence in Nigeria?
2. Does the level of competition in the audit services market affect auditor's independence in Nigeria?
3. Does the tenure of an audit firm serving the needs of a given client affect auditor's independence in Nigeria?
4. Does the size of audit fees received by audit firm in relation to total percentage of audit revenue affect auditor's independence in Nigeria?
5. Does the provision of non-audit service affect auditor's independence in Nigeria?

HYPOTHESES

In order to be able to test the significance of the relationship that exists between the identified factors and auditor's independence, the following hypotheses have been formulated:

Ho_i: There is no significant relationship between size of audit firm and auditor's independence.

Ho_{ii}: There is no significant relationship between the level of competition in the audit services market and auditor's independence.

Ho_{iii}: There is no significant relationship between the tenure of an audit firm serving the needs of a given client and auditor's independence.

Ho_{iv}: There is no significant relationship between the size of audit fees received by audit firm in relation to total percentage of audit revenue and auditor's independence.

Ho_v: There is no significant relationship between the provision of non-audit service and auditor's independence.

Chi-square test with 5% level of significance was employed in testing the hypotheses. The decision rule is to reject the null hypothesis if the calculated value is greater than the critical value and accept if otherwise. Chi-square is calculated with the help of the following formula.

$$\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where O_{ij} = represents observed frequency; E_{ij} = represents expected frequency

E= Number of questionnaire

Number of response

Level of significant= 0.05; Formula for degree of freedom= n-1; Therefore the degree of freedom df= 5-1 = 4. Thus, the value of χ^2 from that 4 degree of freedom at 5% significance is 9.49

RESEARCH METHODOLOGY

The study adopts a survey research design. Five-point rating scaled questionnaire starting from strongly agreed (SA), agreed (A), undecided (U), disagreed (D), and strongly disagreed (SD) was used to collect data from randomly selected Audit firms in Nigeria. The questionnaire was designed in such a way that every question in the questionnaire was related to the research questions.

RESULTS AND DISCUSSION

The perceptions of the respondents on the various statements put forward in the questionnaire are analyzed as follows:

TABLE 1: ANALYSIS OF RESPONSES TO STATEMENT 1 IN THE QUESTIONNAIRE: THE SIZE OF AUDIT FIRM AFFECTS AUDITOR'S INDEPENDENCE

| S/No. | Responses | No. of responses | % of Responses |
|-------|--------------------|------------------|----------------|
| 1 | Strongly agree | 62 | 41.33 |
| 2 | Agreed | 46 | 30.67 |
| 3 | Undecided | 13 | 8.67 |
| 4 | Disagreed | 11 | 7.33 |
| 5 | Strongly disagreed | 18 | 12.00 |
| Total | | 150 | 100 |

Source: Field Survey, 2012

The analysis of responses to statement number one reveals that most of the respondents agreed that the size of audit firm affects auditor's independence.

TABLE 2: ANALYSIS OF QUESTIONNAIRE BASED ON HYPOTHESIS 1

| Observed (O) | Expected (E) | (O - E) | (O - E) ² | (O - E) ² /E |
|--------------|--------------|---------|----------------------|-------------------------|
| 62 | 30 | 32 | 1,024 | 34.1333 |
| 46 | 30 | 16 | 256 | 8.5333 |
| 13 | 30 | -17 | 289 | 9.6333 |
| 11 | 30 | -19 | 361 | 12.0333 |
| 18 | 30 | -12 | 144 | 4.8000 |
| χ^2 | | | | 69.1332 |

Source: Field Survey, 2012

The result of the hypothesis one indicates an χ^2 value of 69.1332 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Thus we conclude that there is a significant relationship between size of audit firm and auditor's independence

TABLE 3: ANALYSIS OF RESPONSES TO STATEMENT 2 IN THE QUESTIONNAIRE: THE LEVEL OF COMPETITION IN THE AUDIT SERVICES MARKET AFFECTS AUDITOR'S INDEPENDENCE

| S/No. | Responses | No. of responses | % of Responses |
|-------|--------------------|------------------|----------------|
| 1 | Strongly agree | 78 | 52.00 |
| 2 | Agreed | 47 | 31.33 |
| 3 | Undecided | 11 | 7.33 |
| 4 | Disagreed | 6 | 4.00 |
| 5 | Strongly disagreed | 8 | 5.33 |
| Total | | 150 | 100 |

Source: Field Survey, 2012

The analysis of responses to statement number two reveals that most of the respondents agreed that the level of competition in the audit services market affects auditor's independence.

TABLE 4: ANALYSIS OF QUESTIONNAIRE BASED ON HYPOTHESIS 2

| Observed (O) | Expected (E) | (O - E) | (O - E) ² | (O - E) ² /E |
|--------------|--------------|---------|----------------------|-------------------------|
| 78 | 30 | 48 | 2,304 | 76.8000 |
| 47 | 30 | 17 | 289 | 9.6333 |
| 11 | 30 | -19 | 361 | 12.0333 |
| 6 | 30 | -24 | 576 | 19.2000 |
| 8 | 30 | -22 | 484 | 16.1333 |
| χ^2 | | | | 133.7999 |

Source: Field Survey, 2012

The result of the hypothesis two indicates an χ^2 value of 133.7999 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Thus we conclude that there is a significant relationship between the level of competition in the audit services market and auditor's independence.

TABLE 5: ANALYSIS OF RESPONSES TO STATEMENT 3 IN THE QUESTIONNAIRE: THE TENURE OF AN AUDIT FIRM SERVING THE NEEDS OF A GIVEN CLIENT AFFECTS AUDITOR'S INDEPENDENCE

| S/No. | Responses | No. of responses | % of Responses |
|-------|--------------------|------------------|----------------|
| 1 | Strongly agree | 71 | 47.33 |
| 2 | Agreed | 48 | 32 |
| 3 | Undecided | 7 | 4.67 |
| 4 | Disagreed | 21 | 14 |
| 5 | Strongly disagreed | 3 | 2 |
| Total | | 150 | 100 |

Source: Field Survey, 2012

The analysis of responses to statement number three reveals that most of the respondents agreed that the tenure of an audit firm serving the needs of a given client affects auditor's independence.

TABLE 6: ANALYSIS OF QUESTIONNAIRE BASED ON HYPOTHESIS 3

| Observed (O) | Expected (E) | (O – E) | (O – E) ² | (O – E) ² /E |
|--------------|--------------|---------|----------------------|-------------------------|
| 71 | 30 | 41 | 1,681 | 56.0333 |
| 48 | 30 | 18 | 324 | 10.8000 |
| 7 | 30 | -23 | 529 | 17.6333 |
| 21 | 30 | -9 | 81 | 2.7000 |
| 3 | 30 | -27 | 729 | 24.3000 |
| | | | | χ^2 111.4666 |

Source: Field Survey, 2012

The result of the hypothesis three indicates an χ^2 value of 111.4666 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Thus we conclude that there is a significant relationship between the tenure of an audit firm serving the needs of a given client and auditor's independence

TABLE 7: ANALYSIS OF RESPONSES TO STATEMENT 4 IN THE QUESTIONNAIRE: THE SIZE OF AUDIT FEES RECEIVED BY AUDIT FIRM IN RELATION TO TOTAL PERCENTAGE OF AUDIT REVENUE AFFECTS AUDITOR'S INDEPENDENCE

| S/No. | Responses | No. of responses | % of Responses |
|-------|--------------------|------------------|----------------|
| 1 | Strongly agree | 41 | 27.33 |
| 2 | Agreed | 62 | 41.33 |
| 3 | Undecided | 19 | 12.67 |
| 4 | Disagreed | 19 | 12.67 |
| 5 | Strongly disagreed | 9 | 6.00 |
| Total | | 150 | 100 |

Source: Field Survey, 2012

The analysis of responses to statement number four reveals that most of the respondents agreed that the size of audit fees received by audit firm in relation to total percentage of audit revenue affects auditor's independence.

TABLE 8: ANALYSIS OF QUESTIONNAIRE BASED ON HYPOTHESIS 4

| Observed (O) | Expected (E) | (O – E) | (O – E) ² | (O – E) ² /E |
|--------------|--------------|---------|----------------------|-------------------------|
| 41 | 30 | 11 | 121 | 4.0333 |
| 62 | 30 | 32 | 1,024 | 34.1333 |
| 19 | 30 | -11 | 121 | 4.0333 |
| 19 | 30 | -11 | 121 | 4.0333 |
| 9 | 30 | -21 | 441 | 14.7000 |
| | | | | χ^2 60.9332 |

Source: Field Survey, 2012

The result of the hypothesis four indicates an χ^2 value of 60.9332 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Thus we conclude that there is a significant relationship between the size of audit fees received by audit firm in relation to total percentage of audit revenue and auditor's independence.

TABLE 9: ANALYSIS OF RESPONSES TO STATEMENT 5 IN THE QUESTIONNAIRE: THE PROVISION OF NON-AUDIT SERVICE AFFECTS AUDITOR'S INDEPENDENCE

| S/No. | Responses | No. of responses | % of Responses |
|-------|--------------------|------------------|----------------|
| 1 | Strongly agree | 88 | 58.67 |
| 2 | Agreed | 43 | 28.67 |
| 3 | Undecided | 14 | 9.33 |
| 4 | Disagreed | 4 | 2.67 |
| 5 | Strongly disagreed | 1 | 0.67 |
| Total | | 150 | 100 |

Source: Field Survey, 2012

The analysis of responses to statement number five reveals that most of the respondents agreed that the provision of non-audit service affects auditor's independence.

TABLE 10: ANALYSIS OF QUESTIONNAIRE BASED ON HYPOTHESIS 5

| Observed (O) | Expected (E) | (O – E) | (O – E) ² | (O – E) ² /E |
|--------------|--------------|---------|----------------------|-------------------------|
| 88 | 30 | 58 | 3,364 | 112.1333 |
| 43 | 30 | 13 | 169 | 5.6333 |
| 14 | 30 | -16 | 256 | 8.5333 |
| 4 | 30 | -26 | 676 | 22.5333 |
| 1 | 30 | -29 | 841 | 28.0333 |
| | | | | χ^2 176.8665 |

Source: Field Survey, 2012

The result of the hypothesis five indicates an χ^2 value of 176.8665 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Thus we conclude that there is a significant relationship the provision of non-audit service and auditor's independence.

FINDINGS

The findings of this study include the following:

- There is a significant relationship between size of audit firm and auditor's independence
- There is a significant relationship between the level of competition in the audit services market and auditor's independence
- There is a significant relationship between the tenure of an audit firm serving the needs of a given client and auditor's independence.
- There is a significant relationship between the size of audit fees received by audit firm in relation to total percentage of audit revenue and auditor's independence.
- There is a significant relationship the provision of non-audit service and auditor's independence.

RECOMMENDATIONS

The following recommendations are deemed appropriate at this juncture.

11. For auditors to remain strictly independent, they should not be allowed to provide audit clients with any other advisory services.
 2. There should be rotation of auditors to improve the auditors' independence.
 3. There should be an implementation of peer assessment in order to ensure that audits are carried out with utmost professionalism and mutual respect.
 4. An audit committee should be set up by every limited liability company to evaluate the audit work done.
- It is anticipated that when all these are done it will help the auditor to be independent and also enhance the credibility of audited financial statements.

CONCLUSION

From the literature review and analysis of data, it could be concluded that each of the five factors of: size of audit firm, level of competition in the audit services market, tenure of an audit firm serving the needs of a given client, size of audit fees received by audit firm in relation to total percentage of audit revenue, and the provision of non-audit service has a significant relationship with auditor's independence.

SCOPE FOR FURTHER RESEARCH

This study focuses on the perceptions of Professional Accountants who serve in the various audit firms alone. There is the possibility of expanding the scope of future research on this subject. Other stakeholders such as accountants working in the industry, staff members of internal audit/accounts department of organizations, managers of corporate organizations and Accounting Scholars who lecture in Universities and other post secondary schools should be integrated into future study on this subject. This will result into more robust research findings on the perceptions of auditor's independence.

REFERENCES

1. Abeygunasekera, A. W. J. C. (2010), "Perception of Auditor Independence among Auditors and Financial Statement Users in Sri Lanka," *Journal of International Economic Studies*, No. Vol. 21, pp. 85-102.
2. Abu-Bakar, N. B. (2006), "Threats to Auditors' Independence," *The Malaysian Accountant*, *Journal of the Malaysian Institute of Certified Public Accountants*, (December Issue), pp. 3-5.
3. Abu-Bakar, N. B., and Ahmad, M. (2009), "Auditor Independence: Malaysian Accountants' Perception," *International Journal of Business and Management*, Vol. 4, No. 12, pp. 129-141.
4. Abu-Bakar, N.B., Abdul-Rahman, A.R., and Abdul-Rashid, H.M. (2005), "Factors Influencing Auditors' Independence: Malaysian Loan Officers' Perceptions," *Managerial Auditing Journal*, Vol. 20, No. 8, pp. 804-822.
5. Ajagunna, B. (2012, August 8), "Unravelling the Fuel Subsidy Scandal," *The Punch*, pp. 4-5.
6. Al-Ajmi, J., and Saudagaran, S. (2011), "Perceptions of Auditors and Financial Statement Users regarding Auditors' Independence in Bahrain," *Managerial Auditing Journal*, Vol. 26, Issue 2, pp. 130-160.
7. Alleyne, P.A., Devenish, D. and Alleyne, P. (2006), "Perceptions of Auditors' Independence in Barbados," *Managerial Auditing Journal*, Vol. 21, No. 6, pp. 621-635.
8. Ashbaugh, H., LaFond, R., and Mayhew, B. W. (2003), "Do Non-audit Services Compromise Auditors' Independence? Further evidence," *The Accounting Review*, Vol. 78, No. 3, pp. 611-639.
9. Faraj, S. K., and Akbar, S. (2010), "An Empirical Investigation of the Libyan Audit Market: Perceptions of Auditors' Independence," *Journal for Global Business Advancement*, Vol. 3, Issue 2, pp. 133-154.
10. Goldwasser, D. L. (1999), "The Task awaiting the ISB," *Accounting Today*, Vol. 7, pp. 52-54.
11. Hudaib, M., and Haniffa, R. (2009), "Exploring Auditors' Independence: An Interpretive Approach," *Accounting, Auditing & Accountability*
12. ICAN, (2006), "Financial Reporting and Audit Practice, Professional Examination Study Pack," VI Publishing Limited, Lagos.
13. *Journal*, Vol. 22, No. 2, pp. 221-246.
14. *Journal*, Vol. 23, No. 9, pp. 917-934.
15. Krishnan, J., Sami, H., and Zhang, Y. (2005), "Does the Provision of Non-Audit Services affect Investors' Perceptions of Auditors' Independence?" *Auditing: A Journal of Practice and Theory*, Vol. 24, No. 2, pp. 111-135.
16. Law, P. (2008), "An Empirical Comparison of Non-Big 4 and Big 4 Auditors' Perceptions of Auditors' Independence," *Managerial Auditing*
17. Olagunju, A. (2011), "An Empirical Analysis of the Impact of Auditors' Independence on the Credibility of Financial Statement in Nigeria," *Research Journal of Finance and Accounting*, Vol. 2, No. 3, pp. 83-98.
18. Robert, J. N., and Darryl, J. W. (2009), "Perceptions of Auditors' Independence: Evidence from CPAS', Loan Officers, and the General Public," *Academy of Accounting and Financial Studies Journal*, Volume 13, Number 3, pp. 93-106.
20. Salehi, M. (2008), "Corporate Governance and Audit Independence: Empirical Evidence of Iranian Bankers," *International Journal of Business and Management*, Vol. 3, No. 12, pp. 44-51.
21. Salehi, M., Mansoury, A., and Azary, Z. (2009), "Audit Independence and Expectation Gap: Empirical Evidence from Iran," *International Journal of Economics and Finance*, Vol. 1, No. 1, pp. 165-174.
22. Ye, P., Carson, E., and Simnett, R. (2006), "Threat to Auditors' Independence: The Impact of Non-Audit Services, Tenure and Alumni Affiliation," Working Paper, University of NSW.

AN ASSESSMENT OF MARKET SUSTAINABILITY OF PRIVATE SECTOR HOUSING PROJECT FINANCING OPTIONS IN NIGERIA

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ABSTRACT

Private sector housing project developers have a wide financial option for both housing and others infrastructural development facilities. A survey was conducted using questionnaire within Abuja- Federal Capital Territory. A total of 150 questionnaires were administered and 80 were retrieved, which was considered as the population of the study. The stakeholders were real estate developers and with the scope of the study financial institutions to investigate, the related financial options available to real estate private property developers and the management of such funds to meet its purpose. Data collected were subjected to frequency and severity index analyses, Kendall's Tau (w) concordance test and chi-square test to produce a rank ordering of 12(twelve) financial related options. Four factors were identified as being the most important, namely: 'Partnership, loan from commercial banks', equity funding, loan from merchant banks and discount houses were ranked respectively, while by kind and loan from mortgage insurance companies were ranked least. Conclusively, partnership arrangement among the stakeholders in the Building and construction sector and loans from commercial banks operators should be encouraged and enhanced in all ramifications. Also, government should devise means of reducing interest rate charged on secured bank loan facilities in order to encourage investors to invest in housing project to improve on accommodation needed by the growing population of these mega cities, Abuja, Lagos, and Portharcourt etc. In addition, all loans disbursed should be monitored by the relevant government law enforcement agencies and make sure the funds are used for the proposed development.

KEYWORDS

Private sector, housing, financing and sustainability.

INRODUCTION

During the post independence period, (1960 – 1979), government involvement in housing was centered essentially on the provision of quarters for expatriate staff and for some selected indigenous staff in specialized occupation like the railways, police and few others which resulted in Government Reserve Areas (G.R.A) and limited quarters for some Nigerians (Mustapha, 2002). From the past civilian and military regime 1979 – 1983, to the present administration, investment in the housing sector is around 1.0 – 9.0% of the total annual budgets (National Bureau Office of Statistics, 2010). This figure is below the 15% that is in the operation in the developing nation like Singapore (Ughamadu, 1991). In 1994, federal government initiated a new housing scheme all over the federation to enhance the objective of housing for all by the new millennium, to be ready in 1994/95, with only about 1% success rate (Anyadike, 2002; Mustapha, 2002; Onibokun, 1990; Zubairu, 2000). This research work is considering the assessments of private sector housing project financing options. (Wasiu, 2005), in (Kabir, Bustani and Kolo, 2007), concur that the history of housing finance in Nigeria has been an appalling one.

Kabir, et al, (2007), observed, that various attempts have been made by successive administrations in Nigeria for providing an enabling environment for financing the housing market. Ben (2007) asserts that evolution of housing market and housing finance and the influence of international change in U. S housing and mortgage market have significantly influence both the transmission of monetary policies and the economy's cyclical dynamics. The Federal Mortgage Bank of Nigeria (FMBN) is the apex decentralized network of building societies towards fund mobilization into housing development, housing association, credit unions forming the second tier at the grass root level in Nigeria (Wasiu, 2005). According to Abiola (2001), a well organized, articulated and efficient housing finance system enhances substantial mobilization of financial resources. Babalola (2002), affirm's inadequacy of construction funds by an individual alone. Oyegoke (2005) opined that project financing is one of the fundamental factors in project success. Before embarking on developing infrastructure assets, there is need to assess the projects broad financial feasibility studies, cash flow, and revenue streams in the operational including the constructional stages. The aim of

this paper is to assess the performance of private sector participation in housing project financing in Nigeria, with the view of sourcing for alternate means of financing housing projects, for the purpose of providing leave able houses for all in 2015 – 2020.

Urbanization and exceptionally rapid population growth and influx of people into (mega cities), urban centres right from 1990 to date exert pressure on existing facilities, and infrastructures and equally the demand for new housing stock to accommodate the growing populace within and outside these urban centres. The housing finance generally depends on the national economy and housing problems in Nigeria are enormous, past and present government policies and programmes aimed at solving the identified problems, both in the formal (public sector) and informal (private sector). The housing problems is relative to the quantity and quality, states like Lagos, Abuja and other mega cities. In addition, government alone cannot be able to meet one of the millennium development goals (housing for all by the year 2020). This study tends to look for alternative sources of funding for private sector housing finance for existing and emerging mega cities.

LITERATURE REVIEW

HOUSING FINANCING OPTIONS

Housing may mean having a place just for shelter and security not minding the quality, especially in a community where a poor man cannot buy or rent at reasonable price (Agbola, 2005). Private Sector; these are development embarked upon by non-government institutions/agencies. It could be an individual, groups, and corporate bodies. Housing has been universally accepted as the second most important essential human needs after food (National Housing Policy, 2006). While the, word project financing in this context means various strategies of mobilization of construction finances, cash flow or its cash flow guaranteed the profitability or viability of the investment issued by financial institutions for the benefit of private sector housing developers by the project sponsor, financier or funding agency (Onwusonye and Nzotta, 2003; and Samuel, 2005). In addition housing financing can be outsourced in – house, direct and indirect chain, segmented, separated combined, independent, and interdependent relationships (Oyegoke, 2005). World Sustainable Development' was first coined in 1987 report of the World Commission on Environment and Development, which defines the term as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987) in (Ameh, 2010). Sustainable Construction is the application of sustainable development to the building and construction sector. Sustainability development is a challenge for the construction industry in general, the purpose of which is to consume resources through undertaking development of the earth for the benefit of human beings. At the same time, sustainability is becoming an important focal point from a global construction perspective. In this context sustainability means to maintain or prolong both environmental and economic standard of market sustainability of private sector housing project finances in Nigerian towards addressing the problems of housing and infrastructural deficits in developing nation like Nigeria.

RELATED FINANCIAL OPTIONS AVAILABLE TO PRIVATE SECTOR HOUSING PROJECT FINANCING

Adekunle (2006) classified Sources of housing project financing into two; **Formal/institutionalised** sources include; Commercial banks; these are institutions required by law to give out at least 10% of their loan able funds to prospective investor at official regulated interest. Primary mortgage institution (PMI); The (PMI) institution by law are expected to give loans to individual, corporate bodies who wishes to build at moderate interest with long repayment period as dictated by Federal Mortgage Bank of Nigeria (FMBN, 1973) (Adekanye, 1986; Jide, 2008).

Insurance Companies; these are institutions by law are expected to provide insurance coverage for commercial, individual and corporate bodies properties and assets.

Contractor finance; this is a method of financing real estate by means of building financing contractor.

NON –INSTITUTIONALIZED/INFORMAL SOURCE OF HOUSING FINANCE

By-kind; this traditional method of housing finance whereby a prospective house owners used the services of kinsmen, relations and friends to carry out specific aspect of a building project programme. Personal saving; this include private saving by prospective house owners, soft loans or monetary gift from friends and relatives "Etsusu". Money lender; potential house owners may not have access to financial institution. Equity funding; securing funds through the stock market investment in share, bonds etc. in which the investor have interest in the company's produces.

Partnership; an agreement between two or more parties to conduct business in accordance with terms of partnership. Corporations; investors may form a corporation whose principal investment focus will be on the development of real estate. Syndicates; these are partnership form of organization for a single purpose.

METHODOLOGY

METHOD OF DATA COLLECTION

Prior to the design of the questionnaire, an oral interview was conducted with staff in the relevant department to get an insight into financing options available to private sector housing project developers. The responses from the oral interview form the basis for the design of the structured questions. One hundred and fifty questionnaires were distributed within Abuja - Fct private property developments companies and financial institutions/organisations, randomly selected from the Kompass Register of product and services in (Idrus and Newman, 2002). Of these (95) questionnaires were administered to private real estate development companies consulting engineers, 40 were to contractors engaged in the building construction and the remaining 15 questionnaire administered to architectural practices 6 and quantity surveying 9 randomly selected. Of the original sample, 80 were returned fully completed.

The data collected from the survey were measured in an ordinal scale (i.e likert type of scale) where 1 = not significant, 2 = Slightly Significant, 3 = Significant, 4 = Very Significant are not known.

DATA ANALYSIS TECHNIQUES

Data obtained in the study were analysed using severity index, Kendalls Tau (w) Coefficient of Concordance and Chi-squared test.

VALID PERCENTAGE

Frequency analysis was first carried out to obtain the valid percentage of different selection factors as opined in (Idrus *et al.*, 2002), the frequency of the rank factors were analyzed as:

$$\left(\frac{f_i}{n} \times 100 \right) \dots \dots \dots 3.1$$

Where

f_i = frequency of the respondent

n = total number of respondent

Severity Index (S.I)

The severity index (S.I) was adopted in analyzing data collected from the questionnaire survey, to rank the factors according to their relative importance. (Idrus *et al.*, 2002).

$$S.I = \left\{ \sum_{i=1}^{i=n} w_i f_i \right\} \times 100\% / n \dots \dots \dots 3.2$$

Where S.I; is the severity index,

f_i is the frequency of the respondent,
 w_i is the weight for each rating (= rating in scale/number of points in a scale), and
 n is the total numbers of responses.

Kendall's Tau (w) Coefficient of Concordance

The Kendall's Tau (W) Coefficient of Concordance was used in the study to examine the different group of respondents within the survey was computed as reported in (Siegel, 1956; Hays, 1998; in Idrus *et al.*, 2002).

$$W = \frac{S}{K^2 (N^3 - N)} \times 13 \quad \dots\dots\dots 3.3$$

Where

S = is the sum of square of deviation of ranking sum from mean

k is the number of respondent groups, and

N is the number of factors or entities.

DATA PRESENTATION AND ANALYSIS

TABLE 1: LEVEL OF RESPONSE FROM THE ADMINISTERED QUESTIONNAIRE

| Organization | Administered Questionnaires | Returned % Questionnaires | response | Total response |
|------------------------------------|-----------------------------|---------------------------|----------|----------------|
| Real Estate Developers | 90 | 42 | 28 | 52.83 |
| Financial Institution/Organisation | 60 | 38 | 25 | 47.17 |
| Total | 150 | 80 | 53 | 100.00 |

Source: Field Survey, 2011

Table 1 indicate 53% response rate based on the level of homogeneity of the returned questionnaire.

Severity index analysis was conducted on the sample data to rank the factors according to their relative importance. Table 2 reveals: Valid percentage, severity and ranking of the respondent's response.

TABLE 2: PRIVATE FINANCIAL OPTIONS AS RANKED BY REAL PRIVATE ESTATE DEVELOPERS AND FINANCIAL INSTITUTIONS/ORGANISATION

| Factors | Valid percentage for Score of | | | | Index % | Order |
|---------------------------------------------|-------------------------------|-------|-------|-------|---------|------------------|
| | 1 | 2 | 3 | 4 | | |
| Loans and Mortgage from Insurance Companies | 5.00 | 7.50 | 50.00 | 37.50 | 3.20 | 12 th |
| Contractors/developers Finances | 5.00 | 25.00 | 57.50 | 12.50 | 35.56 | 6 th |
| Primary mortgage Institutions (PMI) | 6.25 | 31.25 | 43.75 | 18.75 | 35.63 | 5 th |
| Merchant banks and Discount houses | 1.25 | 15.00 | 62.50 | 21.25 | 36.09 | 4 th |
| Commercial Banks | 5.00 | 12.50 | 57.50 | 25.00 | 43.19 | 2 nd |
| Multilateral finance Institute | 18.80 | 11.25 | 18.75 | 51.25 | 25.94 | 9 th |
| By kind | 70.00 | 25.00 | 2.50 | 2.50 | 17.69 | 10 th |
| Personal Savings | 0.00 | 12.50 | 60.00 | 27.50 | 5.31 | 11 th |
| Money Lender | 2.50 | 40.00 | 45.00 | 12.50 | 35.44 | 7 th |
| Equity Funding | 5.00 | 57.50 | 30.00 | 7.50 | 37.56 | 3 rd |
| Partnership | 2.50 | 47.50 | 40.00 | 10.00 | 49.19 | 1 st |
| Syndicate | 12.50 | 31.25 | 31.25 | 25.00 | 30.16 | 8 th |

Source: Field Survey, 2011

Based on the magnitude of the severity indices, Table 2 reveals that, the first four most severe factors are: Loan from commercial banks, partnership, equity funds while the least ranking factors are loan from merchant banks and discount houses and loan from mortgage insurance companies.

Comparison of severity index and ranking for each group Table 3 - 4

TABLE 3: PRIVATE FINANCIAL OPTIONS AS RANKED BY REAL PRIVATE ESTATE DEVELOPERS

| Factors | Valid percentage for Score of | | | | Index % | Order |
|---------------------------------------------|-------------------------------|-------|-------|-------|---------|------------------|
| | 1 | 2 | 3 | 4 | | |
| Loans and Mortgage from Insurance Companies | 2.50 | 5.00 | 32.50 | 12.50 | 3.03 | 12 th |
| Contractors/developers Finances | 2.50 | 7.50 | 3.50 | 7.50 | 24.29 | 1 st |
| Primary mortgage Institutions (PMI) | 0.00 | 10.00 | 25.00 | 17.50 | 20.60 | 3 rd |
| Merchant banks and Discount houses | 1.25 | 30.00 | 15.00 | 6.25 | 14.94 | 8 th |
| Commercial Banks | 0.00 | 2.50 | 35.00 | 15.00 | 13.21 | 10 th |
| Multilateral finance Institute | 2.50 | 11.25 | 12.50 | 26.25 | 16.37 | 6 th |
| By kind | 25.00 | 3.75 | 17.50 | 6.26 | 9.29 | 11 th |
| Personal Savings | 0.00 | 6.25 | 40.00 | 6.25 | 14.52 | 9 th |
| Money Lender | 2.50 | 12.50 | 27.50 | 10.00 | 23.63 | 2 nd |
| Equity Funding | 1.25 | 31.25 | 12.50 | 6.25 | 15.61 | 7 th |
| Partnership | 2.25 | 22.50 | 15.00 | 12.50 | 18.51 | 4 th |
| Syndicate | 0.00 | 22.50 | 12.50 | 17.50 | 17.38 | 5 th |

Source: Field Survey, 2011

Based on the magnitude of the severity indices, Table 3 reveals that, the first four most severe factors are: contractors/developers finances, money lenders, Primary mortgage Institutions (PMI), while the least ranking factors are partnership and loan from mortgage insurance companies.

TABLE 4: PRIVATE FINANCIAL OPTIONS AS RANKED BY FINANCIAL INSTITUTIONS

| Factors | Valid percentage for Score of | | | | Index % | Order |
|---------------------------------------------|-------------------------------|-------|-------|-------|---------|-------|
| | 1 | 2 | 3 | 4 | | |
| Loans and Mortgage from Insurance Companies | 2.50 | 5.00 | 22.50 | 17.50 | 3.16 | 10 |
| Contractors/developers Finances | 1.25 | 1.25 | 37.50 | 7.50 | 20.72 | 1 |
| Primary mortgage Institutions (PMI) | 0.00 | 7.50 | 22.50 | 17.50 | 20.72 | 1 |
| Merchant banks and Discount houses | 1.25 | 25.00 | 12.50 | 8.75 | 13.09 | 6 |
| Commercial Banks | 0.00 | 2.50 | 35.00 | 10.00 | 12.37 | 7 |
| Multilateral finance Institute | 1.25 | 7.50 | 12.50 | 26.25 | 15.13 | 6 |
| By kind | 25.00 | 3.75 | 12.50 | 6.25 | 7.99 | 9 |
| Personal Savings | 0.00 | 3.75 | 37.50 | 6.25 | 10.99 | 8 |
| Money Lender | 2.50 | 12.50 | 25.00 | 7.50 | 20.71 | 2 |
| Equity Funding | 1.25 | 25.00 | 12.50 | 8.75 | 14.61 | 6 |
| Partnership | 2.50 | 20.00 | 18.75 | 6.25 | 16.68 | 3 |
| Syndicate | 0.00 | 10.00 | 25.00 | 12.50 | 15.72 | 4 |

Source: Field Survey, 2011

Based on the magnitude of the severity indices, Table 4 reveals that, the first four most severe factors are: contractors/developers finances, Primary mortgage Institutions (PMI), money lenders, while the least ranking factors are partnership, syndicates loan and loans from mortgage insurance companies.

TABLE 5: DERIVATION OF KENDALL'S CONCORDANCE COEFFICIENT W BETWEEN REAL ESTATE PROPERTY DEVELOPERS AND FINANCIAL INSTITUTIONS/ORGANISATION

| Factors | Real estate developers Ranking (a) | Financial/Org. Ranking (b) | Sum of Ranking R between Group (b)+(c) | Deviation d of R from mean, $m^a(b)+(c)-(m)$ | d^2 |
|---------------------------------------------|------------------------------------|----------------------------|----------------------------------------|----------------------------------------------|--------|
| Loans and Mortgage from Insurance Companies | 12.00 | 10.00 | 22.00 | -10.42 | 108.58 |
| Contractors/developers Finances | 1.00 | 1.00 | 2.00 | 9.58 | 91.78 |
| Primary mortgage Institutions (PMI) | 3.00 | 1.00 | 3.00 | 8.58 | 73.62 |
| Merchant banks and Discount houses | 8.00 | 6.00 | 14.00 | -2.42 | 5.86 |
| Commercial Banks | 10.00 | 7.00 | 17.00 | -5.42 | 29.38 |
| Multilateral finance Institute | 6.00 | 5.00 | 11.00 | 0.58 | 0.34 |
| By kind | 11.00 | 9.00 | 20.00 | -8.42 | 70.90 |
| Personal Savings | 9.00 | 8.00 | 17.00 | -5.42 | 29.38 |
| Money Lender | 2.00 | 2.00 | 4.00 | 7.58 | 57.46 |
| Equity Funding | 7.00 | 6.00 | 13.00 | -1.42 | 2.02 |
| Partnership | 4.00 | 3.00 | 7.00 | 4.58 | 20.98 |
| Syndicate | 5.00 | 4.00 | 9.00 | 2.58 | 6.66 |

Kendal's concordance coefficient $W = 12S/(k2(N3 - N)) = 0.87^b$ Chi-squared value = $\chi^2 = k(N - 1)W = 19.14$

Ma , mean of $R = (22.00+2.00+3.00+14.00+...+9.00)/12 = 11.42$; b^s is the sum of square of deviation of R from means = $\sum d^2 = 496.92$; k is the number of ranking groups = 2; and N is the number of factors/criteria = 12.

From the Table 5, Kendall's coefficient of concordance W obtained is 0.87, a coefficient of 0.75 is considered as a moderately high degree of concordance between the sets of ranking (Hays, 1998) in (Idrus et al 2002). The value of W must also be investigated for significance; to ensure that the agreement between the two ranking groups were not as a result of pure chance. For this the chi-square test was used in determining the probability of occurrence of a relationship between the two sets of ranking. With a concordance coefficient W of 0.87, the chi-square value obtained was 19.14, for an 11degrees of freedom. The null hypothesis that 'there is no relationship between the sets of ranks' has a probability of occurrence of $p < 10\%$. The alternative hypothesis can therefore be accepted at the 90% confidence level. Thus conclude that the ranking obtained for all the respondents, as given by the severity index analysis, was consensual among the respondents, significant and coherent.

DISCUSSION OF RESULT

Response rate of 52% was achieved based on level of homogeneity of the returned questionnaires. Statistical analysis carried out has shown ranked list of 12 perceived financial options available to private sector house developers. The ranking obtained in Table 2 was as a result of a consensual agreement among the respondents, as confirmed by the concordance test. 'Partnership was ranked first indicating the most importance choosing private financial options, followed by Commercial Banks loans', followed by equity found, Merchant banks and Discount houses, judging from their severity indices. Table 3 and 4 depict the comparison of the ranking of the different groups, Contractors/developers Finances.

RECOMMENDATIONS

- 1) Partnering arrangement should be encouraged those with enough finances and managerial expertise both in the building Professionals/Stakeholders, and the government should help in the provision of buildable lands and infrastructures for easy of development.
- 2) Commercial banks operatives should be enhanced through adequate government favourable policies and programmes, to narrow the gap between savings and lending rates, check and balance of power given to the operatives so that loans secured by these developers will adequately be use for the proposed projects.
- 3) Equity found should adequately be used for house project financing, private individual to go to stock-exchange market to rise found for building and infrastructures development equally through the use of merchant banks for the purchase of heavy equipments using letter of credit.
- 4) Primary mortgage Institutions (PMI) Primary mortgage Institutions (PMI), the bureaucratic process of assessing (PMI) by the private developers should be minimised to be enable private developer to raise funds for housing and infrastructural development.

REFERENCES

1. Abiola, R.O (2001), An evaluation of the national housing policy in Nigeria The Nigeria quantity surveyor pp 2-6.
2. Adekunle, S.O (2006), Housing development in Nigeria: A mortgage finance initiative. The Nigeria quantity surveyor vol 54 No3 pp 12-39.
3. Ameh .O.(2010), The Contributions of Tertiary Institutions' Training to Sustainable Construction, Unpublished Thesis submitted to Post Graduate School Ahmadu Bello University Zaira Kaduna - State.

4. Anyadike, E (2002), Cost Management of Housing and Infrastructural Development. Paper presented at NIQS 2 – day workshop on housing and Urban Development held at premier Hotel, Ibadan, 25th November.
5. Babaola, O. (2002), An appraisal of the impact of primary mortgage institution on Housing improvement in Nigeria. The quantity surveyor vol 41 pp 13-16.
6. Ben S. B (2000), Housing, housing finance and monetary policy. Federal reserve bank Kansas city Economic symposium, Jackson Hole, Wyoming.(Speech) 13th 07 2009.
7. Idrus, A. B and Newman, J. B. (2002). Construction related factors influencing the choice of concrete floor systems, Construction Management and Economics, Uk spoon press,
8. Jide, O. (2008), IDB approves \$2.8Billion to boost low – income housing market in Mexico. Retrieved 13th 07 2010, from,[http:// www.iadb.org/news/detail](http://www.iadb.org/news/detail) .
9. Kabir, B. Bustani, S.A and Kolo, B.A (2007), Housing finance in Nigeria; An appraisal of the performance of mortgage institutions. Probe 07 Glasgow Caledonian University, Glasgow, UK.
10. Mustapha, I. (2002), Overview of Housing and Urban Development programme since Independence. Paper presented at NIQS 2 – day National Workshop on Housing and Urban Development held at premier Hotel, Ibadan, 25th November.
11. National Bureau of Statistics (2010). Annual abstract of statistics. Abuja: pp145-165.
12. Onibokun, P (1990), Housing Strategies. In Urban Housing in Nigeria. P.O. Onibokun (Ed). Ibadan. N.I.S.E.R.
13. Onwusonye S.I.J & Nzotta S.M (2003), Project financing: A panacea for efficient procurement and delivery of Turnkey projects, the journal Nigerian institute of Quantity Surveyor Vol.45, pp2-5.
14. Oyegoke, A.S. (2005), Infrastructure project finance and extension development Strategies.The quantity Surveyor, vol. 52, No 3, pp11-17.
15. Ughamadu, F. (1991), Investment in human settlements. Business times, pp.24, 4th March.
16. Wasiu A.O. Akewusola, Esq (2005), Housing for all by the year 2015, a realistic point of view. The quantity Surveyor, vol. 52, No 3, pp29-31.
17. Zubairu, M. (2000), Housing Development in Nigeria. The Federal Housing Authority Experience. Paper presented at NIQS 2 – day Workshop on Financing and procurement of Housing and Infrastructure, held at Sheraton hotels and 25 July.

AN EXPLORATORY STUDY ON THE PERCEPTION OF CUSTOMERS TOWARDS THE ROLE OF MOBILE BANKING, AND ITS EFFECT ON QUALITY OF SERVICE DELIVERY, IN THE RWANDAN BANKING INDUSTRY

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ABSTRACT

Banking in several developing countries has transcended from a traditional brick-and mortar model of customers queuing for services in the banks to modern day banking where banks can be reached at any point for their services. This can be attributed to the tremendous growth in mobile penetration in many countries across the globe including Rwanda. This study was conducted with the aim of identifying the perception of customers towards the role of mobile banking, when categorized according to age groups and gender and its effect on quality of service delivery, in the Rwandan banking industry. Data for this study was collected using a questionnaire containing 22 questions. Out of 400 questionnaires that were distributed, 349 were returned indicating a (87.25%) return success rate. In the survey, factors that may affect Rwandan mobile phone users' and there effect on the quality of service delivered were examined. When categorized according to gender, the statistical analysis indicate that the male perceive risk and cost as having a negative effect on the quality of service offered while the female perceive all the variables (perceived risk, perceived cost, easy access, Perceived time of access, Perceived Speed of access) as having a positive effect on the quality of service provided by mobile banking. The research findings suggested that all the six factors; Easy Access, Perceived Risk, Perceived Cost, Perceived Time of access, Perceived Speed of access, were statistically significant with the quality of service delivered.

KEYWORDS

Mobile banking, technology adoption, quality of service delivery.

INTRODUCTION

Banking today is undergoing a radical transformation. The symptoms are obvious; new products, new players, new channels are appearing daily. This transformation is taking place across all sectors of the banking industry. Technology is a major force in this radical transformation that has led to breaking the geographical, legal and industrial barriers and has created new products and services. The escalation and convergence of wireless telecommunications has created a tremendous potential platform for providing business services. It's estimated that mobile phone users are approaching the three billion mobile subscriptions mark globally, and advertisers and operators alike are keenly aware of the opportunity to connect with potential consumers through mobile phones (Khraim, Shoubaki, & Khraim, 2011).

In the Rwandan banking industry due to competition, IT investments and adoption has become a very important component in achieving organizational goals. In the recent past therefore, electronic and communication technologies have been used extensively in banking so as to advance the agenda of banks. The earliest forms of electronic and communications technologies used by the banks were mainly office automation devices. Telephones, telex and facsimile were employed to speed up and make more efficient, the process of serving clients. However, with the coming of new partners in banking industry, competition intensified and the personal computer (PC) got proletarian, Rwandan banks begun to use them in back-office operations and later tellers used them to service clients. The advancements in computer technology have led to application and adoption of the new IT investments that have changed the banking landscape in the country. Mobile banking is one developing mobile technique used in the commercial domain. It has combined information technology and commerce applications together. Since mobile banking was introduced, consumers have been able to use it to obtain special services 24 hours a day without having to visit the traditional bank branch for personal transactions.

Mobile banking services can be described as the newest services in electronic banking. They are performed using mobile phones or other mobile devices. Mobile banking services are provided through a convention of connection to these services. Access to the database is made through a password and a customer code. Customers can check their balance and make adjustments between accounts. There are two main types of technology available for use in mobile banking: WAP (Wireless Application Protocol) and WIG (Wireless Internet Gateway). The first one is an application environment and set of communication protocols for wireless devices build to enable the manufacturer, vendor and platform independent access to the internet and advanced telephone services. The other one (WIG) is a SMS-based service in which a menu of banking services options is downloaded from the bank to the phone. This enables the user to browse to all bank services options and through their accounts and to conduct specific tasks. (Daniela & Simona, 2011).

Electronic banking, in its diversified forms, represents an innovation in which both intangible service and an innovative medium of service delivery employs high technology convergence. The term electronic banking defined by Daniel (1999) as the provision of information and services by a bank to its customers via electronic wired or wireless channels, for example Internet, telephone, mobile phone or interactive television. Mobile banking has been adopted and is in the process of being adopted by various banks globally so as to have a competitive edge and advantage. Mobile banking offers considerable benefits to both the banks and their customers. The system can enable bank customers to withdraw cash, transfer of funds, pay bills, view account balances, pay mortgages, purchasing financial instruments and certificates of deposits, and access the account statements at a more convenient time outside the banking hours. There are many advantages of mobile banking. It is convenient, it isn't bound by operational timings, there are no geographical barriers and the services can be offered at a diminutive cost. According to McAndrews, (2003) these potential benefits are multiplied when banks share their means of using mobile banking, allowing depositors of other banks to access their accounts through their banks mobile system.

Banks have adopted and diffused mobile banking facilities and services in their daily operations majorly for the following main reasons:- to increase their market share, to reduce the cost of transaction which ultimately costs less than the transactions conducted across the counter and being able to handle more transactions at one specific time. The spread of mobile banking across the developing world is one of the most remarkable technology stories of the past

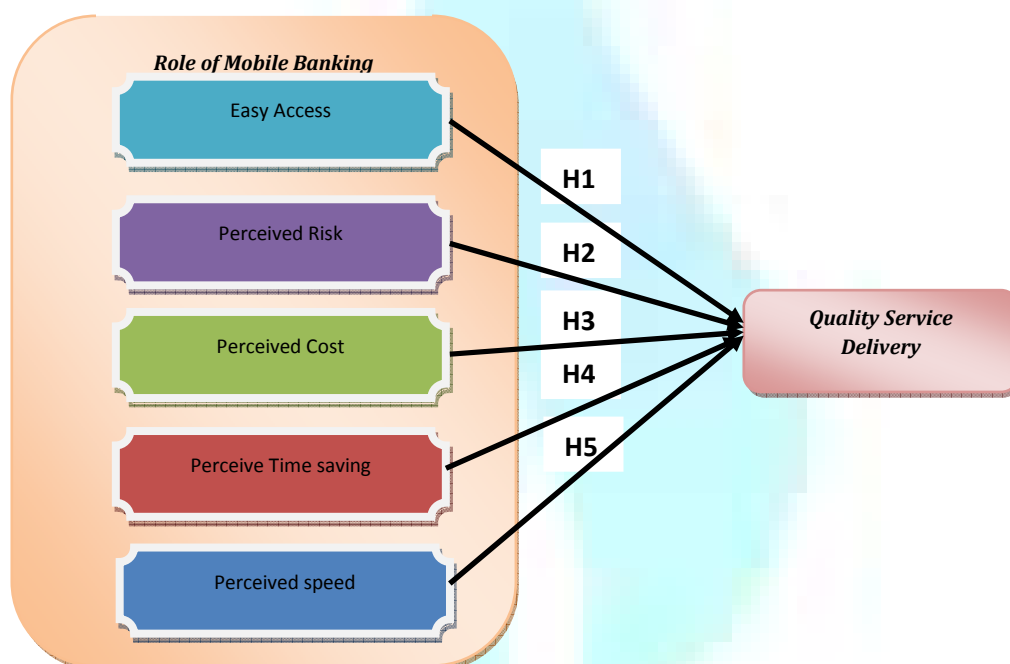
decade. According to development economist Mitha, (2009) the mobile phone has become “the single most transformative tool for development. Many of these same new mobile users live in informal and/or cash economies, without access to financial services that others take for granted. Indeed, across the developing world, there are probably more people with mobile handsets than with bank accounts (Porteous, 2006).

Traditional access of the bank services required the customers to physically visit the banks or branches of the financial institutions (Smith, 2009). With the advancement in technology, this situation has been partially overcome by time. According to Kanen, (2006) the opportunity of avoiding to queue at the banks, was revolutionized with the introduction of the Automated Teller Machine (ATM), which was perceived an important factor in electronic banking. The technology has become an increasingly revolutionized landscape in the financial services of the banks. Mobile banking is leading to a paradigm shift in marketing practices resulting in high performance in the banking industry. Delivery of the services in banking can be provided efficiently only when the background operations are efficient. An efficient background operation can be conducted only when it is integrated by an electronic system. The components like data, hardware, software, network and people are essential elements of the system.

The advancement in technology in the provision of financial services has changed the nature of accessing financial services in the Rwandan banks. The development of the new technology has profoundly, changed the way in which customers interact with the services provided by the banks. The thrust of the research is to establish the role of mobile banking in Rwandan commercial banks. The study aims to explore and investigate the role of mobile banking based on the aggregate respondents perception, and its effect on the quality of service delivery. The study also aims to investigate the respondents perception when categorized into various age groups and gender on the role of mobile banking and the quality of service delivered. The study investigates the independent variable (easy access, perceived risk, perceived cost, perceived time, and perceived speed) and the dependent variable (quality of service delivery) so as to arrive at a concrete and solid conclusion on the matter. The work is divided into sections with the foregoing introduction, followed by the theoretical and related literature review, methodology design, data analysis, interpretation and discussions, and the conclusion respectively.

CONCEPTUAL MODEL

This conceptual model is developed on the basis of the literature review and related research studies and variables include independent variables (easy access, perceived risk, perceived cost, perceived time, and perceived speed), and dependent variables (quality of service delivery)



RELATED LITERATURE REVIEW

Evolution in human culture has been consummated by the development of new technologies. The last few years have witnessed supreme changes throughout the world (Deshmukh, 1995). Due to increase in technology usage, the banking sector's performance increases day by day. Mobile banking is becoming the indispensable part of modern day banking services. It is expected that 60 % of retail banking dealings will be online in ten years' time (Barwise, 1997). Ease of Access to financial services refers to the possibility that individuals or enterprises can access financial services, including credit, deposit, payment, insurance, and other risk management services in a simplified way that allows them to perform transactions easily. Ease of use is another important determinant for the customer preferring mobile banking (Beer, 2006). In a study conducted by Cooper (1997); reported that ease of use of innovative product or service as one of the three important characteristics for adoption from the customer's perspective. The user friendliness as well as the ease of navigation is an important determinant for ease of use. The study evaluated the five outlined hypothesis, investigated them and drew a conclusion based on the findings of the study.

H1. There is a significant positive relationship between perceived risk of access to mobile banking services and quality of service delivery.

Perceived risk is the “uncertainty about the outcome of the use of the innovation”. Perceived risk is considered an important risk attribute that impacts on the consumer decision-making process when buying a product or consuming some services (Mitchell, 1998). Electronic banking is a technology-enabled channel and consumers' perceive the use of electronic banking as a risky decision because technology-enabled services exhibit invasive technological, unfamiliar and indefinite stimuli (Davidow, 1986). As mobile banking is revolutionized from internet banking, therefore mobile banking tends to have similar risks as internet banking

Consumer Perceived risks identified by literature of electronic banking include; Financial risk, Performance risk, Physical risk, Social risk and Psychological risk. Financial risk represents the financial loss in using electronic banking, as consumers may perceive that reversing a transaction, stopping a payment after discovering an error, or a refund may not be possible. Performance risk in electronic banking is less satisfying than non-electronic banking, as consumers may perceive that electronic banking cannot be used to complete a transaction when needed due to the denial of access to their account. Physical risk in electronic banking refers to possible injury when personal information is accessed by a third party. Social risk refers to the older generation who may object to the use of electronic banking due to their perception that non-electronic banking is personal and friendly. Psychological risk represents consumer perceptions that the use of electronic banking would reduce the self-image of them, or have a negative effect on their perceived image from other consumers. Time risk in electronic banking implies that it takes more time to complete a banking transaction than a non-electronic banking transaction.

Hamid, Hhnutdin, Suddin, & Noren, (2007) in their study on the comparative analysis of internet banking in Malaysia and Thailand, they indicated that, perceived risk can cause customers to reject new technology-based service delivery. Customers are also worried that technology based services delivery system will not work as expected and lack of confidence that the problems can be solved quickly. Furthermore, some of them have to go to the bank branches to solve the

problem which is time consuming. (Walker, 2002; Westland, 2002) found that transaction risk occurs when online banking fails to assure that services will be delivered with adequate quality. Internet banking users are dissatisfied with the low speed of Internet banking response, which results from deficiencies in infrastructure for the communication network.

Many customers are concerned about legal support for commercial usage of the Internet, Zulghelder (2000) mention that customer protection is the major legal issue associated with Internet banking. Among other things customer protection issues can cover unfair and deceptive trade practices by suppliers, unauthorized access and usage by others such as hackers or system failures. Customer protection is important for building online customers confidence because there is no face-to-face contact, and there is great possibility for having or making mistakes via the Web. With a lack of specific and standard laws governing Internet banking, bank customers hesitate to use this service. (Larpsiri, 2002)

Another problem of legal support issue for using the Internet in commercial transactions is the jurisdiction of the courts and dispute resolution procedures. Online transaction records are not accepted by some courts to the difficulties in providing authentication of electronic transmission. Many businesses are still wary of making extensive transactions over the Web because of the lack of supporting law about electronic documents as legal evidence (Farhoomand, 2000). Recent studies conducted by Luo, (2010) found that user's perception of risk is a crucial driver to determine innovative technology acceptance. The findings show that perceived risk has negative significant relationship towards behavioral intention on mobile banking adoption.

H2. There is a significant positive relationship between perceived cost to mobile banking services and quality of service delivery.

Several satisfaction studies have examined the role of price as an attribute of performance. Voss, (1998) found that price perceptions do affect satisfaction in an experimental setting involving a banking service. Fornell, (1996) also found that price perceptions affect customer satisfaction in a macroeconomic study involving seven industry sectors. When accessing mobile banking services, consumers cannot actually see or handle the product. In conditions characterized by such performance uncertainty, price perceptions likely play an increased role in determining both post-purchase satisfaction and intention to return. Internet banking model offers advantages for both banks and customers. Mobile banking (m-banking) reduces the transaction costs of banking for both the customers and banks. The banks can benefit from lower transaction costs as e-banking requires less paper work, less staffs and physical branches (Riyad, Akter, & Islam, 2010). Mobile banking allows both customers and financial institutions to lower transaction cost and save time to customers and creates more business.

The Internet provides the banks with the ability to deliver products and services to customers at a cost that is lower than any existing mode of delivery. It is widely agreed that internet banking provides banks with a competitive advantage, by improving the quality of customer services and reducing the operational costs (Jordan and Katz, 1999; Furst, 2000a). Pikkarainen, (2004) electronic banking services delivery are the cheapest, the most profitable and wealthiest delivery channel for banking products. Internet banking services are crucial for longterm survival of banks in the world of electronic commerce (Burnham 1996). (BankAway, 2001; Gur_u, 2002) also considered the benefit from the customer point of view that there is a reduction in costs of accessing and using the banking services, increased comfort and timesaving – transactions can be made 24 hours a day without requiring the physical interaction with the bank, quick and continuous access to information and corporations will have easier access to information as, they can check on multiple accounts at the click of a button, and better cash management

Financial institutions, which have had difficulty providing profitable services through traditional channels to poor clients, see m-banking/m-payments as a form of "branchless banking" (Ivatury & Mas, 2008), which lowers the costs of serving low-income customers. Mattila, Karjaluoto, & Pento, (2003) in their research on Internet banking adoption among mature customers: early majority or laggards, they analyzed that, some mature customers expressed concern about high start-up costs of using Internet banking. A number of mature customers wrongly believed that Internet banking cost more per transaction than conventional methods.

H3. There is a significant positive relationship between Perceived time saving of mobile banking services and quality of service delivery.

According to Leow (1999), mobile banking has numerous benefits for both customers and banks, among them: time saving. Mobile-banking reduces loan processing time as borrowers loan application can be viewed by loan processing and loan approval authority simultaneously. From customers' perspective as indicated by Rashid & Saleem, (2011), mobile banking services benefit in terms of convenience to perform banking transactions anytime and anywhere.

H4. There is a significant positive relationship between Perceived speed of access by using mobile banking services and quality of service delivery.

Emergence of technology-based electronic services constitutes the emergence of new methods of trade and financial transactions. In this case, customers are able to conduct many financial transactions directly and without involving bank employees (Beiginia, Besheli, & Ahmadi, 2011). As far as speed of access is concerned, the idea of mobile banking according to Essinger, (1999) is to give customers rapid access to their bank accounts via a cell phone and to enable them to enact certain transactions on their account, given compliance with precise security checks. Mobile banking by its nature is more convenient and flexible to customers coupled with a virtually total control over their banking.

H5. There is a significant positive relationship between Perceived ease of access by mobile banking services and quality of service delivery.

Easy Access to financial services refers to the possibility that individuals or enterprises can access financial services, including credit, deposit, payment, insurance, and other risk management services in a simplified way that allows them to perform transactions easily. In their research Chavidi and Mulabagula, (2004) found out that the ease of access to relevant information or service is the most important feature in mobile banking. Based on that banks need to minimize complicated procedures and need to enhance ease of use to attract more consumers.

The account balance service is one of the most promising mobile banking services, and is designed to help customers check their account balance and latest transactions immediately anytime/anywhere (Laukkanen, 2007). Luukkanen and Lauronen (2005) found that location free access created convenience in requesting account balances. Furthermore, accessibility and portability are classified as dimensions of convenience in the consumer behaviour literatures (Yale & Venkatesh, 1986; Gehrt & Yale, 1993). Mobility access is another necessary element for the use of mobile banking. Laukkanen (2007) found that one of the most promising mobile banking services was that of checking bank account balance immediately anywhere at any time, to avoid, for example, queuing in front of an ATM to check an account balance.

Laukkanen and Lauronen (2005) suggest that mobile banking offers customers additional value in terms of location-independent access. According to the discussion in the focus group and prior studies, mobility access improves the usefulness of mobile banking services.

RESEARCH METHODOLOGY

The theoretical architecture was bridged with methodological design towards deepening the scientific or philosophical undertone of the research. The research employed and utilized descriptive and correctional research design. The choice of these designs was informed by the ability of descriptive method to profile respondents categorically (Greener, 2008) and the correlation was to examine the relationship between variables (Wallace and Wray, 2006). Collectively, these designs formed the background upon which the statistical analysis is based. Evidence from Adams, Khan, Raeside and White (2007), Remenyi (2002 & 2005), and Pallant (2005) have demonstrated that survey-based research which required grouping is best organized and analyzed with descriptive approach. Primary data was used for the research. This was collected through a self-constructed questionnaire. The questionnaire was constructed on a likert-scale. The face, content, and construct validity (Greener, 2008) were established through experts' intervention from the field of management. The research approached 400 customers with a self structured questionnaire with the aim of collecting the data. The researcher used the Convenience Sampling method. This method was used to make research procedure faster by obtaining a large number of accomplished questionnaires rapidly and efficiently. Of the four hundred (400) customers approached to fill the questionnaires, 349 agreed to fill the questionnaire. The respondents' participation was solicited through a consent letter with approval from the bank management and the data gathered are for academic purpose only.

DATA ANALYSIS, INTERPRETATIONS AND DISCUSSIONS

The profile of the respondents was analyzed through descriptive statistics as presented in Table 1 indicates that a total of 259 male representing (74.2%) and 90 female, representing (25.8%) of the total 349 respondents were used in the study. Most respondents are those of the age between 25 and 35, and a large number of the respondents are businessmen/Women.

TABLE 1: DISTRIBUTION OF THE RESPONDENTS BY DEMOGRAPHIC FACTORS

| Demographic Variables | Categories | Frequency | Percent |
|-----------------------|-------------|-----------|---------|
| Gender | Male | 259 | 74.2% |
| | Female | 90 | 25.8% |
| Age | 18-25 | 98 | 28.1% |
| | 25-35 | 203 | 58.2% |
| | 35-40 | 45 | 12.9% |
| | Over 40 | 3 | 0.9% |
| Occupation | Businessmen | 161 | 46.1% |
| | Students | 110 | 31.5% |
| | Unemployed | 57 | 16.3% |
| | Others | 21 | 6.0% |

To find the strength of the relationship between several variables, "Pearson Product Moment Correlation Co-efficient" was used. In this tool, both the variables are treated symmetrically, i.e. there is no peculiarity between dependent and independent variables. Two variables are said to be correlated if they tend to be varying in same direction. If both the variables tend to increase or decrease together, the correlation is said to be direct or positive. When one variable tends to increase and the other variable tends to decrease, the correlation is said to be negative or inverse.

TABLE 2: MEAN AND STANDARD DEVIATION OF THE VARIABLES

| Variables | Mean | Std. Deviation |
|---------------------------|--------|----------------|
| Easy Access | 3.3649 | 0.95021 |
| Perceived Risk | 1.8711 | 0.89392 |
| Perceived Cost | 2.0955 | 1.04914 |
| Perceived Time of access | 3.0879 | 0.93733 |
| Perceived Speed of access | 2.7049 | 1.05315 |

Table 2 indicated the means, and standard deviations. The highest mean of perceived easy access (3.3649) indicates to be the main factor affecting the customer's perception on the quality of service delivered by mobile banking, followed by perceived time of access, perceived speed of access, perceived cost and lastly perceived risk. The mean of perceived time is (3.0879) and standard deviation is (0.93733). This means that the perceived time plays a vital role in the customer's acceptance of the timely quality service delivered by mobile banking. The mean of perceived speed of access is (2.7049) and standard deviation is (1.05315). This means that the perceived speed of access plays a vital role in the customer's acceptance of the speedy access of information by mobile banking. Perceived risk illustrated the lowest mean (1.8711), highlighting that it is not a major contributory factor of the customer perception on the quality of service delivered by mobile banking.

DESCRIPTIVE STATISTICS OF THE RESPONDENTS PERCEPTION WHEN CATEGORIZED INTO GENDER

TABLE 3: MEAN AND STANDARD DEVIATION OF THE VARIABLES CATEGORIZED INTO GENDER

| Gender | Variables | Mean | Std. Deviation |
|--------|---------------------------|--------|----------------|
| Male | Easy access | 3.1441 | 1.01402 |
| | Perceived Risk | 1.4324 | .44514 |
| | Perceived Cost | 1.5766 | .62914 |
| | Perceived Time | 2.8018 | .92678 |
| | Perceived speed of access | 2.2635 | .85777 |
| Female | Easy access | 4.0000 | .00000 |
| | Perceived Risk | 3.1333 | .61565 |
| | Perceived Cost | 3.5889 | .34275 |
| | Perceived Time | 3.9111 | .14823 |
| | Perceived speed of Access | 3.9750 | .07542 |

Table 3 indicated the means, and standard deviations of the variables when categorized into various gender. The male do perceive risk (1.4324) and cost (1.5766) as having influence on the quality of service delivered by mobile banking, meaning that if they perceive the some risk or a cost to be incurred in the usage of mobile banking that will deter the perception they have towards the quality of service offered. The female on the other hand do not have any problem with all the variables, meaning that any of these variables does not in a greater percentage influence how they look at the quality of service offered.

TABLE 4: MEAN AND STANDARD DEVIATION OF THE VARIABLES CATEGORIZED INTO AGE GROUPS

| Age group | Variables | Mean | Std. Deviation |
|-----------|---------------------------|--------|----------------|
| 18-25 | Easy access | 2.0952 | .85354 |
| | Perceived Risk | 1.0000 | .00000 |
| | Perceived Cost | 1.0000 | .00000 |
| | Perceived Time | 1.8095 | .50200 |
| | Perceived speed of Access | 1.4464 | .14019 |
| 25-35 | Easy access | 3.8276 | .33555 |
| | Perceived Risk | 1.8768 | .49823 |
| | Perceived Cost | 2.2135 | .75879 |
| | Perceived Time | 3.4893 | .49002 |
| | Perceived speed of Access | 3.0062 | .80201 |
| 35-40 | Perceived Risk | 3.6000 | .35248 |
| | Perceived Cost | 3.8222 | .16817 |

Table 4 indicated the sample means, and standard deviations, of the variables when categorized into various age groups. In the age group between 18 years and 25 years the only variable that has a mean above 2.00 but lower than 2.50 is easy access (2.0952), meaning that the respondents between this age group perceive easy access to be the role of mobile banking that foster the quality of service delivery. The other variables based on these age groups, perception does not seem to influence the quality of service delivery. The age group between 25 years and 35 years do perceive all the variables as having an influence in quality of service delivery apart from perceived risk, meaning that perceived risk (1.8768) is seen as a variable that deters the perception of quality of service delivery. The age group between 35 years and 40 years perceive the two variables perceived risk (3.600) and perceived cost (3.8222) as being important and having an influence on the quality of service delivered to the customers. These variables in this age group have a mean greater than 3.500.

CORRELATION ANALYSIS OF VARIABLES

Pearson correlations were calculated to identify the correlations between the variables. Table 3 shows the correlations for all the variables.

TABLE 5: CORRELATION OF VARIABLES

| Variables | Quality of Service Delivery | easy | Risk | Cost | Time | Access |
|-----------------------------|-----------------------------|--------|--------|--------|--------|--------|
| Quality of Service Delivery | 1 | | | | | |
| Easy Access | 0.915** | 1 | | | | |
| Perceive Risk | 0.834** | .622** | 1 | | | |
| Perceive Cost | 0.889** | .673** | .970** | 1 | | |
| Perceived Time of access | 0.946** | .956** | .744** | .788** | 1 | |
| Perceive Speed of access | 0.933** | .797** | .879** | .937** | .903** | 1 |

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

* Correlation is significant at the 0.05 level (2-tailed)

There is a high correlation amongst the independent and dependent variables. The highest correlation is between perceived time and quality of service delivery, in which the correlation is (0.946). This indicates that there is a significant relationship between the time of access of information using mobile banking and the quality of service delivery. In other words time of access influence the perception of the customer as to whether the service delivered is of quality or not. The lowest correlation is between perceived risk and the quality of service delivery, in which the correlation is (0.834). Though lower than the other variables, it still indicates a significant relationship between the two variables. This indicates that there is a significant relationship between the risk of access of information using mobile banking and the quality of service delivery. In other words risk of access influence the perception of the customer as to whether the service delivered is of quality or not.

CONCLUSION

This research contributes to the wealth of existing documentation through the identification of the role of mobile banking and quality of service delivery in the microfinance institutions in Rwanda. The research is perceptual and relationship based. All the variables were found to have a significant relationship with the quality of services offered. Perceived time of access (0.946) was found to be the most important factor in determining the quality of service offered by mobile banking. This translates to indicate that the entire hypotheses in this study are upheld. This translated to indicate that all the hypothesis of the study are upheld. The suggested policy has implications for managers, and can be used as a basis to plan efforts towards increasing the quality of service offered in the institutions. By improving the various access factors on mobile banking will enhance the quality of services delivered thus increasing the customer niche. According to Leow (1999), Mobile banking has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks' perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services.

REFERENCES

- Adams, J., Khan, H. A. T., Raeside, R., and White, D. (2007). Research Methods for Graduate Business and Social Science Students. New Delhi, Sage
- Barwise, P. (1997). Editorial. The Journal of Brand Management, 4, 220-223.
- Beer Stan (2006). Customers Preference on Internet Banking, Survey (Retrieved from <http://www.itwire.com/content/view/4570/53> on 20 March 2009)CGAP.
- Beiginia, A. R., Besheli, A. S., & Ahmadi, M. (2011). Examine the Customers' Attitude to Mobile Banking Based on Extended Theory of Planned Behaviour (A Case Study in EN Bank). International Bulletin of Business Administration, 10.
- Cooper, R.G. (1997). Examining Some Myths About New Product Winners in Katz, R. (Eds), The Human Side of Managing Technological Innovation, Oxford, pp.550-60. (Retrieved from www.ebsco.com)
- Daniel, E. (1999). Provision of Electronic Banking in the UK and the Republic of Ireland. International Journal of Bank Marketing, 17, 72-82.
- Daniela, B., & Simona, M. (2011). ELECTRONIC BANKING – ADVANTAGES FOR FINANCIAL SERVICES DELIVERY.

8. Davidow, W. H. (1986). Marketing high technology: An insider's review. New York: Free Press.
9. Dawson, & Catherine. (2002). Practical Research Methods. New Delhi: UBS Publishers' Distribution.
10. Deshmukh, S.G and Sambasivarao, K.V. (1994). Strategic framework for implementing the flexible manufacturing systems in India. International Journal of Operations & Production Management 14(4) 52-65.
11. Donald, R. C., & Pamela, S. S. (2006). Business Research Methods. New Delhi: Tata McGraw-Hill Publishing Company Limited.
12. Farhoomand, A.F., Tuunainen, V.K., & Yee, L.W. (2000). Barriers to global electronic commerce: A cross-country study of Hong-Kong and Finland. Journal of Organizational Computing and Electronic Commerce, Vol. 10 No.1, pp.23-48.
13. Greener, S. (2008) Business Research Methods. APs. Ventus Publishing
14. Hamid, R. M., Hnudin, A., Suddin, L., & Noren, A. (2007). A comparative Analysis of internet banking in Malaysia and Thailand. Journal of internet business (4).
15. Ivatury, G., & Mas, I. (2008). The early experience with branchless banking. Washington, DC:
16. Khraim, H. S., Shoubaki, Y. E., & Khraim, A. S. (2011). Factors Affecting Jordanian Consumers' Adoption of Mobile Banking Services. International Journal of Business and Social Science, 2.
17. Larpsiri, R., Rotchanakitumnuai, S., Chairsakeo, S., & Speece, M. (2002). The impact of Internet banking on Thai consumer perception. Conference on Marketing Communication Strategies in a Changing Global Environment, May 22-25, 2002 Hong Kong, China. Luo. (2010).
18. Mattila, M., Karjaluo, H., & Pento, T. (2003). Internet banking adoption among mature customers: early majority or laggards? Services Marketing, 5, 514-528.
19. Pallant, J. (2005). SPSS Survival Manual. 2nd edn. Sydney. Open University Press.
20. Rashid, K., & Saleem, Z. (2011). Relationship between Customer Satisfaction and Mobile Banking Adoption in Pakistan. International Journal of Trade, Economics and Finance, 2 (6).
21. Remenyi, D. (2005). Research Strategies – Beyond the Differences. The Electronic Journal of Business Research Methods. 1(1), 38-41
22. Remenyi, D. (2005). Tell me a Story – A way to Knowledge. The Electronic Journal of Business Research Methods. 3(2), 133-140
23. Riyad, N., Akter, S., & Islam, N. (2010). The adoption of e-banking in developing countries: A theoretical Model for SME's Systems, vol. 49, no. 2, pp. 222-234, 2010.
24. Walker, R.H., Craig-Lees, M., Hecker, R., & Francis, H. (2002). Technology-enabled service delivery: An investigation of reasons affecting customer adoption and rejection. International Journal of Service Industry Management, Vol. 13 No.1, pp.91-106.
25. Westland, J.C. (2002). Transaction risk in electronic commerce. Decision Support Systems, Vol. 33 No.1, pp.87- 103.
26. Zugelder, M.T., Flaherty, T.B., & Johnson, J.P. (2000). Legal issues associated with international Internet marketing. International Marketing Review, Vol. 17 No.3, pp.253-271.

BUSINESS PROCESS REENGINEERING AND ORGANIZATIONAL PERFORMANCE**C. S. RAMANIGOPAL****DEAN****DEPARTMENT OF MANAGEMENT STUDIES****VINAYAKA MISSIONS UNIVERSITY****SALEM****G. PALANIAPPAN****ASST. PROFESSOR****DEPARTMENT OF MANAGEMENT STUDIES****VINAYAKA MISSIONS UNIVERSITY****SALEM****N. HEMALATHA****ASST. PROFESSOR****PERIYAR UNIVERSITY****SALEM****M. MANICKAM****ASST. PROFESSOR****DEPARTMENT OF MANAGEMENT STUDIES****V. M. K. V. ENGINEERING COLLEGE****SALEM****ABSTRACT**

Business Process Re-engineering has rapidly developed towards a new management philosophy. The inherent business process orientation changes the perspective of international management from a structural to that of a process view. The re-engineering of business processes is only one aspect of the management of business processes. This paper identifies the meaning of BPR and its concepts, early stages of improvements, need, advantage and criticism while implementing the organisations. Reengineering process remains an effective tool for organizations striving to operate in the competitive world; organizations are required to re-engineering their business processes in order to achieve break through performance and long-term strategy for organizational growth. Most of the aim of reengineering a business performance is to redesign the existence of a business practices in order to achieve improvement in performance. Business Process reengineering as found that typically affects various variables in the organization such as people, employees, business, technology etc. Thus, Business Process Reengineering has become useful weapon for any corporate organisations that is seeking for improvement in their current organizational performance and intends to achieve cost leadership strategy in its operating industry and environment.

KEYWORDS

Business Process Reengineering, Innovations, Rethinking, leadership, strategy, TQM.

INTRODUCTION

Many organisations around the globe are undergoing major changes in their structure and management in order to stay alive in today's highly competitive environment. Hence, a number of firms are undertaking such Business Process Reengineering (BPR) in order to bring the much needed innovations to change the outdated business processes. The goal of business process re-engineering is to redesign and change the existing business practices or process to achieve dramatic improvement in organizational performance. Organizational development is a continuous process but the pace of change has increased in manifolds. In a volatile global world, organizations enhance competitive advantage through Business Process Re-engineering (BPR) by radically redesigning selected processes.

According to Stoddard and Jarvenpea (1995) Business Process are simply a set of activities that transformed a set of inputs into a set of outputs (goods or services) for another person or process using people and equipments. Business process entails set of logically related tasks performed to achieve a defined business output or outcome. It involves a wide spectrum of activities procurement, order fulfillment, product development, customer service and sale (Sharma 2006). Thus, Business Process Re-engineering becomes an offshoot of Business Process.

Business Process Reengineering relies on a different school of thought. It believes in continuous process improvement, re-engineering assumes that current process is irrelevant and there is need to commence another one. Such a clean slate perspective enables the designers of business process to focus on new process. Business Process Re-engineering in the actual sense, have mixed successes therefore, business process reengineering projects aimed at transforming inefficient work process. Henceforth, organisations such as banks and other financial institutions need to optimize results from this model in real business situations.

MEANING AND DEFINITION

Hammer and Champy (2001) have revolutionized the idea of reengineering. They define BPR as,

"..the **fundamental** rethinking and **radical** redesign of business systems to achieve **dramatic** improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed."

In this definition you can find four important key words:

1. **Fundamental**: "Why do we do what we do?" and "Why do we do it the way we do?" Reengineering ignores what is and concentrates on what should be.
2. **radical**: Disregarding all existing structures and procedures and inventing completely new ways of accomplishing work
3. **dramatic**: Used for quantum leaps in performance, not used for small jumps
4. **process**: the most important key word, Collection of activities taking multiple inputs to create an output that is of value to the customer

NEED OF THE ORGANISATION UNDERTAKES REENGINEERING

- Organisation which are already in deep trouble, If the company cost's are higher than competitors, if the customer service is really bad and the customers are already against it, if the product failure is much higher as the competition's
- Organisation which are not in trouble yet If the financial situation is still good but problems might appear in the future such as new competitors, changing customer requirements and an altered economic environment
- Organisations which are in a peak condition, The Company is in a healthy condition and not even in the future problems might appear. But the management of such companies is ambitious and aggressive. These companies want to improve their own level in order to stay in lead over their competitors.

But companies do not reengineer themselves. The people do it. It is very important for every company that it selects the right people who can do this changing process thus it will lead to success. The following roles are mostly involved by implementing reengineering at a company:

- **Leader:** a senior executive who authorizes and motivates the overall reengineering effort
- **Process owner:** a manager with responsibility for a specific process and the reengineering effort focused on it
- **Reengineering team:** a group of individuals dedicated to the reengineering of a particular process, who diagnose the existing process and oversee its redesign and implementation
- **Steering committee:** a policy-making body of a senior manager who develop the organization's overall reengineering strategy and monitor its progress
- **Reengineering czar:** an individual responsible for developing reengineering techniques and tools within the company and for achieving synergy across the company's separate reengineering projects.

The relationship between the roles is like this: *"..The leader appoints the process owner, who convenes a reengineering team to reengineer the process, with the assistance from the czar and under the auspices of the steering committee..."* [Hammer, Champy, 2001].

CONCEPT OF BUSINESS PROCESS REENGINEERING

The reengineering concepts involve four dimensions that are stated below:

- Innovative Rethinking:** This is a process that is itself utterly dependent on creativity, inspiration and old-fashioned luck. **Drucker (1993)** argues that this paradox is apparent only not real most of what happens in successful innovations is not the happy occurrences of a blinding flash of insight but rather, the careful implementation of unspectacular but systematic management discipline.
- Process Function:** Taking a systematic perspective, **Hammer and Champy (1993)** describes process functions as a collection of activities that take one or more kinds of input and creates an output that is of value to the customer. Typical process of this includes ordering of organizational structure, manufacturing, production, development, delivery and invoicing.
- Radical change:** In radical change, a key business process is the transformation of organizational element; it is essential to an organization survival. Change leads to new ideas, technology, innovation and improvement. Therefore, it is important that organizations recognize the need for change and learns to manage the process effectively (**Pamela et al, 1995**).
- Organizational Development and Performance:** It takes a look at the firm's level of efficiency and way to improve its current activity level in order to meet up to standards and survive the competitive pressure. One way to judge the performance of an organization is to compare it with other unit within the company. Comparison with outsiders however can highlight the best industrial practices and promote their adoption. This technique is commonly term "bench making" (**Roberts, 1994**).

ELEMENTS OF REENGINEERING IN AN ORGANIZATION

From the work of **Abolo (1997)** and **Thomas (1996)** cited by **Ezigbo (2003)**, the essential element or principles of reengineering include the following:

- Rethinking the theory of the business.
- Challenging old assumptions and discharging old rules that are no longer applicable.
- Breaking away from conventional wisdom and the constraints of organizational boundaries.
- Using information technology not to automatic outdated process but to redesign new ones.
- Externally focus on customers and the generation of greater value for customers.
- Internally focus on harnessing more of the potentials of people and applying it to those activities that identify and deliver values to customers.
- Encourages training and development by building creative work environment.
- Think and execute as much activity as possible horizontally, concentrating on flows and processes through the organization.

STEPS INVOLVED IN BUSINESS PROCESS REENGINEERING

Davenport and Short (1990) prescribe a five-step approach to Business Process Reengineering. These are:

- Develop the business vision and process objectives:** Business Process Reengineering is driving by a business vision which implies specific business objectives such as cost reduction, time reduction, output quality improvement, quality of work life.
- Identify the processes to be redesigned:** Most firms use high- impacts approach which focuses and most important processes or those that conflict most with the business vision. Few number of firms use the exhaustive approach that attempts to identify all the processes within an organization and the prioritize them in order to redesigned urgency.
- Understand and measure the existing process:** For avoiding the repeating of old mistake and for providing a baseline for future improvements.
- Identity information technology (IT) levels:** Awareness of IT capabilities can and should influence process. This is because IT is a sine qua non to the business process reengineering.
- Design and Build a prototype of New Process:** The actual design should not be viewed as the end of the BPR process. Rather, it should be viewed as a prototype, aligns the BPR approach with quick delivery of results and the involvement and satisfaction of customers.

PRINCIPLES OF BPR

The logic behind BPR is that many organisations are not organized in an efficient manner. They are functionally structured with many handoffs and no entity other than the CEO responsible for the end-to-end process. This disorganized approach is due to organisations evolving over time and processes evolving with them in a piecemeal manner. This occurs without anyone taking a holistic view and determining whether or not the way processes are performed make sense. While IT is generally seen as the panacea for inefficiency, **Hammer and Champy** argue that the implementation of IT systems are largely a disappointment as they tend to mechanize old ways of doing business, and therefore only result in minor improvements. Instead what is needed is a complete rethink of how the business' operations are managed.

Hammer and Champy (1993) point to the following as principles for BPR:

- Several jobs are combined into one
- Workers make decisions
- The steps in the process are performed in a natural order
- Processes have multiple versions, i.e. processes are designed to take account of different situations
- Processes are performed when it make the most sense, e.g. if the accounting department needs pencils, it is probably cheaper for such a small order to be purchased directly from the office equipment store around the block than to be ordered via the firm's purchasing department
- Checks and controls are reduced to the point where they make economic sense

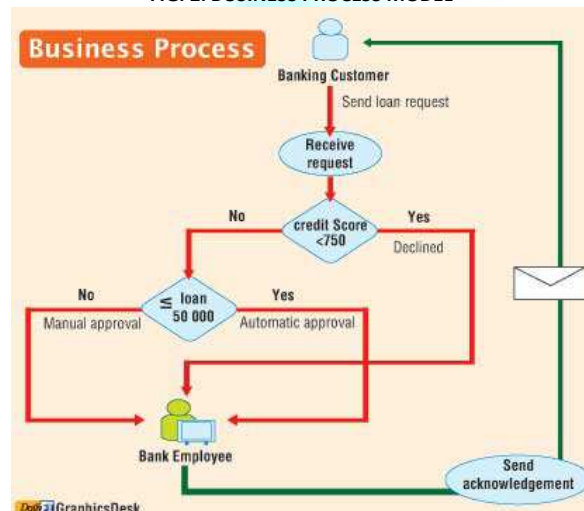
➤ Reconciliation is minimised
 ➤ A case manager provides a single point of contact at the interface between processes
 Hybrid centralized/decentralized operations are prevalent, e.g. through a shared database decentralized decisions can be made while permitting overall coordination simply through information sharing.

CONCEPTUAL FRAMEWORK

A Business Process is a collection of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how the work is done within an organisation, in contrast to a product's focus. A process is thus a specific ordering of work activities across time and place, with a beginning, an end, and clearly defined inputs and outputs: a structure for action. A Business process:

1. Has a goal
2. Has specific Inputs
3. Has a specific output
4. Uses resources
5. Has a number of activities that are performed in some order
6. Many affect more than one organisational unit. Horizontal organisational impact
7. Creates value of some kind for the customer. The customer may be internal or external.

FIG. 2: BUSINESS PROCESS MODEL



BPR develops all its products based on the following business model. The key components of this business model are innovation, organisation and achievement. The Three Levels of Process Activities are:

1. Business process improvement
2. Business process reengineering
3. Business process architecture

The most basic process activity is Business Process Improvement and the most complex is Business Process Architecture. As you increase the scope of process activity the investment, the risk and the time requirement also increase.

Business process improvement: This is equivalent to re-decorating a house. The starting and finishing points of the process are usually within a single department. The effort supports the business department's business plan and annual objectives. The results affect the performance of that department. When the project is finished, the nature of the business, and the organisational structure and boundaries remain unchanged. The department's employees have to modify their routine and new skills are often needed to make the new process improvements work.

Business process reengineering: Reengineering results in companies being re-modeled: Projects can be expensive in scope. The starting point and finishing point of a targeted process are usually in different departments, making it cross-functional. Areas involved are those which have an impact on, or are impacted by, the process being reengineered. A reengineering effort supports the company's Business Plan. The focus is to achieve benefits in support of mid-term targets which are three to four years in the future. The results of a successful project contribute to corporate performance and should be tracked to the bottom line within a year of implementation.

FIG. 2: BPR MODEL



Business process architecture: It is comparable to getting an old building or constructing a new one. You start with a clean sheet of paper, with the objective being to achieve an overall change. Experts are needed, the investment and the risk are substantial, the project can take years to complete and there are no guarantees of achieving the desired returns. This type of effort is unlimited in scope. The focus is on the entire business.

EARLY STAGES OF BPR

Frederick Taylor excited the business world when he published 'The Principles of Scientific Management' in the 1900's. Scientific Management was a step to the introduction of BPR. During Taylor's time, not many knowledgeable workers were employed in the manufacturing workforce, which at the time was the main wealth generator. Scientific Management involves breaking the manufacturing process down to a cycle of simple sequences, which were to be carried out in the least amount of time possible with the minimum amount of effort. **Davenport (1990)** developed four major principles, which are:

1. A science should be developed for each work activity, identifying the 'best way' to perform it.
2. People performing an activity should be scientifically selected to have the proper capabilities, and then trained in the science and their skills developed.
3. Management's relationship with workers should be one of cooperation in performing the work according to the science.
4. There is an almost equal division of the work and the responsibility between the management and the workmen.

FIG. 3: EVALUATION OF BPR



The key to **Taylor's** advances in organizational thinking was that the scientific method should be used to develop a "best way." The "best way" must always be acknowledged to be relative to the available tools and labour skills for performing business activities. They will change over time, so business processes must continuously be reengineered to produce a new "best way." What shouldn't change over time, however, is use of the scientific method to find it. The necessity to continually reengineer appears to be one of the areas where Taylor's principles have been misapplied [Soliman, (1998)].

The scientific method requires first developing a hypothesis as to how an improvement might be achieved, then testing the hypothesis in controlled ways so that its validity can be confirmed or denied. Implicit in the ability to both state and test a hypothesis is that there is a way to measure whether it is true or false, and to measure and control all of the variables in the environment surrounding it, which may impact the result that is; there must be a good set of measurable metrics for the domain of interest [Davenport and Short (1990)]. The early BPR is mainly centered on scientific method.

ADVANTAGES OF BPR

1. **Satisfaction:** A big advantage of reengineering is that the work becomes more satisfying because the workers get a greater sense of completion, closure, and accomplishment from their jobs. The workers not only try to keep the boss happy or to work through the bureaucracy. More important is the fact to satisfy the customer needs.
2. **Growth of Knowledge:** Furthermore, the personal development within a process team environment does not play such an important role which means climbing up the hierarchy is a minor goal. In this case it is much more important to get a widespread knowledge of the whole process and there are no such things as "mastering" a job; as a worker's expertise and experience grow, his or her job grows with it.
3. **Solidarity to the Company:** "Moreover, since workers in a reengineered process spend more time on value adding work and less time on work that adds no value, their contributions to the company increase, and, consequently, jobs in a reengineered environment will on the whole be more highly compensated." [Hammer, Champy, 2001]
4. **Demanding Jobs:** "There is, however, a challenging side to all this good news about work in a reengineered environment. If jobs are more satisfying, they are also more challenging and difficult. Much of the old, routine work is eliminated or automated. If the old model was simple tasks for simple people, the new one is complex jobs for smart people, which raises the bar for entry into the workforce. Few simple, routine, unskilled jobs are to be found in a reengineered environment." [Hammer, Champy, 2001]. For such persons it will be probably difficult to survive within this new environment which mostly leads to a personal failure in their job.
5. **Authority:** In a traditional oriented company the management expects from the employees that they follow some specific rules. In contrast to that the reengineered companies "don't want employees who can follow rules; they want people who will make their own rules. As management invests teams with the responsibility of completing an entire process, it must also give them the authority to make the decisions needed to get it done." [Hammer, Champy, 2001]

CHALLENGES

"...They end their efforts precisely where they began, making no significant changes, achieving no major performance improvement, and fueling employee cynicism with yet another ineffective business improvement program..." [Hammer, Champy, 2001] Between 50 % and 70 % of the organizations which have undertaken a reengineering effort do not achieve the dramatic results they have intended.

The comparison of **chess and roulette** describes the situation of such companies. "Roulette is a high-risk endeavor, chess is not, although a player may lose at chess as frequently as at roulette. Roulette is purely a game of a chance. Once the money is put down, players have no control over the outcome; in chess, chance plays no part in the outcome. The better player can expect to win; loss results from ability and strategy." [Hammer, Champy, 2001]

The same theory can be applied for Business Process Reengineering which means that the success always depends on the knowledge and the ability, but not in luck.

1. **Resistance to the change:** "There will certainly be some resistance to the change necessary for reengineering, but the key is to expect this resistance and develop ways to confront it. Employees will be most concerned about their job status after a reengineering; they will often show this by promoting opposition to the plan. Employers must confront this and deal with the employees' concerns and not their arguments." [Cartland, Business Administration 542, 1998]
2. **Drawbacks to Business Process Reengineering:** "People are not inherently opposed to change... but they don't like surprises. It is a leader's responsibility to let people know what the issues are." [Mark Wallace, CEO, Texas Children's Hospital] "Just understanding how to reengineer does not ensure success. When clearly thought out and implemented properly, BPR can be a very good way to improve the success of a company. Unfortunately, many companies

implement BPR as a fad, forgetting completely about the people involved. Companies that wish to use Business Process Reengineering must determine the best strategy and follow through with the objectives. BPR will not be successful if the company flagellates. It will also not be successful if the company uses BPR over and over again. The reengineering process must come from the top down – the executives must be committed and ready to promote the changes as an example for the rest of the company." [Cartland, *Business Administration* 542, 1998]

3. **Higher Demands to the Workers:** Empowering the workers is an inevitable step in a reengineered process. Therefore the companies which hire new workers have to consider additional criteria's in their hiring. "It is not longer enough merely to look at prospective employees' education, training, and skills; their character becomes an issue as well. Are they self-starting? Do they have self-discipline? Are they motivated to do what it takes to please the customer?" [Hammer, Champy, 2001]. This might be more complicated to find the right people for one specific job. The worker has to be a kind of "All rounder" which can perform several jobs. As it was enough to convince a possible employer in a job interview with practical skills, now it is also very important to have the more and more demanded soft skills.

"For multidimensional and changing jobs companies don't need people to fill a slot, because the slot will be only roughly defined. Companies need people who can figure out what the job takes and do it, who can create the slot that fits them. Moreover, the slot will keep changing. In an environment of flexibility and change, it is clearly impossible to hire people who already know everything they're ever going to need to know, so continuing education over lifetime of a job becomes the norm in a reengineered company." [Hammer, Champy, 2001]

FUTURE BPR

Over the last few years, the reengineering concept has evolved from a radical change to account for contextual realism [Earl, 1994], to reconcile with more incremental process change methods such as Total Quality Management (TQM), towards a broader, yet more comprehensive process management concept [Davenport, 1995]. The future of BPR can be said to revolve round Process Management, advancement in IT and development in organizational structure [Adebayo, 2000]. BPR continues to evolve and adapt in many ways. The most significant shift has been toward technology-enabled enterprise transformation. There are several current trends on the cutting edge. These include Architecture Integration Reengineering; smaller projects; fast cycle methods and active bottom up participation [Davenport, 1995].

CRITICISM OF BPR

The principle reason for this failure was neglecting people and the change process. Even Hammer noted that in hindsight he should have paid more attention to the people factors. BPR invariably resulted in massive changes to organisations. The improvements in efficiency brought about by BPR also often resulting in large redundancies. Soon BPR became to be seen as synonymous with redundancies and in turn was strongly resisted by many employees.

The other key criticism of BPR was levelled at it from Michael Porter (1996). Porter claimed that the improved efficiency brought about via BPR was a necessary but not sufficient condition for success. He makes this claim as strategy is about being different to competitors, and BPR is effectively only focussing on a single dimension. When all firms focus on this dimension the level of differentiation is reduced. Additionally there is a limit to the level of cost savings that can be achieved. This is not to say that efficiency is not important, just that efficiency is not the solution to strategy.

CONCLUSION

Business Reengineering Process will only be successful if the activities in which the processes are based are directly related to the needs and objectives of the business. Business Reengineering Process has helped in the achievement of the organization over-all objectives. In the context of changing customer expectations, technological discontinuities, increasing environmental uncertainties, business managers have a big challenge of making the right strategic choice and setting their strategic priorities in order to allocate their resources to different functions in an efficient manner for business success. Thus, Business Process Reengineering has become useful weapon for any corporate organisations that is seeking for improvement in their current organizational performance and intends to achieve cost leadership strategy in its operating industry and environment.

REFERENCES

1. Analysis, and Recommendations, Planning Review, November pg. 22.
2. Caron, M, Jarvenpea, S.L. and Stoddard, D.B. (1994). Business Reengineering at CIGNA Corporation Experiences and Lessons Learned from The First five years, *Ms Quarterly*, pp. 233– 250.
3. Cartland, *Business Administration* 542, 1998, sample.doc, page 7, www.bus.iastate.edu/hndrcksn/MIS503/sample.doc
4. Davenport, T. (1995), 'Business process reengineering: where it's been, where it's going' in Grover, V and Kettinger, W. (Eds), *Business Process Change: Reengineering Concepts, Methods and Technologies*, Idea Group Publishing, London, pp. 1-13.
5. Davenport, T. and Short, J. (1990), 'The new industrial engineering: Information technology and business process redesign', *Sloan Management Review*, 11-17, Summer 1990.
6. Davenport, T.H. and Short, J.E. (1990). The New Industrial Engineering: InformationTechnology and Business Process Redesign, *Sloan Management Review*, pp. 11 – 27.
7. Drucker, P. (1993). The Discipline of Innovation. *Harvard Review* pp. 3.
8. Earl, M.J. "Viewpoint: The New and Old of Business Process Redesign," *Journal of Strategic Information Systems* (3:1), 1994, pp. 5-22.
9. Ezigbo C.A. (2003). *Advanced Management Theory* Immaculate Pub, Enugu, pp. 83 - 90.
10. Gunasekaran, A. and Adebayo, J. (2000). GEC Alstom Learns Many Lessons from BPR, *Production and Inventory Management Journal*, Vol. 41, No. 2, pp. 9-13.
11. Hammer M. and Champy J. (1993). *Reengineering the Corporation. A manifesto for Business Revolution*, New York: Harper Business.
12. Hammer, Champy, *Reengineering the Corporation*, 2001.
13. Maureen W., William W.C, Wan C.L and Vand (2005). *Business Process Reengineering*
14. Pamela S. L. and Stephen H.G. (1995). *Management Challenges in the 21st Century*, West Pub. Company St. Paul, Minnesota, pp. 375 – 376.
15. Porter, M. E. 1996. What is strategy? *Harvard Business Review*, 74(6): 61-78.
16. Roberts, L. (1994), *Process Reengineering: The Key To Achieving Breakthrough Success*, Quality Press, Milwaukee.
17. Sharma M. (2006). Business Process Reengineering: A Tool to further Bank Strategic Goals. *Journal of Management Information Systems* 12: 1.
18. Soliman, F. (1998) Optimum level of process mapping and least cost business process reengineering, *International Journal of Operations & Production Management*. Vol 18, No 9/10, pp 810-816 MCB University Press.

CUSTOMER PERCEPTION OF REAL ESTATE SECTOR IN INDIA: A CASE STUDY OF UNORGANISED PROPERTY ADVISORS IN PUNJAB-INDIA

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ABSTRACT

The role of real estate consumers in estate agency practice cannot be over-emphasized. They are involved in service production and affect the overall service delivery. This study provides an analysis of the real estate consumers' perception of service quality in Punjab, India for the purpose of creating better consumers' satisfaction and improving service quality in the real estate agency market. The data collection instrument adopted for this study was self-administered questionnaires. A survey of 203 real estate consumers revealed what real estate consumers actually value in real estate agency service delivery but are lacking on the part of real estate agents. Findings indicated five key components to consumers' satisfaction in real estate agency in the study area. These components are: "courtesy", "provided service as promised", "frequent communications", "exact time services would be performed" and "personal attention". These components contribute to consumers' satisfaction and the ability to attract repeat businesses in real estate agency in Lagos metropolis.

KEYWORDS

Customer Perception, Property advisors, Real Estate Sector, Consumers' Satisfaction, Service Quality.

INTRODUCTION

The real estate agency market in the Punjab-India is becoming more competitive than other businesses in the study area. This is as a result of increasing number of real estate firms in the metropolis and real estate consumers that are becoming informed on service quality issues Oladapo, (2008). In particular, to ensure that the real estate agents remain relevant in real estate agency practice in India, there is a need for studies on how real estate agency can become more advanced to face the increasing demand for real estate and its related services and to render services that are consistent and of high value. However, little concern has been shown for consumers' expectation and satisfaction issues in real estate agency in Punjab-India. Services as defined by Gronroos (1990) constitute an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customers and the service providers, which are provided as solutions to customers' problems. Since services are meant to be solutions to consumers' problem, the wishes and desires of the consumer must be taken into consideration. Johnson et al. (1988) categorized real estate agency as a service sector industry. It differs in many aspects from other service industries (lawyer-client, employer-employee, buyer-supplier etc.). One study by McDaniel and Louargand (1994) suggested that all service businesses must respond to consumer expectations. According to Johnson et al. (1988), the real estate agency industry is characterized as being prescriptively customized. That is, there is a high degree of consumer customization because the buyer is continuously involved in the production process. Service quality according to Vicky et al. (2000) is an important issue for an organization that recognizes the essential role of acquiring and retaining customers through continuous improvement strategies. According to Johnson et al. (1988), service quality is the degree to which service performance matches consumer expectations of service. McDaniel and Louargand (1994) also define service quality as that in which the consumer's perception of service performance meets or exceeds the expectation of what the service firm should do. In the view of Parasuraman et al. (1985), service quality perceptions result from a comparison of consumer expectations with actual service performance. There is therefore the need for studies on consumers' perspective and service quality issues in real estate agency. This study therefore investigated into customers' perspective of service quality in real estate agency in order to increase agents' effectiveness and hence better customers' satisfaction.

STATEMENT OF RESEARCH PROBLEM

The real estate agency market in Punjab is being regulated by the GMADA-Greater Mohali Area development Authority under the supervision of Punjab Apartment and Property Regulation Act, 1995. By virtue of the act estate advisors are statutorily empowered to act as estate agents in the sale, purchase or in the leasing of property or any interest therein. However, the real estate agency market in India has recently seen other professionals and even people without formal training in any related discipline expanding their core business and starting to offer real estate related services. It is no longer given that one must use the services of a real estate agent, in search of land or landed property. This may be as a result of demand for real estate which has significantly increased over the years. Past studies have also shown that real estate practice is not meeting the needs of the parties involved in real estate purchase and sales transactions (Guntermann and Smith, 1988; Pancak et al., 1997; Haag et al., 2000). The perceptions and expectations of buyers and sellers are often at variance with the actual performance of the real estate agents.

Perceptions of what constitutes service quality may differ between consumers and service providers (Marsh and Zumpano, 1988).

Most of the researches and studies on consumers' perception of service quality in real estate agency are foreign (Johnson et al., 1988; McDaniel and Louargand, 1994; Isakson and Spencer, 2000; Vicky et al., 2000). This research would therefore present an understanding of the subject in India context and assist in achieving enhanced consumers' satisfaction, improved service quality delivery and ensuring that competition would increase in estate agency market.

REVIEW OF LITERATURE

In the words of Parasuraman, et al. (1985), services have become more and more important factor for organizations. Most service providers' depends on performing the services correctly but also others find services as an important means of differentiation and creating better customer satisfaction. The problem facing many real estate agents is how to meet their client's taste, retain them and be able to gain competitive advantage over others. There is need to know what the consumers actually value so as to meet their needs and probably retain them.

Parasuraman et al. (1990) identified three attributes of services which are: search properties, experience properties and credence properties. The authors found that consumers typically rely on experience properties when evaluating service quality. The authors concluded that when expected service (ES) is greater than perceived service (PS) [ES > PS], perceived quality is less than satisfactory and the greater the difference between ES and PS is, the more

unacceptable the quality is. When $ES = PS$, perceived quality is satisfactory and when $ES < PS$, perceived quality is more than satisfactory and will tend toward ideal quality, with increased difference between ES and PS . This means that the consumer is satisfied if his/her expectations are met.

In a study by McDaniel and Louargand (1994), the study revealed that all services must respond to consumer expectation because consumers' perception of quality is an important part of the consumption decision. Therefore, the customer must never feel ignored, unimportant or abandoned in service delivery. Stewart (2008) noted that the most valuable, and often the most neglected approach towards getting "the edge" over competitors is developing a better understanding of the perspective of the concerned consumer and devising strategies to increase their service quality. This will give the consumer satisfaction and also encourage repeat business.

Parasuraman et al. (1985) in their pioneering work on service quality identified some criteria for assessing service quality from the consumers' perspective. These criteria are: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles. After further research, the authors came out with five basic dimensions that the consumer of any service wants to have the provider meet his or her expectations. These are in the areas of: tangibles, reliability, responsiveness, assurance, and empathy. These according to Parasuraman et al. (1990) are the determinants of the perception of service quality on the part of the consumer.

Mason et al. (2004) offered insight into factors that contribute to consumer satisfaction in Healthcare delivery. The authors found out that relationships characterized by bonding and caring are the key determinants to consumer satisfaction in health care services. Also it was discovered that health care services must be responsive to the requirements of their consumers to achieve the desired result in mental treatment. Omar and Schiffman (1995) Parasuraman et al. (1988) and Radwin (2000) all reported that consumer requirements need to be known in order to have a satisfied consumer, that is, the provider's understanding of what the consumer want and the provider's ability and willingness to deliver it brings consumer satisfaction.

Patterson and Marks (1992) identified determinants of service quality that can be applied to promote consumers' satisfaction with services. These determinants include reliable services, responsiveness to the needs of the consumer, good communication between counsellors and consumers, competent staff, and consumer involvement throughout the process. Timmons (2001) added that consumer education is also important in order to encourage consumer involvement.

Crew (1999) researched into consumer perception of the service offered by real estate agents in Real Estate Institute of New Zealand. His findings confirmed that buyers continue to choose a real estate firm because the firm had the services, people or product (home) that they wanted. His findings also reflected mixed results in terms of consumer satisfaction levels.

Sridhar (2001) observed that service quality is ultimately defined by customer irrespective of organization internal quality specification. However, there is problem of different levels of expectation, incorrect interpretations of expectations, delivery of inappropriate service and failure to match expectations with performed service. To ensure better service quality, the author advised that providers should promise what can be delivered, attend to complaints from dissatisfied customers and make services easily understood.

According to Susan (2002), communication plays a vital role in ensuring success in real estate agency. In the words of Narayanan et al. (2003), communication plays a major role in influencing consumer purchases in new product or services. It plays both informative and a persuasive role over the life cycle of goods and services. Frequent communicating with customers enables one to deliver message to them so that they will react to it. Consumers are affected by the communication a firm has with them. This communication adds to the firm's value in the mind of the consumer and builds on their cognitive and emotional ties to the firm. The authors advised that frequent communication should be integrated into customer service process. Thomas and Whitney-Thomas (1996) identified communication breakdowns as the greatest barrier to a positive working relationship. The authors agreed that the more involved and assertive the consumer, the better the services.

From the foregoing, it could be deduced that there are some factors that bring consumers satisfaction. The providers' understanding of these factors and their ability to provide same will lead to improved service delivery, enhance consumers' satisfaction and encourage repeat businesses.

THE STUDY AREA

The study area for this research is Punjab-India. The cities of Mohali and Chandigarh has been chosen to be a representative sample of the whole country. These cities have seen the sudden spurt of commercial activities in terms of industrialization, education, IT hubs in last 10 years (post 2000) and of course this has contributed a lot in the sudden increase in the real estate/ property market. These two destinations are in comparison with the top metro cities of Mumbai, NCR region Delhi, Calcutta, Channai etc. as the volume of economic activity in Mohali-Chandigarh exceeds that of all capitals or towns in the country. Also the vast majority of firms of estate surveyors and valuers who are involved in real estate practice have their head offices or branch offices located in the cities.

RESEARCH METHODOLOGY

The study was conducted in Mohali-Chandigarh in March-April 2012. The focus group for this research work was mainly real estate service consumers. This comprises landlords and tenants who employ the services of estate agents whether in search of a prospective tenant or a property. 118 estate surveying firms were randomly selected representing 50% of the total number of estate agency firms in the study area.

This is believed to be a fair representation of the entire population. From each real estate firm, two (2) service consumers were purposively selected on the basis of the number of times they have employed the services of their agents, their literacy level and experience in real estate related services. A total number of 236 real estate service consumers were selected by the authors. The study adopted self-administered questionnaires as its data collection instrument.

Each consumer was asked to complete a questionnaire. The questions focused on individuals' perspective of real estate agents' qualities in their service delivery. More specifically, consumers were asked to express their views based on experience as a consumer of real estate agency services during their recent transactions with their estate agents.

SAMPLE CHARACTERISTICS OF PARTICIPANTS

The sample characteristics for real estate consumers that participated in the study are shown in Table 1. A total number of 236 were sampled given rise to 236 questionnaires but 203 sable questionnaires were retrieved, an 86% response rate. For the purpose of this study, the real estate consumers comprise of home buyers, home sellers and tenants. The consumers consist of 77.3% male and 22.7% female. The average consumer was between the ages of 36 - 50 years old and had an average annual income of over Rs.700,000. 56.3% of real estate consumers were married, 38.8% single and the remaining 4.9 divorced.

TABLE 1: SAMPLE CHARACTERISTICS FOR REAL ESTATE SERVICE CONSUMERS

| Real Estate Service Consumers (203) | | |
|--------------------------------------|-------------------|----------|
| Age | < 35 | 59.1% |
| | 36-50 | 34.0% |
| | > 50 | 6.9% |
| Education | Graduate degree | 46.8% |
| | Masters degree | 37.9% |
| | Others | 14.8% |
| Sex | Male | 77.3% |
| | Female | 22.7% |
| Year of experience | Mean | 10 years |
| Marital status | Married | 56.3% |
| | Single | 38.8% |
| | Divorced | 4.9% |
| Occupation | Civil servant | 56.2% |
| | Self employed | 34.5% |
| | Others | 9.3% |
| Annual income | < N100, 000 | 25.6% |
| | N100,000-N400,000 | 22.7% |
| | > N400, 000 | 51.7% |
| Source: Authors' field survey (2012) | | |

The 203 consumers that were surveyed had an average length of 10 years experience in real estate related businesses. These are people who have at one time or the other employ the services of real estate agents either in search of properties (to buy or rent) or to dispose their properties (for sale or lease). Majority of the consumers were civil servant and have a graduate degree as the highest level of education attained. From this outcome, it may be deduced that most of the consumers are qualified to know the importance of research and can be relied on to give reliable information. Therefore the credibility of the data is sustained and the information obtained actually reflects the view of real estate service consumers in the subject under study.

RESULTS

From the review of theoretical and empirical studies as discussed earlier in this study, certain issues appeared to be fundamental for a good service delivery in any service sector. These qualities were employed in appraising the real estate agency practice in Mohali-Chandigarh from consumers' perspective. The consumers were asked to overtly score their satisfaction with the service they had received based on certain qualities. They were asked to assess their agents on a series of real estate-specific questions relating to good service delivery. Respondents scored each question as strongly disagree or strongly agree on a seven-point Likert scale where 1 represent strongly disagree, 2 represent disagree, 3 is somewhat disagree, 4 represent undecided, 5 somewhat agree, 6 is agree and 7 represent strongly agree.

Analysis of data collected from participants revealed certain components that appear to be fundamental to consumers' satisfaction and good service delivery in real estate agency. These qualities from the consumers' perspective appear to be lacking in real estate agents' qualities in Mohali-Chandigarh. These are the factors consumers' value and were identified as important to success for real estate agent in their service delivery. These factors are: "courtesy", "frequent communications", "provided service as promised", "exact time services would be performed", and "personal attention" as their mean scores were tending towards strongly disagree. Table 2 shows the mean scores of real estate consumers to the services delivered by their real estate agents. The respondents were asked questions pertaining to issues that appeared to be fundamental for a good service delivery in any service sector. These issues were derived from past studies as discussed in the review of literature. The study clearly showed the areas in which real estate agents pay more attention to and areas they pay less attention to. The study revealed that real estate consumers want service quality in those areas that real estate agents remain blind to. This might be due to the inability of real estate agents to understand what the consumers actually value in service delivery. It was observed that the consumers base their opinion of quality on some factors that the service provider considered to be unimportant.

TABLE 2: CONSUMERS' ANALYSIS OF REAL ESTATE SERVICE QUALITY

| Qualities | Consumers mean scores | |
|--------------------------------------------|-----------------------|------|
| 1. Consistently courteous | 3.86 | 4.26 |
| 2. Frequent communications | | |
| 3. Provided service as promised | 4.05 | 4.44 |
| 4. Personal attention | | 4.67 |
| 5. Willingness to help | | |
| 6. Agents in Neat Appearance | 4.86 | |
| 7. Presence of modern-looking equipment | 4.63 | |
| 8. Convenient operating hours | 4.74 | 4.61 |
| 9. Safe Transaction | | 4.58 |
| 10. Professional Qualification | | |
| 11. Ability to get the best deal | 4.55 | |
| 12. Exact time services would be performed | 4.30 | |
| 13. Confidence | 4.71 | 4.51 |
| 14. Prompt service delivery | | |
| 15. Friendliness | 4.62 | |
| 16. Right understanding of Client's needs | 4.66 | 4.26 |

Source: Authors' field survey (2012)

The results also showed that service quality is not uniformly delivered to real estate consumers as all the variables received different mean scores. The result indicated that real estate service quality is being delivered in some desired areas but not all as some qualities received high values than others. In particular, service quality was being delivered in areas of estate agents in neat appearance, convenient operating hours etc. but not in areas of "courtesy", "provided service as promised", "frequent communication", "exact time services would be performed" and "personal attention" as their mean scores were tending towards strongly disagree.

Courtesy as defined in this study means politeness, respect, friendliness and the care real estate firms provide for their clients. This quality from the real estate consumers' perspective received the least mean value of 3.86. This means real estate agents in Mohali-Chandigarh are lacking behind in this area of service quality. It was revealed that real estate consumers believed that their agents are not consistently courteous with them as that quality received the least mean score. This means the real estate agents needed to be more polite and show more respect to their consumers.

"Provided service as promised" also received a mean value of 4.05. According to the consumers, real estate agents in Mohali-Chandigarh do not provide services to their clients as promised. It was observed that real estate agents often use verbal descriptions which often promise something they are not able to provide. Rather than helping a potential buyer identify a suitable property, they give him/her a false impression about such property. Frequent communication received a mean value of 4.26. Communication here means good relationship and free sharing of information between agent and service consumer whether in speaking or in writing, making efforts to know the consumers and their needs. The study observed that communication was often done in speaking and little of writing. It was also observed that communication was done in the language the client understands better. However, the frequency of communication was the main concern. A lot of factors were responsible for this. The study area being a developing country, consumers complained of high call rates and bad network as major barriers to frequent communication. The consumers were also of the opinion that their agents were too busy to respond to their requests. The study observed that "frequent communication" is a very vital area that should not be ignored. Real estate agents need to look into this area in order to get more satisfied clients. Also the consumers thought the real estate agent does not provide their services at exactly the time they promised. This received a mean value of 4.30. There are some reasons that could be responsible for this delay. For instance, there may be some stubborn tenants that refuse to vacate the premises at the time due and thus prevent the potential tenant from taking possession at the promised time; lack of fund to put a premise in a tenable condition or for sale and most importantly the inelasticity nature of the property market, that is increase in demand for properties does not lead to a corresponding increase in property supply.

"Personal attention" was the last quality that real estate agents in Mohali-Chandigarh need to pay attention to. They need to improve on this quality. From the perspective of the consumers, they rated this quality with a mean value of 4.44. "Personal attention" means providing special care or treatment to each consumer. The study revealed that real estate agents in the study area are lacking behind in the provision of "personal attention" to the consumers.

The results as enumerated in Table 2. Further revealed that the real estate agents were always neat-appearing. This quality has the highest mean score (4.86) according to the consumers. This quality entails agent's presentation, dressing, character, looks and mannerism. This indicated that real estate agents always pay great attention to their appearance. The authors observed this to be true. The real estate agents were always well-dressed, most of them in formal dressing. They have distinctive way of doing things and a befitting appearance. Next to this factor was that the real estate agents have convenient operating hours. The author observed that most of the firms commence work as early as 8.00a.m and close at 6.00p.m on Mondays to Fridays. Mondays to Fridays are known as working days and most businesses in Nigeria do not open on weekends. However, majority of the real estate firms render services on Saturdays to most of their clients who are very busy during the week days.

CONCLUSION

Real estate agency has been categorized as a service sector industry and all service businesses must respond to consumer expectations, hence the need for real estate agents to understand their consumers' expectation in order to have satisfied consumers. The study revealed the areas in which real estate agent pay more attention to and areas they considered to be less important. The study observed that real estate consumers value these areas and they want service quality provided in these areas.

These include "courtesy", "frequent communications", "provided service as promised", "exact time services would be performed", and "personal attention". It is the conclusion of this study that real estate agents should improve their mode of service quality in these areas so as to have more satisfied consumers. This study also recommends that the GMADA-Greater Mohali Area Development Authority should educate their members on service quality related issues in order to enhance their members' effectiveness in meeting the needs of their consumers and also attract more patronage. However, there is need for future researchers to continue to build on the body of knowledge on service especially in Unorganized Property Advisors.

REFERENCES

1. Dabholkar PA, Shepherd CD, Thorpe DI (2000). A Comprehensive Framework for Service Quality: An Investigation of Critical Conceptual and Measurement Issues through a Longitudinal Study, *J. Retailing*, 76(2) 139-173.
2. Geetika SN (2010). Determinants of Customer Satisfaction on Service Quality: A Study of Railway Platforms in India, *J. Public Transportation*, 13(1)
3. GMADA (2012). Directory of Estate Surveyors and Valuers, Greater Mohali Area Development Authority.
4. Gronroos C (1990). From Scientific Management to Service Management: A Management Perspective for the Age of Service Competition, *Int. J. Service Ind. Mgt.*, 5(1): 5-20.
5. Guntermann KL, Smith RL (1988). Licensing Requirements, Enforcement Effort and Complaints against Real Estate Agents, *J. Real Estate Res.*, 3(2): 11-20.
6. Haag JT, Rutherford RC, Thomson TA (2000). Real Estate Agents Remarks: Help or Hype? *J. Real Estate Res.*, 20(1/2): 205-215.
7. Isakson HR, Spencer M (2000). Total Quality Management and Residential Real Estate Agency Issues, *J. Real Estate Res.*, 20(1/2): 179-188.
8. Johnson LL, Dotson MJ, Dunlap BJ (1988). Service Quality Determinants and Effectiveness in the Real Estate Brokerage Industry, *J. Real Estate Res.*, 3(2): 21-36.
9. Marsh GA, Zumpano LV (1988). Agency Theory and the Changing Role of Real Estate Broker: Conflicts and Possible Solution; *J. Real Estate Res.*, 3(2): 151-164.
10. Mason K, Olmos-Gallo A, Bacon D, McQuiken M, Henley A, Fisher S, (2004). Exploring the Consumer's and Provider's Perspective on Service Quality in Community Mental Health Care, *Community Mental Health J.*, 40(1).
11. McDaniel JR, Louargand MA (1994). Real Estate Brokerage Service Quality: An Examination, *J. Real Estate Res.*, 9(3): 339-351.
12. Narayanan S, Manchanda P, Chintagunta PM (2003). The Informative Versus Persuasive Role of Marketing Communication in New Product Categories: An Application to the Prescription Antihistamines Market, Stanford Graduate School of Business, 518 memorial Way, Stanford, CA 94305-5015, United States.
13. Nguyen DD, Nguyen H (2007). Determinants of Retail Service Quality, A Study of Supermarkets in Vietnam. *Sci. Technol. Dev.*, 10(08): 15-23.
14. Oladapo AT (2008). A Study of Real Estate Assets Pricing in Lagos Metropolis, Nigeria, Being an unpublished M.Sc Thesis Submitted to the Department of Estate Management, Obafemi wolowo University, Ile-Ife, Osun State, Nigeria
15. Omar MA, Schiffman RF (1995). Pregnant Women's Perceptions of Prenatal Care, *Maternal-Child Nursing J.*, 23(4): 132-142.
16. Parasuraman A, Zeithaml V, Berry L (1985). A Conceptual Model of Service Quality and its Implications for Future Research, *J. Marketing*, 49: 41-50.
17. Parasuraman A, Zeithaml V, Berry L (1991). Understanding Customer Expectations of Service, *loan Management Review*, Spring, pp. 39 - 48.
18. Parasuraman A, Zeithaml VA, Berry LL (1988). SERVQUAL, A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality, *J. Retailing*, Spring, 64: 1, 12-40.

19. Patterson J, Marks C (1992). The Client as Customer: Achieving Service Quality and Customer Satisfaction in Rehabilitation, *J. Rehabilitation*, 16-21.
20. Radwin L (2000). Oncology Patients' Perceptions of Quality Nursing Care, *Res. Nursing Health*, 23: 179-190.
21. Sridhar MS (2001). Service Quality and Customer Satisfaction, A Lecture Delivered in the UGC Refresher Course on Library and Information Science at Academic Staff College of Bangalore University.
22. Susan F (2002). Organizational Learning and Success in New Zealand Real Estate Agencies, Paper prepared for Pacific Rim Real Estate Society Conference, Christchurch, New Zealand.
23. Thomas D, Whitney-Thomas J (1996). Research to Practice, Perspectives from Consumers and Counselors on Elements that Influence Successful Vocational Rehabilitation System Delivery, Boston: Institute for Community Inclusion (UAP) Children's hospital.
24. Vanniarajan T, Stephen A (2008). Railqual and Passenger Satisfaction: An Empirical Study in southern Railways. *Asia Pacific Business Review* IV (1), January-March: pp. 64-75.
25. Vicky LS, Webb JR, Whipple TW (2000). Assessment of Real Estate Brokerage Service Quality with a Practicing Professional's Instrument, *J. Real Estate Res.*, 20(1/2): 105-117.
26. Yi Y (1990). A Critical Review of Consumer Satisfaction, In Zeithaml, V. A. (Ed.), *Review of Marketing 1990*, American Marketing Association: Chicago. pp. 68-123.



INNOVATIVE TECHNOLOGY AND PRIVATE SECTOR BANKS: A STUDY OF SELECTED PRIVATE SECTOR BANKS OF ANAND DISTRICT

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ABSTRACT

Banks have progressed by jumps and bounces in last decade in terms of profits, in their figures, in their services and of course in their technology. Their attitude towards financial as well as non financial services is changed. Customers and general people's attitudes towards banks have also changed reciprocally because Private Sector Banks render fast services. They provide fast services with the help of technology. Now days the customer satisfaction is not important but delight of customers are very important. For this happiness innovative technology plays very imperative role. Our paper reflects the effects of innovative technology used by Private Sector Banks and the potentiality of these techniques for further progress and development.

KEYWORDS

Private sector banks, innovative technology.

INTRODUCTION

Indian Banking is in the limelight today or a more apt description would be that it is under a searchlight. With the gathering momentum of demand on the part of the politicians for 'nationalization' or 'social control' of banks, Indian banks have been subjected to a glaring publicity from all quarters including the bankers themselves. Arguments for and against nationalization or social control of banks have been advanced and in the context, the achievements and failures have been put forward and debated. The dust and din raised by these arguments have now settled down as Government has since extended their hands of services with the help of innovative technology like computers and networking of banks.

Private Banks like Axis, HDFC, ICICI and Kotak Mahindra are not only failing in this competition but we can say that they are rather ahead of them. Today when we enter in the banks; we can see computers against each and every employee of the bank. But merits and demerits of this innovative technology are yet to be analyzed.

THE PROBLEM TO BE INVESTIGATED

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Private Banks like UTI, IDBI, ICICI and HDFC are not only failing in this competition but we can say that they are rather ahead of them. Today when we enter in the banks; we can see computers against each and every employee of the bank. But merits and demerits of this innovative technology are yet to be analyzed.

OBJECTIVES

Specific objective of the research are as follow:

1. To study the concept of Innovative Technology
2. To study Innovative Technology used by private sector banks and to inform people/Users regarding these services.
3. To study the effects of Innovative Technology used by private sector banks.
4. To study the potentiality of these techniques.
5. To study the scope of their progress and development.
6. To come on some conclusion after studying the comparison of these services.

SIGNIFICANCE OF THE STUDY

As users we frequently go and use services rendered by the banks. Some time we think to compare services rendered by these banks.

In this way, services rendered by commercial as well as private banks, computerization, and services connected with net-working i.e. mutual funds, demat account, internet banking, doorstep services, equity guidance and information, portfolio tracking etc. have attracted people towards private banks.

The study of these services rendered by private banks will be significant. Users will know about the services; commercial bank will fulfill their drawbacks and after all the healthy competition will serve the common people.

LITERATURE REVIEW

While there is ample literature on the role of commercial banks in the economic development and future of Indian banking industry, there is inadequate literature concerning banking services particularly by private sector banks. The literature available is mostly available in the form of articles and journals and mere chapters in books devoted to customer service by private sector banks. Literature is also available from the reports of number of commissions, working groups, research institutes and other private survey organizations. However, four research studies with reference to India and related to present study have come to notice. Before going into Indian scene, it would be pertinent to look into the banking scene in developed Nations especially with regard to innovative technology and customer services. In the past, banks in India never thought in their responsibility to respond to the needs of the customer, but with the growing importance of the concept of customer service and innovative technology, banks are finally taking notice of the both. On the other hand foreign countries, especially developed nations are ahead of India in these fields. There are several reasons why customer service and innovative technology are gaining importance in India. They are mainly due to "growing completion, technological advancement, expanding world markets, increasing sophistications, growing size

and complexities of modern business and changes in the structured and demand pattern of our urban and rural population" (Muniraj R. in his article-Strategies to improve customer service in India).

Banks in India have begun to realize that in order to make a fast forward march to catch up with developed countries; they would have to improve their customer service particularly by using innovative technology. This would perhaps be the major determinant of banks' operational success.

The following is the review of past research.

- Muniraj R. discussed "Strategies to improve customer service in banks using innovative technology" in June 1994 in his article in "The banker (India)"
- Sharma S.C. made a maiden attempt to review "Customer service in Banks with innovative technology in his book "Customer service in Banks-Trends and portends in banking"
- Subramanyam D.A.R. conducted and reviewed "Customer service in commercial and private sector banks using innovative technology" in his book "Modern Banking in India in 1985.
- Mantri V. S. and Mistra R.K. revealed problems of banking customers in 1985 in his book "Modern Banking in India".
- Sapru R.K. discussed "Personal Management in commercial and private sector Banks" in his same titled book in 1987.
- Amin S. complained for poor bank services in "Indian Express" on 10th Sept.1993
- Dr. Manmohan Singh, the then Finance Minister had put forth the idea of ranking the banks based on the services rendered to the public while addressing top executives of banks, financial institutions and others on March 13, 1993.
- Rao B. Ramchandra also viewed the same point of "ranking of banks on the basis of service to public with innovative technology" in Nov. 1993.
- Bandopadhyay S.C. highlighted on "Banking services Tomorrow with innovative technology " in June 1994.
- Thompson, Thomas W. Leonard L Berry and Philip H. Davidson also threw highlight on "Banking Tomorrow" in New York in 1978.
- Lal R.K. and B.N. Patnaik surveyed on "Marketing of banking services in fragment market with innovative technology" in 1993.
- It reveals that there exists a need to highlight on some of the aspects of innovative technology used by private sector banks and responses of the customers to it

No specific research has been done on the said subject i.e. innovative technology and private sector banks. The researcher them self had chosen this subject but it reveals that, there is still a need and scope of comprehensive, deep, balanced and effective research in the field of innovative technology and private sector banks.

HYPOTHESIS

The following hypotheses have been formulated for the study

- 1 Services of private banks are increased due to innovative technology.
- 2 Services have increased and their pace of work has also increased due to networking.
- 3 Efficiency of private banks is much more ahead comparing to commercial banks.
- 4 Services of private banks like mutual funds, demat account, Internet banking, doorstep service, equity guidance and information, portfolio tracking etc. have attracted common men/customers towards themselves.
- 5 Commercial banks are also in competition with private banks with regard to services and innovative technology.

CONCEPT OF INNOVATIVE TECHNOLOGY

The word innovate is similar to novelties, to renew, to alter for better. The word innovation also similar the same to alter for better. In this way innovative technology is that the new technology that serves its customers the better. But it is not only the computer or its hardware – software that innovates but the concept the idea, the attitude of the banker and bank-staff that innovate towards better.

Banks that may be a commercial bank, a co-operative bank or a private bank its attitude towards its customers has been changed basically. Now customers are a decisive factor. He chooses in which bank, he has to open his account and invest his money. Before a decade, a customer was neglected, now customer is the king, he is a master he is a driver. He has many alternatives to select for his investment. Now co-operative banks remain open on Sundays also. The staff and their agents make contact by phone to their customers. They offer their better services at the customers, doors.

LIST OF VARIOUS INNOVATIVE TECHNOLOGY COMMONLY PROVIDED BY PRIVATE SECTOR BANKS

As per the opinion of branch manger of Axis Bank, HDFC Bank, ICICI Bank, Kotak Mahindra Bank branches at an educational town of Gujarat, Vallabh Vidyanagar and the milk city of India Anand following services are innovative services for their banks.

TABLE 1: INNOVATIVE SERVICES PROVIDED BY PRIVATE SECTOR BANKS LIKE AXIS BANK, HDFC BANK, ICICI BANK, KOTAK MAHINDRA BANK

| | | |
|-----------------------------------|-----------------------|----------------------------|
| Account Rooming | At Par Check Facility | ATM Service |
| Credit Card | Debit Card | Demat Account Service |
| Doorstop Service | E-Fills | Electronic Fund Transfer |
| E-Mail Alerts | Financial Advisory | Gift Card |
| Gold Facilities | Home Loans | Insurance Covered Facility |
| International Debit Card Facility | Internet Banking | Mobile Banking |
| NRI Services | Payment of Tax | Personnel Loans |
| Petro-Cards | Tele Banking | Travel Currency Card |

METHODOLOGY

Procedure: A questionnaire of 10 statements was given to above mentioned customers. Statements were related to their attitude towards private Banking [Appendix – I]. And they were told simply to make tick mark against each statement in consent discontent or neutral.

Analysis & Interpretation of Data:

A sample of 100 respondents was selected amongst them 50 from Bakrol, 25 from Anand city and 25 from Vallabh Vidyanagar town randomly. Bakrol can be considered as rural area and Anand – Vallabh Vidyanagar can be considered as urban area. In this way, 50 customers from rural and 50 customers form urban area were selected of different age groups.

PRIVATE BANKS ARE MORE AHEAD THAN COMMERCIAL BANKS IN TERMS OF INNOVATIVE TECHNOLOGY

80 customers gave their positive response towards this question. 10 customers give replay in negative and 10 were remained neutral. This response shows that customers are aware of Innovative Technology opted by the private banks.

CUSTOMERS PREFER PRIVATE BANKS INSTEAD OF COMMERCIAL BANKS DUE TO THEIR HASSLE-FREE SERVICES

75 customers were affirmative towards this statement. 12 were negative while 13 remained neutral. The response shows that 75% customers preferred private Banks due to their hassle-free services. Hassle-free service is the key-factor in day-to-day banking.

CUSTOMERS NOW CONSIDER RELIABILITY OF PRIVATE BANKS

69% customers consider private banks reliable. 6 customers do not consider it reliable while 15 remained neutral. That shows that reliability of private banks is nearly 75% but 15% customers suspect regarding their reliability.

DAY BY DAY THE RESPONSIBILITY OF PRIVATE BANKS WILL INCREASE IN FUTURE

76% customers considered that responsibility will increase day by day while 10 customers do not feel like that. 14 respondents kept away themselves from answering on any side.

ELEMENTS OF UNIONISM AND REDTAPISM ARE NOT INTERFERING WHILE BANKING WITH PRIVATE BANKS

92% customers are aware of unionism and they feel like hassle due to redtapism while banking with commercial banks they do not see this factor at private banks and perhaps this may be the logical reason of selecting private banks. Only 5% customers remained neutral.

SERVICES LIKE PHONE-BANKING AND NET-BANKING HAVE ADDED CREDITWORTHINESS OF PRIVATE BANKS

84% respondents were affirmative while 5% were neutral against this statement. This shows that customers are aware of services like phone banking and net banking and such services might have attracted the customers towards private banks.

CONVENIENCE AND HASSLE-FREE ATMOSPHERE ARE THE MOST CONSIDERABLE FACTORS IN DAY-TO-DAY BANKING

88% customers prefer private banks due to their convenience that they make convenient to their customers and hassle free atmosphere. They think this factor as a heart-reaching and most considerable factor.

BANKING OF PRIVATE BANKS OF CUSTOMERS' DOOR-STOP HAS ATTRACTED THEM TOWARDS PRIVATE BANKING

Again 90% customers have given affirmative response that banks services of their doorsteps have attracted them towards private banking.

ELEMENTS OF E-BANKING HAVE BASICALLY CHANGED THE SCENARIO OF BANKING INDUSTRY

77% respondents consider that elements of e - banking have changed the scenario of banking industry. Only 5% respondents do not feel it affirmative. 13% respondents remained neutral.

EDUCATION AND AGE GROUP HAVE ALSO AFFECTED ATTITUDE TOWARDS BANKING INDUSTRY

80% respondents feel that education and age group-affected attitude towards banking industry. 10% Respondents are negative while 10% remained neutral.

SUGGESTIONS

The object of this study was to investigate the services given by the private banks, to compare them and to come on some conclusions after analyzing the data. After concluding it is necessary to give suggestions, which may affect readers, researchers, bankers, policy-makers, users and the people at large.

OUR SPECIFIC SUGGESTIONS AFTER THIS STUDY ARE AS UNDER

- 1 Private Banks are also reliable and users should take more and more services of Private Banks.
- 2 Commercial banks should realize that this is the age of competition and if they will not stand in competition, people will move their heads from them in the coming days.
- 3 Elements of unionism and red tapisim will have to longer existence in the competing era.
- 4 Rate of private banks is also responsible, affirmative and retable they should also not forget that users are "guests" in the words of Mahatma Gandhi. Customer is the boss of any dealing with bank. He should not hassle while banking.
- 5 People should take more and more advantage of latest technology adopted by banks like e-banking, net-banking and doorstep banking.
- 6 Banking, mobility and GDP ratio are in the equally proportional i.e. synonymous. If the banking facilities will increase, mobility will also increase and GDP ratio will also increase. Bank staff should also learn this equation by heart.
- 7 It is high time that private banks should think to modify their operation in such a way to give more services to people regarding in rural and semi-urban areas.
- 8 They should think to adopt new methods or techniques to satisfy the requirements of the above categories. It is also necessary for the banks to speed up their activity by opening more branches, more ATMs and allied activities to enable then to penetrate in the semi-urban and rural areas.

APPENDIX**APPENDIX – I: A QUESTIONER OF TEN STATEMENTS**

| Sr. No. | Statements | P | N | Neu |
|---------|--------------------------------------------------------------------------------------------------|---|---|-----|
| 1 | Private Banks are more ahead than commercial bank in terms of Innovative Technology | | | |
| 2 | Customers prefer private banks instead of commercial banks due to their hassle free services | | | |
| 3 | Customers now consider reliability of private banks | | | |
| 4 | Day by day the responsibility of private banks will increase in future | | | |
| 5 | Elements of Unionism and redtapism are not interfering while banking with private banks | | | |
| 6 | Services like phone-banking and net-banking have added creditworthiness of private banks banking | | | |
| 7 | Convenience and hassle-free atmosphere are the most considerable factors in day-to-day banking | | | |
| 8 | Banking of private banks at customers' doorstep have attracted them towards private banking | | | |
| 9 | Elements of e-banking have basically changed the scenario of banking industries | | | |
| 10 | Education and age-group have also affected attitude towards banking industries | | | |

P=Positive

N= Negative

Neu= Neutral

REFERENCES

1. ALLEN, a.m.cope, Commercial Banking Legislation and control, 1998
2. Annual Reports of ICICI 2009-2010
3. Annual Reports of Axis Banks 2008 -2009-2010
4. Annual Reports of HDFC Banks 2009 & 2010
5. Annual Reports of Kotak Mahindra Bank 2008 & 2010
6. Arbd, H.W.The Indian Trading Banks, 1999
7. Edward W. Red, Commercial Banking,1984
8. Gurley J.C.,World Monetary Reform: Plans and Issues
9. Indian Economic Review – Journals
10. K.C.Shekhor, Banking Theory and Practice 5th edition
11. M.C. Vaish Monetary Theory,1973
12. S.K.Basu, A Review of Current Banking Theory and Practice 1st edition
13. S.K.Muranjan & Kamla Muranjan, Modern Banking in India, 3rd edition
14. T.A.Vasani, Indian Banking System , 5th edition
15. <http://www.axisbank.com>
16. <http://www.hdfcbank.com>
17. <http://www.icicibank.com>
18. <http://www.kotak.com>

THE PROBLEMS AND PERFORMANCE OF HANDLOOM COOPERATIVE SOCIETIES WITH REFERENCE TO ANDHRA PRADESH INDIA

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ABSTRACT

Andhra Pradesh of India has much economic importance and fabrics are being exported to various countries. The cooperative societies in Andhra Pradesh are facing multiple problems in Production and Marketing of their fabrics. A majority of them are struggling hard to survive Competition of Mill or Power loom products, Unfavorable climatic conditions, lack of finance and other management problems also has enhanced the problems of cooperative societies. The principal objective of this paper is to analyze the profile of the sample Primary handloom Cooperative Societies in Andhra Pradesh, with a view to identify their problems and performance of Primary Handloom Cooperative societies in three selected districts of Andhra Pradesh.

KEYWORDS

share capital, cooperatives.

INTRODUCTION



On attaining Independence Government of India rightly recognized the important role that the industry can play and a number of policies were formulated and executed to bring the industry on a sound footing. Development of industry on cooperative lines was the cardinal idea in all these plans. Cooperation has the advantage of bringing freedom and opportunity for people with profits of large scale management and organization. Cooperative societies are expected to perform functions of bulk purchase of raw material, raise capital by the issue of shares, procure finished goods from members and market them.

In the earlier days, the weavers were organized into purchase and sale societies leading to malpractice of purchasing cloth from others and arranging its disposal through the Apex society. Thus the very purpose of organizing weavers co-operatives for providing work to weavers was defeated as the members of the societies did not receive employment from the societies. At that stage, to ensure the cloth produced for sale by the apex society in its selling units, the "purchase and sale societies" were converted into "Production and sale societies". These were made obligatory to distribute yarn to the members, get cloth produced on their looms and take it back for sale either in their selling units or in the selling units of apex society.

STATEMENT OF THE PROBLEM

In spite of the rich heritage of handloom sector in India, in Andhra Pradesh is not in fair and encouraging due to multifarious reasons. Despite several measures taken by the government by the way of support and direct financial assistance to the handloom weavers, they are suffering miserably due to myriad problems and are sustaining continuous losses. These problems include improper supply of raw material, lack of proper marketing facilities, lack of proper financial resources, competition from mill and power loom products, lack of modern technology, lack of prompt timely support from the government and other allied agencies and so on. The standard of living of the weavers is significantly low and they suffer from unemployment and underemployment. This situation prevails everywhere in our country. Andhra Pradesh, which is chosen for detailed research study, is no exception to this situation. This pathetic condition of handloom industry in Andhra Pradesh demands a thorough investigation into the problems confronting handloom weavers and suitable measures to plug the loop holes.

OBJECTIVES OF THE STUDY

The main objective of this study is to appraise the profile and general working conditions and assess the problems and performance of the Primary Handloom Weavers Cooperative Societies in Andhra Pradesh with reference to the Prakasam Guntur and Nellore districts of Andhra Pradesh.

NEED FOR THE STUDY

Andhra Pradesh in India has much economic importance and the fabrics are being exported to various countries. But Present handloom cooperative societies in Andhra Pradesh are facing lack of management, acute production and marketing problems, unfavorable climate conditions, and their poverty and under employment also has enhanced the problems of weavers. A majority of them are struggling hard to survive and labour weavers have become bonded labourers, So far as the researcher's knowledge is concerned no organized study has been made in three districts where handloom weaving is popular.

SAMPLE DESIGN

The following methodology is adopted to achieve the above objectives. Both primary and secondary data sources of information are used to carry out the present study. The Primary data are collected by interacting with the Board of Directors and member Weavers of various Primary Handloom Cooperative Societies. Proper care was taken to explain to the cooperative societies all the aspects in the schedule to elicit truthful and unexaggerated feedback from them. A questionnaire was prepared and administered to the handloom weavers and the Board of Directors to ascertain their perceptions. The schedules were pre tested before conducting the field survey. The stratified survey method has been used while drawing the samples. Three districts were selected basing on concentration of weaving households. These are Prakasam, Guntur, and Nellore districts. In each district 24 cooperative societies were selected by stratified random sampling. The samples are drawn in such a way as to reflect the characteristics of the total cooperative societies.

The secondary data were collected from 2006-11. The relevant data are collected from the offices of the Development commissioner for Handloom Government of Andhra Pradesh, the Director of Handlooms and Textiles Hyderabad, Assistant Director of Handlooms of various districts.

PERFORMANCE OF COOPERATIVE SOCIETIES IN ANDHRA PRADESH

The government of India encouraged the weavers to form themselves into co-operative organizations and has undertaken many programs to assist such societies. The share of cooperatives in handloom industry is only 60 percent. By 1977 and 1978 this had increased to 1690, and to 1933 in 1980-81. By 1982-83 there were 2115 cooperatives, an increase of 106% in seven years. Whereas by the year of 2009-2010 the total number of cooperative societies are decreased to 755 in the state of Andhra Pradesh. Since many societies were defectors running at losses the Government of Andhra Pradesh decided to recognize the cooperative societies and liquidate the one making loss. Others considered to be potentially viable (though only marginal at that time) were merged. In this process 240 cooperatives or roughly one third of the total were liquidated. 212 societies were merged with 102 societies and only 165 (less than one fourth) were considered to be independently viable and retained. Percentage of cooperatives closed down is as follow in Prakasam District (83%), followed by Nellore (75.6%) and Guntur district (69%).

AGE OF PRIMARY HANDLOOM COOPERATIVE SOCIETIES

Table I.1 exhibits the age of sample primary handloom weaver's cooperative societies in three selected districts of Andhra Pradesh. The table reveals that the age of the handloom cooperative societies varies from 5 to 16 years in the area of study. It is also noted that majority of the cooperative societies in the study area have come into existence during the 1960's. Out of the total 72 cooperative societies, 24 societies representing about 33 percent of which 12 cooperative societies at Prakasam district 6 societies each at Guntur and Nellore districts were established 16 years ago, 21 cooperative societies about 30 percent of which 9 societies at Guntur district and 6 cooperative societies each at Prakasam.

TABLE I.1: AGE OF SAMPLE PRIMARY WEAVERS COOPERATIVE SOCIETIES

| District | 5 (years) | 6-10 (years) | 11-15 (years) | 16 above (years) | Total |
|----------|-----------|--------------|---------------|------------------|----------|
| PRAKASAM | -- | 6 | 6 | 12 | 24 |
| | -- | (8.33) | (8.33) | (16.66) | (33.33) |
| GUNTUR | -- | 9 | 9 | 6 | 24 |
| | -- | (12.5) | (12.5) | (8.33) | (33.33) |
| NELLORE | -- | 12 | 6 | 6 | 24 |
| | -- | (16.66) | (8.33) | (8.33) | (33.33) |
| Total | -- | 27 | 21 | 24 | 72 |
| | -- | (37.5) | (29.16) | (33.33) | (100.00) |

Source: Primary Data through Questionnaire

Note: Figures in Parenthesis Indicate Percentage to the Total

Nellore districts were established between 11-15 years ago. Whereas of the remaining 27 cooperative societies, 12 societies at Nellore, 9 societies at Guntur district and remaining 6 societies at Prakasam district were established between 6-10 years ago.

From the above analysis, it can be inferred that the cooperative movement in three districts of Andhra Pradesh was started in the initial days of independence. However the cooperative movement gained momentum during the last decade and also it can observe from the above analysis that very old societies which were established 50 years ago are located at Prakasam district compared to other districts in Andhra Pradesh.

DISTRIBUTION OF MEMBERSHIP IN COOPERATIVE SOCIETIES

Table I.2 shows the distribution of membership in sample primary weaver's cooperative societies in Andhra Pradesh. The membership has varied from 100 to 1319 in the area of study. Table 1.2 reveals that only two cooperative societies at Prakasam district representing about 8.33 percent of the total have membership of above 800, 11 cooperative societies representing about 46 of which 5 societies each at Guntur and Nellore districts and one society at Prakasam district have the membership between 101-200.

Eighteen cooperative societies account for 25 percent of which 9 cooperative societies at Prakasam district 6 societies at Nellore and 3 societies at Guntur district have membership between 501- 800. However, only four cooperative societies which represents about 16.6 got the membership between 201-500. Whereas three cooperative societies which are located at Guntur district got the membership of only below 100.

It can be inferred from the above analysis that majority of the cooperative societies at Prakasam district of Andhra Pradesh have recorded the highest membership and also it is to note that the cooperative societies which are placed at Nellore and Guntur districts have recorded the lowest membership compared to other societies of Prakasam district in the area of study.

TABLE I.2: DISTRIBUTION OF MEMBERSHIP IN COOPERATIVE SOCIETIES

| District | 100 | 101-200 | 201-500 | 501-800 | 800 above | Total |
|----------|--------|---------|---------|---------|-----------|----------|
| PRAKASAM | -- | 3 | 6 | 9 | 6 | 24 |
| | -- | (4.16) | (8.33) | (12.5) | (8.33) | (33.33) |
| GUNTUR | 3 | 15 | 3 | 3 | -- | 24 |
| | (4.16) | (20.83) | (4.16) | (4.16) | -- | (33.33) |
| NELLORE | -- | 15 | 3 | 6 | -- | 24 |
| | -- | (20.83) | (4.16) | (8.33) | -- | (33.33) |
| Total | 3 | 33 | 12 | 18 | 6 | 72 |
| | (4.16) | (45.83) | (16.66) | (25.00) | (8.33) | (100.00) |

Source: Primary Data through Questionnaire

Note: Figures in Parenthesis Indicate Percentage to the Total

DETAILS OF SHARE CAPITAL

Table I.3 throws light on the share capital position of the primary handloom weavers cooperative societies in 3 selected areas of Andhra Pradesh. The share capital of the cooperative societies comprises of members' contribution and the contribution by the Government. It can be revealed from the above analysis that out of the total 72 cooperative societies surveyed in three districts of Andhra Pradesh 33 cooperative societies representing about 45.83 percent of which 15 cooperative societies at Nellore 12 at Guntur and remaining 6 cooperative societies at Prakasam district maintain the share capital only between Rs. 1-2 lakhs, 24 cooperative societies representing about 33.33 percent of which 9 societies each at Prakasam and Nellore districts, remaining 6 cooperative societies at Guntur district maintain the share capital between Rs. 2-3 lakhs. Whereas only 15 cooperative societies of which 9 societies at Prakasam district and 6 at Guntur district are maintained the share capital between Rs. 3-4 lakhs.

It can be concluded from the above analysis that majority of cooperative societies in three selected areas of Andhra Pradesh are maintain the share capital below Rs. 2 lakhs only. It is note that cooperative societies which are maintained share capital between Rs.3-4 are very less and these societies are recorded only at Guntur and Prakasam districts. It is distressing to observe that no one single society could maintain the share capital above Rs. 4 lakhs in the area of study.

TABLE I.3: DETAILS OF SHARE CAPITAL IN COOPERATIVE SOCIETIES (Rs. Lakhs)

| District | below 1 lakh | 1-2 | 2-3 | 3-4 | above 4 | Total |
|----------|--------------|---------|---------|---------|---------|----------|
| PRAKASAM | -- | 6 | 9 | 9 | -- | 24 |
| | -- | (8.33) | (12.50) | (12.50) | -- | (33.33) |
| GUNTUR | -- | 12 | 6 | 6 | -- | 24 |
| | -- | (16.66) | (8.33) | (8.33) | -- | (33.33) |
| NELLORE | -- | 15 | 9 | -- | -- | 24 |
| | -- | (20.83) | (12.5) | -- | -- | (33.33) |
| Total | -- | 33 | 24 | 15 | -- | 72 |
| | -- | (45.83) | (33.33) | (20.83) | -- | (100.00) |

Source: Primary Data through Questionnaire

Note: Figures in Parenthesis Indicate Percentage to the Total

NATURE OF PROBLEMS FACED BY COOPERATIVE SOCIETIES

Like any other organizations the primary weavers cooperative societies in the Andhra Pradesh also facing many problems. At present the handloom cooperative societies in the area of study are facing multi-dimensional problems which not only hamper the productivity but also put the societies in measurable conditions. The details of problems faced by the primary handloom cooperative societies in three selected areas of Andhra Pradesh are presented in the table I.4. out of the total 72 cooperative societies surveyed in 3 districts of Andhra Pradesh 27 societies representing about 37 percent of which 12 societies at Prakasam district 9 societies at Nellore district and remaining 6 cooperative societies at Guntur district expressed that supply of raw yarn constitutes the major problem, 18 cooperative.

TABLE I.4: NATURE OF PROBLEMS FACED BY COOPERATIVE SOCIETIES

| District | Lack of Mktg. | Supply of Yarn | Financial | Inability of Management | Total |
|----------|---------------|----------------|-----------|-------------------------|----------|
| PRAKASAM | 9 | 12 | 3 | -- | 24 |
| | (12.50) | (16.66) | (4.16) | -- | (33.33) |
| GUNTUR | 3 | 6 | 9 | 6 | 24 |
| | (4.16) | (8.33) | (12.50) | (8.33) | (33.33) |
| NELLORE | 6 | 9 | 6 | 3 | 24 |
| | (8.33) | (12.50) | (8.33) | (4.16) | (33.33) |
| Total | 18 | 27 | 18 | 9 | 72 |
| | (25.00) | (37.50) | (25.00) | (12.50) | (100.00) |

Source: Primary Data through Questionnaire

Note: Figures in Parenthesis Indicate Percentage to the Total

Societies accounting for 25 percent expressed that lack of financial support as their problem. 18 cooperative societies, which 9 societies at Prakasam district 6 cooperative societies at Nellore district and remaining 3 societies at Guntur district view that lack of marketing facilities is their major problem. Whereas only 9 cooperative societies representing about 12.5 percent of the total for which 6 societies at Guntur and 3 societies at Nellore district expressed that inability of management is the major problem.

It can be concluded that majority of cooperative societies in three districts of Andhra Pradesh opined that shortage of raw yarn is the major problem followed by lack of financial support and marketing facilities. It is clear that not a single cooperative society is free from above said problems in the area of study.

FINDINGS

- The age of primary handloom cooperative society in the Andhra Pradesh varies from 5-6 years and more than 50 percent of cooperative societies have come into existence during the 1960s. Very old societies which were established 50 years ago are located at Prakasam district of Andhra Pradesh.
- A large majority of cooperative societies in the area of study have the membership between 101-200 followed by 501-800. It is also note that primary handloom cooperative societies which are located at Prakasam district only recorded highest membership compare to other societies in the area of study.
- It is distressing to observe that a large number of cooperative societies in the area of study, maintained share capital only below Rs. 2 lakhs, one can therefore understand from these trends that share capital position of some cooperative societies in Andhra Pradesh is very poor and not at a satisfactory level when compare to other societies in the area of study. It is clear that the share capital of primary handloom cooperative societies compromises of member's contribution and the contribution by the Government.
- Almost all sample primary handloom cooperative societies in the area of study are facing various problems related to the society operations, majority of cooperative societies have expressed that supply of yarn constituted the major problem in addition to that, the societies are facing other problems in various dimensions like financial problems, lack of marketing support and inability of cooperative management are there in society operations. Finally it can be concluded that not a single society is free from the above said problems in the area of study.

SUGGESTIONS

- Handloom societies laying defunctional for the last 10 to 15 years may be wound up. Some societies have not yet installed the looms given by the department. Such cases may be reviewed immediately for appropriate action. Rebate claims of handloom societies remain pending for a number of years. The budgetary allocation for paying rebate should be suitably increased. The handloom weavers who are member of agricultural credit societies may be provided finance from Cooperative Banks by suitably devising a credit limit application form.
- One of the major reasons for the stagnation of cooperative societies in Andhra Pradesh is the erratic supply of yarn to societies. Frequent shortages of yarn coupled with high prices have been noticed as the factory in the under-utilisation of the looms as well as to the weavers in the societies remaining idle without job. In order to overcome this and to ensure the uninterrupted supply of yarn at more or less steady prices, a yarn bank is recommended to be established in every district.
- Only viable handloom societies may be organised covering 150 looms an average of 200 weavers in every district. All the societies will be serviced by Common Facility Centres. For the work-shed type activities, work-shed of 30 looms were recommended along with common facility centres. The society should be managed by well-trained paid managers, besides the technical staff.
- The management of weaver's cooperative societies must be made accountable to all their operations, so as to keep under check the corruption at the societies level itself.
- Training institutes are to be established in various districts of Andhra Pradesh for the purpose of imparting training to the existing weavers on weaving more on paying styles and also for giving training to new entrants.
- The contribution of Co-operative Societies help in maximizing the benefits for weavers in the entire chain of Production and Marketing, their present condition is a cause of concern. Since the Co-operative system has utterly failed in selling finished products as the handloom Cooperative system is riddled with corruption and political interference. Many handloom weavers in Andhra Pradesh though they are not members of these Cooperatives, still make better profits as they all join together forming private limited companies.
- It is essential to every Handloom cooperative society that salesmen should be given quota of sales to be accomplished in every month and keep monitoring. Incentives should be given on the over achievements than the prescribed sales quotas.
- The cooperative societies to depend on supply of dyes and chemicals from firms outside the district from whom it is not possible to obtain quality dyes and chemicals as per requirement from time to time. A dyes and chemicals bank needs to be established by the Directorate of Handloom and these facilities should be made available at every common facility centres in the district.
- The government of Andhra Pradesh should take steps to make yarn available to the weavers at the nearest place without any delay in the supply. The Directorate of Handlooms and Textiles and the Government of Andhra Pradesh should put every effort to regularize the supply of yarn during the shortage period so that the weavers are able to continue the work throughout the month or year.

REFERENCES

- Abdul Noor Basha, Prof., "Comment on New Textile Policy", Trade Trends, November 27- December 3, 2005.
- Anjaneyulu. G, Financial Management in the Cooperative Handloom Industry, (Classical Publishing company, 2001 New Delhi.)

3. Chalam. G.V, "Problems and Prospects of Handloom Industry in Co-operative sector: A study of handloom weavers co-operative societies in Krishna Dt. A.P", India Co-operative Review, Jan 2001.
4. Chandra Sekhar. C.P. and Sen Abhijit, (1996): "Statistical Truths: Economic Reforms and Poverty", Frontline, Vol 13, No.3, February 10-23.
5. Dee.E.M., "Cotton Spinning Mills Treading a Rough Path", Express Textiles February 25th 2005.
6. Devendra Bijoy Mitra., Cotton Weavers of Bengal, Farma.K.L., Calcutta, 2004.
7. Dil Bagh S.Gill and Kuldeep Kumar, "An Empirical Study of Modeling And Forecasting Macroeconomic Time series Data", Indian Journal of Economics, 2007.
8. "Handloom Sector in India, The Current Status and Shape of things to come by 2015" -Dr. D. Narasimha Reddy.
9. "Kanakalatha Mukund Syam Sundari.B, "Doomed to Fail Handloom Weavers Cooperatives in Andhra Pradesh", Economic and Political Weekly, December 26, 1998.
10. Mukund.K and B. Syamasundari (2001): "Traditional Industry in the New Market Economy – The Cotton Handlooms of Andhra Pradesh", Sage Publications, New Delhi.
11. Rama Mohana Rao. K., "Development of Handloom Industry (A case of Andhra Pradesh)", Discovery Publishing House, New Delhi, 1990.
12. Rao.V.A., "Directorate of Handloom Industry of India", Shuttle Craft Publications, Hyderabad, 1999.
13. Rajyalakshmi, P (1994), "Handloom Industry in Andhra Pradesh – The Case of Venkatagiri Handlooms", M.Phil Dissertation, B.R. Ambedkar Open University.
14. "Rising Unemployment in India: Need to project employment in Handloom Sector-2007". Dr. D. Narasimha Reddy.
15. Srinivasulu, K., "Handloom Weavers' Struggle for Survival", Economic and political Weekly, Vol. XXIX, No. 36, September 3, 1994.
16. Tyagi.R.B: "Recent trends in the Co-operative movement in India", Asia Publishing House, Bombay, 1975.
17. Venkateswara Rao.A (1991): "A Directory of Hand weaving Industry of India", Shuttle Craft Publications, Hyderabad.

IMPACT OF GENDER AND TASK CONDITIONS ON TEAMS: A STUDY OF INDIAN PROFESSIONALS

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ABSTRACT

Evolutionary Psychology states that every type of behavior is designed to perpetuate the continuance of the gene pool and ensure the survival of the species. This evolutionary imperative leads to gender differences in behavior. Researches have suggested that men and women differ with each other in terms of many physical, biological, psychological/emotional and behavioral characteristics. On the outset, teams have become important and are more popular today than ever before in terms of various kinds and sizes. Because of changing workplace demographics, teams have become more gender diverse. This paper explores whether gender-based differences exist in the belief of men and women regarding the impact of certain task conditions on teams/ team performance. The population for this research work consists of a sample of 300 professionals (actual sample was 320, out of which 20 responses were rejected). These include 46 men and 65 women (total 111 professionals) from Health care sector, 67 men and 30 women (total 97 professionals) from Information Technology sector and 56 men and 36 women from (total 92 professionals) Armed forces. It is based on a questionnaire having close-ended questions on Likert scale. We find that men and women differ significantly vis-à-vis their beliefs about gossiping, recklessness, aggressiveness, violence etc, and their impact on team/ team performance. This difference in the opinion of the researcher has positive connotations.

KEYWORDS

Gender differences, Task conditions, Team and Team work.

INTRODUCTION

 Social needs are among the most important and powerful motivating forces that prevail on a person in the job scenario. For satisfaction of these social needs, employees tend to form small groups on the job itself. Groups perform many of the activities in the workplace and these can have significant and positive impact on individual work performance. A team is also a specific type of group. In today's work context, even the organizations are recognizing the benefits of having teams at their work places, as they are helpful in outperforming the individuals.

Modern work conditions demand team orientations more than ever before in the history of humankind. Also, modern teams are required to operate within ever-growing diversity. Today a team comprises of multiple professional, ethnic, age and gender-based identities. This enhances the complexities associated with teams, because, such diverse identities result in potential faultiness within a team. We undertook this work to understand the differences between gender-based beliefs that could lead to weak teams or teams having fault-lines around the gender axis. The objective for this research work is to measure the gender based differences in beliefs related to task conditions affecting teams in following three professional categories: Armed forces, Healthcare professionals and Professionals working in Information Technology Firms in India.

Research studies the world over have shown consistent differences between the behavior of men & women. The debate is whether the difference is inherent or it is because of social upbringing. Men and women behave, think and operate differently. The literature shows that men and women are different from behavioral and cognitive dimensions. Gender differences have been known to exist ever since the beginning of civilization. Several researches have proved that gender differences are based upon natural, biological and emotional characteristics; moreover a large group holds the belief that social upbringing also plays a major role. Many inherent differences have been found in the minds of male and female such as boys getting attracted towards blue colour whereas girls going crazy for pink. Similarly discussing about behavioural differences, men are found to be more aggressive whereas women are more emotional in nature, men are more risk-taking, where on the other hand, women are more risk-averse. The psychological differences as studied by researchers also categorized women as "contextual thinkers" and men as "linear or focused thinkers". Certain researches have highlighted the differences based upon certain emotional issues such as, women being more empathetic and affectionate to others but men on contrary maintaining distance with others. Women when upset tend to burst out into tears whereas men, tend to hit something or run away. Biologically differences are also marked where boys develop their spatial skills while girls develop their verbal skills and in later stages are encouraged to do so. Even physical differences distinguish men and women from the view point that men prefer hard jobs and risky tasks whereas women prefer soft and secured jobs which are less materialistic and more intellectual in nature.

Evolutionary Psychology states that every type of behavior is designed to perpetuate the continuance of the gene pool and ensure the survival of the species. This *evolutionary imperative* leads to gender differences in behavior. Women try to look for a single mate with suitable economic resources who can protect and help to raise children in the most favorable environment. On the other hand, men try to maximize the chance of passing along their genes, value fertility and youth over wisdom and stability. Researches have suggested that men and women differ with each other in terms of many physical, biological, psychological/emotional and behavioral characteristics. Gender difference is a distinction of biological and/or physiological characteristics typically associated with either males or females of a species in general ("Gender Diff ", n.d.). Lot many researches have pointed out at certain differences among men and women in respect to some specific behaviours. The literature review points out at these differences.

LITERATURE REVIEW**(a) GENDER-BASED DIFFERENCES IN STRESS**

The gender differences between men and women influence the behaviour of both to a great extent. Many researches have evidenced the differences between male and female in the way they communicate, the type of decisions taken, intelligence shown, significant differences in their aggressive, empathetic, risk-taking, systemizing behaviours. There is substantial difference also in terms of the stress that is perceived and felt by both the genders. The differences in hormone and brain state the distinction between male and female in feeling, realizing and coping up with stress. Studies have revealed that men react with fight-or-flight techniques; women react with tend- or- befriend method.

Fight or flight technique – this refers to the coping style of human beings, particularly the male members who in threatful conditions become aggressive and have a direct confrontation with the stressor (fight), or else, they might abuse the stressors and try to avoid it by withdrawing themselves from the situation

(flight or flee technique). Thus, men either face the situation directly or find out all possible ways of coping with it or they tend to flee away from the situation. (Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A. R., & Updegraff, J. A., 2000)

Tend or befriend – this refers to the protection of younger's by nurturing them (tend) under threatful conditions and then seeking alliances and support from other social groups (especially the female groups) for mutual defense (befriending). Women are found to use these techniques more often, Taylor et al. (2000).

Coping with Stress

The ability to effectively cope with stress is the first step towards the prevention of psychological distress and development of serious illnesses. Two type of coping strategies have been identified- (i) **Adaptive coping strategies** – which includes methods like talking with friends and family, praying exercising, meditation that enhances the overall well-being (Andre-Petersson, Hedblad, Janzon, & Ostergren, 2006; Tyler & Ellison, 1994; Wang & Patten, 2002).

(ii) **Maladaptive and avoidance strategies** – such as drinking, smoking or denying the existence of the stressful situation which ends up with depression (Gore-Felton, Koopman, Spiegel, Vosvick, Brodino, & Winningham, 2006).

Significant gender differences exist in the use of these stress coping strategies (Matheny, Ashby & Cupp. 2005). Studies reveal that women use protective factors against depression and anxiety disorders by reaching out to their social support and by exhibiting help-seeking behaviors to cope with stress. Women get into praying, talking, eating and being with their families and friends to cope up with stress, (Andre-Petersson, Hedblad, Janzon, & Ostergren, 2006; Tyler & Ellison, 1994; Wang & Patten, 2002). This is the adaptive coping strategy generally used by women. (Plaisier, de Bruijn, de Graaf, Ten Have, Beekman, & Penninx, 2007; Torkelson & Muhonen, 2004). Whereas, men were found using more of maladaptive coping strategies by consuming alcohol, smoking, taking drugs, following unhealthy eating patterns, getting aggressive during stress.

(b) GENDER-BASED DIFFERENCES IN RISK-TAKING

Gender differences also exist in the perception of risk associated with various risk-taking behaviors. In a meta-analytic study examining gender differences over a wide variety of risk-taking activities has shown that men are more inclined towards risky behaviors than women (Byrnes et al., 1999). For example, females perceive greater risk in using alcohol and illicit drugs than males (Spigner, Hawkins, & Loren, 1993, Anderson et al., 1993, p. 170). Similarly, females perceive greater risk than males in various risk driving behaviors (Cherpitel, 1993; DeJoy, 1992). Males participate in higher risk sports, riskier driving, are involved in more road accidents, higher road fatalities and are over three-and-a-half times more likely to die from all accidental causes than are females (RTA, 2001). Hillier and Morrongiello (1998) examined gender differences in perceptions involved in physical risk taking in children.

In the studies of Byrnes, Miller and Schafer (1999), they analyzed the risk-taking tendencies of male and female participants in a variety of settings. They researched the type of task (e.g., self-reported behaviors versus observed behaviors), task content (e.g., smoking versus sex), and age. Results showed that in 14 out of 16 tasks, males were more risk taking. Certain tasks (e.g., intellectual and physical risks) produced larger gender differences than others (e.g., health risks like smoking). A similar review of social risk taking by Arch (1993) analyzed that women are more risk averse than men. Arch (1993) explains this phenomenon by claiming that males are more likely to see a risky situation as a challenge that calls for participation while females tend to respond to these situations as threats that encourage avoidance.

(c) GENDER-BASED DIFFERENCES IN AGGRESSION

Historically aggressiveness has been viewed as a male phenomenon (Bjorkqvist, 1994). Gender differences in aggression have frequently been reported, such that men and boys show more aggression than women and girls, especially in terms of physical aggression (Burton, Hafetz, & Henninger, 2007). However Rachel Simmons the author of the New York Times bestseller *Odd Girl Out: The Hidden Culture of Aggression in Girls*, the first book to explore the phenomenon of bullying between girls suggests that females are not necessarily less aggressive, but tend to express through not only physical aggression, but also through non-physical means, such as manipulation, exclusion, and gossip (Dettinger & Hart, 2007). This type of aggression is referred to as relational aggression. To prove the same, a research was also done by Bjorkqvist & Niemela, 1992; Galen & Underwood, 1997; Lagerspetz, Bjorkqvist, & Peltonen, 1998, where they challenged the conventional perception that men were overwhelmingly more aggressive than women by studying the nonovert aggressions shown by women. Differences in aggressions were also reported to exist in children's and adolescents in a study done by Owens, Shute, and Slee (2000a, 2000b). Their research showed that boys naturally engage in aggression that involves a direct physical and/or verbal assault (i.e., hitting and yelling), whereas girls use less overt forms of aggression such as negative gossip, exclusion, breaking confidences, and criticism of a victim's clothing, appearance, or personality.

(d) GENDER-BASED DIFFERENCES IN NEUROTICISM

On average, men and women differ in a number of personality traits. In many studies, it has been found that men tend to be more assertive and risk taking than women, whereas women are generally higher than men in anxiety and tender-mindedness (Brody & Hall, 2000; Byrnes, Miller, & Schafer, 1999; Feingold, 1994; Kring & Gordon, 1998; Lynn & Martin, 1997; Maccoby & Jacklin, 1974). These gender differences in personality traits were detected in early childhood (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Wilgenbusch & Merrell, 1999) and were believed to remain fairly constant across adulthood (Feingold, 1994; McCrae & Costa, 1984). The effects of these gender differences lead to predictable differences in men's and women's leisure behaviors, occupational preferences, and health-related outcomes (Browne, 1998; Collaer & Hines, 1995; Lippa, 2005). Costa, Terracciano, & McCrae, 2001; Lynn & Martin, 1997 also studied gender differences in personality traits such as assertiveness and anxiety that appears to be culturally pervasive. Feingold (1994) in his research found that women in Canada, China, Finland, Germany, Poland, and Russia tended to score higher than men on scales related to the personality traits of neuroticism, agreeableness, and conscientiousness. Men, in contrast, scored higher in the extraversion-related trait of assertiveness across cultures. In a much larger study done across 36 cultures revealed that women in most countries are higher in several traits related to neuroticism, agreeableness, warmth, and openness to feelings, whereas men score higher on scales measuring assertiveness and openness to ideas (Costa et al., 2001; McCrae, 2002).

In one more large study of 50 cultures done on college students (McCrae, Terracciano, & 78 Members of the Personality Profiles of Cultures Project, 2005), men were rated by observers as being higher than women in assertiveness, excitement seeking, and openness to ideas. Women were rated by observers as being higher on many traits, especially in anxiety, vulnerability, aesthetics, feelings, and tender-mindedness (McCrae et al., 2005). Using the five-factor model of personality, Schmitt, Realo, Voracek, & Allik, 2008, reported that men score higher than women on some extraversion facets (e.g., assertiveness, dominance) but lower on others (sociability, warmth), whereas women score higher than men on many neuroticism and agreeableness facets.

William McBride has also made noticeable studies to find the neural differences among men and women. He based his study on adolescent boys and girls and suggested some important findings. His research illustrates that girls have fewer attention span problems and their stronger neural connectors create better listening skills. Girls are usually better at- sensory memory, sitting still, listening, mental cross talk, and the complexities of reading and writing (Gurian, M. & Stevens, K. 2004). In the study of Sax, Leonard, 2005; they also explained that boys are significantly more likely to do something dangerous than girls. Boys systematically *overestimate* their own ability, while girls are more likely to *underestimate* their abilities.

(e) GENDER DIFFERENCES IN EMPATHIZING AND SYSTEMIZING

The issue of gender differences in empathy is quite controversial. It is often believed that females are more empathic than males. On average female subjects score higher than males on the Empathy Quotient (EQ), while males tend to score higher on the Systemizing Quotient (SQ), (Eisenberg, N., & Fabes, R.A., 1990). Gender differences in empathy are seen from birth, with female babies showing a stronger preference for looking at social stimuli (faces) from 24 hours after birth (Connellan et al. 2000). Girls have also been found to make more eye contact immediately after birth (Hittelman and Dicks 1979) and more prominent at 12 months of age (Lutchmaya et al. 2002), 2 and 4 years of age (Podrouzek and Furrow 1988). Girls have been found to exhibit more comforting, sad expressions or more sympathetic vocalizations while observing another's distress (Hoffman 1977). Girls also show better quality of social relationships at 48 months, as measured by a subscale of the Children's Communication Checklist (Knickmeyer et al. 2005). Similar patterns have been observed in adults also in the studies of (Baron-Cohen and Wheelwright 2003; Umberson et al. 1996). In one of the research done by (Bosacki and Astington 1999), they illustrated that girls are better than boys at evaluating the feelings and intentions of characters in a story and differentiating between the appearance and reality of emotions (Banerjee 1997).

Some of the studies have examined the play preferences among boys and girls and have found mechanical and constructional play in boys, demonstrated by a preference to play with toy vehicles, guns or construction sets, while girls are more likely to choose to play with dolls, kitchen sets, clay toys or toy animals

(Berenbaum and Hines 1992; Liss 1979; Servin et al. 1999; Smith and Daglish 1977). Males score higher on tasks that require systemizing such as using directional cues in map-reading and map-making (Beatty and Troster 1987; Galea and Kimura 1993; Kimura 1999), intuitive physics (Lawson, Baron-Cohen and Wheelwright 2004) and the SAT-Math Test (Benbow and Stanley 1983). They are also more accurate on measures of spatial ability such as mental rotation (Johnson and Meade 1987; Kerns and Berenbaum 1991; Masters and Sanders 1993) and spatial visualization (Kerns and Berenbaum 1991). Finally, males score higher on the Embedded Figures Test (EFT) (Berlin and Languis 1981; Nebot 1988; Witkin et al. 1962), which measures attention to detail and field independence- considered to be the basics for systemizing (Baron- Cohen 2002).

NEED FOR STUDY

Teams have become important and are more popular today than ever before in firms of various kinds and sizes. Now a day's, organizations are increasingly focusing on teams to increase competitive advantage by improving productivity, enhancing creativity, increasing response times, and improving decision-making. In fact, 68% of Fortune 1000 companies were found to use self-managed work teams. Because of changing workplace demographics (Rogelberg G. S., and Rumery M.S., 1996), teams are becoming more gender diverse. More and more women are now joining the corporate world. Most of the gender-based researches have compared all-male with all-female teams or same-gender with balanced-gender teams. It is expected that teams of varying gender configuration would differ in their behavioral patterns and that these differences would account for significant variation in team process and outcome measures. Since, our literature review finds a gap that such gender differences have not been studied in India, though plenty of research is found in other countries, hence, our research is focused on measuring the expressed beliefs of men and women vis-a-vis task conditions. The study is focused on Army, Health care and Information Technology sectors in India.

STATEMENT OF THE PROBLEM

Gender equality has been a very prominent issue in professional organizations. Many believe that task conditions are always favourable to men only whereas, some believe that they are quite favourable to women also. A study is needed to assess the position in this respect. This study makes an assessment whether or not a difference exists in organizations that have modern men and women working side-by-side – with respect to nature of task conditions.

OBJECTIVE OF THE STUDY

To study the gender differences affecting task conditions in Information Technology sector, Healthcare sector and Armed forces.

HYPOTHESIS

Ho: No gender differences exist in the belief of men and women regarding the impact of task conditions on teams/ team performance.

Ha: Gender differences exist in the belief of men and women regarding the impact of task conditions on teams/ team performance.

RESEARCH METHODOLOGY

- Our study is based on empirical and conclusive research as it is a data-based research followed by conclusions that are capable of being verified. The formulation of hypothesis is another reason for the choice of empirical research. Since conclusive research tests the hypothesis of the research problem and draws definite conclusion for implementation, thus, our research is also conclusive in nature.
- The population for this research work consists of (i) All Defence officers currently working in India, (ii) All the Physicians (holding a minimum of MBBS degree) and Nurses working in India, (iii) All the engineers working in software development in India.
- Out of the entire population, a sample of 300 professionals was chosen using random and judgmental sampling method. As per the judgmental sampling we have taken into consideration the regions and the organizations of the population and as per the random sampling we have chosen the subjects (respondents who have filled the questionnaire). The researcher has opted for judgmental sampling because the population was known and clearly identified, and in order to avoid biased results, randomly the subjects were chosen.
- The actual sample size was 320, out of which 20 responses were rejected. The sample size consists of 46 men and 65 women (total 111 professionals) from Health care sector, 67 men and 30 women (total 97 professionals) from Information Technology sector and 56 men and 36 women from Armed forces (total 92 professionals).
- The sample has represented all the Information Technology professionals, Health care professionals and Defence officers (presently employed) throughout India.
- A questionnaire was prepared that comprised closed-ended questions to measure the expressed belief of our respondents.
- The questions are based on task conditions which state the differences in the beliefs of working men and women. Evaluation of each question has been done by analyzing the compared means through one-sample t-test, at 95% confidence interval.
- The data has been collected using **Likert Scale**. The ratings are given below:

| | |
|----------------------------|---|
| Strongly Disagree | 1 |
| Disagree | 2 |
| Slightly disagree | 3 |
| Neither agree nor disagree | 4 |
| Slightly agree | 5 |
| Agree | 6 |
| Strongly agree | 7 |

SCOPE OF THE STUDY

Study is limited to –

- Three sectors only i.e. Information Technology sector, Healthcare sector and Armed forces.
- The study has been limited to India only.
- We have concentrated only on the gender differences; no other demographic factor has been undertaken.
- Focus is only on belief towards task conditions of working professionals.
- Our sample size was 320 out of which 20 responses were rejected due to incomplete information.

RESULTS AND DISCUSSIONS

S.No. 1 - At times I feel endangered because of the reckless behaviour of a team member.

Table 1.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|----|-----|------|----------------|-----------------|
| Q4 | 300 | 4.60 | 1.590 | .092 |

In table 1.1 we find that the value of mean is 4.60, which shows that in general, beliefs of men and women are inclined towards agreement that at times they feel endangered because of the reckless behaviour of any other team member.

Table 1.2**One-Sample Test**

| | Test Value = 4 | | | | | |
|----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q4 | 6.498 | 299 | .000 | .597 | .42 | .78 |

In table 1.2 we find the value of t is 6.498, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – well below 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that at times they feel endangered because of the reckless behaviour of any other team member.

S.No. 2 - Very often team performance is affected because two or more male members are very aggressive towards each other.

Table 2.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q10 | 300 | 4.59 | 1.478 | .085 |

In table 2.1 we find that the value of mean is 4.59, which shows that in general, beliefs of men and women are inclined towards agreement that very often team performance is affected because two or more male members are very aggressive towards each other.

Table 2.2**One-Sample Test**

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q10 | 6.877 | 299 | .000 | .587 | .42 | .75 |

In table 2.2 we find the value of t is 6.877, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – well below 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that very often team performance is affected because two or more male members are very aggressive towards each other.

S.No. 3 - Women members of the team have a greater tendency to gossip about group members that eventually affects team performance.

Table 3.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q19 | 300 | 4.77 | 1.646 | .095 |

In table 3.1 we find that the value of mean is 4.77, which shows that in general, beliefs of men and women are inclined towards agreement that women members of the team have a greater tendency to gossip about group members.

Table 3.2**One-Sample Test**

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q19 | 8.070 | 299 | .000 | .767 | .58 | .95 |

In table 3.2 we find the value of t is 8.070, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that women members of the team have a greater tendency to gossip about group members that in due course affects the performance of team.

S.No. 4 - Male members of the team resort to threat of physical violence.

Table 4.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q22 | 300 | 4.37 | 1.526 | .088 |

In table 4.1 we find that the value of mean is 4.37, which shows that in general, beliefs of men and women are inclined towards agreement that male members of the team resort to threat of physical violence.

Table 4.2**One-Sample Test**

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q22 | 4.201 | 299 | .000 | .370 | .20 | .54 |

In table 4.2 we find the value of t is 4.201, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that male members of the team resort to threat of physical violence.

S.No. 5 - In a tense situation, women members of the team play a very important pacifying role.

Table 5.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q26 | 300 | 5.64 | 1.397 | .081 |

In table 5.1 we find that the value of mean is 5.64, which shows that in general, beliefs of men and women are strongly inclined towards agreement that in a tense situation women members of the team play a very important pacifying role.

Table 5.2
One-Sample Test

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q26 | 20.294 | 299 | .000 | 1.637 | 1.48 | 1.80 |

In table 5.2 we find the value of t is 20.294, which is much higher than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that in a tense situation women members of the team play a very important pacifying role.

S.No. 6 - Generally it is the male members who may face false accusation of sexual harassment.

Table 6.1
One-Sample Statistics

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q33 | 300 | 5.01 | 1.465 | .085 |

In table 6.1 we find that the value of mean is 5.01, which shows that in general, beliefs of men and women are strongly inclined towards agreement that generally it is the male members who may face false accusation of sexual harassment.

Table 6.2
One-Sample Test

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q33 | 11.899 | 299 | .000 | 1.007 | .84 | 1.17 |

In table 6.2 we find the value of t is 11.899, which is higher than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that generally it is the male members who may face false accusation of sexual harassment.

S.No. 7 - When a risky decision is being taken the note of caution is generally forwarded by women members of the team.

Table 7.1
One-Sample Statistics

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q40 | 300 | 4.86 | 1.359 | .078 |

In table 7.1 we find that the value of mean is 4.86, which shows that in general, beliefs of men and women are inclined towards agreement that when a risky decision is being taken the note of caution is generally forwarded by women members of the team.

Table 7.2
One-Sample Test

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q40 | 10.962 | 299 | .000 | .860 | .71 | 1.01 |

In table 7.2 we find the value of t is 10.962, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that when a risky decision is being taken the note of caution is generally forwarded by women members of the team.

S.No. 8 - Women find it easier to seek help.

Table 8.1

One-Sample Statistics

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q70 | 300 | 4.90 | 1.293 | .075 |

In table 8.1 we find that the value of mean is 4.90, which shows that in general, beliefs of men and women are inclined towards agreement that women find it easier to seek help.

Table 8.2

One-Sample Test

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q70 | 12.097 | 299 | .000 | .903 | .76 | 1.05 |

In table 8.2 we find the value of t is 12.097, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that women find it easier to seek help.

S.No. 9 - Female bosses are generally better than the male bosses

Table 9.1

One-Sample Statistics

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q74 | 300 | 3.50 | 1.392 | .080 |

In table 9.1 we find that the value of mean is 3.50, which shows that in general, beliefs of men and women are inclined towards slight disagreement that female bosses are generally better than the male bosses

Table 9.2

One-Sample Test

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q74 | -6.265 | 299 | .000 | -.503 | -.66 | -.35 |

In table 9.2 we find the value of t is -6.265, which is less than -1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that female bosses are generally better than the male bosses

S.No. 10 - Tasks that require warmth, support & nurturing are performed better by having women members.

Table 10.1**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|-----|------|----------------|-----------------|
| Q77 | 300 | 5.22 | 1.349 | .078 |

In table 10.1 we find that the value of mean is 5.22, which shows that in general, beliefs of men and women are strongly inclined towards agreement that tasks that require warmth, support & nurturing are performed better by having women members.

Table 10.2**One-Sample Test**

| | Test Value = 4 | | | | | |
|-----|----------------|-----|-----------------|-----------------|-------------------------------------------|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Q77 | 15.708 | 299 | .000 | 1.223 | 1.07 | 1.38 |

In table 10.2 we find the value of t is 15.708, which is more than 1.972. We therefore reject the null hypothesis and accept the alternate one. This is also concluded by the significance level which is 0.000 – lower than 0.05. It is therefore confirmed that there are significant differences in the beliefs of men and women that tasks that require warmth, support & nurturing are performed better by having women members.

FINDINGS

Our finding in this respect is that many significant differences in the beliefs of men and women regarding impact of task conditions on team work/ performance exist. It has been concluded that though it is the women members who actually have a fear of getting harassed sexually at their work place but men have also have to fear the other side of the stick. Even men have a strong fear of being falsely accused for sexual harassment. Significant differences are also noticed in behaviours such as gossiping, recklessness, aggressiveness, violence, etc, which again are believed to have a strong impact on team work.

Analyzing the co-operation level between both the genders, we find that both the genders believe that they are able to get help when a male/ female member is around. But both the genders believe that it is easier to work with a male boss than a female one. Again it is the male members from health care sector and armed forces and female members from IT sector who agree more with this.

It has also been analyzed that tasks that require warmth, nurturing, support, peace-keeping are better performed by females. Women members of the team also empathize with others better and more promptly when another member is unwell/ upset. They notice the distress and discomfort of others earlier than men. These differences should be given due importance while assigning roles to women members especially in health care sector and armed forces, since these characteristics can be used in crisis and emergency situations. For example - during times of peace-keeping when the general public needs to be addressed, in hospitals where patients and patients relatives at times are to be convinced and counseled, women members are needed to manage these critical situations.

REFERENCES

1. Anderson, E. R., Bell, N. J., Fischer, J. L., Munsch, J., Peek, C. W. & Sorell, G. T. (1993). Applying a risk-taking perspective. In N. J. Bell & R. W. Bell (Eds.), *Adolescent Risk Taking*, (pp. 165-185). Newbury Park, CA: Sage.
2. Andre-Petersson, L., Hedblad, B., Janzon, L., & Ostergren, P. O. (2006). Social support and behavior in a stressful situation in relation to myocardial infarction and mortality: Who is at risk? Results from prospective cohort study "Men born in 1914," Malmo, Sweden. *International Journal of Behavioral Medicine*, 13, 340-347.
3. Arch, Elizabeth. 1993. "Risk-Taking: A Motivational Basis for Sex Differences," *Psychological Reports* 73: 3, pp. 6-11.
4. Banerjee, M. (1997). Hidden emotions: Preschoolers' knowledge of appearance-reality and emotion display rules. *Social Cognition*, 15, 107-132.
5. Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in Cognitive Sciences*, 6, 248-254. doi:10.1016/S1364-6613(02)01904-6.
6. Baron-Cohen, S., & Wheelwright, S. (2003). The Friendship Questionnaire: An investigation of adults with Asperger syndrome or high-functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders*, 33, 509-517. doi: 10.1023/A:1025879411971.
7. Beatty, W. W., & Troster, A. I. (1987). Gender differences in geographical knowledge. *Sex Roles*, 16, 565-590. doi:10.1007/ BF00300374.
8. Benbow, C. P., & Stanley, J. C. (1983). Sex differences in mathematical reasoning ability: More facts. *Science*, 222, 1029-1031. doi:10.1126/science.6648516.
9. Berenbaum, S. A., & Hines, M. (1992). Early androgens are related to childhood sex-typed toy preferences. *Psychological Science*, 3, 203-206. doi:10.1111/j.1467-9280.1992.tb00028.x.
10. Berlin, D. F., & Languis, M. L. (1981). Hemispheric correlates of the Rod-and-frame Test. *Perceptual and Motor Skills*, 52, 35-41.

11. Bjorkqvist, K., & Niemela, P. (1992). New trends in the study of female aggression. In K. Bjorkqvist & P. Nienrelli (Eds.), *Of mice and women: Aspects of female aggression*. San Diego, CA: Academic Press.
12. Bosacki, S., & Astington, J. W. (1999). Theory of mind in preadolescence: Relations between social understanding and social competence. *Social Development*, 8, 237–255. doi:10.1111/1467-9507.00093.
13. Brody, L. R., & Hall, J. A. (2000). Gender, emotion, and expression. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions: Part IV: Social/personality issues* (2nd ed., pp. 325–414). New York: Guilford Press.
14. Browne, K. (1998). *Divided labours*. New Haven, CT: Yale University Press.
15. Burton, L., Hafetz, J., & Henninger, D. (2007). Gender Differences in Relational and Physical Aggression. *Social Behavior And Personality*, 35(1), 41-50.
16. Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: a meta-analysis. *Psychological Bulletin*, 125, 367–383.
17. Cherpitel, C. J. (1993). Alcohol, injury, and risk-taking behavior: Data from a national sample. *Alcoholism: Clinical and Experimental Research*, 17 (4), 762–766.
18. Collaer, M. L., & Hines, M. (1995). Human behavioral sex differences: A role for gonadal hormones during early development? *Psychological Bulletin*, 118, 55–107.
19. Connellan, J., Baron-Cohen, S., Wheelwright, S., Batki, A., & Ahluwalia, J. (2000). Sex differences in human neonatal social perception. *Infant Behavior and Development*, 23, 113–118. doi: 10.1016/S0163-6383(00)00032-1.
20. Costa, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology*, 81, 322–331.
21. DeJoy, D. M., (1992). Examination of gender differences in traffic accident risk perception. *Accident Analysis and Prevention*, 24 (3), 237-246.
22. Dettinger, S., & Hart, G. (2007). The Relationship Between Self-Esteem And Indirect Aggression In The Workplace. *Journal of Psychiatry and Psychology*, 1(1).
23. Eisenberg, N., & Fabes, R.A. (1990). Empathy: Conceptualization, Measurement, and Relation to Prosocial Behavior. *Motivation and Emotion*, 14, 131–149.
24. Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin*, 132, 33–72.
25. Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, 116, 429–456.
26. Galea, L. A., & Kimura, D. (1993). Sex differences in route-learning. *Personality and Individual Differences*, 14, 53–65. doi:10.1016/0191-8869(93)90174-2.
27. Galen, B. R., & Underwood, M. K. (1997). A developmental investigation of social aggression among children. *Developmental Psychology*, 33, 589–600.
28. Gender Differences. (n.d.). In (Ed.), *Wikipedia*. Retrieved February 15, 2009, from http://en.wikipedia.org/wiki/Gender_differences.
29. Gore-Felton, C., Koopman, C., Spiegel, D., Vosvick, M., Brodino, M., & Winningham, A. (2006). Effects of quality of life and coping in depression among adults living with HIV/AIDS. *Journal of Health Psychology*, 11, 711-729.
30. Gurian, M. & Stevens, K, Nov'2004, *The Minds of Girls - "With Boys and Girls in Mind," Educational Leadership*.
31. Hillier, L. M., & Morrongiello, B. A. (1998). Age and gender differences in school-age children's appraisals of injury risk. *Journal of Pediatric Psychology*, 23, 229–238.
32. Hittelman, J. H., & Dicks, R. (1979). Sex differences in neonatal eye contact time. *Merrill-Palmer Quarterly*, 25, 171–184.
33. Hoffman, M. L. (1977). Sex differences in empathy and related behaviors. *Psychological Bulletin*, 54, 712-722.
34. Johnson, E. S., & Meade, A. C. (1987). Developmental patterns of spatial ability: An early sex difference. *Child Development*, 58, 725–740.
35. Kerns, K. A., & Berenbaum, S. A. (1991). Sex differences in spatial ability in children. *Behavior Genetics*, 21, 383–396.
36. Kimura, D. (1999). *Sex and cognition*. Cambridge, MA: The MIT Press.
37. Knickmeyer, R., Baron-Cohen, S., Raggatt, P., & Taylor, K. (2005). Foetal testosterone, social relationships, and restricted interests in children. *Journal of Child Psychology and Psychiatry*, 46, 198–210.
38. Kring, A. M., & Gordon, A. H. (1998). Sex differences in emotion: Expression, experience, and physiology. *Journal of Personality and Social Psychology*, 74, 686–703.
39. Lagerspetz, K. M. J., Bjorkqvist, K., & Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11-12-year-old children. *Aggressive Behavior*, 14, 303-315, 403-414.
40. Lawson, J., Baron-Cohen, S., & Wheelwright, S. (2004). Empathising and systemising in adults with and without Asperger syndrome. *Journal of Autism and Developmental Disorders*, 34, 301–310.
41. Lippa, R. A. (2005). *Gender, nature, and nurture*. Mahwah, NJ: Erlbaum.
42. Liss, M. B. (1979). Variables influencing modeling and sex-typed play. *Psychological Reports*, 44, 1107–1115.
43. Lutchmaya, S., Baron-Cohen, S., & Raggatt, P. (2002). Foetal testosterone and eye contact in 12 month old infants. *Infant Behavior and Development*, 25, 327–335.
44. Lynn, R., & Martin, T. (1997). Gender differences in extraversion, neuroticism, and psychoticism in 37 countries. *Journal of Social Psychology*, 137, 369–373.
45. Maccoby, E. E., & Jacklin, C. N. (1974). *The psychology of sex differences*. Stanford, CA: Stanford University Press.
46. Masters, M. S., & Sanders, B. (1993). Is the gender difference in mental rotation disappearing? *Behavior Genetics*, 23, 337–341.
47. Matheny, K. B., Ashby, J. S., & Cupp, P. (2005). Gender difference in stress, coping, and illness among college students. *The Journal of Individual Psychology*, 61, 365–379.
48. McCrae, R. R. (2002). NEO-PI-R data from 36 cultures: Further intercultural comparisons. In R. R. McCrae & J. Allik (Eds.), *The five-factor model of personality across cultures* (pp. 105–125). New York: Kluwer Academic/Plenum Publishers.
49. McCrae, R. R., & Costa, P. T. (1984). *Emerging lives, enduring dispositions*. Scott Foresman.
50. McCrae, R. R., Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology*, 88, 547–561.
51. Nebot, T. K. (1988). Sex differences among children on embedded tasks. *Perceptual and Motor Skills*, 67, 972–974.
52. Owens, L., Shute, R., & Slee, P. (2000a). bGuess what I just heard!Q: Indirect aggression among teenage girls in Australia. *Aggressive Behavior*, 26, 67–83.
53. Owens, L., Shute, R., & Slee, P. (2000b). bl'm in and you're out. .Q: Explanations for teenage girls' indirect aggression. *Psychology, Evolution, and Gender*, 2, 19–46.
54. Plaisier, I., de Bruijn, J. G., de Graaf, R., ten Have, M., Beekman, A. T., & Penninx, B. W. (2007). The contribution of working conditions and social support to the onset of depressive and anxiety disorders among male and female employees. *Social Science & Medicine*, 64, 401-410.
55. Podrouzek, W., & Furrow, D. (1988). Preschoolers' use of eye contact while speaking: The influence of sex, age, and conversational partner. *Journal of Psycholinguistic Research*, 17, 89–98.
56. Roads and Traffic Authority of NSW. (2001). *Road Traffic Accidents in NSW – 2001*. Haymarket, Australia: Roads and Traffic Authority, Road Safety Strategy Branch.
57. Sax, Leonard (2005) *Why Gender Matters*. New York: Broadway Books.
58. Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. *Journal of Personality and Social Psychology*, 94, 168–182.
59. Servin, A., Bohlin, G., & Berlin, D. (1999). Sex differences in 1-, 3-, and 5-year-olds' toy-choice in a structured play session. *Scandinavian Journal of Psychology*, 40, 43–48.
60. Smith, P. K., & Daglish, L. (1977). Sex differences in parent and infant behavior in the home. *Child Development*, 48, 1250–1254.

61. Spigner, C, Hawkins, W., & Loren, W. (1993). Gender differences in perception of risk associated with alcohol and drug use among college students. *Women and Health*, 20(1), 87-97.
62. Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A. R., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review*, 107, 441-429.
63. Torkelson, E., & Muhonen, T. (2004). The role of gender and job level in coping with occupational stress. *Work & Stress*, 18, 267-274.
64. Tyler, P. A., & Ellison, R. N. (1994). Sources of stress and psychological well-being in high dependency nursing. *Journal of Advanced Nursing*, 19, 469-476.
65. Umberson, D., Chen, M. D., House, J. S., Hopkins, K., & Slaten, E. (1996). The effect of social relationships on psychological wellbeing: Are men and women really so different? *American Sociological Review*, 61, 837-857.
66. Wang, J., & Patten, S. B. (2002). The moderating effects of coping strategies on major depression in the general population. *Canadian Journal of Psychiatry*, 47, 167-173.
67. Wilgenbusch, T., & Merrell, K. W. (1999). Gender differences in self-concept among children and adolescents: A meta-analysis of multidimensional studies. *School Psychology Quarterly*, 14, 101-120.
68. Witkin, H. A., Dyk, R. B., Fattuson, H. F., Goodenough, D. R., & Karp, S. A. (1962). *Psychological differentiation: Studies of development* (p. 418). Oxford, England: Wiley.



MOTIVATIONAL PREFERENCES OF TEACHERS WORKING IN PRIVATE ENGINEERING INSTITUTIONS IN WESTERN INDIA REGION: AN EXPLORATORY STUDY

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ABSTRACT

Teachers form a part of the triad supporting education, the other two being students and infrastructure. They play an important role in facilitating learning in students. Motivation has direct effect on performance of teachers. A set of motivated teachers can do wonders in developing self learning capability in students to take on the challenges in future. In a survey based approach a well structured questionnaire has been used to find responses regarding motivators of teachers working in private engineering institutes in Western India. Performance of the teachers in terms of student feedback, peer review, number of research papers published and conferences attended has been taken as a measure of their overall motivation. Descriptive statistics and correlation analysis have been used to find effects of motivators on performance of the employees. Effect of demographic variables like age, experience, education and gender on motivators has also been studied. Our study suggests a significant link between satisfaction of intrinsic motivators and performance of teachers.

KEYWORDS

Autonomy, Demographic Variables, Growth Opportunities, Motivation, Performance.

INTRODUCTION

Motivation has been defined as amount, quality and direction of employee's effort that energizes their behaviour within the work environment (Perry and Porter 1982). The growth of a nation depends on all-round development of its various sectors encompassing entire population. Education is the key element in this process of development of people (Tripathi et al, 2006). Higher education enhances employability of students by developing various skills. These students contribute effectively to different sectors of national economy. Higher education rests on a triad formed by teachers, students and infrastructure. Teachers play an important role in facilitating learning, especially self learning, in students.

Human resource management of teachers in private engineering institutions can be defined as strategic and coherent approach to management of teachers. The teachers may be motivated due to intrinsic or extrinsic factors. The intrinsic factors may be work culture, job satisfaction, autonomy and opportunities for growth like training and development. The extrinsic factors could be salary and other monetary benefits, rules and regulations of the central/ state government, regulating agencies (UGC, AICTE etc). It may not be easy to change the rules and regulations. Similarly it may not be easy to reduce the gap between expected and received salaries or make it comparable to that in other sectors of economy. What could be done easily on the other hand is to address the intrinsic factors. These also have been found to affect motivation to a large extent (Borzaga and Tortia, 2006). This study concentrates on intrinsic motivators of the faculty and what could be done to enhance these without involving large monetary resources way beyond the capability of most of the private institutions.

Motivation is not constant. It varies with age, education, experience etc. Therefore it is very important for institutions to know what gives its faculty intrinsic motivation and if the intrinsic motivators are same for its entire faculty. The management may then take appropriate action to enhance motivation. The effects of age, experience, education and gender of teachers on intrinsic motivation are studied in the empirical analysis. The study is limited to teachers in private engineering institutions. Responses from teachers of a number of institutions from Western India have been obtained and analysed statistically with SPSS 16 in order to obtain inferences.

LITERATURE REVIEW

Muchinsky (1996) defines motivation as "the individual's desire to demonstrate the behaviour and reflects willingness to expend effort". Motivation is also defined as "the willingness to exert high levels of effort to reach organizational goals, conditioned by the effort's ability to satisfy some individual need" by Robbins, Coulter and Coulter (1998). Motivation could be broadly classified into two types extrinsic and intrinsic. Aronson, Wilson and Akert (2002) have reported "Extrinsic motivation refers to external factors which can be measured in monetary terms such as salary and bonuses etc". These are external to the people. Intrinsic motivation refers to internal factors such as interest, enjoyment, choice, perceived competence, relatedness etc. Satisfaction of these factors causes and maintains intrinsic motivation as brought out by Gagne and Deci (2005). Intrinsic motivation is long lasting as reported by Deci and Ryan (2000) as well as Ryan and Deci (2000).

Need for autonomy concerns experiencing choice and feeling like initiator of one's own actions. It is essential for ongoing psychological growth, integrity and well-being. Satisfaction of these needs will enhance intrinsic motivation. Thwarting of this need on the other hand will undermine intrinsic motivation. Deci, Connell and Ryan (1998) have found that managerial autonomy support, defined as managers' acknowledgement of their subordinate's perspective, providing information in a non controlling way, offering choice and encouraging self initiation was associated with employees' being more satisfied with their jobs, having a higher level of trust in management and positive work related attitudes. Gagne and Deci (2005) have found autonomous motivation to be related to organisational commitment. Hence autonomous motivation is important if employees are to accept the organisation's goals and be committed to working towards them. Baard, Deci and Ryan (2004) have reported that in a workplace setting supervisor's understanding and autonomy matter a lot for intrinsic motivation of employees. It would be appropriate to assume that teachers will also exhibit similar trends in their motivation.

Compensation and benefits are important factors in competitive market environment but some intangible motivators like job design, work environment, feedback, recognition and empowerment or decision making/ participation are also the potential factors for motivating teachers in higher education (Rasheed et al, 2010). However finding what employees want and then alignment of individual and institutional needs can be a very complex task. Although money is an influential factor at every stage but it is not necessary that money alone can increase motivation of every worker. There are intangibles like empowerment, recognition, feedback etc that are primary motivators for workers' inspiration to perform effectively (Fuhrmann, 2006). Dysvik Anders and Kuvaas BRD (2008) have also found significant correlation between performance and empowerment of personnel in work settings.

An institution cannot sustain without motivated teachers in the current scenario which is highly competitive. The teachers at higher education level play an important role in institution's success and its goodwill among students and academia. Their motivation has significant influence on their delivering knowledge and grooming of the students as global citizen and masters in their field. Filak and Sheldon (2003) have opined that motivation is crucial to long term success and performance of any educational system. Ololube (2004) explored the same point of view that increased motivation of teacher's leads to an increase in productivity that gives boost to the educational systems; hence the function of educational motivational methods cannot be underemphasised. According to Praver et al (2008) teacher's empowerment is having academic freedom meaning planning lessons, formatting syllabus and selecting text books to recommend to their students on their own and not by department.

Motivation of people is not constant. It also varies with age, education, experience, aspirations, gender of people, level in organization and stay in the organization.

The discussion above provides a canvas of factors broadly classified into two groups namely extrinsic and intrinsic affecting teacher motivation. It would be within reach of all institutions to work on intrinsic motivators identified in the study to energize teachers and enhance their performance. The aim of the paper is to study the effect of fulfilment of these intrinsic and non monetary motivators on performance(overall motivation) and evaluate the impact of demographic variables like age, experience, gender and education on these parameters for the teachers.

METHODOLOGY

Based on above we selected a number of private engineering institutions in Western India considering the size and age of institution as well as standing in market. We then targeted a large number of teachers working in these institutions directly for getting responses. All responses were obtained through emails in soft copies.

CHOICE OF SAMPLE SIZE AND DEVELOPMENT OF QUESTIONNAIRE

Aczel (1999) argues it is necessary to have at least 30 responses to have statistically reliable result. In order to have 30 responses in each subgroup based on age, education, experience and gender we approached a large number of teachers in various engineering institutions directly. The questionnaire developed for the study is based on General Causality Orientation Scale used by Deci and Ryan (1985a), Job satisfaction Instrument by Schnake (1983) and Perceived Autonomy Support: The Climate Questionnaire used by Baard et al (2004). It is in two parts A and B. It is placed at Appendix A. Part A contains personal information about the respondent. Part B contains 31 questions on various motivators. A Likert scale of 1-5(1-Strongly disagree, 2- disagree, 3-neutral, 4-agree, 5-strongly agree) has been used in the questionnaire. The questionnaire has been tested for internal consistency by calculating Cronbach alpha. The value for the entire questionnaire comes to be 0.96. It is considered to be more than adequate. Last two questions in part B were open ended questions to capture feelings of respondents.

MEASUREMENT

Measurement of various variables has been done to extract relationship between motivators and performance as a measure of overall motivation. These variables have been clubbed under independent and dependent variables category for description and subsequent analysis as follows:

INDEPENDENT VARIABLES IN THE STUDY

Intrinsic motivators: These are treated as independent variables and are listed below:

- **Autonomy:** It concerns experiencing choice and feeling like initiator of one's own actions. Measure of autonomy is through response to questions like I enjoy/feel like working here, I could select way of working/timing, My superiors are supportive of my actions, I am not unnecessarily worried if I make a mistake and I am encouraged to take initiative. (Q Nos 1 - 3)
- **Role Clarity:** It means the teachers are clear about their job. They understand mission, goals and objectives of the institution. They also understand how quality is defined and measured with respect to their work in the institution.(Q Nos 23 -25)
- **Opportunity for growth:** It includes training and development also. The respondents are clear about opportunities available in the institution, discrimination if any, management's attitude towards quality in work, Equal opportunity for self development, favourable institutional policies towards self development and prompt feedback to help in self development. (Q Nos 12 – 15, 27-29).
- **Communication:** Free and unhindered communication channels available in institution, open culture, decisions based on logic, prompt feedback. (Q Nos 19 -22, 26)
- **Job satisfaction:** Recognition of good work done, satisfaction with working environment, policies and pleasure/ comfort of working with subordinates, peers and seniors. (Q Nos 7-11)

EXTRINSIC MOTIVATORS

- **Extrinsic motivators:** Comparable salary and compensation at par with industry. (Q Nos 4 – 6)
- **Job security:** Security of job in the organisation and no unnecessary worries on making a mistake. (Q Nos 16 – 18)

DEPENDENT VARIABLE

Performance: Performance of an individual depends on his/ her ability and motivation. Employee performance is judged by combining student feedback, peer review/ annual report, number of papers presented in national/ international journals and number of national/ international conferences attended in last three years. Stated algebraically the principle is:

Performance = f [ability X motivation](Aswathappa K, 2005)

Ability refers to the skill and competence of a person to complete a given task and alone is not enough. Context also plays part in performance. But it has not been considered as it remains similar for all people under same settings. Employee performance therefore has been taken as the indicator of their overall motivation level.

SUB GROUPING OF VARIABLES

The information of the respondents in terms of age, total experience, educational qualification and gender has been used to check their effect on performance (overall motivation). Accordingly the respondents have been grouped in three categories as per age and their total experience. The respondents have been grouped based on their educational qualification and gender also as shown in the Table No 1.

TABLE NO. 1: SUB GROUPING OF VARIABLES

| Variables | As Appearing in Analysis | Type | Definition/description |
|------------|-------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Gender | M F | Binary | Male Female |
| Age | Age group | Discrete | Low age group = upto 30 years of age Medium age group = between 30 and 40 years of age High age group = above 40 years of age group |
| Education | Graduate Postgraduate Miscellaneous | Discrete | Graduate= graduate in any stream including engineering Post graduate = higher degree in any discipline Miscellaneous = MBA, MPhil, PhD |
| Experience | Total experience | Discrete | Low exp group = upto 5 years of exp Medium exp group = between 5 and 10 years of exp High exp group = above 10 years of exp |

RESULTS AND DISCUSSIONS

Present work has been carried out through well structured questionnaire based survey of a large number of faculty working in private degree engineering institutions in Western India. In addition email exchanges were also carried out to elicit their views. It uses Likert scale of one to five to record strength of response. Sample size for the study is 94. It is a large sample in terms of statistics (Aczel 1999). The respondents are from a number of institutions spread over the chosen geographical area. It ensures even spread in terms of demographics in response from population.

TABLE NO. 2: SURVEY DETAILS OF TEACHERS

| | Gender | Age (years) | Experience (years) | Education |
|---------------------------|--------|-------------|--------------------|-----------|
| Male | 75 | | | |
| Female | 19 | | | |
| Age upto 30 years | | 21 | | |
| Age bet 30 - 40 years | | 28 | | |
| Age above 40 years | | 45 | | |
| Experience upto 5 yrs | | | 17 | |
| Experience bet 5 - 10 yrs | | | 14 | |
| Experience above 10 yrs | | | 63 | |
| Graduate | | | | 23 |
| Post Graduate | | | | 46 |
| Miscellaneous | | | | 25 |
| Total | 94 | 94 | 94 | 94 |

A total of 105 teachers from a large number of institutes responded to our questionnaire out of which 94 were found usable. The respondents are from 24 years of age to more than 60 years. The teaching experience varies from less than one year to over 40 years with average being 15 years. Majority of teachers have post graduate degree in engineering with 8 of them having Ph. D. (9%). It shows that the number of male teachers is much higher in engineering institutions (80%) compared to female teachers.

TABLE NO 3: DETAILS OF INTRINSIC MOTIVATORS IN TEACHERS

| Variable | Motivator | Intrinsic | | | | | | | | | |
|------------|---------------------------|-----------|------|--------------|------|------------------------|------|---------------|------|------------------|------|
| | | Autonomy | | Role clarity | | Opportunity for growth | | Communication | | Job satisfaction | |
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Overall | | 4.0 | 0.71 | 4.1 | 0.65 | 3.7 | 0.87 | 3.8 | 0.83 | 4.0 | 0.69 |
| Age | Age upto 30 years | 4.2 | 0.7 | 3.8 | 0.47 | 3.7 | 0.74 | 3.6 | 0.91 | 3.9 | 0.71 |
| | Age bet 30 - 40 years | 4.0 | 0.75 | 4.3 | 0.68 | 3.8 | 0.95 | 3.8 | 0.79 | 4.0 | 0.75 |
| | Age above 40 years | 4.0 | 0.69 | 4.2 | 0.66 | 3.7 | 0.84 | 3.9 | 0.76 | 4.1 | 0.62 |
| Experience | Experience upto 5 yrs | 4.2 | 0.75 | 3.7 | 0.50 | 3.5 | 0.92 | 3.5 | 1.11 | 3.7 | 0.77 |
| | Experience bet 5 - 10 yrs | 4.1 | 0.71 | 4.3 | 0.67 | 4.1 | 0.71 | 3.9 | 0.54 | 4.1 | 0.68 |
| | Experience above 10 yrs | 4.0 | 0.71 | 4.2 | 0.65 | 3.7 | 0.88 | 3.8 | 0.80 | 4.1 | 0.65 |
| Education | Graduate | 4.3 | 0.69 | 4.1 | 0.71 | 3.9 | 0.89 | 3.7 | 1.02 | 3.8 | 0.63 |
| | Post Graduate | 4.0 | 0.71 | 4.2 | 0.66 | 3.7 | 0.87 | 3.8 | 0.76 | 4.0 | 0.74 |
| | Miscellaneous | 4.0 | 0.73 | 4.0 | 0.58 | 3.6 | 0.87 | 3.8 | 0.81 | 4.2 | 0.62 |
| Gender | Male | 4.0 | 0.72 | 4.2 | 0.68 | 3.7 | 0.93 | 3.8 | 0.88 | 4.0 | 0.71 |
| | female | 4.1 | 0.70 | 4.0 | 0.53 | 3.9 | 0.57 | 3.8 | 0.63 | 4.0 | 0.60 |

Autonomy is higher for teachers of under 30 years age group. Teachers with less than five years experience find higher autonomy in their working whereas they find communication least effective for them. Job satisfaction is higher for teachers in the above 40 years age group. It is understandable as one grows in service one gets more academic freedom and hence satisfaction. Female teachers find opportunity for growth is higher for them. Male teachers find role clarity higher for them. Role clarity is much higher in middle age group.

TABLE NO. 4: DETAILS OF EXTRINSIC MOTIVATORS

| TABLE NO. 4: DETAILS OF EXTRINSIC MOTIVATORS | | | | | | | |
|----------------------------------------------|---------------------------|----------|------|--------------|------|-------------|------|
| | | Monetary | | Job security | | Performance | |
| | | Mean | SD | Mean | SD | Mean | SD |
| Overall | | 3.5 | 0.77 | 3.8 | 0.83 | 7.4 | 1.03 |
| Age | Age upto 30 years | 3.5 | 0.63 | 3.5 | 0.62 | 7.2 | 1.06 |
| | Age bet 30 - 40 years | 3.6 | 0.75 | 3.9 | 0.9 | 7.2 | 0.72 |
| | Age above 40 years | 3.5 | 0.83 | 4.0 | 0.81 | 7.7 | 1.13 |
| Experience | Experience upto 5 yrs | 3.4 | 0.72 | 3.5 | 0.76 | 7.1 | 1.16 |
| | Experience bet 5 - 10 yrs | 3.9 | 0.61 | 4.1 | 0.71 | 7.4 | 0.58 |
| | Experience above 10 yrs | 3.5 | 0.80 | 3.9 | 0.85 | 7.5 | 1.06 |
| Education | Graduate | 3.6 | 0.72 | 3.6 | 0.93 | 7.0 | 0.76 |
| | Post Graduate | 3.5 | 0.71 | 3.9 | 0.77 | 7.2 | 0.86 |
| | Miscellaneous | 3.5 | 0.93 | 3.9 | 0.86 | 8.2 | 1.09 |
| Gender | Male | 3.5 | 0.83 | 3.8 | 0.88 | 7.5 | 1.0 |
| | female | 3.5 | 0.49 | 3.9 | 0.63 | 7.2 | 1.14 |

Teachers in middle age group are found to be more satisfied with monetary rewards given to them. Monetary benefits are similar across all age groups. People in highest age group feel more secure in their jobs. This is natural as one goes up in ladder one feels more wanted and therefore more sure of job. Experience wise teachers feel more satisfied with rewards as the age increases. It is probably due to fact that salaries at higher levels are more. Teachers in the 5-10 years experience group is most satisfied as far as monetary benefits or job security are concerned. There is negligible difference in monetary benefits or job security as far as gender is concerned. Performance is higher for teachers with miscellaneous qualifications. It is as expected as this group includes PhDs also. Performance of male teachers is higher than female teachers. Performance improves with age. It is on expected lines as teachers gain confidence with age and publish more papers/ attend more conferences.

TABLE NO. 5: CRONBACH ALPHA VALUES OF SUB SCALES AND QUESTIONNAIRE

| SI No | Sub Scale | Value |
|-------|------------------------|-------|
| 1 | Autonomy | 0.82 |
| 2 | Role clarity | 0.77 |
| 3 | Opportunity for growth | 0.94 |
| 4 | Job satisfaction | 0.74 |
| 5 | Communication | 0.87 |
| 6 | Extrinsic motivators | 0.69 |
| 7 | Job security | 0.75 |
| 8 | Overall Questionnaire | 0.96 |

The cronbach alpha values for the whole questionnaire and the sub scales used are listed in Table No 5 above. The value of overall questionnaire is 0.96 indicating its high reliability and internal consistency. Values for all sub scales are also adequate for reliable statistical analysis.

CORRELATION AMONG THE INDEPENDENT AND DEPENDENT VARIABLES

The correlations among the eight independent variables and dependent variable have been worked out and are given in Table No 6. It shows that autonomy, communication, satisfaction and security have significant correlation with performance at high significance level. The correlations between role clarity, opportunity for growth and external motivation lose its significance because of high t value.

TABLE NO 6: PEARSON CORRELATION AMONG DEPENDENT AND INDEPENDENT VARIABLES

| | Autonomy | role-clarity | Opportunity for growth | communication | satisfaction | ext mot | security | performance |
|------------------------|----------|--------------|------------------------|---------------|--------------|---------|----------|-------------|
| Autonomy | 1 | | | | | | | |
| role-clarity | 0.494* | 1 | | | | | | |
| Opportunity for growth | 0.690* | 0.688* | 1 | | | | | |
| communication | 0.715* | 0.754* | 0.839* | 1 | | | | |
| satisfaction | 0.599* | 0.658* | 0.792* | 0.716* | 1 | | | |
| ext mot | 0.711* | 0.614* | 0.828* | 0.776* | 0.645* | 1 | | |
| security | 0.515* | 0.588* | 0.604* | 0.711* | 0.644* | 0.512* | 1 | |
| performance | 0.257* | 0.096 | 0.081 | 0.134** | 0.164** | 0.111 | 0.256* | 1 |

* $p < 0.01$

** $p < 0.05$

DIFFERENCES WITHIN SUB GROUPS IN MOTIVATORS

Kruskal Wallis test were carried out to find statistically significant differences in the medians of various motivators across the sub groups based on age, experience, educational qualifications and gender. The results are given in the Table No 7 below. Autonomy is different in the different experience groups. Autonomy also differs significantly in groups based on education, it being highest in miscellaneous group. Role clarity varies significantly with age and experience. Opportunity for growth is different for different experience groups. Job satisfaction is significantly different for groups based on education, age and experience. Gender has no significant effect on autonomy, communication, satisfaction and job security.

TABLE NO 7: RESULT OF KRUSKAL WALLIS TEST FOR DIFFERENT SUB GROUPS FOR INTRINSIC/ EXTRINSIC MOTIVATORS

| Predictor | Age group | | | Experience | | | Education | | | Gender | |
|--------------|---------------|------------------|----------------|--------------|----------------|----------------|-----------|---------------|---------------|--------|--------|
| | upto 30 years | bet 30 -40 years | above 40 years | upto 5 years | bet 5-10 years | above 10 years | graduates | postgraduates | miscellaneous | Male | female |
| Autonomy | - | - | - | ** | ** | ** | ** | ** | ** | - | - |
| Role clarity | * | * | * | * | * | * | - | - | - | ** | ** |
| Opp-growth | - | - | - | * | * | * | - | - | - | ** | ** |
| Commn | ** | ** | ** | ** | ** | ** | - | - | - | - | - |
| Satisfaction | ** | ** | ** | ** | ** | ** | * | * | * | - | - |
| Ext Mot | ** | ** | ** | ** | ** | ** | - | - | - | - | - |
| Security | * | * | * | * | * | * | ** | ** | ** | - | - |
| Performance | - | - | - | - | - | - | - | - | - | - | - |

* at 5% level

** at 10% level

ANALYSIS OF COMMENTS RECEIVED THROUGH OPEN ENDED QUESTIONS

A total of 33 comments have been received in response to open ended questions. These have been subdivided into following categories for better interpretation and analysis:

BETTER INFRASTRUCTURE AND WORKING CONDITIONS: 10 comments (30%) have been received addressing these issues. There is a definite need to improve working conditions including working environment, facilities and laboratories.

COMMUNICATION: Four teachers have raised the issue of improvement in communication. As per them communication needs improvement. It could be improved by opening various channels of horizontal and vertical communication.

GOVERNANCE: Governance has emerged as most dominant area which needs to be improved. Maximum number of comments received (12) pertain to this. This shows teachers are not happy with the way the administration is managed in institutions. A lot needs to be done to bring in transparency.

RESEARCH ORIENTATION: Two remarks address need for research orientation to improve. The number is less probably because institutes from where teachers have responded mainly handle undergraduate programmes.

INCENTIVES: Monetary incentives/ extrinsic rewards still count as may be seen from three comments received regarding these matters.

It is thus obvious that the comments strengthen the variables identified through closed ended questionnaire notably autonomy, communication, growth opportunities and better facilities including higher monetary rewards.

CONCLUSIONS

It has been observed that the intrinsic motivators like autonomy, communication and satisfaction have significant correlation with performance of the teachers. Autonomy for a teacher means planning lessons, formatting syllabus and selecting text books to recommend to their students on their own. It may also be seen that the motivators are different for teachers of different age groups. These are different even for groups based on experience, education and gender. Gender has no significant effect on motivators. Institutional heads/ promoters need to pay attention to these intrinsic motivators. There is also a general feeling that governance needs to improve considerably for teachers to be more effective. Communication also needs to improve. Institutions need to set up transparent systems in place for human resource management of teachers. Empowerment of teachers will go a long way in energizing them. These do not need much monetary resources for enhancement of these parameters. What is required is a strong will and clarity of purpose/ goal on the part of management of the institutions.

DIRECTION FOR FUTURE WORK

This is one of many attempts to assess if the fulfilment of intrinsic motivators enhances satisfaction and performance of teachers significantly. We have found some correlation among these. More studies are needed to establish causal relationship between selected independent and dependant variables. A longitudinal study with larger sample size may reveal more accurate causal relationship.

REFERENCES

1. Aczel A. (1999), "Complete Business Statistics", 4th Edition, Singapore: Irwin/McGraw-Hill.
2. Aronson L, Wilson T and Akert R (2002), "Social Psychology", 4th Edition, Prentice Hall, New Jersey.
3. Aswathappa K, "Human Resource and Personnel Management" (2005), Text and Cases, 4th Edition. Tata McGraw Hill Publishing Company Limited, N Delhi, 4th Edition.
4. Baard PP, Deci EL and Ryan RM (2004), "The Relation of Intrinsic Need Satisfaction to Performance and Wellbeing in two Work Settings", Journal of Applied Psychology, 34, pp 2045-2068.
5. Borzaga C and Tortia E (2006), "Worker Motivation, Job Satisfaction, and Loyalty in Public and Non-profit Social Services", Non-profit and Voluntary Sector Quarterly, 35(2), pp225-248.
6. Deci EL and Ryan RM (2000), "The What and Why of Goal Pursuits: Human Needs and the Self-Determination of Behaviour", Psychological Inquiry, Vol. 11, No 4, pp227-268.
7. Deci EL and Ryan RM, "The General Causality Orientation Scale: Self Determination in Personality", Journal of Research in Personality, 1985a, 19, pp109-134.
8. Deci EL, James P. Connell and Ryan RM.(1989), "Self Determination in a Work Organisation", Journal of Applied Psychology, Vol. 74, No 4, pp580-90.
9. Dysvik Anders and Kuvaas BRD (2008), "The Relationship between Perceived Training Opportunities, Work Motivation and Employee Outcome", International Journal of Training and Development, Vol. 12, Issue 3, pp138-157.
10. Filak VF, "Student Psychological Need Satisfaction and College Teacher Course Evaluation", Educational Psychology, 23(3), 2003, pp 235-247.
11. Fuhmann TD, "Motivating Employees, Advances in Dairy Technology", 18, pp 93-101.
12. Gagne Marylene and Deci EL (2005), "Self-Determination Theory and Work Motivation", Journal of Organisational Behaviour, 26, pp331-362.
13. Muchinsky Paul M (1996),"Psychology Applied to Work: An Introduction to Industrial and Organisational Psychology", Brookes: Cole Publishing Co, 5th Revised Edition.
14. Ololube NP, "Professionalism: An Institutional Approach to Teachers' Job Effectiveness in Nigerian Schools", Seventh International LInE Conference.
15. Perry JL and Porter LW(1982), "Factors Affecting the Context of Motivation in Public Organisations", Academy of Management Review, 7, 1, pp89-98.
16. Praver Max and Quint Oga-Baldwin (2008), "The Motivated Language Teacher: Work satisfaction in Japanese Context", in JALT 2007 Conference Proceedings, Tokyo, JALT, pp880-899.
17. Rasheed MI, Aslam HD, Sarwar S (2010), "Motivational Issues for Teachers in Higher Education: A Critical Case of IUB", Journal of Management Research, Vol 2, No. 2, 2010 pp 2-23.
18. Robbins Stephen P, Coulter Mary, Coulter Mary K(1998), "Management", Prentice Hall of India Private Ltd, New Delhi, 5th Edition.
19. Ryan RM and Deci EL (2000), "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-being", American Psychologist, Vol. 55, No. 1, pp 68-78.
20. Schnake ME (1983), "An Empirical Assessment of the Effects of Affective Response in the Measurement of Organisational Climate", Personnel Psychology, 36, pp791-807.
21. Tripathi BK, Singh AK & Mishra PN (2006), "Human Resource Management: An Emerging Area of Research in Institutions of Higher Learning", University News Vol 44, Aug 28-Sept 03, pp 1-7.

APPENDIX

APPENDIX 1: QUESTIONNAIRE

PART A

Name
 Gender
 Organisation
 Present position
 Present salary as per 6th pay commission, as per 5th pay commission, in between these two
 Working since in current institute (years)
 Total experience (years)
 Age(years)
 Educational qualifications
 No of publications in refereed journals in last three years
 No of international conferences attended in last three years
 No of national conferences attended in last three years
 Feedback from students
 Peer review and/ or Annual performance rating

PART B

Likert scale 1 – 5

1 strongly disagree, 2 disagree, 3 neutral, 4 agree, 5 strongly agree

| Sl No | Question | Response (Scale 1-5) |
|-------|-------------------------------------------------------------------------------------------------------|----------------------|
| 1 | I feel like doing work here | |
| 2 | I find superiors supportive of my actions | |
| 3 | They show concern for our feelings | |
| 4 | I feel organisation pays adequately for the job | |
| 5 | I find performance based incentives are sizable part of compensation | |
| 6 | I think rewards are fair | |
| 7 | I think organisation recognises good work | |
| 8 | I am satisfied with working environment in the organisation | |
| 9 | I am comfortable with peers, subordinates and superiors | |
| 10 | I am happy with policies of the organisation | |
| 11 | Our pay is comparable with other organisations | |
| 12 | The organisation provides equal opportunities for self development | |
| 13 | We are provided adequate training for self development | |
| 14 | Personnel policies of the organisation facilitate employee development | |
| 15 | My appraisal helps me to continuously improve performance | |
| 16 | I am not unnecessarily worried if I make a mistake | |
| 17 | Job security is high in the organisation | |
| 18 | Management does not discriminate on the basis of age, religion, gender, disability or native language | |
| 19 | We have free and unhindered communication channels in the organisation | |
| 20 | The organisation has open culture where we can question decisions based on logic | |
| 21 | My organisation has an effective employee feedback system | |
| 22 | Management uses the employee feedback to improve continuously | |
| 23 | We are clear about our role in the organisation | |
| 24 | I am aware of mission, goals and objectives of my organisation | |
| 25 | I understand how quality is defined & measured in my work | |
| 26 | I am kept informed of my department results vs targets | |
| 27 | There are adequate opportunities for self development | |
| 28 | The management style in my company brings out the best in employees | |
| 29 | My management's emphasis is on quality resulting in continuous improvement in services | |
| 30 | What one item organisation can/ should do to improve motivation | Open ended |
| 31 | Your suggestions for improvement of your organisational culture | Open ended |

CHANNEL MANAGEMENT IN INSURANCE BUSINESS

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ABSTRACT

A channel Management or trade channel is defined as the path or route along which goods move from producers or manufacturers to ultimate consumers or industrial users. In other words, it is a distribution network through which producer puts his products in the market and passes it to the actual users. This channel consists of: - producers, consumers or users and the various middlemen like wholesalers, selling agents and retailers (dealers) who intervene between the producers and consumers. Therefore, the channel serves to bridge the gap between the point of production and the point of consumption thereby creating time, place and possession utilities. Marketplace success for most organizations requires delivering a customer experience across multiple channels that differentiates an organization from its competition. Understanding the elements of experience that really excites different types of customers in a multi channel world is complex. But getting it right can significantly improve loyalty and value. In an increasingly challenging marketplace, the end-to-end customer experience has become the new battleground. Success in business today requires companies to deliver a superior, differentiated experience attuned to ever-changing customer needs and preferences. A company's multichannel strategy is critical because of the central role its channels must play in the information-rich, seamless and tailored experience customers are beginning to expect.

KEYWORDS

Channel Levels, Intermediaries, Strategies, New channels, Banc assurance, Challenges.

INTRODUCTION

A distribution channel is the route by which the product or service (or offer) prepared by the producer reaches the ultimate consumer (or buyer). The distribution channel bridges the gap between the producer (point of manufacture or generation of service) and the consumer (point of sale). They are the prime drivers of growth for any organization.¹ They are the enabling mechanism or a set of interdependent organizations involved in the process of making a product or service available for use or consumption by the consumer or business user.

A company's channel decisions directly affect every other marketing decision. The company's pricing depends on the distribution channels it works with. The firm's sales force and communication decisions depend on how much persuasion, training, motivation and support its channel partners need. Whether a company develops or acquires new products may depend on how well those products or services fit the capabilities of its channel members. Distribution system can be used to gain a competitive advantage. The use of intermediaries results from their greater efficiency in making goods or services available to target markets and through their contacts, specialization and scale of operation, intermediaries usually offer the firm more than it can achieve on its own. From the economic system's point of view, the role marketing intermediaries is to transform the assortments of products or services made by the producers into the assortments wanted by the consumers. They play an important role in matching demand and supply. Members of the marketing channel perform many key functions and help to complete transactions.

- Information: Gathering and distributing marketing research and intelligence information about actors and forces in the marketing environment needed for planning and aiding exchange.
- Promotion: Developing and spreading persuasive communications about an offer
- Contact: Finding and communicating with prospective buyers.
- Matching: Shaping and fitting the offer to the buyer's needs, including such as manufacturing, grading, assembling and packaging.
- Negotiations: Reaching an agreement on price and other terms of the offer so that ownership or possession can be transferred.
- Physical distribution: Transporting and storing goods.
- Financing: Acquiring and using funds to cover the costs of the channel work.
- Risk taking: Assuming the risks of carrying out the channel work.

In dividing the work of the channel, the various functions should be assigned to the channel members who can add the most value for the cost.

CHANNEL LEVELS

Companies can design their distribution channels to make products and services available to customers in different ways. Each layer of marketing intermediaries that performs some work in bringing the product and its ownership closer to the final buyer is the channel level. The number of intermediary levels indicates the length of a channel. A direct marketing channel is the one which has no intermediary levels; the company sells directly to the customers. Indirect marketing channel has one or more than one intermediaries

TYPES OF INTERMEDIARIES

A firm should identify the types of channel members available to carry out its channel work. The main course of action can be to use company's own sales force whereby the company can expand the company's direct sales force. It can assign outside salespeople to territories and have them to contact all prospects in the area or develop company's sales force for different activities. The company can hire manufacturer's agents, independent firms whose sales forces handle related products from many companies in different regions or industries to sell the products or services. The company may find distributors including financial distributors in the different regions or industries who will carry on the activities and give them exclusive distribution, good margins, product training and promotional support

LIFE INSURANCE DISTRIBUTION

Distribution of life insurance varies from the distribution of other tangible products or other forms of insurance. Various reasons can be attributed to this, mainly being the fact that life insurance is not an immediate need for the customers and thus the concept goes that life insurance is not bought but sold. This is because the possibility of death is either ignored or not considered imminent. The requirements of today which seems to be more compelling, take over the requirements of tomorrow. There is no compulsion to under the law to buy life insurance unlike the other forms of insurance. Also superstitious beliefs and cultural or religious backgrounds often interfere with the process of considering the importance of life insurance. People need to be persuaded to take up

insurance because there is a need to be concerned about the future and that life insurance is a necessity and not an option. This need arises because there is a tendency to leave everything to fate and also there are notions that insurance is not a very good investment since the yields are low and the time period involved is much more. Insurance is a concept that has to be explained and its usefulness clarified personally to the people. Each prospective buyer has his own special needs and requires specialized solution. Personalized guidance is possible when there is a face to face contact between the agent and the customer.

INTERMEDIARIES IN LIFE INSURANCE

The role played by the distributor or the producer in an insurance market is very critical. In an insurance market it is the distributor who makes the difference in terms of quality of advice for choice of product, servicing of policy post sale and settlement of claims. In a market with distinct cultural and social ethos, these conditions play a major role in shaping the distribution channel and their effectiveness.

The channels of distribution can be grouped under two heads namely,

PERSONALIZED DISTRIBUTION SYSTEM

This includes all channels like agencies of different models and brokers, banks and work site market

DIRECT RESPONSE DISTRIBUTION SYSTEMS

This covers all channels through which the client purchases the insurance directly. This segment utilizes various media such as internet, telemarketing, direct mailing, call centers and so on and is just catching up. The traditional channels of distribution are agents and brokers.

AGENTS

The companies emphasise on building a good field force, trained to get people thinking about their family's financial security and recommend appropriate policies for their needs. Currently most of the life insurance companies follow this traditional route of marketing. The tied agency channels (agents) has yielded place to multiple distribution channels. This is to primarily ensure that the reach is increased, the customer base is enlarged, to have an adequate channel mix for different segments of market and to ultimately ensure growth in volumes.

CHALLENGES

The insurance agent has to know which product will appeal to the customer and also know his competitor's products in the same space to be an effective salesman. In the current scenario, the new companies are looking for well educated and aware individuals from elite class and offer them high remuneration which may not be possible in the insurance business with its price pressures and the complexity of selling insurance. There are high attrition rates of agents due to indiscriminate agent appointment. There is a lack of knowledge of the competitive market and the inability to do intelligent comparisons with the competitors's products and educating and training these agents is a serious challenge for the insurance companies. Apart from this age and gender poses a challenge. Notions of the elder being more knowledgeable restrict the efficiency of the young salesmen. The increase in number of insurance companies in India has failed to improve the consumers' response to the insurance products. The low consumer response proves to be one of the biggest challenges faced by the agents. In spite of telemarketing departments that takes care of marketing insurance products of companies, they have not been able to capture the attention of the customers because of their inappropriate call timings and push selling strategies. There is a lack of knowledge about insurance benefits and is viewed as a sole device of tax savings by people. They are usually found to be ignorant of the benefits and are found to have an inappropriate insurance coverage.² Apart from this lack of trust in private life insurance companies form barriers for effective distribution. The people have preconceived notions about private organizations of often being involved in fraudulent activities and unethical practices. The agents also suffer from the continuous pressures from the companies to achieve high targets due to intense rivalry among the private life insurance companies in India. As a result the agents vie for the numbers game without paying heed to the customers' requirements. Moreover the agents resort to push sales instead of need based selling, thereby resulting in lower customer satisfaction. Apart from this the pay packages of the employees are found to be inadequate considering the amount of pressure they have to handle on a daily basis. The agents receive a meager amount of commission based on the number of policies sold and are constantly burdened with astronomical targets to achieve. As a result the agents lack the motivational aspect, besides the financial security, which ultimately gets reflected in their abysmal performance. The lack of penetration in rural areas poses a challenge since the rural and the semi urban areas of the country remain untouched which actually have huge potential. Most of the insurance companies set up their bases in the urban areas and developed regions of the country due to availability of the infrastructural, transportation and distribution facilities. This hampers the business opportunities of private life insurance companies with respect to the maximum GDP – contributing sector of the economy. Entry restrictions and operational barriers are the two trade barriers responsible for the underperformance of the country's insurance sector. Regulatory dilemmas like entry of foreign players through joint ventures with companies and the minimum investment required and license requirements bring in more challenges. However in spite of these they still continue to be the mostly used channel.

STRATEGIES TO OVERCOME CHALLENGES

The insurance Companies need to take up a holistic approach in addressing the impediments to insurance selling, the crucial parameter in achieving success. As a result, the insurance companies must frame and/or revamp the existing strategies, while keeping the following in mind.

(a) INNOVATIVE PRODUCTS

The companies should go for need based selling and try to promote awareness, literacy and the understanding among the people to eliminate the perception of the insurance products being a sole means of tax benefits. The insurers should focus on the financial protection and long term wealth creation and have four different types of product in their kitty, commonly known as PIPS (protection-insurance-pensions-savings). They have to gauge the needs of the customers and their financial capability before offering the product that would suit their preference. As a result the companies with their innovative products may capture the huge untapped insurance market in India

(b) CUSTOMERS

The starting point of the strategy formulation is the customers who are the driving force behind much of the changes taking place in the insurance industry. The tastes and preferences of the customers are changing at a high pace and prefer alternative investments like private equity and venture capital and guaranteed investment products. They demand products any place, anytime and anywhere. They are in a constant demand of innovative and quality services and products coupled with competitive pricings and on time services. The customers usually tend to resort to brand names since there are a large number of companies and array of financial products available. The use of technology would further cater to increasingly knowledgeable clients, setting aside the traditional agent client relationship.

(c) TECHNOLOGY

New technology challenges the traditional methods of insurers in terms of changing distribution channels, facilitating customer relationship management and enhancing customer service. The issue of online claim processing through the web based software has been the topic of focus for the insurers. In addition the use of expert system is particularly helpful for the sales force of the service organization. The knowledge based expert system can be used more directly as a training tool for the sales people. The expert system can be used as a guide when interacting with the customers and assists the salesman to match various products in congruence with the customer's necessities and risk involvements. The sales force would be able to deal with more unusual and unique customer cases thereby resulting in effective selling and reduced direct selling costs through the use of expert systems.

(d) AGENT'S SKILLS

The knowledge and skills of the agents assume significance since the traditional models are giving way to newer innovative strategies in attracting and maintaining the satisfaction level of the customers.³ The knowledgeable and skilled agents are found to spend more time with customers in building relationships. The knowledge and skill of the agent assume significance in this context. The 80-20 rule applies here i.e. 80% of the revenue comes from 20% of the sales people.⁴

(e) SELECTION CRITERIA OF AGENTS

The selection criteria used at the time of recruiting sales people help to determine the person's ability in becoming an effective salesman. Since insurance is an intangible product, the insurance firms must have a clear vision about the type of training that needs to be imparted to the salespeople. Training would make a salesperson more responsive to the pre sale, during sale, and post sale services. Technology oriented training using expert systems will be of great help.

(f) NATURE OF CUSTOMERS

This refers to the quality of customers. The strategy of the firms should not be the "law of large numbers"⁵ instead they should focus on the trust between the insurers and the customers in terms of regular payment premium and continuation of policy

(g) MARKETING STRATEGIES

An innovative and integrated marketing strategy based on the customer needs and the ever changing environment would ensure sustainable competitive advantage. Traditional business models are giving way to new and more innovative strategies. This is due to variety of factors including globalization of financial markets, demands of customers who want to obtain full range of financial services from single institution, insurers seeking to acquire new distribution channels, access to better technology, entry into new markets through affiliations and acquisitions. Moreover the companies should quickly adapt to the changing demands of the customer.

(h) ALTERNATIVE DISTRIBUTION CHANNELS

The development of alternate channels like direct marketing, work site marketing etc. will create awareness about an insurance product which in turn may help the individual agents as a prospecting tool. It is a natural inclination on advice of a financial advisor before investing high amounts of premiums. And hence, the importance of their role in the financial world.⁶ The emphasis has shifted from single unit sale towards multiple products selling. As part of their marketing strategy, the private life insurance companies resort to several distribution channels such as banks, brokers, corporate agents and other intermediaries to reach out to the masses through out the length and breadth of the country. The use of sophisticated and user friendly technology enabled the consumer to have a wider array of information about the financial products before going for the product.

BROKERS

Brokers are the intermediaries who represent the customer and sell the products of more than one company. The brokers in the urban area can attract the elite and the upper middle class customers very well. They help the clients to find the best product suited to them and can effectively address the mind block faced by the public companies. Insurance brokers are professionals who assess the risk on behalf of a client, advise on the mitigation of that risk, identify the optimal insurance policy structure, bring together the insurer and the insured, carry out the preparatory work to insurance contracts and where necessary, assist in the administration and performance of such contracts, in particular when claim arises. The brokers are retained by the insured and their prime responsibility lies towards the insured unlike the agents. The main difference between the brokers and the agents is the that the agent acts on behalf of one insurer and can offer what his insurer has to offer whereas broker acts on behalf of his client and is not tied to an insurer. While brokers have done well and captured a good share in the non-life business their contribution has been rather insignificant on the life side.⁷

CHALLENGES

The challenge here lies in establishing regulations that protect the customer and attract the right players into the brokerage market rather than creating another middlemen segment eroding the premium.

NEW CHANNELS OF DISTRIBUTION**BANKS**

The banks (especially public sector) have become one of the foremost channels of distribution and are referred to bancassurance. The bancassurance is the distribution of insurance products through the bank's distribution channel. It is a phenomenon where in the insurance products are offered through the distribution channel of the banking services along with a complete range of banking and investments products and services. In simple terms, bancassurance tries to exploit synergies between both the insurance and banking operations. The main functions of banking can be described as resource mobilization, credit dispensation, risk management and fund management where as the main functions of insurance can be categorised as risk management, fund management and reinsurance. In particular life insurance companies deal with savings and investment and so do the banks. Thus there is synergy between the operations of the two. Banking is fully governed by RBI while the insurance sector is governed by the IRDA and bank assurance being the combination of two sectors is governed by both the regulators and each of them have given guidelines for the functioning .

RBI Guidelines for banks entering into insurance sector provides three options for banks. They are,

- Joint ventures will be allowed for financially strong banks wishing to undertake insurance business with risk participation.
- For banks which are not eligible for this joint venture option, an investment option up to 10% of the net worth of the bank or Rs 50 crores, whichever is lower, is available.
- Finally any commercial bank will be allowed to undertake insurance business as agent of insurance companies. This will be on a fee basis with no risk participation.

IRDA Guidelines for the bancassurance are,

- Each bank that sells insurance must have a chief insurance executive to handle all the insurance activities.
- All the people involved in selling should undergo mandatory training at an institute accredited by IRDA and pass the examination conducted by the authority.
- Commercial banks including the co-operative banks and regional rural banks may become corporate agents for one insurance company.
- Banks cannot become insurance brokers.

Bancassurance can be a sure shot way to reach a wide base of customers provided it is used sensibly. Bancassurance is a mutually beneficial situation as banks can expand their range of products on offer to customers and earn more, while the insurance company profits from the exposure at the branches and the security of receiving timely payments. The products that are likely to sell well through bancassurance are commoditised term and annuity products. Also those products that combine insurance and banking needs help to create demand such as a loan cover, term assurance and simple products that can be sold over the counter at banks. Apart from this the banks with rural area network helps to fulfill rural and social obligations imposed by the IRDA.

BANCASSURANCE CONVERGENCE STRATEGIES

The success of bancassurance depends on the development and successful execution of the collaborative strategies. The strategies to be adapted should primarily revolve around the customer and be directed towards enhancing the value of the customer.⁸ It implies that the strategy execution should eventually lead to customer attraction and retention. Technology adaptation is one strategy that is gaining significant coverage for varied reasons. As the level of technology is enhanced in banks, they are able to develop new operating capabilities, thereby offering unprecedented service to the customers. Data management systems enable maintenance of seamless data in an integrated fashion. Tailor made technological applications can then be used to touch the business processes in the collaboration process thereby ensuring faster execution through automated services. The reduced costs and enhanced revenues will confer competitive advantage to the technology adopters. On the Indian front, SBI life has reaped the maximum benefits out of bancassurance. Taking advantage of its branch network, it generated almost 39% of its total premium in 2006-07 through bancassurance route. Thus, bancassurance has its own share of advantages and disadvantages. If properly executed, the concept of one-stop shop for financial products is bound to be a reality.⁹

WORK SITE MARKETING

Work site marketing channel is used to tap one of the biggest markets. With changes in human resource management policies and compensation packages, group products or work sites products do have a definite market. The advantages of work site marketing are

- Captive customer base
- Potential to sell both individual and group insurance
- High trust factor
- High volume

CHALLENGES

The challenges here would be to sell customized, cost effective product with good after sales service. This will bring continued business to the insurance company. Technology has a key role to play in work site marketing to ensure cost benefits.

TABLE 1: TIE UPS BETWEEN THE LIFE INSURANCE COMPANIES AND BANKS

| Insurance company | Banks |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HDFC Standard Life | Union bank of India, Indian bank, HDFC bank, Bank of Baroda, Saraswat bank |
| ICICI Prudential | Federal bank, ICICI bank, Bank of India, Lord Krishna bank, South Indian bank, and many other cooperative banks |
| Birla Sunlife | Citi bank, IDBI bank, Catholic Syrian bank, Development Credit bank |
| AVIVA | ABN amro, American bank, Canara bank, Lakshmi Vilas bank, Centurion bank of Punjab, IndusInd bank, Punjab and Sind bank and 24 others including the cooperative banks |
| BAJAJ Allianz | Standard chartered bank, syndicate bank |
| SBI Life | SBI, BNP Paribas |
| Tata AIG Life Insurance co. | HSBC Bank, United Bank of India |
| Ing Vysya Life Insurance | ING Vysya bank |
| LIC | Andhra bank, Dena bank, Corporation bank, Indian overseas bank, Allahabad bank, Vijaya bank, Central bank of India |
| Metlife | UTI bank, Dhanalakshmi bank, J&K bank, Karnataka bank |

Source: Banks and Insurance Companies' websites

INTERNET

The use of this channel is restricted since it requires a lot of face to face persuasion. The insecurity attached to the transactions over the net are another inhibiting factor. While the technology capability is there, improvements in band with and infrastructure are needed. The products need to be simpler with auto underwriting facility

CHALLENGE

These channels by themselves will not be able to overcome the mindset of the people, but rather can only be enablers for the human channels.

INVISIBLE INSURER

In this model, the insurance company or its representative is not the entity marketing the products. The insurance cover is sold by an automobile/credit card company as an add-on product leveraging the brand of the retailer. The risk is carried by the insurance company which underwrites it. This models can be adapted in all market segments for the different lines of business. The arrangements is attractive because of low distribution cost and captive customer cost

RETAIL ASSURANCE

'Insurance products are being sold at retail outlets.' This news should convey the message that Indian insurance industry is really boiling. Not only the insurance players but also their distribution partners are very much interested in this kind of game plan. The office of the chief post-master general, Chennai has mooted the idea of selling some of the insurance products through post offices. With 1.53 lakh post offices in the country, more than twice the number of bank branches, it can really be a channel with very great potential. Medicine Shoppe, a pharma chain store group and Bajaj Allianz have tied up to provide free insurance cover of Rs.2/- on every purchase of pharma products worth Rs.1/-. This scheme is open to 5-25 years age group, and distributed through its 40 outlets. Also insurance selling has gone the 'corner shop' way, with TATA-AIG's plans to sell the policies at petrol bunks.

REFERENCES

1. Viswanathan S, Role of Distribution Channel- A Paradigm Shift, Irda Journal, December 2006, pg.20.
2. Sandeep Ray Chaudari and Joy Chkraborty, Private Life Insurance Companies in India: Strategizing Ways to Overcome the Product-Selling Challeges, The Icfai Journal Risk and Insurance, Vol:V, No.2, April 2008, pp. 9-12.
3. Joseph Mathew, Stone George and Anderson Krista, Insurance Customers' Assessmnt of Service Quality: A Critical Evaluation, Journal of Small and Enterprise Development, Volume 10, No. 1, pp. 81-92.
4. Ainscough Thomoas L, DeCarlo Thomos, Bellenger Danny and Barksdale Jr. Hiram, Relationship Selling Behaviours: Antecedents and Relationship with Performance, Journal Business and Industrial Marketing, 2000, Vol. 15, No. 2-3, pp. 141-153.
5. Powers Michel R, Insurance Paradox, The Journal of Risk Finance, 2006, Vol. 7, No.2, pp.113-116.
6. Ramesh D V S, Retaining a Life Policy- Distributor's Ethics, Irda Journal, December 2006, pg.18.
7. Sai Kumar V, Life Insurance Products in India- Issues in Distribution, Irda Journal, December 2006, pp.22-23.
8. Krishnaphani Kesiraju, Bancassurance- Disstribution by Convergence in Global Insurace Trends and Issues Edited by Karuna, The Icfai University Press, 2005, pp. 134-135.
9. Divya Gupta and Balaji S, Polygamous Bancassurance; A Boon or Bane, Insurance Chronicle, Vol. VIII, Issue: VI, June 2008, pg. 25.

MANAGEMENT INFORMATION SYSTEM APPLIED TO MECHANICAL DEPARTMENT OF AN ENGINEERING COLLEGE

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ABSTRACT

Information systems play a crucial role in the management of any contemporary enterprise such as small or medium or large organization, profit making or a social service setup, a public or a private sector undertaking, a manufacturing or a service organization, a local or a global corporation and an upcoming or an established business house. The fast changing scene of liberalization, competition and globalization combined with a never before seen emphasizes on quality, timelessness, innovation, customer orientation and efficiency information across the globe. This work was carried out at mechanical engineering department of a reputed engineering college. In this work an attempt has been made to develop MIS for listing out the student names who have less than 75% attendance, maintaining the internal assessment marks of the students and the details of all the faculty members like who is handling which subject. The software is designed by using Oracle Server as backend and Visual Basic as front end. After entry of attendance of all the students in different subjects, the software calculates the percentage of attendance of all the students so that it is easy for us to see who have less than 75% attendance. Similarly after entry of internal assessment marks of all the students of different subjects, the software calculates the average of best two. It also gives the details of the faculty handling different subjects. This report can be transferred on to a hard copy. Hence by using this software, a lot of time can be saved and the mistakes which could happen by oversight can be eliminated.

KEYWORDS

Management, Information, System, Applied, Attendance, IA Marks.

1. INTRODUCTION

MIS is not new, only its computerization is new. Before computers, MIS techniques existed to supply managers with the information that would permit them to plan and control operations. The computer has added one or more dimensions such as speed, accuracy and increased volumes of data that permit the consideration of more alternatives in a decision. The current challenge in information processing is to use the capability of the computer to support knowledge work including managerial activities and decision-making. The wide variety of computer resources are used to perform transaction processing, provide processing for formal information and to report organization's management information system. The scope and purpose of MIS is better understood if each term is defined.

- Management has been defined as the processes or the activities that describe what managers do in the operation of their organization such as plan, organize, initiate and control operations.
- Information consists of data that have been collected, retrieved, processed or otherwise used for informative or inference purposes, argument or as a basis for forecasting or decision-making.
- System is a group of inter-related components working together towards a common goal by accepting inputs and producing outputs in an organized transformation process.

Thus, "Management Information System" (MIS) is an integrated user machine system for providing information to support operations, management and decision making functions in an organization. The system utilizes computer hardware and software, manual procedures, models or analysis, planning, control and decision making and database.

Management information can be categorized into three main areas such as

- a) Strategic Planning Information.
- b) Management Control Information or Tactical Planning Information.
- c) Operational Information.

a) Strategic Planning Information: Relates to top management tasks of deciding on objectives of the organization, on the levels and the kinds of resources required to attain the objective and on the policies that govern the acquisition, use and disposition of resources.

b) Management Control Information or Tactical Planning Information: Shed light on goal congruence, it helps managers to take those actions which are in the best interests of the organization; it enables managers to see that resources are being used efficiently and effectively in meeting the organizational goals.

c) Operational Information: Pertains to the day to day of the organization and helps assure that specific tasks are performed effectively and efficiently.

1.1 IMPORTANCE OF MIS

The study of MIS is important both to the computer science and management students. A student of management who undergoes a course in MIS will be equipped with the technical foundations of computing. As MIS is a synthesis of the essence of various topics in computer science, it helps the management students in developing information systems independently.

MIS also provides a balanced perspective into the exciting applications of computers in the broad area of business. Computers are making inroads into every activity of human endeavor. Thus, a basic knowledge of information system is almost becoming a generic skill needed by every professional. To the top management, MIS is a tool to gain insight into the overall health of the organization itself.

The recent information revolution has pushed information system to the center stage of modern management systems. Getting a competitive advantage, balancing market strengths, increasing market share, acquiring more attractive finances etc are all made possible in numerous ways by the introduction of information technology. Understanding the working and appreciating the impact of information systems on the contemporary and further business are prerequisites to the education of today's computer and management students.

2. ABOUT THE COLLEGE

The college started in the year 2006 being one of the top ten upcoming colleges in south karnataka region. The progress of the institution was so rapid that, today it is one of the premier institutions in the state offering 9 undergraduate, 8 post graduate and 4 doctorate degrees in many fields of engineering. the college has a intake of 1300 in first year and the total strength is more than 6000. The strength of this institution lies in its qualified and dedicated faculty, well equipped laboratory and workshops, well stocked library and excellent computer center.

2.1 INTRODUCTION TO MECHANICAL ENGINEERING DEPARTMENT

The undergraduate program in mechanical engineering established in 2006 presently running with 3 sections of 60 students each. Two Post graduate program established in 2010 of 18 students each. The core curriculum consists of basic courses in the Thermal Engineering, Design Engineering, Manufacturing Engineering and Management Sciences. The advance courses are offered as electives in a wide range of latest areas. The highly qualified faculties are actively engaged in research activities.

2.2 REASONS TO APPLY MIS

- The maintaining of attendance all the students of the department..
- Calculation of average Internal Assessment Marks all the students of the department.
- Calculation of percentage of attendance of all the students of the department.
- To sort out the students names who have shortage of attendance.
- The details of the entire faculty in the department handling various subjects for different sections in UG and PG courses.

All the above points which are listed is a time consuming and tedious job to the faculty as well as for the Head of the Department to keep track of all the information about the department. Hence a need has been felt to overcome these difficulties by designing Management Information System package which helps to overcome these tedious job.

2.3 OBJECTIVES OF THE STUDY

The objectives of the project are, to design and develop a Management Information System package for

- Maintaining and updating the student details.
- Maintaining the attendance statistics.
- Maintaining the internal assessment marks statistics.
- Maintaining the details of the entire faculty handling different subjects for UG and PG courses.

3. METHODOLOGY

The various steps and the methodology followed in the course of this project are explained below.

3.1 REQUIREMENT ANALYSIS

It involves the determination of what exactly the end user wants from the system. Before embarking upon the design and development of a MIS, quick study was made to ascertain whether such a system would be of any help to the department of the college. In this process a consultation was made with various staff members and head of the department of the college to study their requirements and need for the information. Hence by studying the existing system in the institution and identifying the various information required has initiated to develop MIS for the mechanical department of the college which helps the end users like staff members and head of the department in referring the details of the students through the software developed.

3.2 DATABASE DESIGN

A database is a collection of related data i.e. known facts that can be recorded and that has implicit meaning. Database has the following properties

- A database logically consists of collection of data with some inherent meaning.
- A database is designed, built and populated with data for a specific purpose. It has an intended group of users and some preconceived application in which these users are interested.
- A database may be generated and maintained manually or by machine. A computerized database can be created and maintained by database management system or application programs (written specifically for the task) or by a combination of the two.
- To successfully retrieve information from a database here, a combination of Microsoft access to create and maintain the database and a set of application programs written in visual basic to manipulate the database is chosen.
- Both the database and software is referred to as a database system. In the process of designing an efficient database system.

3.3 SOFTWARE SELECTION

An integrated set of computer programs for storing and retrieving data from a database is called a DBMS (Database Management System). It is the software used for management, maintenance and retrieval of data stored in a database. It collectively provides an organization with all the capabilities of a centrally managed system.

Visual Basic is a popular rapid application development tool (RAD) and a full fledged programming language used for developing windows application programs. It is widely used as a powerful front-en tool for writing client applications. The data is processed on a front end (client) but stored and served by the powerful back end (server). The backend is developed using Oracle server and the program is written in Visual Basic. The backend will consist of the various data about the students and also it has certain queries which retrieve data in a certain format and criteria. The frontend of the application written in Visual Basic consists of user interfaces and the controls, which help the user to retrieve, update or edit the required data.

In this work database system is designed to operate as follows

- Details of the students are entered in the student details form.
- Details of the faculty of the department are entered in the faculty details form.
- Maximum number of classes and the number of classes attended are entered in the attendance form which will have the details of students as entered in the student details form.
- A report will be generated which shows the details of the students having shortage of attendance.
- IA marks should be entered in the IA marks format which will have the details of the students as entered in the first form.
- Then the software will calculate the average of the best two tests and finally the report will be generated for the average marks.
- A report will be generated which shows the details of faculty handling the subjects for UG and PG courses.

4. PROPOSED MANAGEMENT INFORMATION SYSTEM FOR MECHANICAL DEPARTMENT OF THE COLLEGE

This package is designed and developed using Oracle Server and Visual basic. The high lights of the package are

- Each menu can be executed from main menu.
- For critical data input suitable validation of data is incorporated in program. Thus wrong data entry or duplication of data is kept under control.
- The deletion and data is kept fully under user's control.
- Messages are displayed to ease the use of package.

The package consists of 6 Menus

1. Student Details Menu.
2. Faculty Details Menu.
3. Attendance Menu.
4. IA Marks Menu.
5. Reports Menu.
6. Subject Details Menu.

| MAIN MENU | |
|------------------------|------------------------|
| STUDENT DETAILS | FACULTY DETAILS |
| ATTENDANCE | IA MARKS |
| REPORTS | SUBJECT DETAILS |
| EXIT | |

4.1 STUDENTS DETAILS MENU

This menu allows the user to enter the details of students such as Course, Name, Register Number, Semester, Section etc, which is shown below:

| STUDENT DETAILS MENU | |
|----------------------|----------------------|
| NAME: | <input type="text"/> |
| COURSE: | <input type="text"/> |
| REGISTER.NO: | <input type="text"/> |
| SEMESTER: | <input type="text"/> |
| SECTION: | <input type="text"/> |
| SAVE | MODIFY |
| DELETE | EXIT |

4.2 FACULTY DETAILS MENU

This menu allows the user to enter the details of Faculty such as Name, Employee ID, Qualification, Designation etc, which is shown below:

| FACULTY DETAILS MENU | |
|-----------------------|----------------------|
| NAME: | <input type="text"/> |
| EMPLOYEE ID: | <input type="text"/> |
| QUALIFICATION: | <input type="text"/> |
| DESIGNATION: | <input type="text"/> |
| SAVE | MODIFY |
| DELETE | EXIT |

4.3 ATTENDANCE MENU

This menu allows the user to enter the attendance details of students for different subjects such as maximum number of classes held and the number of classes attended by the student. The software will calculate the percentage of attendance in that subject, which is shown below:

| ATTENDANCE MENU | | | |
|---------------------|----------------------|------------------|----------------------|
| NAME: | <input type="text"/> | COURSE: | <input type="text"/> |
| REGISTER.NO: | <input type="text"/> | | |
| SEMESTER: | <input type="text"/> | | |
| SECTION: | <input type="text"/> | | |
| SUBJECT: | <input type="text"/> | | |
| MAX: | <input type="text"/> | ATTENDED: | <input type="text"/> |
| | | %AGE: | <input type="text"/> |
| SAVE | | MODIFY | DELETE |
| | | EXIT | |

4.4 IA MARKS MENU

This menu allows the user to enter the IA marks details of students such as maximum marks and the marks obtained by the student for different subject in number of tests. The software will calculate the average of the test marks in that subject, which is shown below:

| IA MARKS MENU | | | |
|---------------------|----------------------|------------------|----------------------|
| NAME: | <input type="text"/> | COURSE: | <input type="text"/> |
| REGISTER.NO: | <input type="text"/> | SEMESTER: | <input type="text"/> |
| SEMESTER: | <input type="text"/> | | |
| SUBJECT: | <input type="text"/> | TEST: | <input type="text"/> |
| MAX: | <input type="text"/> | OBTAINED: | <input type="text"/> |
| | | AVG: | <input type="text"/> |
| SAVE | | MODIFY | DELETE |
| | | EXIT | |

4.5 SUBJECT DETAILS MENU

This menu allows the user to enter the details of subjects that student has to study in their respective semester such as Course, Semester, Section, Subjects he has to study and faculty handling the different subjects, which is shown below:

| SUBJECT DETAILS MENU | |
|----------------------|----------------------|
| COURSE: | <input type="text"/> |
| SEMESTER: | <input type="text"/> |
| SECTION: | <input type="text"/> |
| SUBJECT: | <input type="text"/> |
| FACULTY: | <input type="text"/> |
| SAVE | MODIFY |
| DELETE | EXIT |

4.6 REPORTS MENU

This menu allows the user to view or to print the details of students such as attendance percentage and IA marks in different subjects of their respective semester, which is shown below

| REPORTS MENU | | | | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| COURSE: | <input type="text"/> | SEMESTER: | <input type="text"/> | |
| SECTION: | <input type="text"/> | SUBJECT: | <input type="text"/> | |
| ATTENDANCE: | RANGE: | <input type="text"/> | TO | <input type="text"/> |
| IA MARKS: | RANGE: | <input type="text"/> | TO | <input type="text"/> |
| VIEW | PRINT | MODIFY | DELETE | EXIT |

To implement the MIS to any department in the institution, it is necessary to study the existing system used for the purpose. Any suitable database management system is used to design the Management Information System as per the requirement. The development of the system starts after deciding the needs of the end user and keeping in view the overall objectives of the system. Once the Management Information System is developed based on the requirement, it is implemented along with the existing system for some period of time. After completely familiar with this system, the old system is stopped and new system is continued by the institution. The success of the developed Management Information System depends on the users how best they will use the system, learn the system, adopt the system and switchover from the existing system to the new system.

5. CONCLUSION

It helps the department heads to keep on hand information about the student's attendance, internal assessment marks and details of all the faculty of the department. Any updating and modification can also be done easily. The details of the students can be entered in student details form once and the same data can be used for entering attendance and IA marks for each subject in respective forms. After the entry of attendance for all the students in all the subject, the software calculates the percentage of attendance and generates a report which will have register number and percentage of attendance of those students who have less than 75% attendance. The report can be transferred on to a hard copy.

When the IA marks of all the students are entered for all subjects and all three tests, the software calculates the average of best two and generates a report which will have register number, the average marks of all the students in all the subjects. This can be transferred on to a hard copy. Hence by using this software, a lot of time can be saved and the mistakes which could happen by oversight can be eliminated.

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REFERENCES

1. A Muralidharan "Mangement Information Systems", A.I.C.T.E Continuing Education Program, Jan 1996.
2. Bo Yan, Yiyun Chen, Guangwen Huang, "Design of Tax Management Information System", IEEE-2009.
3. Davis, Gordan.B, "Management Information Systems", Mc.Graw Hill (International Editions) Book Company Singapore, 1985.
4. George M Scott, "Principles of Management Information System", McGraw Hill Book Company Ltd., New Delhi, 1986.
5. Gordon B Davis, "Management Information System", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2001.
6. Goyal D.P, "MIS Concept and Application", Ist Edition Deep and Publications, 1994.
7. Jamilin Jais, Zarina Abdul Rahman, Suhaila Abdul Hamid, Zailani Ibrahim, Mohd. Zaliman Mohd Yusoff, "Management Information Systems in Higher Learning Institutes of Malaysia: An Overview", IEEE-2000.
8. K Venkateshwara Alias Blaji "Management Information System in Maintenance", ISTE Summer School on Maintenance Engineering. 1991.
9. Kapur, Jagadish C "Management Information Systems: A conceptual Frame Work", Part-I, Indian Management, 1982.
10. Kapur, Jagadish C "Management Information Systems: A conceptual Frame Work", Part-II, Indian Management, 1982.
11. Kenneth C.Laudon, Jane P. Laudon, "Management Information System", America: Prentice Hall, pp. 27-28,2006.
12. McLeod R, Schell G, "Management information systems", Prentice Hall PTR, Paramus, USA, 2003.
13. Murdick R G & Joel E Ross "Information System for Modern Management", Prentice Hall of India, 1997.
14. O'Brien, James A. "Management Information System: A Managerial End User Perspective", Galgotia Publications (P) Ltd., Delhi 1991.
15. S. Chakrabarti & S. Mitra & B. Bhattacharyya "Development of a management information system as knowledge base model for machining process characterisation", Springer-Verlag London Limited pp. 1088-1097, 2007
16. S. Sadagopan, "Management Information Systems", Prentice Hall of India, 2000.
17. W S Jawadekar, "Management Information System", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2000.
18. Weijian Huang; Hua Zhao; Liang Huang; Wei Du, "Management Information System Applied in the Logistics"IEEE-2010.
19. Yuemin Zhou, Bingfang Wu, Jihua Meng, "Design and Implementation of Small Watershed Management Information System", IEEE-2005,
20. Zhang Li, PAN Zhichen, The Research and Application of National Team's Information Management System, Journal of TUS, vol.21, pp.470-471, Dec 2006.

A STUDY ON THE PERCEPTIONS OF EMPLOYEES ON LEADERSHIP CONCEPTS AND CONSTRUCTS IN LIC

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ABSTRACT

The leadership is widely recognized as having crucial importance for performance and success. Indeed, there is a wide range of issues relating to supporting and promoting the provision of effective leadership in public sector organizations, including those around recruitment, roles and responsibilities, retention, participation, succession planning, governance, continuing professional development and reward. In public sector organizations employees used to enjoy the privilege of job security and they least bother about the hierarchical instructions in many a times. The career development is based on seniority and reservations and less emphasis on performance and achievements in public sector organizations. In the above context the researcher has selected one public sector organization (LIC) to examine how the employees of LIC perceive the leadership concepts and constructs in their organization. LIC is one among the successful public sector organizations in India enjoying 80% market share in life insurance sector. The success of any organization is attributed to the effectiveness of leadership. The data and information are collected from the different districts of Coastal Andhra Pradesh, viz., Guntur, Krishna, Nellore and Prakasam have been purposively selected for the present study. There are 10 branches of LIC in Guntur district with 750 employees, 11 branches in Krishna district with 825 employees, 7 branches in Nellore district with 450 employees and 6 branches in Prakasam district with 275 employees. The data and information have been collected from 300 employees which is 13.04 per cent of the employees of LIC. In order to study employees' perception about leadership concepts and constructs in LIC, the factor analysis has been employed. The principal component method of factor analysis is carried out with Eigen value greater than one through varimax rotation

KEYWORDS

retention, hierarchical instructions, career development, leadership, life insurance.

INTRODUCTION

Leadership is essentially the core and spirit of organizations. As the people in charge, they not only manage the organization's affairs but also deal with the general employees face to face. Entrusted with the task to communicate organizational goals, visions and ideas to employees, leaders are responsible for maintaining and implementing organizational rules and systems and even have the final say on promotion, retention and dismissal.

The five aspects of leader competence are technical competence; interpersonal skills; judgment, conceptual skills and character. They believed that character was the vital element that determines leader efficacy as he claimed that he had never found a person to be rejected due to technical incompetence but had seen people rejected because of a lack of character (Eagly 1992)

In order for managers and leaders to display the competencies acquired through training and development they required the support and encouragement of their own managers. Thus, simply acquiring a competency did not necessarily mean that they would use it and nor does the absence of a competency make you 'incompetent'. Indeed, studies of executive derailment actually showed that excessively high levels of a 'beneficial' competency can lead to failure; thus excessive team orientation can turn to indecisiveness, integrity to zeal and global vision to lack of local focus (Boyatzis 1993)

Leadership is significant in performance management and employee involvement in context of TQM for gaining the competitive benefit. Constant, clear and quality leadership was necessary for success. Therefore it was required that quality leadership should be deemed as a strategic aim of the organization. Quality in today's era was the continuous improvement therefore needed change at continuous basis. Change cannot be carried out without effective leadership which provided steadfastness and persistence against the confrontation to the change inside an organization Abbasi *et. al.*, (2011),

Leaders needed to pass leadership to others in the group or modify their approach and became more tasks focused when involved in tough negotiations or when the business needed that approach. This was similar to the situational or contingency approaches to leadership. This model stressed the need for effective leaders to change and adapt their normal style depending on the needs of the business at a particular time, while considering the demands of a particular situation or circumstance (Barling 1996)

Leadership styles and management methods across the world are diverse and are influenced by specifications dominant in the environment. Different studies and researches in different countries have emphasized compliance of leadership style in terms of success conditions. The influencing factors of leadership styles includes moral behavior, motivation, achievement oriented approach, experience, knowledge, directive and participative approach, supportive in nature and situational factors Woodbine and Liu (2010)

The achievement in organizational performance was the outcome of prosperous and conscious leadership, while it at other times may be the outcome of poor and deficient leadership. The effective leadership had impact on corporate decision making and business behavior in the organizations (Svensson and Wood 2006).

METHODOLOGY

Among the different districts of Andhra Pradesh, the Coastal Districts of Guntur, Krishna, Nellore and Prakasam have been purposively selected for the present study. There are 10 branches of LIC in Guntur district with 750 employees, 11 branches of LIC in Krishna district with 825 employees, 7 branches of LIC in Nellore district with 450 employees and 6 branches of LIC in Prakasam district with 275 employees. The data and information have been collected from 300 employees which is 13.04 per cent of the employees of LIC.

In order to study the leadership concepts and constructs in LIC, the exploratory factor analysis has been employed with principal component extraction with oblique rotation. The factor analysis can be expressed as:

$$Z_{ij} = a_1 f_{1j} + a_2 f_{2j} + \dots + a_m f_{mj} + e_{ij}$$

Whereas,

Z = Leadership Concepts and Constructs / Effectiveness of Leadership Styles

a = Factor Loadings

f = Factor Score

e = Residual term accounting for Errors or other Source of Variation.

To assess the internal consistency of scale "Coefficient of Internal Consistency (Cronbach alpha) has been computed. The formula is:

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

Where:

α = Cronbach alpha

K = Number of components (K-items or test lets).

σ_X^2 = Variance of the Observed Total Test Scores for the Current Sample.

$\sigma_{Y_i}^2$ = Variance of Component i for the Current Sample.

DATA ANALYSIS

The leadership concepts and constructs are measured in the five point Likert scale varying from strongly agrees to strongly disagree.

PROFILE OF LIC

Life Insurance Corporation of India is one among the successful public sector organization in India with 80% market share in life insurance sector. On January 1956, in keeping with the then prevailing political and economic philosophy of socialism, 245 Indian and foreign insurers and provident societies operating in India were taken over by the Central Government by an Act of parliament. Today LIC functions with 2048 fully computerized branch offices, 109 divisional offices, 8 zonal offices, 992 satellite offices and the corporate office. The recruitment process of LIC is direct recruitment and the human resources of the organization are considered effective which contributed for the success of their organization.

SOCIO-ECONOMIC CHARACTERISTICS OF EMPLOYEES

Out of 300 employees of LIC, about 80.00 per cent of employees are males and the rest of 20.00 per cent of employees are females. Out of 300 employees of LIC, about 33.33 per cent of employees belong to the age group of 36-40 years followed by 41-50 years 26.67 per cent, 31-35 years 16.00 per cent, 26-30 years 13.3 per cent, 21-25 years 6.67 per cent and more than 50 years 4.00 per cent.

Out of 300 employees of LIC, about 25.33 per cent of employees belong to the monthly income group of Rs. 25001-30000 followed by Rs. 30001-35000 24.00 per cent, Rs. 20001-25000 21.33 per cent, more than Rs. 35000 16.67 per cent, Rs. 15001-20000 8.00 per cent and Rs. 10001-15000 4.67 per cent. Out of 300 employees of LIC, about 89.33 per cent of the employees are married while the rest of 10.67 per cent of employees are unmarried.

Out of 300 employees of LIC, about 47.33 per cent of employees are educated up to post graduation followed by graduation 29.33 per cent, higher secondary 10.00 per cent, secondary 6.67 per cent, professional 4.00 per cent and diploma 2.67 per cent. Out of 300 employees of LIC, about 33.00 per cent of employees are HGA followed by assistant (28.00 per cent), AAO (22.67 per cent), AO (12.00 per cent), DO (2.67 per cent) and BM (1.33 per cent). The following table shows the socio-economic characteristics of employees of LIC:

TABLE-1: SOCIO-ECONOMIC CHARACTERISTICS OF EMPLOYEES OF LIC

| Variables | Respondents(N=300) | | Variables | Respondents(N=300) | |
|--------------------|--------------------|----------|----------------------------------|--------------------|----------|
| | Number | Per Cent | | Number | Per Cent |
| Gender | | | Educational Qualification | | |
| Male | 240 | 80.00 | Secondary | 20 | 6.67 |
| Female | 60 | 20.00 | Higher Secondary | 30 | 10.00 |
| Age(years) | | | Graduates | 88 | 29.33 |
| 21-25 | 20 | 6.67 | Post Graduates | 142 | 47.33 |
| 26-30 | 40 | 13.33 | Diploma | 8 | 2.67 |
| 31-35 | 48 | 16.00 | Professional | 12 | 4.00 |
| 36-40 | 100 | 33.33 | Monthly Income(Rs.) | | |
| 41-50 | 80 | 26.67 | 10001-15000 | 14 | 4.67 |
| >50 | 12 | (4.00) | 15001-20000 | 24 | 8.00 |
| Designation | | | 20001-25000 | 64 | 21.33 |
| HGA | 100 | 33.33 | 25001-30000 | 76 | 25.33 |
| AAO | 68 | 22.67 | 30001-35000 | 72 | 24.00 |
| AO | 36 | 12.00 | >35000 | 50 | 16.67 |
| Assistant | 84 | 28.00 | Marital Status | | |
| DO | 8 | 2.67 | Married | 268 | 89.33 |
| BM | 4 | 1.33 | Unmarried | 32 | 10.67 |

FACTOR ANALYSIS FOR PERCEPTION OF LEADERSHIP CONCEPTS AND CONSTRUCTS OF EMPLOYEES OF LIC

In order to study employees' perception about leadership concepts and constructs in LIC, the factor analysis has been employed. The principal component method of factor analysis is carried out with Eigen value greater than one through varimax rotation and the results obtained through rotated component matrix are presented in Table 2.

TABLE-2: FACTOR ANALYSIS FOR PERCEPTION ABOUT PERCEPTION OF LEADERSHIP CONCEPTS AND CONSTRUCTS BY EMPLOYEES OF LIC

| Leadership Concepts and Constructs | Rotated Factor Loadings on | | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------|----------------------------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|----------|-----------|
| | Factor I | Factor II | Factor III | Factor IV | Factor V | Factor VI | Factor VII | Factor VIII | Factor IX | Factor X | Factor XI |
| Leader is one who sets the specific goals for both organization and employees. | | | | | | | .62 | | | | |
| Leader prescribes the behavioural expectations of employees through formalization of rules and regulations. | | | | | | | | | .56 | | |
| Leader is monitoring conformance to the expectations of organization. | | | | | | | | | | -.52 | |
| Leader is one who interacting with the external environments efficiently. | | | | | | | .77 | | | | |
| Leader is the person responsible for bringing the changes in the organization. | | | | | | | | | | .58 | |
| Leader is managing the critical functions of organization efficiently. | | | | | .68 | | | | | | |
| Leader is an encouraging motivational practice in the organization. | | | | | | | | .80 | | | |
| Leader is facilitating the creativity and innovation on the part of the employees. | | | | | | .60 | | | | | |
| Leader is ensuring the organizational coordination, flexibility and agility. | | | | | | .80 | | | | | |
| Leader should develop the teamwork. | | | | | .75 | | | | | | |
| Leader is the guardian of development of employees. | | | | | | | | | | | .79 |
| Leader should discuss, participate with employees and arrives the consensus in all matters of the organization. | | | | | | | | | .62 | | |
| Leader is responsible for increasing morale, cohesion and commitment among the employees. | | | .82 | | | | | | | | |
| Leader is responsible for standardized decision making. | | | | | | | | | .72 | | |
| Leader ensures the timeliness of operations and decision making. | | | | | | | | | | .85 | |
| Leader is in charge of stability and efficiency of organizational activities. | | | .62 | | | | | | | | |
| Leader should properly communicate with all the employees regarding all the organizational matters. | | .81 | | | | | | | | | |
| Leader should have commitment to experimentation and individual initiative. | | | | | | | | -.52 | | | |
| Leader should have insight about the functions and activities of the organization. | .65 | | | | | | | | | | |
| Leader should have the capacity of achievement of measurable goals. | | | | .89 | | | | | | | |
| Leader should have the judgmental and problem solving skills. | .81 | | | | | | | | | | |
| Leader should create trust among the employees. | | .72 | | | | | | | | | |
| Leader should recognize the employee's contribution through rewards and awards. | .85 | | | | | | | | | | |
| Leader is responsible for creating and maintaining strong work culture. | .53 | | | | | | | | | | |
| Leader should satisfy the needs and wants of employees. | | -.81 | | | | | | | | | |
| Eigen Value | 3.42 | 2.67 | 2.22 | 1.75 | 1.66 | 1.44 | 1.33 | 1.26 | 1.18 | 1.08 | 1.01 |
| % of Variance | 10.16 | 9.84 | 6.86 | 6.57 | 6.44 | 6.41 | 6.35 | 6.28 | 5.97 | 5.91 | 5.31 |
| Cumulative % of Variance | 10.16 | 20.00 | 26.86 | 33.43 | 39.87 | 46.28 | 52.63 | 58.91 | 64.88 | 70.79 | 76.10 |
| Cronbach's Alpha | 0.92 | | | | | | | | | | |

Source: Primary & Computed Data

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation converged in 21 iterations.

There are eleven independent groups are extracted which account for a total of 76.10 per cent of variations on the 25 variables of leadership concepts and constructs. The each of eleven factors contributes 10.16 per cent, 9.84 per cent, 6.86 per cent, 6.57 per cent, 6.44 per cent, 6.41 per cent, 6.35 per cent, 6.28 per cent, 5.97 per cent, 5.91 per cent and 5.31 per cent respectively.

Factor-I: From the table, it is inferred that out of 25 employees' perception on leadership constructs and concepts, four variables have their high, relatively tightly grouped factor loadings on factor-I.

This factor consists of:

Leader should have insight about the functions and activities of the organization. (0.65)

Leader should have the judgmental and problem solving skills. (0.81)

Leader should recognize the employee's contribution through rewards and awards. (0.85)

Leader is responsible for creating and maintaining strong work culture. (0.53)

Hence, this factor is named as "**ORIENTATION**".

Factor-II: is formed with:

Leader should properly communicate with all the employees regarding all the organizational matters. (0.81)

Leader should create trust among the employees. (0.72)

Leader should satisfy the needs and wants of employees. (-.81)

These variables are named as "**CONFIDENCE**".

Factor-III: This factor includes:

Leader is responsible for increasing morale, cohesion and commitment among the employees. (0.82)

Leader is in charge of stability and efficiency of organizational activities. (0.62)

These two variables are named as "**VALUES**".

Factor-IV: This factor is formed with:

Leader should have the capacity of achievement of measurable goals. (0.89)

This factor is named as "**GOALS**".

Factor-V: This factor includes:

Leader is managing the critical functions of organization efficiently. (0.68)

Leader should develop the teamwork. (0.75)

The factor is named as "**EFFICIENT**".

Factor-VI: This factor is formed with:

Leader is facilitating the creativity and innovation on the part of the employees. (0.60)

Leader is ensuring the organizational coordination, flexibility and agility. (0.80)

This factor is named as "**ENCOURAGEMENT**".

Factor-VII: This factor includes:

Leader is one who sets the specific goals for both organization and employees. (0.62)

Leader is one who interacting with the external environments efficiently. (0.77)

The factor is named as **"INTERACTION"**

Factor-VIII: This factor is formed with:

Leader is an encouraging motivational practice in the organization. (0.80)

Leader should have commitment to experimentation and individual initiative (-0.52)

This factor is named as **"COMMITMENT"**

Factor-IX: This factor is formed with:

Leader prescribes the behavioral expectations of employees through formalization of rules and regulations. (0.56)

Leader should discuss, participate with employees and arrives the consensus in all matters of the organization. (0.62)

Leader is responsible for standardized decision making. (0.72)

This factor is named as **"STANDARDS"**

Factor-X: This factor includes:

Leader is monitoring conformance to the expectations of organization. (-0.52)

Leader is the person responsible for bringing the changes in the organization. (0.58)

Leader ensures the timeliness of operations and decision making.(0.85)

The factor is named as **"RESPONSIBILITY"**

Factor-XI: This factor is formed with:

Leader is the guardian of development of employees. (0.79)

The factor is named as **"DEVELOPMENT"**

The Cronbach's alpha of the scale was 0.92 indicating that each measure demonstrated acceptable internal consistency.

CONCLUSION AND SUGGESTIONS

The results show that leader is managing the critical functions of organization efficiently, leader is facilitating the creativity and innovation on the part of the employees, leader should create trust among the employees and leader is responsible for creating and maintaining strong work culture are strongly agreed by the employees of LIC as perceived by them.

The employees of LIC are agreed with leader is one who sets the specific goals for both organization and employees, leader is monitoring conformance to the expectations of organization, leader is one who interacting with the external environments efficiently, leader is the person responsible for bringing the changes in the organization, leader is an encouraging motivational practices in the organization, leader is ensuring the organizational coordination, flexibility and agility.

Leader should develop the teamwork, leader is the guardian of development of employees, leader should discuss, participate with employees and arrives the consensus in all matters of the organization, leader is responsible for increasing morale, cohesion and commitment among the employees, and leader ensures the timeliness of operations and decision making.

Leader is in charge of stability and efficiency of organizational activities, leader should properly communicate with all the employees regarding all the organizational matters, leader should have insight about the functions and activities of the organization, leader should have the capacity of achievement of measurable goals, leader should have the judgmental and problem solving skills and leader should satisfy the needs and wants of employees.

In order to improve the leadership, leaders should prescribe the behavioral expectations of employees through formalization of rules and regulations precisely and they should be responsible for standardized decision making. Besides, leaders should have commitment to experimentation and individual initiative and leaders should recognize the employee's contribution through rewards and awards.

For improving the quality of leadership practices, employee ideas and input must be sought for upcoming plans and suitable environment must be created where the employees take ownership of the plans and projects and make them participate in decision making process and also employees are allowed to determine what needs to be done and how to do it.

REFERENCES

1. Aamna Shakeel Abbasi, Ali Muslim Bin Aqeel and Ali Naseer Awan(2011), "The Effectiveness of Leadership, Performance and Employee Involvement for Producing Competitive Advantage with a TQM Orientation: A Conceptual Framework" Mediterranean Journal of Social Sciences,3(4): pp.83-90.
2. Barling, J., Weber, T., and Kelloway, E. K., (1996), "Effects of Transformational Leadership Training on Attitudinal and Financial Outcomes: A Field Experiment", Journal of Applied Psychology, 81(6): pp. 827-832.
3. Boyatzis, R., (1993), "Beyond Competence: The Choice to be a Leader", Human Resource Management Review, 3(1): pp. 1-14.
4. Eagly, A. H., and Johnson, B. T., (1990), "Gender and Leadership Style: A meta-Analysis", Psychological Bulletin, 108(2): pp. 233-256.
5. Goran Svensson and Greg Wood (2006), "Sustainable Components of Leadership Effectiveness in Organizational Performance", Journal of Management Development, 25 (6): pp.522-534.
6. Gordon F. Woodbine and Joanne Liu (2010), "Leadership Styles and the Moral Choice of Internal Auditors", Electronic Journal of Business Ethics and Organization Studies, 15(1): pp.28-35.
7. Management: Concepts, Practice & Cases, By Dr. Karminder Ghumanz pp-408-411, 2010

TEXTURE FEATURE EXTRACTION

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ABSTRACT

A feature is nothing but the significant representative of an image which can be used for classification, since it has a property which distinguishes one class from other. The extracted features provide the characteristics of input pixel to the classifier. Feature extraction is used in various pattern recognition applications. This paper aims to compile the recent trends on the usage of feature extraction methods used in the research of texture classification. The study shows that the signal processing methods, such as Gabor filters and wavelets are gaining popularity but old methods such as GLCM are still used but are improved with new calculations or combined with other methods.

KEYWORDS

Computer Vision, Feature extraction, Machine Learning, Pattern Recognition, Texture Classification.

1. INTRODUCTION

Feature extraction is the process to obtain different features from the given images. It is used in texture classification has a large variety of real world problems involving specific textures of different objects. Some of the real world applications that involve textured objects of surfaces include rock classification, wood species recognition, face detection, fabric classification, geographical landscape segmentation and etc. Texture classification techniques are grouped up in five main groups in general, namely 1) structural; 2) statistical; 3) signal processing; 4) model-based stochastic, and; 5) morphology-based methods.

Out of the five groups, statistical and signal processing methods are the most widely used because they can be directly applied onto any type of texture. The rest are not as widely used because the structural methods need to be implemented on structured textures which are naturally rare, the model based stochastic methods are not easily implemented due to the complexity to estimate the parameters and morphology-based methods are relatively new and the process are very simple, they may not promise very good textural features. This paper describes the recent trends in feature extraction methods used in the research of texture classification.

2. FEATURE EXTRACTION METHODS

There are many different feature extraction methods that were introduced and used for texture classification problems. Most of these methods that were popularly used in recent years were statistical and signal processing methods.

2.1. GRAY LEVEL CO-OCCURRENCE MATRIX (GLCM)

This method was first proposed by Haralick in 1973 and still is one of the most popular means of texture analysis [10]. The key concept of this method is generating features based on gray level co-occurrence matrices (GLCM). The matrices are designed to measure the special relationships between pixels. The method is based on the belief that texture information is contained in such relationships.

Co-occurrence features are obtained from a gray level co-occurrence matrix M , which keeps co-occurrence frequencies of pairs of gray intensity. The matrix M has the parameters d , θ . The value of element (i, j) in M is the frequency with which a pixel (x, y) in gray tone i has a pixel (x', y') in gray tone j in distance d . The angle between the two pixels is θ . It can be described as [10]:

$$M_{i,j} = \# \{ (x, y), (x', y') \in (L_x \times L_y) \times (L_x \times L_y) \mid \quad (1)$$

$$\| (x, y) - (x', y') \| = d, \arctg \left(\frac{x-x'}{y-y'} \right) = \theta \} \quad (2)$$

$$L_x = \{1, 2, \dots, W\}, L_y = \{1, 2, \dots, H\} \quad (3)$$

Where $\#$ denotes the number of elements in the set, L_x and L_y denote the horizontal and vertical spatial domain and W and H are the width and height of the image. Normally, θ is quantized in four directions (0° , 45° , 90° and 135°) [1].

Once the matrix is calculated, fourteen different categories of Haralick features are extracted at angle θ and distance d .

They are 1) Angular second moment, 2) Contrast, 3) Correlation, 4) Variance, 5) Inverse difference moment, 6) Sum average, 7) Sum variance, 8) Sum entropy, 9) Entropy, 10) Difference variance, 11) Difference entropy, 12) and 13) two information measures of correlation and 14) Maximal correlation coefficient [10].

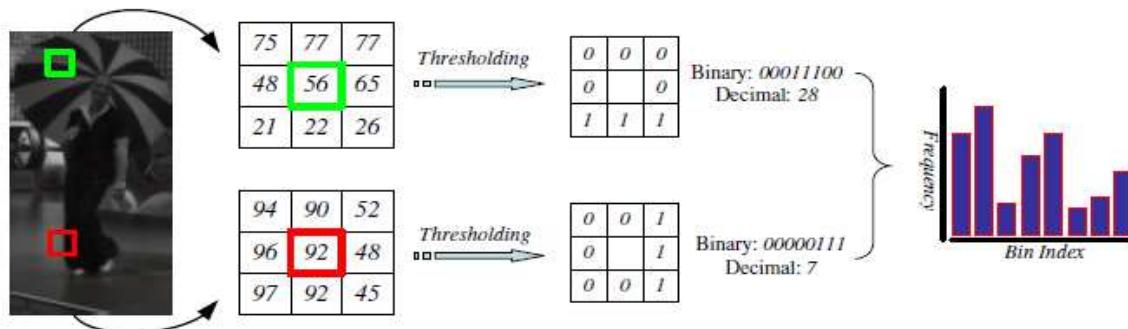
These features have been widely used in machine vision, for example in remote sensing, document image understanding and image database retrieval. The first feature "Angular second moment" measures textural uniformity, the second feature contrast implies the special frequency of textures and the third feature Correlation describes gray tone linear dependency which is a way to describe texture homogeneity.

In texture analysis community, this method is known by several names, including Co-occurrence measures, Gray Level Co-occurrence Matrices (GLCM), Spatial Gray Level Dependence Matrices (SGLDM) and the Harlick method.

2.2. LOCAL BINARY PATTERNS (LBP)

The idea of LBP (local binary pattern) is originally proposed by Ojala et al. in [15] for the aim of texture classification, and then extended for various fields, including face recognition, face detection, facial expression recognition etc. The most attractive advantages of LBP are its invariance to monotonic gray-scale changes, low computational complexity and convenient multi-scale extension. The philosophy behind LBP is simple and elegant: unify statistical and traditional structural methods.

FIGURE 1. ILLUSTRATION OF LBP. TYPICALLY THE BINARY CODES OBTAINED BY LOCAL THRESHOLDING ARE TRANSFORMED INTO DECIMAL CODES. NOTE THAT IN THIS EXAMPLE WE USE A THRESHOLD OF 30, WHICH IS SLIGHTLY DIFFERENT FROM THE ORIGINAL LBP. SEE TEXT FOR MORE DETAILS



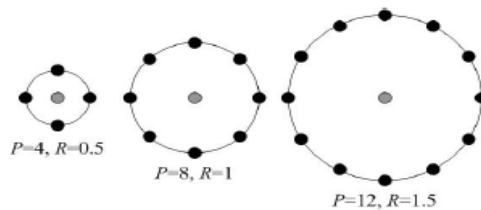
In Figure 1, we give an illustration for how LBP serves as local descriptor. Each neighbor pixel is compared with the center pixel, and the ones whose intensities exceed the center pixel's are marked as "1", otherwise as "0". In this way we get a simple circular point features consisting of only binary bits. Typically the feature ring is unfolded as a row vector; and then with a binomial weight assigned to each bit, the row vector is transformed into decimal code for further use. For clarity, we adopt the same notation $LBP_{p,R}$ as in [14], where R is the radius of the circle to be sampled (see Figure 2), and P is the number of sampling points. Examples for various choices of these two parameters can be found in Figure 2. It is obvious to see that LBP can be effortlessly extended to the multi-scale case. Denote the ring feature for image pixel (x, y) as $B(x, y) = \langle b_{p-1}, \dots, b_1, b_0 \rangle$, where $b_i \in \{0, 1\}$. It is common to transform $B(x, y)$ into decimal code via binomial weighting:

$$LBP_{p,R}(x, y) = \sum_{i=0}^{p-1} b_i 2^i \quad (4)$$

which characterizes image textures over neighborhood of (x, y) . And a 1D histogram for a target image region can be built by counting the frequencies of each value of LBP codes, which is finally normalized with L1-norm or L2-norm as image region representation.

An important special case of LBP is the uniform LBP. A LBP descriptor is called uniform if and only if at most two bitwise transition between 0 and 1 over the circulated binary feature. For example, 00000000 (0 transition), 11100011 (2 transitions) are uniform, while 01010000 (4 transitions), 01110101 (6 transitions) are non-uniform ones. An important observation was made by Ojala et al. [15] that in texture images, majority of LBP features can be categorized to be uniform. In practice, all non-uniform LBP are labeled with a single label, while each uniform LBP is cast into a unique histogram bin according to its decimal value.

FIGURE 2: MULTI - SCALE LBP. R: RADIUS OF SAMPLING CIRCLE. P: NUMBER OF SAMPLING PIXELS.



2.3. GABOR FILTERS

In 1946 Dennis Gabor proposed a method to represent signals in both the time and frequency domains. Unlike the Fourier series, this method allows the analysis of local information rather than just global information. However Gabor's analysis method went almost unnoticed until the early 1980's. It was proposed as a texture analysis method by Turner [6] and Clark et al. [17] in the middle 80's.

A Gabor filter is a harmonic oscillator, composed of a sinusoidal plane wave of a particular frequency and orientation with a Gaussian kernel [3]:

$$\psi(x, y; \sigma, u, v) = \left\{ \exp \left(-\frac{u^2 + v^2}{2\sigma^2} \right) (x^2 + y^2) \right\} \exp i(ux + vy) \quad (5)$$

Where (x, y) are the variables representing position in the spatial domain, (u, v) are the spatial frequencies and σ is the width of the Gaussian. The Gabor transform, $G(u, v)$, of an image fragment, $I(x, y)$, is defined as the convolution of a Gabor kernel ψ with I :

$$G(u, v) = \iint \psi(x, y; \sigma, u, v) I(x, y) dx dy \quad (6)$$

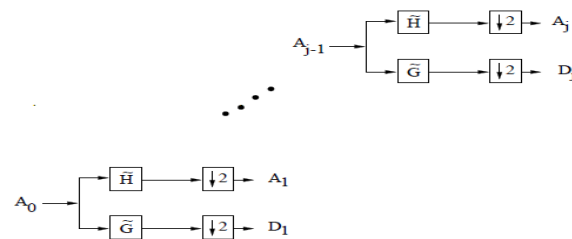
The Gabor filter is frequency and orientation selective. The orientation of the filter, which is defined as $\vartheta = \tan^{-1} v / u$ and the size of image fragments are adjustable. The Gabor features are generated from filtered images proposed by a Gabor filter at a certain size and a certain angle, for example the energy or variance of the filtered images. Gabor filters have been applied in various domains in machine vision, such as texture analysis, face recognition and handwriting recognition. Gabor filters are considered a powerful analysis tool.

2.4. WAVELET TRANSFORM

Wavelet transform is a type of signal representation that can give the frequency content of the signal at a particular instant of time. In this context, one row/column of image pixels can be considered as a signal. Applying a wavelet transform on such a signal decomposes the signal into different frequency sub-bands (for example, high frequency and low frequency sub-bands). Initially, regions of similar texture need to be separated out. This may be achieved by decomposing the image in the frequency domain into a full sub-band tree using filter banks [9]. Each of the sub-bands obtained after filtering has uniform texture information. A filter bank based on wavelets could be used to decompose the image into low-pass and high-pass spatial-frequency bands [12].

We will now briefly review the wavelet-based multi-resolution decomposition. To have the multi-resolution representation of signals we can use a discrete wavelet transform. We can compute a coarser approximation of input signal A_0 by convolving it with the low pass filter H and down sampling the signal by two [13]. By down sampling, we mean skipping every other signal sample (for example a pixel in an image). All the discrete approximations A_j , $1 < j < J$, (J is the maximum possible scale), can thus be computed from A_0 by repeating this process. Scales become coarser with increasing j . Figure 3 illustrates the method.

FIGURE 3: BLOCK DIAGRAM OF MULTI-RESOLUTION WAVELET TRANSFORM



We can extract the difference of information between the approximation of signal at scale $j-1$ and j . D_j denotes this difference of information and is called detail signal at the scale j . We can compute the detail signal D_j by convolving A_{j-1} with the high pass filter G and returning every other sample of output. The wavelet representation of a discrete signal A_0 can therefore be computed by successively decomposing A_j into A_{j+1} and D_{j+1} for $0 \leq j < J$. This representation provides information about signal approximation and detail signals at different scales. We denote wavelet representation of signal A_0 after K levels as $\{A_k, D_k, D_{k-1}, \dots, D_1\}$, $1 \leq k \leq J$. The idea of using multi-resolution property of wavelets in clustering is to use the features of the wavelet coefficients at the coarse scale levels.

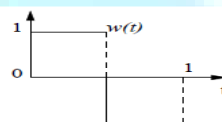
Corresponding to the lowpass filter, there is a continuous-time scaling function $\phi(t)$, and corresponding to the highpass filter, there is a wavelet $\omega(t)$. The dilation equation produces $\phi(t)$, and the wavelet equation produces $\omega(t)$ [4]. For example, for Haar wavelet transform with $H = [1/\sqrt{2}, 1/\sqrt{2}]$, and $G = [1/\sqrt{2}, -1/\sqrt{2}]$, the dilation equation is,

$$\phi(t) = \phi(2t) + \phi(2t-1) \quad (7)$$

and the wavelet equation is

$$\omega(t) = \phi(2t) - \phi(2t-1) \quad (8)$$

Figure 4 shows the Haar wavelet $\omega(t)$.

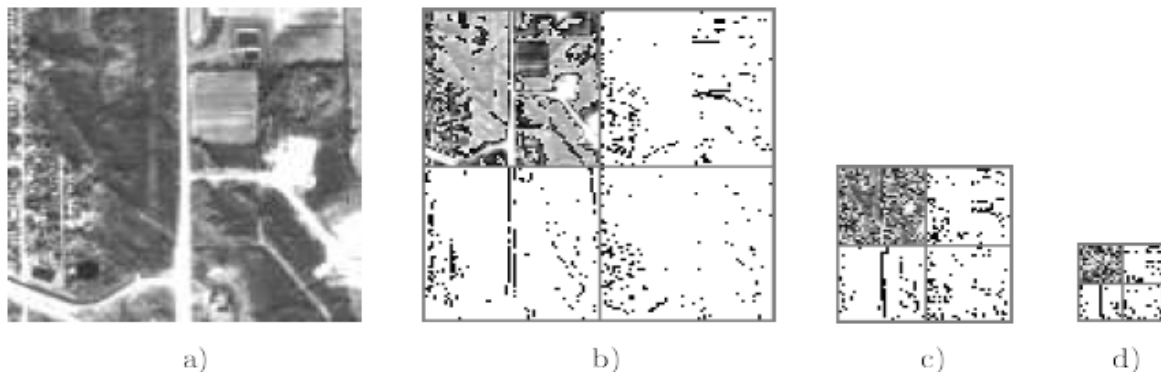
FIGURE 4: THE HAAR WAVELET $\omega(t)$ 

We can easily generalize wavelet model to 2 dimensions for images, in which we can apply 2 separate one-dimensional transforms [5]. The image is first filtered along the horizontal (x) dimension, resulting in a lowpass image L and a highpass image H . We then down sample each of the filtered images in the x dimension by 2. Both L and H are then filtered along the vertical (y) dimension, resulting in four subimages: LL , LH , HL , and HH . Once again, we down sample the subimages by 2, this time along the y dimension. The two-dimensional filtering decomposes an image into an average signal (LL) and three detail signals which are directionally sensitive: LH emphasizes the horizontal image features, HL the vertical features, and HH the diagonal features.

Figure 5-a show a sample airphoto image. Figures 5- b, c, and d show the wavelet representation of the image at three scales from fine to coarse. At each level, sub-band LL (the wavelet approximation of the original image) is shown in the upper left quadrant. Sub-band LH (horizontal edges) is shown in the upper right quadrant, sub-band HL (vertical edges) is displayed in the lower left quadrant, and sub-band HH (corners) is in the lower right quadrant.

Feature extraction and clustering methods can use any appropriate wavelet transforms such as Haar, Daubechies, Cohen-Daubechies-Feauveau or Gabor wavelet transforms

FIGURE 5: MULTI-RESOLUTION WAVELET REPRESENTATION OF AN AIR PHOTO IMAGE: A) ORIGINAL IMAGE; B) WAVELET REPRESENTATION AT SCALE 1; C) WAVELET REPRESENTATION AT SCALE 2; D) WAVELET REPRESENTATION AT SCALE 3.



Applying wavelet transform on images results in wavelet coefficients corresponding to each sub-band. We can extract different features from wavelet coefficients of each of these sub-bands. Next subsection explains the features that we used in the experiments.

2.5. INDEPENDENT COMPONENT ANALYSIS

Assume a set of training images $X = [x_1, x_2, \dots, x_n]$, where each column vector x_i represents an image and the total number of training samples is n . The general model of ICA can be described as follows:

$$X = AS \quad (9)$$

where $S = [s_1, s_2, \dots, s_n]$ is the coefficient, A is a square mixing matrix and its column vectors are basis functions. The independent component analysis is to find a separating matrix W_i , so that

$$U_i = W_i X \quad (10)$$

approximates the independent component S , possibly per muted and rescaled. The components of S are as mutual independent as possible.

Many methods have been proposed to learn the separating matrix W_i . For example, Bell and Sejnowski [2] developed a simple learning algorithm based on the information maximization, and it is improved by Amari [11] with a natural gradient method for better convergence. Their learning algorithm for W_i can be summarized as the following:

$$\Delta W_i = (I + g(y) y^T) W_i \quad (11)$$

$$\text{Where, } y = W_i X \text{ and } g(y) = 1 - \frac{2}{1 + e^{-y}}$$

Before the learning procedure, a preprocessing operation W_p , known as whitening or sphering, is required for most ICA learning algorithms. The transformed data is zero- mean, decorrelated data:

$$W_p X X^T W_p^T = I \quad (12)$$

This transformation can be accomplished by eigen value decomposition. In fact, when $W_p = \Lambda^{-1/2} V^T$, the Eq.(4) can be satisfied. Here, Λ and V are the eigen values matrix and eigenvectors matrix of the covariance matrix of X , respectively.

2.6. REGION COVARIANCE MATRIX

Region covariances were introduced by Tuzel et al. [16] as a novel region descriptor for object detection and classification. Given an image I , let φ define a mapping function that extracts an n -dimensional feature vector z_i from each pixel $i \in I$, such that

$$\varphi(I, x_i, y_i) = z_i \quad (13)$$

where $z_i \in \mathbb{R}^n$, and (x_i, y_i) is the location of the i^{th} pixel. A given image region R is represented by the $n \times n$ covariance matrix C_R of the feature vectors $\{z_i\}_{i=1}^{|R|}$ of the pixels in region R . Thus the region covariance descriptor is given by,

$$C_R = \frac{1}{|R|-1} \sum_{i=1}^{|R|} (z_i - \mu_R) (z_i - \mu_R)^T \quad (14)$$

where, μ_R is the mean vector,

$$\mu_R = \frac{1}{|R|} \sum_{i=1}^{|R|} z_i \quad (15)$$

The feature vector z usually consists of color information (in some preferred color-space, usually RGB) and information about the first and higher order spatial derivatives of the image intensity, depending on the application intended.

Although covariance matrices can be positive semi-definite in general, the covariance descriptors themselves are regularized by adding a small constant multiple of the identity matrix, making them strictly positive definite. Thus, the region covariance descriptors belong to S_{++}^n , the space of $n \times n$ positive definite matrices which forms a connected Riemannian manifold. Given two covariance matrices C_i and C_j , the Riemannian distance metric $d_{geo}(C_i, C_j)$ gives the length of the geodesic connecting these two points on this manifold. This is given by [7],

$$d_{geo}(C_i, C_j) = \left\| \log(C_i^{-1/2} C_j C_i^{-1/2}) \right\|_F \quad (16)$$

where $\log(\cdot)$ represents the matrix logarithm and $\|\cdot\|_F$ is the Frobenius norm. Many existing classification algorithms for region covariances use the geodesic distance in a K -nearest-neighbor framework. The geodesic distance can also be used with a modified K -means algorithm for clustering.

Methods for fast computation of region covariances using integral images [8] enable the use of these compact features for many practical applications that demand real-time performance. For texture characterization, spatial derivatives are suitable features [16], whereas for face recognition, region covariances are constructed from outputs of a bank of Gabor filters. Covariance descriptors are used for probabilistic tracking using particle filtering, multi-object tracking using region covariances and particle filters, improve the classification accuracy, for pedestrian detection and semi-supervised clustering.

2.7. OTHER FEATURE EXTRACTIONS

There are many other feature extractions that are not popularly used in recent years which some are recently proposed, including model-based stochastic methods, e.g. fractals and Markov random field. Also includes some other methods, e.g. Sequential Approximation Error Curves (SAEC), Basic Image Features, Spectral Correlation Function (SCF), Legendre Spectrum and Multiscale Blob Features (MBF).

3. CONCLUSION

It is easily noticeable that signal processing methods are very popularly used in the recent years, especially for Gabor filters and wavelets. Although these methods require more computation as they are examining the frequency domain, the accuracy obtained is good and usually outperform older and simpler techniques. The old technique like GLCM is however yet to be forgotten in the field of texture classification because it is one of the simplest textural feature which is old but is computationally inexpensive. It remains to be mainly used as a baseline algorithm for comparative studies especially when a new application of texture classification is experimented. The GLCM is however more commonly used in some improved or combined ways recently but none of these variants have grown into a major trend.

The major trend of the research today in terms of feature extraction for texture classification is accuracy-oriented, however usually the newer algorithms that promises better accuracy is much more complicated in its calculations and often sacrifices the speed of the algorithm. The signal processing methods for example is a relatively slow algorithm with a higher accuracy. The region covariance matrix is new in the area of texture classification. It has the potential to become the next trend due to its fast computations using integral images.

4. REFERENCES

- Baraldi, F. Parmiggiani, "An Investigation Of The Textural Characteristics Associated With GLCM Matrix Statistical Parameters", *IEEE Trans. on Geos. and Rem. Sens.*, vol. 33(2), pp. 293-304, 1995.
- A.J.Bell and T.J.Sejnowski, "An information maximization approach to blind separation and blind deconvolution", *Neural Computation*, vol.7, pp.1129-1159, 1995.
- Chen and D. C. Chen. Multi-resolutional Gabor filter in texture analysis. *Pattern Recognition Letters*, 23(7):755 – 771, May 2002.
- Gilbert Strang and Truong Nguyen. *Wavelets and Filter Banks*. Wellesley-Cambridge Press, 1996.
- Michael L. Hilton, Bjorn D. Jawerth, and Ayan Sengupta. Compressing Still and Moving Images with Wavelets. *Multimedia Systems*, 2(5):218 – 227, December 1994.
- M. R. Turner. Texture discrimination by Gabor functions. *Biological Cybernetics*, 55(2 - 3): 71 – 82, November 1986.
- Pennec, X., Fillard, P., Ayache, N.: A Riemannian Framework for Tensor Computing. In: *International Journal of Computer Vision* 66(1), pp. 41-66 (2005)
- Porikli, F., Tuzel, O.: Fast Construction of Covariance Matrices for Arbitrary Size Image Windows. In: *Proceedings of IEEE International Conference on Image Processing*, pp. 1581-1584 (2006)
- P. P. Vaidyanathan. *Multirate Systems And Filter Banks*. Prentice Hall Signal Processing Series. Prentice Hall, Englewood Clis, NJ, 1993.
- R. M. Harlick, K. Shanmugam, and I. Dinstein. Texture features for image classification. *IEEE Transactions On Systems, Man, and Cybernetics*, SMC – 3 (6): 610 – 621, November 1973.
- S. Amari, "Natural gradient works efficiently in learning", *Neural Computation*, 1998, 10(2), pp. 251-276.
- S. Mallat. Multiresolution approximation and wavelet orthonormal bases of $L_2(\mathbb{R})$. *Transactions of American Mathematical Society*, 315:69- 87, September 1989.
- S. Mallat. A theory for multiresolution signal decomposition: the wavelet representation.. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 11:674 - 693, July 1989.
- T. Ahonen, A. Hadid, and M. Pietikainen. Face recognition with local binary patterns. In *ECCV (1)*, pages 469–481, 2004.
- T. Ojala, M. Pietikainen, and D. Harwood. A comparative study of texture measures with classification based on featured distributions. *Pattern Recognition*, 29(1):51–59, 1996.
- Tuzel, O., Porikli, F., Meer, P.: Region Covariance: A Fast Descriptor for Detection and Classification. In: Leonardis, A., Bischof, H., Pinz, A. (eds.) *ECCV 2006*. LNCS, vol. 3952, pp. 697-704. Springer, Heidelberg (2006)
- Webster Comprehensive Dictionary. J. G. Ferguson Publishing Company, Chicago, 1984.

INDIAN BANKS: AN IMMENSE DEVELOPING SECTOR**PRASHANT VIJAYSING PATIL****ASST. PROFESSOR****KCES'S INSTITUTE OF MANAGEMENT & RESEARCH****JALGAON****DR. DEVENDRASING V. THAKOR****HEAD****DEPARTMENT OF COMMERCE****MSG COLLEGE****MALEGAON****ABSTRACT**

To evaluate the stability of the banking system, it is therefore critical to benchmark the performance of banks operating in India. An efficient banking system contributes in an extensive way to higher economic growth in any country. Thus, studies of banking efficiency are very important for policy makers, industry leaders and many others who are reliant on the banking sector. During last decade has seen many positive developments in the Indian banking sector. The Reserve Bank of India (RBI), Ministry of Finance and related Government and financial sector regulatory entities has made several notable efforts to improve regulation in the sector. The sector now compares favorably with banking sectors in the region on metrics like growth, profitability and non-performing assets (NPAs). A few banks have established an outstanding track record of innovation, growth and value creation. India's banking industry must strengthen itself significantly if it has to support the modern and vibrant economy which India aspires to be. In this paper we highlight the need to act both decisively and quickly to build an enabling, rather than a limiting, banking sector in India. New private banks could reach the next level of their growth in the Indian banking sector by continuing to innovate and develop differentiated business models to profitably serve segments like the rural/low income and affluent/ HNI segments; actively adopting acquisitions as a means to grow and reaching the next level of performance in their service platforms. At the same time, they should stay in the game for potential acquisition opportunities as and when they appear in the near term. Maintaining a fundamentally long-term value-creation mindset will be their greatest challenge.

KEYWORDS

Banking, Budget Glance, Performance Evaluation, Private Banks.

INTRODUCTION

During the 20th century in most of the nations domestic banking was generally subjected to heavy regulations and financial repression. The growth and financial stability of the country depends on the financial soundness of its banking sector. The Indian banking sector has been working in a more open and globalize environment for a decade and half since liberalization. The liberalization process of Indian Economy has made the entry of new private sector banks possible and allowed the foreign sector banks to increase their branches in the banking sector. Besides, following India's commitment to the WTO, foreign banks have been permitted to open more branches with effect from 1998-99. With the increased competition and the emphatic on profitability, the public sector banks are now moving towards on economic-oriented model departing from the social approach followed for decades.

Thus, the restructuring of public sector banks and the emergence of new banks in the private sector as well as the increased competition from foreign banks, have improved the professionalism in the banking Sector. For the said study researcher is using secondary data gather from financial updates, banks working paper, other financial report & survey reports. The study is descriptive and analytical in nature. It's apt to conduct a study on Excellent Practices among Banks for Performance of Growth in the Recent banking Sector.

With deposits of over half a trillion US dollars, the Indian banking sector accounts for close to three-quarters of the country's financial assets. Over the decades, this sector has grown steadily in size, measured in terms of total deposits, at a fairly uniform average annual growth rate of about 18%. In the years since liberalization, several significant changes have occurred in the structure and character of the banking sector.

The most visible being perhaps the emergence of new private sector banks as well as the entry of several new foreign banks. The spirit of competition and the emphasis on profitability are also driving the public sector banks towards greater profit-orientation in a departure from the socialistic approach followed for decades. In general it seems that the emergence of the new private banks and the increased participation of foreign banks have increased professionalism in the banking sector.

The last decade has seen many positive developments in the Indian banking sector. The policy makers, which comprise the Reserve Bank of India (RBI), Ministry of Finance and related government and financial sector regulatory entities, have made several notable efforts to improve regulation in the sector.

MEANING AND OBJECTIVES OF BANK

A bank is a financial institution and a financial intermediary that accepts deposits and channels those deposits into lending activities, either directly or through capital markets. A bank connects customers that have capital deficits to customers with capital surpluses.

1. To help ensure the monetary stability of the country
2. To assist in regulating the financial system of the country
3. To formulate, implement and monitor the monetary policy
4. To maintain the liquidity in the country
5. To ensure adequate flow of credits
6. Prescribes parameters for banking in the country
7. Maintain public confidence in the system

REVIEW OF LITERATURE**NARASIMHAM COMMITTEE RECOMMENDATIONS FOR BANKING SECTOR REFORMS**

The government of India, under the chairmanship of Shri. M. Narasimham, an Ex-Governor of RBI, appointed the Narasimham Committee-I (NC-I) in April 1991. The committee examined all the aspects relating to the structural organization, functions and procedures of financial system and submitted its report on November 16, 1991. The NC-I had proposed wide ranging reforms for improving the financial viability of the banks, increasing their autonomy from government directions, restructuring unviable banks, allowing a greater entry of the private sector in banking, liberalizing the capital market, further improving the operational flexibility and competition among the financial institutions and setting up of proper supervisory system.

In the current fiscal (FY11), the Indian Banking industry has had to deal with tight monetary policy and low liquidity. This is despite the economy expected to grow at a healthy pace of 8.6% this fiscal. The central bank raised interest rates 7 times, cumulatively increasing the repo rate (rate at which banks borrow from the RBI) by 1.75% and the reverse repo rate (rate at which RBI borrows from banks) by 2.25%. However, with inflation still off RBI's target 7% for the end of FY11, further rate hikes are still expected. Liquidity still remains a major concern, with the level of tightness currently beyond RBI's comfort level.

- 1) Recapitalization of PSU bank will mean that the undercapitalized bank do not fall short of capital to grow their loan book and at the same time are able to comply with the base III norms.
- 2) Clarity on sanctioning additional banking license could pave the way for participation of foreign banks and NBFC in the financial inclusion motive.
- 3) Higher target for Agriculture credit and may lead to some NPA problems in this sector. However the incentives for the timely repayment of loans with lower interest rates will help the offset the same.
- 4) Infrastructure financing companies are set to benefit from the higher allocation extension of fiscal benefits for Infrastructure bonds in addition foreign investor participation in Infrastructure financing.

NEED OF STUDY

The increased presence of the private and foreign banks during the past decade has made the market structure of the banking sector in terms of competitive pricing of services, narrow spreads, and improving the quality of the services. The public sector banks, which had dominated the banking sector for decades, are now feeling the heat of the competition from private and foreign sector banks. In the above back drop the present study is necessitated to examine the performance of all public sector banks.

STATEMENT OF THE PROBLEM

Is there any Need to study the Performance of Private as well as Public Sector Banks?

OBJECTIVES

The Study was planned to perceive the following objectives:

- To find out the Actual Development of Banks
- To List out the Performance of the Banks
- To Study the Key Profitability Indicators of Private Sector Banks

HYPOTHESIS

H1: Growth of the Banking Sector is Consistent.

H2: Public sector banks can convert the emerging challenges into opportunities.

RESEARCH METHODOLOGY

The study is based on the Secondary data which is collected from the Articles, Published papers, Reserve Bank website, and news papers etc.

1) BANKING SECTOR PERFORMANCE IN JANUARY 2011

Financial and Capital Market Commission releases information on the performance of banks for January 2011.

I) Performance results of all banks for January 2011 complied with regulatory requirements. By end-January liquidity ratio of the banking sector was 67.5% (compared to 67.9% at end-December 2010).

II) Whereas the banking sector capital adequacy ratio and tier I capital ratio (only high quality capital components were included in the own funds: paid-up share capital and reserves as well as retained earnings of the previous years) by end-January were 14.4% and 11.3%, respectively (compared with 14.6% and 11.5% by end-December 2010).

III) In 2010, 14 banks had increased their capital overall by 324.4 million lats, and the banks still continued raising their capital also in January 2011 (by 1.3 million lats), and paid-up share capital of the banking sector reached 1 887.8 million lats at end-January.

IV) The banking sector had a profit of 10.9 million lats in January (contrary to loss of 36.1 million lats in the previous year), where 15 banks and five foreign bank branches posted a profit in January 2011 (constituting 78.6% of total banking sector assets) earning the total of 15.5 million lats.

V) In January, banking revenue exceeded operating expenses mainly due to a decrease in provisioning and recovery of assets written-off earlier, as well as increase in net interest income. The banking sector profit (before provisioning and tax) accounted for 18.2 million lats in January.

VI) In January 2011, banking deposit stock fell by 3%, or 337 million lats, mainly due to shrinking of non-resident deposit stock, i.e. by 6%, or 279 million lats (because of typical seasonal increase in non-resident deposits at end of year, however, non-resident deposits usually decline in the first months of a new year as deposits are mostly demand deposits or short term deposits). In January, resident deposit stock also slightly shrank, i.e. by 0.9%, or 58 million lats. At end-January, total deposit stock in the banking sector amounted to 10.8 billion.

2) INVESTMENT BY THE BANKS IN JANUARY 2011

(I) Investment Portfolio of Scheduled Commercial Banks, as on March 31, 2009

The article covers investments in central and state government securities, approved securities other than government securities, other domestic securities and investments, foreign securities and other foreign investments. Analysis of investments based on bank-groups, is in terms of instruments, maturity, interest rate (coupon) and states. The article also highlights comparative position of banks' portfolio in 2009 with that of 2008.

MAIN FINDINGS

I) During 2008-09, the total investments of scheduled commercial banks (SCBs) increased by 22.8 per cent as compared with 23.7 per cent in 2007-08.

II) Nationalized banks accounted for the largest share of the investments of SCBs, though with a moderate decline during 2008-09 by 1.3 percentage points to 44.1 per cent.

III) The maturity profile of the government securities held by SCBs showed that holdings of SCBs in the medium-term maturity buckets was a little more than one-third for each of the maturity brackets - 2010-15 (35.6 per cent) and 2015-20 (35.8 per cent), followed by very short-term holdings of within one year residual maturity (16.9 per cent).

IV) Across different bank groups, foreign banks reported a large part (41.0 per cent) of their holdings with residual maturity of less than one year, as against 16.9 per cent for all the SCBs.

V) During 2008-09, central government securities with the coupon rate of '6 per cent to 10 per cent' held by the SCBs increased from 69.6 per cent to 75.8 per cent.

(II) Composition and Ownership Pattern of Deposits with Scheduled Commercial Banks, as on March 31, 2009

The ownership pattern of estimated deposits is analyzed according to the Population groups, States/Union Territories and Bank groups. The article also provides comparative position of composition and ownership pattern of bank deposits as in March 2008.

MAIN FINDINGS

a) Current, savings and term deposits accounted for 12.0 per cent, 23.3 per cent and 64.7 per cent, respectively, in the total deposits reported by the banks in March 2009. The share of current deposits in total deposits, as on March 31, 2009, registered 1.5 percentage points decline over the position a year ago. While the share of savings deposits remained by and large the same in both the years, term deposits increased by 1.9 percentage points.

b) 'Household' sector, with 58.3 per cent share in total deposits, was the largest holder of outstanding deposits as on March 31, 2009; its share was 58.1 per cent in 2008. By end-March 2009, the share of 'Private Corporate (Non-Financial)' in total deposits recorded a rise, while 'Financial' and 'Foreign' sectors depicted a decline compared to the previous year.

c) The share of current deposits in total deposits recorded an increase in case of 'Private Corporate (Non-Financial)' and 'Household' sectors while it registered a decline in case of 'Financial' sector. On the other hand, the relative share of term deposits in total deposits increased in the case of 'Private Corporate (Non-Financial)' and 'Household' sectors, and declined in the case of 'Government', 'Financial' and 'Foreign' sectors.

d) The share of term deposits in total deposits of metropolitan areas stood at 72.4 per cent as on March 31, 2009 – higher compared to 69.8 per cent in 2008. Savings deposits accounted for 43.5 per cent and 39.8 per cent share in total deposits of rural and semi-urban areas, while their share remained unchanged at 14.8 per cent in metropolitan areas.

(III) International Banking Statistics of India: March 2010

The article presents an analysis of international liabilities and assets of banks in India, for the quarter ended March 2010. The data are classified under Location Banking Statistics (LBS) and consolidated international/foreign claims under Consolidated Banking Statistics (CBS), and have been collected as per the reporting system of the Bank for International Settlements (BIS).

MAIN FINDINGS

a) The international liabilities (in Rupees) of banks in India, at end-March 2010 grew by 17.0 per cent over the position a year ago and by 1.1 per cent over the previous quarter.

b) The investment in the ADRs/ GDRs and equities of the banking sector by non-residents registered a substantial growth over the position a year ago.

c) For the quarter, the overall increase in the international liabilities is due to the increase towards the USA, UAE, France and Bahrain.

d) The share of the international liabilities towards the non-bank sector was higher at 75.6 per cent compared to 71.8 per cent a year ago.

e) At end-March 2010, the international assets (in Rupees) of banks in India registered a growth of 7.4 per cent over the position a year ago and at 9.2 per cent over the previous quarter.

f) The overall increase in the 'Loans and Deposits' component contributed to the growth of the international assets on annual as well as quarterly basis. However, the NOSTRO balances of the banks registered a decline over the previous year.

g) For the quarter, the share of the non-bank sector in the international assets increased to 66.2 per cent from 60.2 per cent for the previous year.

(IV) Performance of the Private Corporate Business Sector during the first half of 2010-11

The article analyses the performance of Private Corporate Business Sector during First Half of 2010-11 based on abridged results of 2576 non-government non-financial listed companies and provides, inter alia, a brief analysis by size and industry.

MAIN FINDINGS

a) The performance of non-government non-financial listed companies that broadly represent the private corporate sector bounced back to pre-crisis level and registered 21.5 per cent sales growth in H1: 2010-11 from the previous year's relatively flat sales growth of (-) 0.6 per cent.

b) Net profits, however, recorded lower growth mainly on account of higher input prices, rise in interest outflow and lower support from non-core other income. As a result, the profitability margins also contracted at the operating, gross and net profit level.

c) Interest payments formed 2.8 per cent of sales and 20.2 per cent of gross profits. An analysis of companies with value of sales as the size differentiator revealed that companies with sales of more than ` 1000 crore dominated the overall corporate performance.

d) It is also observed that sales size influenced growth and profitability – larger the size, higher was the sales growth as also the gross profit margin.

e) In terms of the sector breakdown, companies in manufacturing and IT sector recorded robust sales growth. However, IT companies registered only a 5.9 per cent net profit growth.

f) On the other hand, performance of companies in services sector was subdued in H1: 2010-11. A higher provision towards depreciation by companies in manufacturing and services sector indicates commissioning of investments in fixed assets.

KEY PROFITABILITY INDICATORS FOR DIFFERENT GROUPS

| Indicator | Year | Nationalized Banks | New Private Sector Banks | SBI (in %) |
|---------------------|------|--------------------|--------------------------|------------|
| Net Interest Margin | 2011 | 3.20 | 3.73 | 3.32 |
| Net Interest Margin | 2010 | 2.63 | 3.54 | 2.66 |
| Return on Asset | 2011 | 0.98 | 1.39 | 0.71 |
| Return on Asset | 2010 | 0.99 | 0.86 | 0.88 |
| Gross NPA | 2011 | 1.87 | 2.24 | 3.28 |
| Gross NPA | 2010 | 1.93 | 2.80 | 3.05 |
| Cost to Income | 2011 | 48.22 | 48.99 | 47.60 |
| Cost to Income | 2010 | 46.91 | 49.04 | 52.58 |
| Net Interest Income | 2011 | 4572 | 4454 | 32527 |
| Net Interest Income | 2010 | 3109 | 3597 | 23671 |
| Operating Expenses | 2011 | 2674 | 1335 | 23015 |
| Operating Expenses | 2010 | 2013 | 1003 | 20318 |

Note: Non- Interest income and operating Expenses are in Rs crore

TREND IN BANK SPREADS AND PROFITS (% TOTAL ASSETS)

| | 2005 | | | 2006 | | | 2007 | | |
|--------------------|------|------|------|------|------|------|------|------|------|
| | S1 | P1 | P2 | S1 | P1 | P2 | S1 | P1 | P2 |
| Banks | | | | | | | | | |
| Nationalized Banks | 3.02 | 0.89 | 2.17 | 2.89 | 0.81 | 1.79 | 2.71 | 0.88 | 1.77 |
| State Banks | 3.06 | 0.91 | 2.44 | 3.07 | 0.86 | 2.17 | 2.79 | 0.82 | 1.69 |
| Private Banks- Old | 2.70 | 0.33 | 1.68 | 2.75 | 0.58 | 1.51 | 2.83 | 0.70 | 1.89 |
| Private Banks-New | 2.17 | 1.05 | 1.85 | 2.27 | 0.91 | 1.78 | 2.34 | 0.91 | 1.88 |
| Foreign Banks | 3.34 | 1.29 | 2.98 | 3.58 | 1.54 | 3.34 | 3.74 | 1.65 | 3.45 |
| All Banks | 2.83 | 0.89 | 2.17 | 2.81 | 0.88 | 1.95 | 2.69 | 0.90 | 1.90 |

S1 = Net interest income, P1 = Net Profits, P2 = Gross Profits

SUGGESTATION

1) PSBs need to fundamentally strengthen institutional skill levels especially in sales and marketing, Service operations, risk management and the overall organizational performance ethic.

2) There is Need to Take Significant Measure by Bank Management.

3) The last, i.e., strengthening human capital will be the single biggest challenge. Old private sector banks also have the need to fundamentally strengthen skill levels.

CONCLUSION

The paper investigates the efficiency of Indian banks since systemic reforms began to be undertaken by the Government. Our study is perhaps the first one that examines the long run impact of reforms and liberalization on individual banks' efficiency and profitability. We do this using Data Envelopment Analysis and bank-specific data from 2005 to 2012. We recognize the controversy on the role of deposits as input or output by deriving efficiency scores under alternative specifications. In general, we find

Foreign banks to be the most efficient followed by new private banks. While the efficiency scores of all banks have increased over the reform period, the nationalized banks have registered the strongest gains. This reflects the infusion of new capital and the increase in competition that these banks have experienced in recent years. Hence the H1: Growth of the Banking Sector is Consistent is proved.

SCOPE OF FURTHER RESEARCH

There is lot of scope for further research because the Indian banks face various problems in Financial Sector from several years. If we want to minimize them it requires systemic planning for overcoming these problems. There should be separate panel of expertise person to study & implement the reforms of the banking sector. The banking sector as the most important financial intermediary to mobilize the savings leading to increased investments, facilitating growth would, thus, play the most crucial role in attaining the stipulated economic objectives through expansion of the coverage of banking services by reaching the vast unbanked and under banked population of the country.

REFERENCES

1. India Bank 2010 Towards a High-performing Sector by McKinsey & Company
2. Report – National Bank for Agriculture and Rural Development
3. Report - Reserve Bank of India Year 2011 India
4. Reserve Bank of India, Report on Trend and Progress of banking in India, Various Issues, Bombay, India
5. Y.V.Reddy (18 May 2005) "Banking Sectors Reforms in India: An Overview" at the Institute of Bankers of Pakistan, Karachi
6. Kusum Ketkar and Suhas Ketkar (May 13 2008) "Performance and Profitability of Indian Banks in the Post Liberalization Period"
7. R.K Uppal (April 2011) "New Face of Indian Banking Industry: Emerging Challenges and New Potentials"

DEVALUATION OF INDIAN RUPEE & ITS IMPACT ON INDIAN ECONOMY

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ABSTRACT

The Indian Rupee has depreciated significantly against the US \$ marking a new risk for Indian economy. The year 2012 has begun with catastrophic affect for the rupee. It was Rupees 43.96 against a dollar in the July 2011 and now for \$1 it is Rupees 56.22. Rupee hits all time low in May 2012. This kind of decline will have the sweeping impact on the macro economy of the country, as we are heavily dependent on the import of oil, food items and other crucial raw materials. India may face its worst financial crisis in decades if it fails to stem a slide in the rupee, leaving the central bank with a difficult choice over how to make the best use of its limited reserves to maintain the confidence of foreign investors. The fall in the value of Indian rupee has several consequences which could have mixed effects on Indian economy. This paper reviews the probable reasons for this depreciation of the rupee and also attempts to study the real implications of the depreciation of the rupee on the Indian economy and shows that in the long run, the Indian economy has more to lose and less to gain with weaker rupee. In this paper effort has been made to highlight on the importance of RBI intervention to control this situation.

KEYWORDS

Depreciation, Dollar, FILs, Rupee, RBI.

INTRODUCTION**WHAT IS DEVALUATION OF A CURRENCY?**

It refers to decline in value of a currency with respect to other currencies, which is most of the times brought by central bank. It should not be confused with term depreciation of currency which is a decline in currency value due to market forces without interference of government. Devaluation means officially lowering the value of currency in terms of foreign currencies. There could be many motives of the devaluation. It stimulates exports of commodities. It restricts import demand for goods and services. It helps in creating a favourable balance of payments. Almost all the countries of the world have devalued their currencies at one time or the other with a view to achieving certain economic objectives. During the great depression of 1930 devaluation was carried by most countries of the world for the correcting their over-valuation.

**OBJECTIVES OF THE STUDY**

- 1) To understand the concept of devaluation.
- 2) To know about the trend of Indian Rupee and its exchange rate against US \$ historically.
- 3) To understand the causes and the steps taken by government on the major devaluations that took place in India.
- 4) To study the real impact of the depreciation of the rupee on the Indian economy

WHEN DOES THIS HAPPEN AND HOW?

This happens mostly in developing countries which don't allow currency prices to be determined by market forces. What happens is that they want to avoid financial crisis, for which they adopt policies to maintain a stable exchange rate to minimize exchange rate risk and save their gold (foreign currency) reserves. Restrictions placed are either trade barriers or financial. Financial restrictions are on flow of assets or money across border which is associated with policy of fixed exchange rate or managed exchange rate. The nation will be forced to devalue its currency if its market is too weak to justify the exchange rate. Example a country has depleted foreign reserves and is not credit worthy to borrow from IMF then it has to pay for its imports by devaluation. When currency is overvalued or a country wants to reduce trade deficit then devaluation is used as a policy tool.

**HISTORY ABOUT INDIAN RUPEE AND ITS EXCHANGE RATE**

In early controlled exchange rate regime, the rupee exchange rate hovered around Rs 4.00 in the 1950s, Rs 5.00 in the 60s, Rs 7.00 in the 70s, and Rs 8.00 in the 80s. In the liberalised era of 90s, the rupee moved to Rs 20 and Rs 40 in the next decade of 2000. During this period, the Government has declared two major devaluations. The rupee was devalued first in 1966 by 57.5% from Rs 4.76 to Rs 7.50 against the US dollar. In the 90s, the rupee was again devalued by 19.5% from Rs 20.5 to Rs 24.5 against the US dollar. Indian rupee and its exchange rate historically is as follows-

| YEAR | EXCHANGE RATE |
|-----------|---------------|
| 1947 | £1.00 |
| 1952 | \$4.79 |
| 1960 | \$4.77 |
| 1965 | \$4.78 |
| 1970 | \$7.56 |
| 1975 | \$8.39 |
| 1980 | \$7.86 |
| 1985 | \$12.36 |
| 1990 | \$17.50 |
| 1995 | \$32.42 |
| 2000 | \$44.94 |
| 2005 | \$44.09 |
| 2010 | \$46.21 |
| 2011 | \$53.65 |
| 2012(MAY) | \$57.31 |

DEVALUATION OF INDIAN RUPEE IN 1966

Despite government attempts to obtain a positive trade balance, India suffered a severe balance of payments deficits since the 1950s. Inflation had caused Indian prices to become much higher than world prices at the pre-devaluation exchange rate. When the exchange rate is fixed and a country experiences high inflation relative to other countries, that country's goods become more expensive and foreign goods become cheaper. Therefore, inflation tends to increase imports and decrease exports. Since 1950, India ran continued trade deficits that increased in magnitude in the 1960s. Another additional factors which played a role in the 1966 devaluation was India's war with Pakistan in late 1965. The US and other countries friendly towards Pakistan, withdrew foreign aid to India, which further necessitated devaluation. Because of all these reasons, Government of India devalued Rupee by 57.5% against Dollar.

STEPS TAKEN BY GOVERNMENT**A) IMPOSED QUANTITATIVE RESTRICTIONS**

The government used the method of QRs with varying levels of severity until the Import-Export Policy of 1985-1988. Periodically, when import prices reached a premium, the government would impose import tariffs in order to absorb the gains accruing to foreign exporters as a result of India's import.

B) PROVIDED EXPORT SUBSIDIES

Government began to subsidize exports in an effort to further narrow its consistent current account.

DEVALUATION OF INDIAN RUPEE IN 1991

In 1991, India still had a fixed exchange rate system, where the rupee was pegged to the value of a basket of currencies of major trading partners. At the end of 1990, the Government of India found itself in serious economic trouble. The government was close to default and its foreign exchange reserves had dried up to the point that India could barely finance three weeks' worth of imports. In July of 1991 the Indian government devalued the rupee by between 18 and 19 percent. The government also changed its trade policy from its highly restrictive form to a system of freely tradable EXIM scrips which allowed exporters to import 30% of the value of their exports.

STEPS TAKEN BY GOVERNMENT

a) ESTABLISHED A DUAL EXCHANGE REGIME

In March 1992 the government decided to establish a dual exchange rate regime and abolish the EXIM scrip system. Under this regime, the government allowed importers to pay for some exports with foreign exchange valued at free market rates and other imports could be purchased with foreign exchange purchased at a government mandated rate.

b) FOLLOWED A FLOATING EXCHANGE RATE SYSTEM

In March 1993 the government then unified the exchange rate and allowed, for the first time, the rupee to float. From 1993 onward, India has followed a managed floating exchange rate system. Under the current managed floating system, the exchange rate is determined ostensibly by market forces, but RBI plays a significant role in determining the exchange rate by selecting a target rate and buying and selling foreign currency in order to meet the target.

IMPACT OF DEVALUATION ON CURRENCY

Inflation rates in India have risen about 8.50% amid concerns surrounding the devaluation of the rupee and the erosion of the purchasing power of savings. In spite of Governmental interventions, the rupee is in a free-fall, having slipped by over 20%, making it one of the most awful performing currency globally. RBI made thirteen rate increases attempts to docile the inflation in last one year but hardly achieved any significant result. Inflation rate maintained upwards trend. This is now reflected through the currency depreciation. Inflation directly enhances prices and thereby affects the purchasing power of currency. Currency value and inflation have a direct correlation and impact each other. The currency re-valuation is also essential with the change in domestic prices affected by inflationary forces. Currency is considered to be over valued if the suitable adjustment is not made with the price index fluctuations.

IMPACT OF DEVALUATION ON GOLD

India currency devaluation has also resulted in surge of import by over 200% of gold and silver. Statistics show that imports of gold and silver to India were \$8.96 billion a growth of 222%. The Reserve Bank of India purchased 200 tonnes of gold from the International Monetary Fund in 2009. From the start of 2011, some 30 banks in India have been granted permission to import gold and silver. Further gold purchases are expected in coming months, as the Reserve Bank has issued licenses to seven more banks to import gold and silver. Indian banks are therefore contributing to the massive increase in demand for gold and silver. Chinese banks are also catering to the increased demand of Chinese people for gold bullion for investment and savings purposes. In fact, most of the world's central banks are now diversifying from major currencies such as the dollar and euro into gold. In addition to India and China, these countries include Russia, Sri Lanka, Bangladesh, Mauritius, Mexico, Iran and Saudi Arabia. Financial experts believe, the increased demand for gold and silver from India and wider Asia is sustainable and that it will keep the precious metal market thriving.

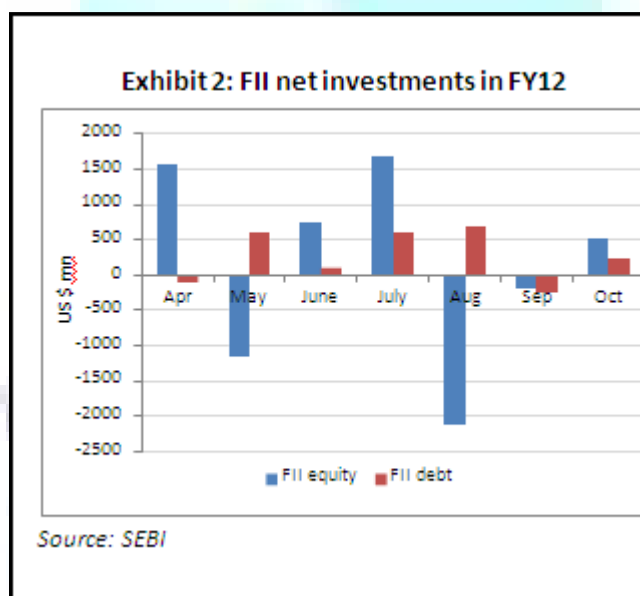
IMPACT OF DEVALUATION ON STOCK MARKET

As a result of devaluation, Indian stock markets will face new threats. The operators and participants were earlier concerned about domestic inflation rate and the Reserve Bank of India's economic policies. But the fall in the value of Indian currency has taken aback all concerned. The investors are bound to suffer as there is always a positive correlation between stock index and corporate results.

CAUSES OF DEVALUATION OF THE INDIAN RUPEE

1. WITHDRAWAL BY FI'S

The main driver of rupee depreciation in the last three months has been the withdrawal of funds by foreign institutional investors (FIIs) from domestic economy. The rather pessimistic view of FIIs is being governed by global developments. FIIs have registered a net sales position of US \$ 1,581 million, between August and November so far.



The ongoing Euro-zone debt crisis seems to be intensifying and rescue packages have been of limited assistance in truly resolving the crisis. While the risk of sovereign default by individual Euro states is a concern, the risk of an impending contagion is also significant. It is estimated that the IMF has about \$400 billion available to provide funding to the Euro-zone, but Italy alone has to refinance \$350 billion worth of debt in the next six months. The support by the IMF thus is a just fraction of the cumulative financing requirement to resolve this debt crisis. Changes in political leaders and finance ministers of these states, debates on the role and mandate of the European Central Bank (ECB) and European Financial Stability Facility (EFSF) and quantum of financial support to be provided by member states remain some points of indecision.

The scenario in the US does not provide an upbeat picture either. Delays in policy formulation on the setting of debt ceiling for the state have reflected some lacunae in management of government finances. While housing starts, industrial production and consumer spending are gradually showing signs of improvement, the rate of unemployment remains uncomfortably high. Growth estimates for the US have been revised downwards to 2.0% in Q3 from the earlier estimate of 2.5%.

The real estate problem, weakening local government finances, lack of transparency in operations and systems of the government and deterioration the assets of the banking system observed in the Chinese economy are further drags to the global macro-economic outlook for the coming months.

Domestic macro-economic prospects as well are weighed by high inflation and sagging industrial production, which have led to downward revision of growth estimates to just 7.6% for FY12.

Consequently, FIIs have withdrawn funds from emerging markets and invested back in the dollar which has been strengthening. In November (so far) itself, FIIs have registered a net sales position to the tune of US \$ 87 million.

2. STRENGTHENING OF DOLLAR

As these downbeat forces have played strong over the last few months, investor risk-appetite has contracted, thereby increasing the demand for safe haven such as US treasury, gold and the greenback. The Euro has depreciated 6.55% against the dollar in the last three months which has in turn made the dollar stronger vis-à-vis other currencies, including the rupee. With winter, the demand for oil and consequently dollar is only expected to move further upwards. Domestic oil importers have also contributed to this strengthening to meet higher oil import bills.

3. WIDENING CURRENT ACCOUNT DEFICIT

The current account balance is composed of trade balance and net earnings from invisibles. While earnings from invisibles have been quite robust this year (growth of 17% y-o-y), the trade account has deteriorated on unfavourable terms of trade. Current account deficit (CAD), in Q1 FY12 had widened by Rs 40,000 crore, over Q4 FY11. Furthermore on a quarterly basis, even invisibles earnings have registered some decline. With contribution of exporters remaining on the sidelines and earnings from invisibles continuing to decline, a further widening of the CAD would result in outflow of dollars from the Indian economy accentuating the depreciation in rupee. In particular software receipts would be under pressure given the global slowdown.

4. DECLINE IN OTHER CAPITAL FLOWS

Foreign Direct Investments (FDI), External Commercial Borrowings (ECBs) and Foreign Currency Convertible Bonds (FCCBs) have maintained robust trends this year, when compared with net inflows in FY11. However, on a month-on-month basis, ECBs and FCCBs have registered slowdown. A prospective decline in these other inflows on the capital account of the balance of payments could cause further depreciation in rupee. While FDI has been increasing it has not been able to make up for lower other capital inflows.

IMPACT OF RUPEE DEPRECIATION

1. HIGHER IMPORT BILLS

A depreciation of the local currency naturally manifests in higher import costs for the domestic economy. Assuming that both imports and exports maintain their current growth rates through the year, higher import costs would widen the trade and current account deficit of the country. We expect current account deficit to settle at 3.0-3.1% of GDP by March 2012- end. Additionally, the domestic economy could be faced with a problem of higher inflation through imports. Commodities prices that are internationally denominated in US dollars would naturally be priced higher on the back of a stronger Dollar. Also, while global base metals prices such as nickel, lead, aluminium, iron and steel would have eased, the depreciating rupee would keep the price of imported commodities elevated.

2. FISCAL SLIPPAGE

The fiscal deficit for FY12 was budgeted at 4.6% of GDP in February, with the price of oil pegged at US \$ 100 per barrel. Throughout FY12 so far, however, the price of oil has been well above this reference rate, hovering at an average of US \$ 110 over the last three months. Oil subsidy for the year is about Rs 24,000 crore for FY12. This will rise on account of the higher cost of oil being borne by the government. While there have been moves to link some prices of oil-products to the market, there would still tend to be an increase in subsidy on LPG, diesel, kerosene. The government has already enhanced its borrowing programme in H2 FY12 by Rs 52,000 crore, to bridge the fiscal gap.

3. INCREASED BURDEN ON BORROWERS

Higher rates will come in the way of potential borrowers in the ECB market. Today given the interest rate differentials in domestic and global markets, there is an advantage in using the ECB route. With the depreciating rupee, this will make it less attractive. Further, those who have to service their loans will have to bear the higher cost of debt service.

4. IMPACT ON EXPORTS

Usually exports get a boost in case the domestic currency depreciates because exports become cheaper in international markets. However, given sluggish global conditions, only some sectors would tend to gain where our competitiveness will increase such as textiles, leather goods, processed food products and gems and jewellery. In case, imported raw material is used in these industries they would be adversely affected. Therefore, exports may not be able to leverage fully.

CONCLUSION

Thus we can see that since 1950 besides few appreciation rupee is depreciating against US dollar and the causes of depreciation are invariable different. Even after taking few measures by government if we see the recent depreciation, Rupee depreciation has abated but it still remains under pressure. Both domestic and global conditions are indicating that the downward pressure on Rupee to remain in future. Thus, RBI should likely to continue its policy mix of controlled intervention in forex markets and administrative measures to curb volatility in Rupee. Apart from RBI, government should take some measures to bring FDI and create a healthy environment for economic growth. Some analysts have even suggested that Government should float overseas bonds to raise capital inflows.

REFERENCES

- 1) Aggarwal Anmol. "Rupee Depreciation: Probable Causes and Outlook." STCI Primary Dealer Ltd 21 Dec 2011:1-9
- 2) Jain A.K. "Currency Devaluation Hammers India." Tapuria Jain & Associates. (13 Jan. 2012.)
- 3) Johri Devika, Miller mark. "Devaluation of the Rupee: Tale of Two Years, 1966 and 1991." State, Market & Economy 84-90
- 4) Kalra Bhawna. "Devaluation of Indian Rupee Against US \$: A Historical Perspective."- International Journal of Research in Economics & Social Sciences (Volume 2, Issue 2, February 2012)
- 5) Rangarajan, C, 1998, *Indian Economy: Essays on Money and Finance*, UBS Publishers' Distributors Limited, New Delhi.
- 6) Reserve Bank of India (RBI) <http://www.rbi.org.in/scripts/publications.aspx?publication=Annual>
- 7) Sumanjeet Singh (2009). "Depreciation of the Indian Currency: Implications for the Indian Economy." AIUB Bus Econ Working Paper Series, No 2009-04,
- 8) Swati Bhatt (2011). Big dangers from a declining rupee." The NEW York times.

SERVICE PRODUCTIVITY: CONCERNS, CHALLENGES, AND RESEARCH DIRECTIONS

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ABSTRACT

The concept of productivity is widely discussed in manufacturing but not in services. The researches in this area lack its focus. There is a need to explore the meaning and understanding the concept of productivity in services. The logical analysis of literature review and critical enquiry on productivity aims to build up patterns for concept of productivity in services. Inductively, the research questions make an attempt to discuss concerns, challenges and provide the conceptual understanding of service productivity. Also, the paper offers research directions through the issues of measurement aspects and techniques for improving service productivity.

KEYWORDS

Challenges, Measurement, Qualitative aspects, Quantitative aspects, Service productivity.

INTRODUCTION

Not every thing that counts can be counted, and not everything that can be counted, counts.

____ **Albert Einstein**

The origin of productivity is deeply rooted in the mass production and therefore productivity concept mainly discussed and analyzed in the manufacturing. Despite the importance of productivity in service organizations it is surprising that there is relatively little empirical research on this topic. Organizations that deliver service must broaden their examination of productivity from the conventional organization-oriented perspective to a dual, organization and customer perspective. This broadened approach can help reconcile conflicts between improving service quality and boosting productivity in services (Sahay, 2005). Some researches state that quality and productivity are two unrelated concepts (Brignall et. al., 1996), (Heskett et. al., 1994). However, most researches state that quality and productivity can not be approached as separate concepts (Sahay, 2005), (Kontaghiorghes, 2003). Productivity of manufacturing organizations is measured in quantitative units of input and output. There are some attempts to measure service sector productivity in the same way, i.e. using only quantitative dimensions of input and output (McLaughlin, 1990). There are two reasons for inadequacy in service productivity measurement aspects. The first reason is the inputs and outputs of service productivity consist not only quantitative elements but also qualitative (Ried, 2005). The second reason is the fact that quality and productivity in all sectors of services are strongly correlative (Gummesson, 1998). Also, customer involvement to the organizational activity in the services generates variations in the output. The concept of productivity has been analyzed for more than two hundred years in the manufacturing but not in services signifies the scope this paper. Further more, there is an incomprehension surrounding the topic makes it necessary to explore the meaning and to understand the concept of service productivity. The paper makes an attempt to discuss conceptual understanding service productivity by posing research questions: Viz., i) what is the service productivity, ii) How we can determine the service productivity, iii) what are the dimensions of service productivity is the core of the research problem.

DEFINING AND MEASURING SERVICE PRODUCTIVITY

The issues surrounding the definition and measurement of productivity have been the topic of research for a variety of disciplines, including accountancy, economics, engineering and operations research. At a basic level, the concept of 'productivity' is relatively easy to define. It is the ratio of output to input for a specific production situation. Rising productivity implies either more output is produced with the same amount of inputs, or that less input are required to produce the same level of output. In either case, it is not difficult to understand the importance of productivity changes for general welfare, including environmental concerns. According to Misterik et al. (1992), an increase in productivity can be caused by five different relationships of input and output: i) Output and input increases, but the increase in input is proportionally less than increase in output, ii) Output increases while input stays the same, iii) Output increases while input is reduced, iv) Output stays the same while input decreases and v) Output decreases while input decreases even more. Simply to define, productivity measures the amount of output produced relative to the amount of inputs used. Hence, improvements in productivity require an increase in the ratio of outputs to inputs. An improvement in this ratio might be achieved by cutting the resources required to create a given volume of output or by increasing the output obtained from a given level of inputs. Input varies according to the nature of the business but may include labour (both physical and intellectual), materials, energy, and capital (consisting of land, buildings, equipment, information systems, and financial assets). The intangible nature of services makes it more difficult to measure the productivity than that of manufacturing. Measuring productivity is difficult in the services when the output is hard to define. In a people processing service like a hospital, we can look at the number of patients treated in the course of a year or average bed occupancy. But how do we account for the different types of interventions performed, such as removal of tumours, treatment of diabetes, or setting of broken bones? How do we evaluate the inevitable difference in outcomes? Some patients get better, some develop complications, and sadly, some even die. Relatively few standardized medical procedures offer highly predictable outcomes. A major problem in measuring service productivity concerns variability. Another approach is counting the number of customers served per unit of time also has the similar shortcoming. Suppose, hairdresser who serves three customers per hour that increases output to one every fifteen minutes - giving what is technically just as good a haircut - by using a faster but noisier hairdryer, eliminating all conversation, and generally rushing. Even if the haircut itself is just as good, the delivery process may be perceived as functionally inferior, leading customers to rate the overall service experience is poor. Thus, the problem is that classical techniques of productivity measurement focus on outputs rather than outcomes, stressing efficiency but neglecting effectiveness. In the long run, organizations that are more effective in consistently delivering outcomes desired by customers should be able to command higher prices for their output. The need is to emphasize effectiveness and outcomes, suggest that issues of productivity cannot be divorced from those of quality and value. Loyal customers who remain with a firm tend to become more profitable over time, an indication of the payback to be obtained from providing quality service. Intangible nature of many service elements makes it hard to measure the productivity of service firms. (Information-based services, efficiency mean comparison to a standard-usually time-based, e.g. how long employee takes to perform specific task). The Problem is focus on inputs rather than outcomes, which may ignore variations in quality or value of service. Service productivity cannot be ignored from quality/customer satisfaction. Traditional measures of service output tend to ignore variations in quality or value of service. They focus on outputs rather than outcomes, and stress efficiency but not effectiveness. Firms that are more effective in consistently delivering outcomes desired by customers can command higher prices. Furthermore, loyal customers are more profitable. Measures with customers as denominator include profitability by customer, capital employed per customer, Shareholder equity per customer. Therefore, the Service productivity measure needs to include the service experience, customer involvement, cooperation and so on.

BASIC TYPES OF PRODUCTIVITY MEASURES

Productivity is concerned with effective utilisation of resources (ie. inputs) in producing the goods or services. (Output). It is strong indicator ability organisation to compete with others. Basically there are three main types of productivity measures.

PARTIAL PRODUCTIVITY: It is the ratio of the output to one class of input. E.g. Physician productivity, labour productivity.

TOTAL FACTOR PRODUCTIVITY: It is the ratio of net out put of the sum of labour and capital input. The net out put is the total of out put minus the materials and services purchased.

TOTAL PRODUCTIVITY: It is the ratio of total output of sum of all input factors. The productivity measure reflects the joint impact of all the inputs producing the out put.

DIFFERENT TERMS OF PRODUCTIVITY

The literature shows that concept of productivity should distinguish from four other similar terms: Profitability, Performance, and Efficiency, Effectiveness.

PROFITABILITY: Perhaps the reason why companies tend to ignore the importance of the productivity is that they often link productivity and profitability as one issue. Profitability is overriding the goal of the success and growth of any business, and generally ratio between the revenue and cost. However the profitability as performance measurers mainly addresses shareholders as the interests group and many researchers therefore claim that using monetary ratios as the productivity measures will results in several shortcomings. Profitability can change for reasons that have little to do with productivity, such as inflation and other external condition that may bear no relationships to the efficient use of resources. The term profitability clearly has a productivity component, but it is strongly influenced by the prices a company pays for its input and receives for its output. If a company can recover the more than the cost of input from rising prices for its output, its profitability can be increased even in times when its productivity is decreasing. There is strong argument for productivity being expressed in physical units (in quantities) instead of monetary units. In conclusion, productivity can separate from profitability by the price recovery.

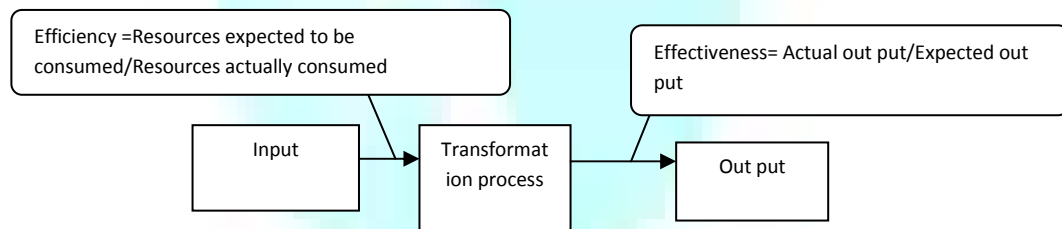
PERFORMANCE: Many people who claim to be discussing the productivity are actually looking at the more general issue of performance. While productivity is fairly specific concept related between output and input, performance is term which includes almost any objective of competition and manufacturing excellence such as cost flexibility, speed, dependability and quality.

EFFICIENCY AND EFFECTIVENESS: The two terms effectiveness and efficiency used in relation to productivity. The effectiveness is usually described as 'doing the right things' and efficiency means 'doing things right'. Most of the researchers agree that efficiency is strongly linked with to the utilization of the resources and mainly influence the input of the productivity ratio. The efficiency ratio simple to measure, whether it is based on time, money or other. Effectiveness is more diffused term and in a many cases difficult to quantify. It is often linked to creation of value for the customer and affects the output of productivity ratio.

In contrast to the manufacturing environment, there are fewer objective ways of determining the quality of a service. How do you determine when an audit is really complete and up to the quality standard, whether the patient needs one more day of hospital care, or whether the advertising campaign is as successful as it should be? More resources almost always increase the cost and, if the output units are unchanged, result in lower efficiency. However, more resources can increase or decrease effectiveness. For example, frequently more hospital days and tests can be detrimental to a patient reducing the effectiveness of the care. At the same time, under treatment or under care can damage the health of the patient as well.

One could easily improve the productivity of any educational institution by increasing the number of students per class. This could have adverse impact on the quality of education, reputation of the institution, desirability of the institution, ability of the institution to attract represent "good" management of productivity but rather "different" management resulting in higher efficiency and lower quality. It may, however, represent good management if there were adequate evidence that the reduced quality would be immaterial for all intents and purposes or if lower service quality expectations would continue to satisfy the service organization clientele or constituents. Thus, researcher in opinion that the combination of effectiveness and efficiency leads to higher productivity.

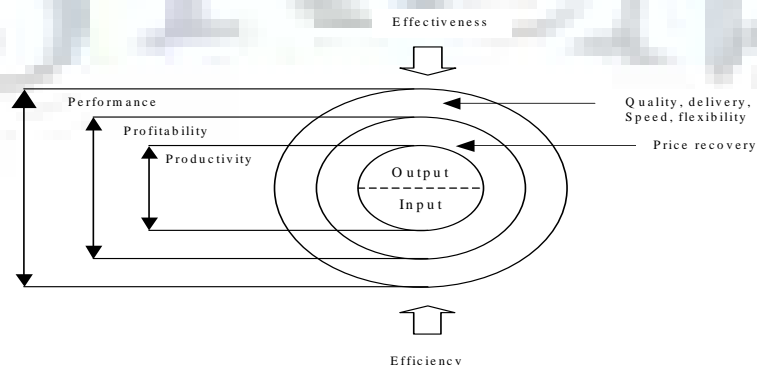
FIGURE 1: EFFICIENCY AND EFFECTIVENESS



THE TRIPLE –P MODEL

The model involves five terms are productivity, profitability, performance, effectiveness and efficiency, and explains how they are related to each other. The Triple P model, gives the main differences between the terms can easily be captured. Productivity is the central part of triple P model and has a straightforward operational definition of productivity as the ratio of out put (i.e. the number of correctly produced products which full fill their specification) divided by input (i.e. all types of the resources are consumed during the transformation process). Profitably is also seen as the relation between output and input but it includes influences of price –factors(Price recovery). Performance is the umbrella term of manufacturing excellence and includes profitability as wells as non cost factors such as quality, speed, delivery and flexibility. Effectiveness is the term to be used when the output of the manufacturing or services process is focused, while efficiency represents how well the input of transformation process is (i.e. resources) utilized.

FIGURE 2: THE TRIPLE –P MODEL



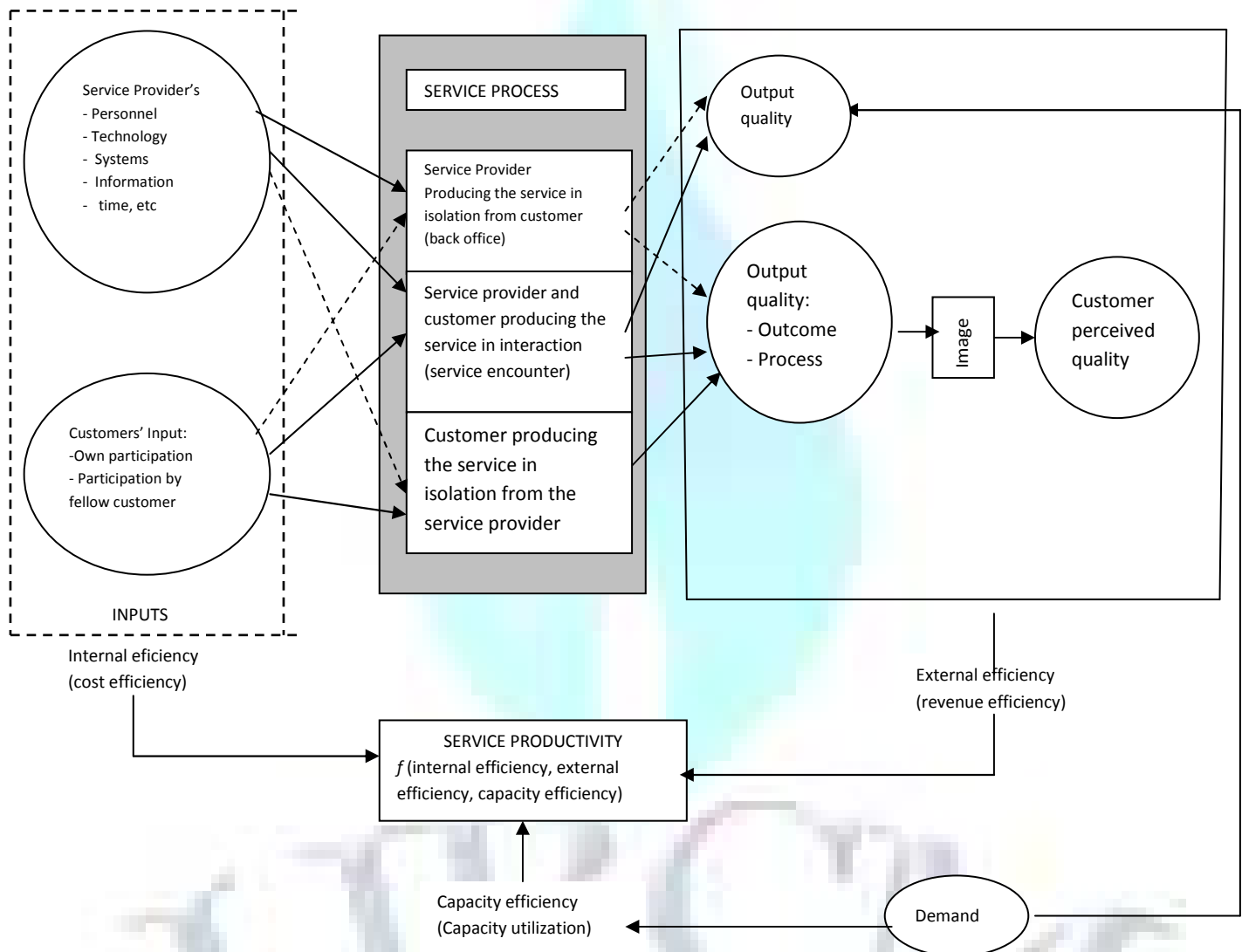
APPROACHING TO SERVICE PRODUCTIVITY MODEL

It is meaningless to develop a service productivity concept based on the management of internal efficiency (cost efficiency) and quantity out put only. Because of the characteristics of services and services process, the management of external efficiency (perceived service quality) of the quality out put has to be integral part of service productivity concept. Managing the external efficiency and perceived service quality is the matter of revenue efficiency, because better quality normally means more sales and increased revenues, and vice versa. A third element of service productivity is the management of demand or capacity efficiency. This is because service providers cannot use inventories to with excess capacity or excess demand, as goods of manufacture can. Hence, Service productivity concept can be described in the following way:

Service productivity = f (internal efficiency, external efficiency, capacity utilisation)

OR

Service productivity = f (cost efficiency, revenue efficiency, capacity efficiency)

FIGURE: 3. SERVICE PRODUCTIVITY MODEL

Sources: Ojasalo, K., *Conceptualizing Productivity in Services*. Helsinki/Helsingfors: Hanken Swedish School of Economics, Finland/ CERS, 1999, p.71. & Christian Gronroos, *Service Management and Marketing*, Second edition, John Wiley & Sons, Ltd.2000, Chichester, England

From productivity perspective the service process can be divided into three separate processes. i) the service provider produces service in isolation, ii) the service provider and customer produce service in interactions (service encounters), iii) the customer produces service in isolation from the service provider. The service provider's inputs into the service process (personnel, technology, systems, information, use of time, etc.) influence the two first process directly and third process indirectly (as illustrated by the back and dotted arrows respectively). The customer's inputs (customer's own participation and fellow customer's participation) directly affect the second and third processes, and indirectly affect the first (providing the information to back office processes). The more efficiently the service organisation uses its own resources as input into processes and better organisation can educate and guide customers to provide process-supporting input to produce a given amount of output, the better internal efficiency or cost efficiency of the service will be. From the provider's point of view, how customer produce the services in isolation from service provider has no direct effect on internal efficiency; but has decisive impact on service productivity through customer perception of service quality. The output of the service process is two fold: quantity of out put (volume), and quality of out put (out come and process) (Christian Gronroos, 2000, Jonas et al; 2005). The quantity produced is dependent on demand. If demand meets supply, the utilisation capacity or capacity efficiency is optimal. If there is excess demand, capacity is utilized to the full extent, but there may be negative effect on the quality of the output. If the demand is lower than potential out put, the capacity is under utilised and capacity efficiency will be lower than optimal. The perceived quality is produced using a given amount input (service provider's input and customer's input), the better external efficiency or revenue efficiency will be, resulting in improved service productivity. If perceived service quality goes down, because the available input is functioning in a less service oriented way or resources structure is altered in

way that decreases quality, external efficiency is reduced and firm revenue generating capability is lowered. This has negative impact on service productivity (Christian Gronroos, 2000). The internal efficiency and the cost-efficient use of resources is one side of the service productivity, and external efficiency and revenue-generating capability is another. In addition, the efficient utilisation of resources so that demand and supply meet as much as possible has a positive on service productivity. An interesting aspect of service productivity is the fact that because image has an effect on the quality perception, managing the image is also part of management of service productivity. Keeping in mind that customer perceived quality is function of the experiences of the services process and its outcome and also customer expectations realize that service productivity is also influenced by expectations management. This is not depicted in the service productivity model, because expectations are also included in perceived quality. (Christian Gronroos, 2000). Service Productivity at the outset of analysis, as the ability of a service organization to use inputs for providing services with the quality matching the expectation of customers (Jarvinen et al., 1996; Jonnas et al 2005).

THE QUANTITY ASPECT OF SERVICE PRODUCTIVITY

The quantity aspect of service productivity is identical to the manufacturing productivity and consists of material, labour, capital. Service business is personnel-intensive; therefore productivity of many service spheres is low compared to manufacturing sphere. Therefore many providers of services investing to technologies as alternative of using labour (e.g. automated teller machines replace operators, World Wide Web business replace sellers in shops). It shows a way to increase productivity through investing to the technologies in expenses of input element of capital. Though capital mostly impacts service productivity, we have no use for only this partial (capital) productivity measures.

It might seem that output, amount or quantity is the primary factors to measure productivity. When a proposed service consists of one or several standardized components, output of service is easy to measure. Therefore output can consist of a number of standardized services adapted to individual customers (e.g. in the case of a unique service package). Therefore defining the service output is a difficult task.

It is strategically important for the service provider to have enough of resources in order to match demand for the service. This strategy is oriented towards the quantity. However, from the customer's view, the volume of the service output is hardly a significant issue, because the customer usually buys only one unit of output (e.g. haircut) or one package of service (e.g. holiday tour). The customer is therefore inclined to give priority to service quality (Sahay, 2005). Yet, the actual volume of operations is determined by the variation of demand over time (McLaughlin, 1996). As a consequence, the productivity ratio of service operations may vary greatly from one time period to another, if it is measured as a quantity ratio. Due to the variation in the amount of the total demand across time, the service provider has to solve two basic problems related to the quantity aspect: capacity size and capacity scheduling (McLaughlin et. al; 1991).

THE QUALITY ASPECT OF SERVICE PRODUCTIVITY

The quality aspect is a dimension that is difficult to define objectively. According to Gummesson (1992), there is a humanistic quality approach. At the one extreme we must pay more attention to the customers, personnel, leadership and culture, whereas at the other end lies a technical approach concerning operations management, statistics and methods of measurement. Service quality is generally defined as customer perceived quality which stresses the individuals' assessment of the value of the total service offering (Gummesson, 1994) and there is difference between expected service quality and experienced service quality (Gronroos, 1982). Physical environment – buildings, offices and interior design – affects customer beliefs, attitudes and satisfaction (Zeithaml and Bitner, 2003), and provides an opportunity to tell the "right" story about a given service (Berry, 1984). It is also very important how contact personnel dresses, articulates, writes, designs and presents proposals (Levitt, 1983). As intangible input, the service personnel represent the service, the organization and the marketers in the customer's eyes (Zeithaml and Bitner, 2003). The quality management of personnel includes such things as motivating, managing information, training, career planning, recruiting and retaining the right people (Zeithaml and Bitner, 1996). Service business is personnel-intensive, meaning that quality supplied to the customer is essentially a result of the way personnel perform (Normann, 1991). According to Gummesson (1994) there are attempts to include customers in the service organization activity. Another important intangible element is service culture. By participating in the service delivery process, customers influence and even create perceived service culture. High levels of intangibility call for image building and maintenance to attain reliance based on reputation and subjective impressions of the service (Cowell, 1998). In the long run, image depends mainly on what the organization actually provides but in the short run image can be used as a tool for the creation of new reality (Normann, 1991). Service sector productivity is heavily dependent on fast developing technologies and automation (Gummesson, 1998). Customers, instead of interacting with a contact person, they transact using an automated teller machine or a computer. According to Normann (1991), there are five main reasons for using information technologies:

1. Reducing costs by substituting services officers for information technologies.
2. Standardizing services.
3. Increasing availability (24-hr access to services using appropriate machines or computers).
4. Linking customers into the service system.
5. Affecting customer and personnel relationships and behaviour.

Thus, service productivity =

$$\frac{\text{quality output} \times \text{quantity output}}{\text{Quality input} \times \text{quantity input}}$$

OR
Service productivity =

$$\frac{\text{customer perceived quality}}{\text{Tangible and Intangible elements,}} \times \frac{\text{service volume}}{\text{Labour, raw materials, capital}}$$

One of most important aspect of service productivity is quality not quantity. From the customer side volume of the service out put hardly significant. Suppose two hospitals providing the healthcare two patients .Can their productivity be truly compared if the service area coverage are different. Sometimes it is difficult to define what to measure. One can define indices to measure some aspects of productivity. For an instance more sales follow-ups or visits may not necessary result in more happy customers. There is need measure on those customers turn to the competitors due to poor service.

NEW CHALLENGES – SERVICE PRODUCTIVITY

Even though the competitive and cost pressure in the service increases, there is little empirical research with regard to cause/effect relationships and productivity related influence factors in service settings. This is one of the reasons why there is hardly any application-related engineering knowledge available at present for sustained improvement or increased productivity in the service sector. The management tools that have been successfully used to evaluate and manage the service productivity include the following; Standard Cost Systems, Comparative efficiency Analysis, Ratio Analysis, Profit and Return on Investment Measures, Zero-base Budgeting.

However, we do know that the "logic" of service work is different from the one of production work. Of course, this has an influence on the issues of productivity and value addition of service activities. The fact that the customer is more or less a component in the service providing process is one of the prime reasons for

the traditional input/output models for productivity mapping reaching their limits in the service sector. Just consider the consulting services of lawyer or doctor. Obviously the quality and productivity of the service decisively depend on the customer's collaboration, i.e. on his active contribution to service providing. How can the input and/or output of a service be determined and made measurable? For example, how can you measure the productivity of a nurse? By the shortest time for a patient to check out of hospital? By the shortest time for him to check in again? Or is it about the sustained effect of provident care? These questions suggest that the quality of a service as perceived by the customer is a decisive factor for assessing the productivity. Eventually the customer's readiness to take on parts of the service process herself has also an effect on the overall productivity (e.g. self-service settings).

FIGURE 4 a: A FRAMEWORK FOR SERVICE PRODUCTIVITY

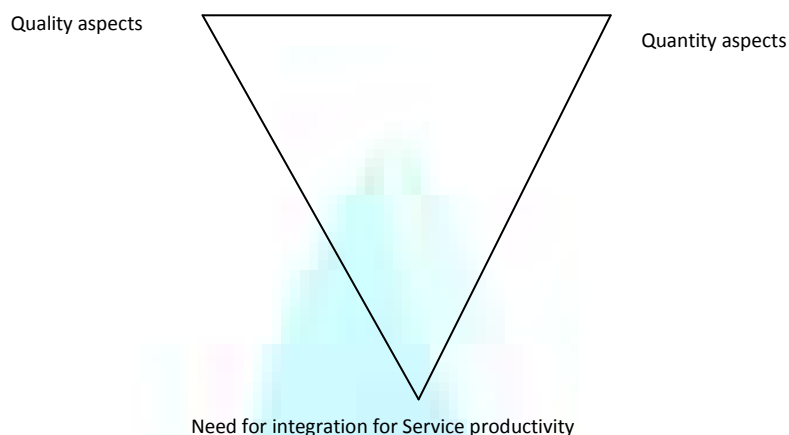
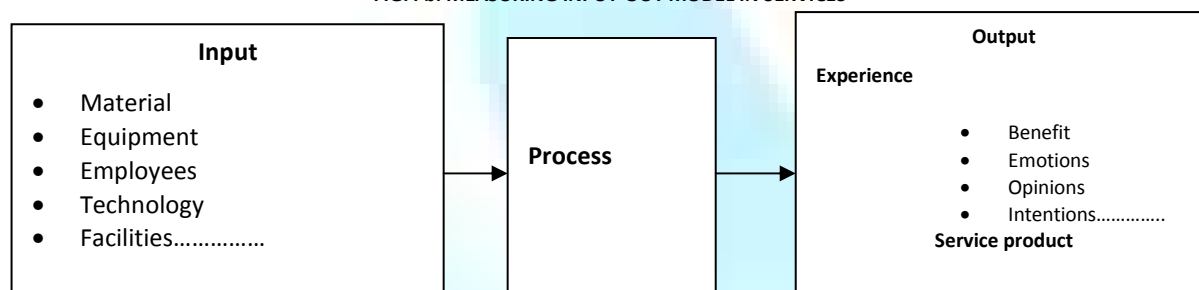


FIG.4 b: MEASURING INPUT-OUT MODEL IN SERVICES



The scientific challenge is to understand the interrelations between the service "event" as perceived by the customer (and by employees) and the design of productive working processes. This is the basis for the subsequent development of design concepts contributing to a substantial improvement of the productivity of services. It will only be possible to achieve a sustained increase in productivity if such concepts take the specific characteristics of service activities into due consideration and can be customised to the work requirements for each specific situation.

PRODUCTIVITY IMPROVEMENT TECHNIQUES

There are various techniques for productivity improvement. Usually they are established techniques under operation research, industrial engineering, management concept, and behavioural science. They are broadly classified into 5 categories.

- 1. TECHNOLOGY BASED TECHNIQUES.** -CAD, CAM, robotics, computer added data processing, integrated information system, electronic data interchange, computer graphics, barcode and smart card technologies.
- 2. PEOPLE BASED TECHNOLOGIES**-Individual and group incentives, job enrichment, enlargement and rotation, worker participation and empowerment, customer focused culture, learning curve and skills training, education and career development, management by objectives (MBO), Quality circles and zero defects.
- 3. PRODUCT (SERVICE) BASED TECHNIQUES** -Value engineering, product standardisation and simplification, rapid product prototyping, concurrent engineering, service standards setting, product/service quality reliability, customer satisfaction evaluation, activity based costing (ABC).
- 4. PROCESS & TASK BASED TECHNIQUES**- methods engineering, work measurement, job design, human factors, computer simulation, operation scheduling, quality assurance, and control, Total quality management, time compression, value chain analysis, planned preventive maintenance, business process re-engineering (BPR)
- 5. MATERIAL (& RESOURCE) BASED TECHNIQUES** -inventory control, supply chain cycle, Just-in-time, materials Requirement planning (MRP), Manufacturing resource planning, material handling system, material reuse and recycling.

CONCLUSION

There is a difficulty in the measurement issues of service Productivity. It is difficult to measure because of intangibility of service. Service productivity wherein to evaluate output and input elements takes both qualitative and quantitative aspects. The most important factor in service productivity measurement is qualitative aspect. This paper attempts to explain the various aspects of service productivity. The most important element in the determination of productivity of service sector is quality. It is especially clearly revealed in determination of output. From the customer's view, the volume of the service output is hardly a significant issue, because the customer usually buys only one unit of output or one package of service and quality becomes the most important aspect of output. Determination of service output could be a difficulty task because of its intangible nature. One of the most effective ways of boosting productivity is investing to new technologies, which helps to reduce labour element of input and to reach higher values of productivity.

REFERENCES

1. Adam K (1995), "service productivity: a vision or a search for new out look", paper presented at the ninth world productivity congress, Istanbul, June4-7, 1995.
2. Berry, L. Services marketing is different (1984), "Service Marketing", Englewood Cliffs, 1984, pp.29-37.
3. Brignall (1996), "Performance measurement in service business, International Journal of service Industry Management, Vol.7No.1, pp.6-31.
4. Christian Gronroos (2000), "Service Management and Marketing", Second edition, John Wiley& Sons, Ltd., Chichester, England.

5. Cowell, D. (1988), "The Marketing of Services", London, 1988.
6. Grönroos, C. (1982), "Strategic Management and Marketing in the Service Sector", Research Reports, No 8, Swedish School of Economics and Business Administration, Helsinki, 1982.
7. Gummesson (1998), "Productivity, quality and relationship marketing in the service operation", International Journal of Contemporary Hospitality management, Vol.10, pp.4-15.
8. Gummesson, E. (1992), "Quality dimensions: what to measure in service organizations". Advances in Services Marketing and Management. Greenwich, CT. pp.177-205.
9. Gummesson, E. (1994), "Service quality and productivity in the imaginary organization", Paper presented at the 3rd International Research Seminar in Service Management. May 24-27. France, 1994.
10. H.Singh, J. Motwani, A. Kumar, (2000), "A review and analysis of the state art research on productivity Measurement, Industrial management and data systems Vol.100. pp.234-41.
11. Heskett, J.L. (1994), "Putting service-profit chain to work", Harvard Business Review, March-April, pp.164-174.
12. Jarvinen, R. (1996), "The change process of industrialization, electronising the service channels and redesign the financial sector from the productivity view point", Paper presented at the second International research workshop on service productivity, April 18-19. Madrid, 1996.
13. Jonas Rutkauskas, Eimen, Paulavicien (2005), "Concept of productivity in service sector", Engineering economics, No.3 (43).
14. Kontogiorgos, C. (2003), "Examining the Association between Quality and Productivity Performance in a Service Organization", Journal of Quality Management, Vol.10, No 1, p.32-42.
15. Levitt T. (1983), "The marketing Imagination", New York, NY, 1983.
16. Martin C. R. (2001), "A perspective on client productivity in business to business consulting services", International Journal of service Management, Vol.12, pp.37-149.
17. McLaughlin, C. (1990), "Measuring productivity in services", International Journal of Service Industry Management, Vol.1, No 1, pp.46-63.
18. Misterik, S. (1992), "Productivity as a performance measure", International Journal of Operations and Production Management, Vol. 12, pp.29-45.
19. Nachum, L. (1999), "Measurement of the productivity in services, International Journal of operation and management", Vol.19, No.9, pp.922-949.
20. Normann, R. (1991), "Service Management", Chichester, 1991.
21. Ojasalo, K. (1999), "Conceptualizing Productivity in Services", Hanken Swedish School of Economics, Helsinki/Helsingfors, Finland/ CERS, p.71.
22. Parasuraman, A. (2002), "Service quality and productivity; a synergistic perspective", Measuring Service Quality, 2002, Vol.12, No 1, pp.6-9.
23. Reid D.R., (2005), "Operation management: An Integrated approach", John Wiley & sons, Inc. 2005.
24. Sahay B.S. (2005), "Multifactor productivity measurement model for service organisation", International Journal of Productivity and measurement, Vol.2 No.1, pp.6-9.
25. Sherman and Zhu (2006), *Service productivity management*, Springer, Boston
26. Stefan Tangen (2002), Understanding the concept of productivity, Proceedings of the 7th Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS2002), Taipei
27. TIM Coelli, Prasada Rao, George E Battese (1998), "An Introduction to Productivity analysis", Kulvar Academic publishers, London, 1998.
28. William F Christoper, Carl G Thor (1993), "Hand book for productivity measurement and improvement, Productivity press, Portland, Oregon, 1993.
29. Zeithaml, V.A. (1996), "Services Marketing", Prentice Hall, 1996.
30. Zeithaml, V. A., & Bitner, M. J., (2003), "Services marketing: Integrating customer focus across the firm", 3rd ed, New York: McGraw-Hill.

A STUDY OF THE MANAGERIAL STYLES OF EXECUTIVES IN THE MANUFACTURING COMPANIES OF PUNJAB

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ABSTRACT

Managers are the pillars of an organization and on them depends its success. For an organization to be effective, the managerial approach to decision making, along with technological efficiency and facilities available for research and development, is very important. The distinctive way in which various functions such as goal setting, strategy formulation and implementation, organizing, staffing, control, co-ordination, leadership, image building, etc. are performed comprises the managerial style. It associates with superior organizational learning, smoothness of functioning, managerial development, synergy, performance etc. Those styles, which have damaging effect on the overall health of the organisation, can be easily diagnosed and discontinued, with immediate effect. A diagnostic instrument with a scoring key helps the management to diagnose how far excellent and bad styles are practiced in their organisation so that the best style can be made use of and the bad ones avoided. The present study was undertaken with an aim of understanding and comparing the managerial styles being used by executives at various levels in the manufacturing companies of Punjab by using a structured interview schedule based on SPIRO-M technique. 224 managers from 56 companies were covered and it was found that around 48 percent managers are using Not-Ok styles. Also no significant differences were found in variances at the middle level and lower levels for all styles except problem solving, bohemian and rescuing styles when F test was used.

KEYWORDS

managerial Approach, Goal Setting, Organisational Learning, Synergy.

INTRODUCTION

Managers are the pillars of an organization and on them depends its success. For an organization to be effective, the managerial approach to decision making, along with technological efficiency and facilities available for research and development, is very important. Educators and social scientists have tried since time immemorial to define the concept of leadership. The literature is replete with definitions of leadership. For instance, **Burns** (1978) believes that leaders should "induce new more activist tendencies in their followers, arouse in them hope, aspirations and expectations." **Lipham** and **Hoe** (1974) define leadership as "the initiation of new structure or procedure for accomplishing an organization's goals and objectives." This multiplicity of definitions of leadership, perhaps, prompted **Spikes** (1979) to conclude that "there appears to be no universally accepted definition of this concept which has stood the test of time and enquiry."

Weber (1947) distinguishes differences among the legal, traditional and charismatic styles of leadership. **Havinghurst** (1972) categorizes great leaders as (a) the prophet (b) the scholar – scientist and (c) the social engineer. **Halpin** (1959) constructed the democratic and authoritarian styles of leadership and **Likert** (1969) compared the job centered and employee centered styles of managers. The theoretical formulations and research unfolding from these approaches to the study of leadership identity compare and determine the effectiveness of different behavioral styles of leaders.

The distinctive way in which various functions such as goal setting, strategy formulation and implementation, organizing, staffing, control, co-ordination, leadership, image building, etc. are performed comprises the managerial style. It associates with superior organizational learning, smoothness of functioning, managerial development, synergy, performance etc. Those styles, which have damaging effect on the overall health of the organisation, can be easily diagnosed and discontinued, with immediate effect. A diagnostic instrument with a scoring key helps management to diagnose how far excellent and bad styles are practiced in their organisation so that the best style can be made use of and the bad ones avoided.

Since organizations are of various types and characteristics, managers function in different styles to suit it. Leadership styles vary widely because of two fundamental reasons. Firstly, organizations differ in terms of their size, type, purpose, operating environment, history, etc. Secondly, styles differ because it is possible to manage organizations in different ways. Styles have a major impact on the development of the organisation. Moreover, managerial styles can discover ways by which organizations can improve their performance as well as be cost effective.

REVIEW OF LITERATURE

Roger (1961) has explained that the high trustee is likely to be unhappy or maladjusted and is liked more often, both by low trustees and high trustee. People low in trust feel that other people can not be trusted. There is less pressure on them to tell the truth, and under some circumstances, they may feel that line, cheating and similar behaviour are necessary for defensive reasons because all others are doing it to them. Obviously, low trustees believe that high trustees are just plain dumb, because people who trust more are less likely to lie and are less likely to cheat or steal.

Dubin (1970) relates human relations to authority. He concluded that the significant orientation to a human relations approach is to seek an understanding of how people behave in an organization. Members of an organization understand authority and leadership and their functions. The real problem is to make leadership and the exercise of authority operate according to the accepted values and beliefs of the society.

Brown (1982) in her study tested the effects that four different leadership styles had upon groups' satisfaction, effectiveness and efficiency. Half of the groups were mature and the other half was immature. Half of the groups were led in the task by a leader whose style was appropriate to their maturity level, while the other half were led by an inappropriate leadership style. The results indicated that the groups who were correctly matched with the appropriate style were significantly more satisfied than groups who were incorrectly matched. Inconsistent results were found for effectiveness and efficiency. The results also indicated that mature groups outperformed immature groups even when both groups were correctly matched with an appropriate leadership style.

Sergiovanni (1992) observed that managers engage head, heart and hand. To succeed their beliefs and values – their "hearts" needed to be aligned with their new actions and ideas. Although "head" or cognitive changes often come out easily, "heart" changes or changes in their beliefs, commitments and their interpersonal relationships, come with more differently, "hands" changes or changes to their behaviour often needed to be preceded by the other two. He concluded that managerial style depends almost totally on interpersonal factors. Interpersonal relationship challenges have a certain universal quality. Building trust, clarifying meaning, establishing common purpose, facilitating mutually agreeable decisions, and resolving conflicts or hurt feelings is constant interpersonal activity for the managers.

Kiran (2001) reported that managers adopt multiple styles and not one best style of leadership. These findings strengthen the premise that the behavioral tendencies of authoritarianism, depending and nurturance are reflected in Indian managerial styles.

NEED OF THE STUDY

Enormous research has been done in foreign countries as well as in India on managerial styles of executives. But only a few have been conducted on managerial styles of executives in companies of Punjab. Hence, the present study was taken up.

OBJECTIVES

1. To study the managerial styles of executives in the manufacturing companies of Punjab.
2. To compare the managerial styles of executives at different levels in the manufacturing companies of Punjab.

RESEARCH METHODOLOGY

For the present study both exploratory and conclusive research methods were used. The conclusive research method here is descriptive in nature and the research design is cross sectional. In this study primary data has been collected through survey method. The research was conducted with the help of a structured interview schedule based on SPIRO-M technique (Pareek, 1997). This instrument has already been tested for reliability and validity.

TABLE 1: TWELVE STYLES IN TERMS OF EGO STATES

| Ego States | Styles in Two Life Positions | |
|-------------------|------------------------------|-----------------|
| | NOT-OK | OK |
| Nurturing Parent | Rescuing | Supportive |
| Regulating Parent | Prescriptive | Normative |
| Adult | Task Obsessive | Problem-solving |
| Creative Child | Child Bohemian | Innovative |
| Reactive Child | Child Aggressive | Confronting |
| Adaptive Child | Sulking | Resilient |

In the present case the target population consists of lower and middle level managers working in manufacturing units. Sampling unit (Kotler, 1997) in the study includes the companies of Punjab engaged in manufacturing. The elements in the research are the managers working at middle and lower level of management. A sampling frame (Malhotra and Dash, 2009) is a representation of the elements of the target population. It consists of a list or directions for identifying the target population. In this case, a list of member companies of CII for the year 2009 was obtained. The total was 7274 companies all over India. Out of these 234 companies were based in Punjab. In the list of companies of Punjab, 72 were from Ludhiana and these included 56 companies belonged to manufacturing sector. All these fifty six companies of Ludhiana were chosen to undertake the present research. For each of these companies the list of managers at lower and middle levels was obtained. In each company two lower level and two middle level managers were selected by lottery method. There were 56 companies that were covered and accordingly 112 managers at middle level and 112 managers at lower level were selected. Thus, the sample size for the present study was 224.

The respondents were personally administered the questionnaire and primary data was collected. The questionnaire consisted of two parts, namely, Part-A and Part-B.

Part-A of the questionnaire consisted of solicited information about the profile of respondents like their age, educational qualifications, experience in the present company, level of management and monthly income of the executives.

Part-B consisted of 36 questions based on SPIRO-M technique developed by Mr. Udai Pareek. This questionnaire consisted of 36 situations designed to analyze the behaviour of the managers. The respondents were graded according to the way they responded to in the given situation i.e. whether they behave rarely, occasionally, sometimes, often and almost always in those 36 situations.

Analysis of data has been done by constructing suitable tables and by using other statistical techniques like mean, standard deviation, z-test for means, z-test for proportions and F-test for variances.

Percentage method was used to analyze Part-A of the questionnaire. The percentage of respondents was calculated for each category of respondent's profile. Part-B consisted of 36 questions. The answer sheet for this questionnaire was used for scoring. Each question had five options and the respondent had to tick on one of them.

TABLE 2: SCORES FOR DIFFERENT ANSWER CHOICES

| <u>I Behave In This Way</u> | <u>Score</u> |
|------------------------------------|--------------|
| I rarely behave in this way | 1 |
| I occasionally behave in this way | 2 |
| I sometimes behave in this way | 3 |
| I often behave in this way | 4 |
| I almost always behave in this way | 5 |

The answer sheet contained twelve (12) rows having three (3) questions each. For scoring we add the responses in each row (there are three items in each row), e.g., responses 1, 13, 25 will be totaled in one row. Each row shows a single managerial style, so there are twelve managerial styles. The row, which has got maximum score, is the dominant style. A person can have more than one dominant style. A dominant style is the characteristic style of a person.

HYPOTHESIS OF THE STUDY

The data was analyzed using the following null hypothesis (Bajpai, 2010).

HYPOTHESIS

1. **H₀:** There is no significant difference between variances in scores of managerial styles at middle level and lower level of management.

H₁: There is a significant difference between variances in scores of managerial styles at middle level and lower level of management.

Formula used:

$$F = \frac{S_1^2}{S_2^2}$$

where:

S_1^2 = Variance of sample 1

S_2^2 = Variance of sample 2

n_1 = Size of sample 1

n_2 = Size of sample 2

df= $v_1 = n_1 - 1$ = Degree of freedom for numerator

df= $v_2 = n_2 - 1$ = Degree of freedom for denominator

LIMITATIONS OF THE STUDY

To understand the research findings in their right perspective, it is necessary that limitations of the study be mentioned. The present study may have suffered from the following limitations.

- Size of the sample selected for research may perhaps be considered as small, hence; the result of this study might not be fully reliable for generalization for the whole country.
- Since the questionnaire is comparatively lengthy and the executives normally busy, there are chances that information obtained in some cases might have deviated from actual.
- The respondents were asked to give their practical views and not the ideology, but the personal biases of the respondents might have affected the results.

RESULTS AND DISCUSSION

The outcome of number of respondents has been categorized in categories such as age, educational qualifications, experience level of management, and monthly income of executives.

AGE

Age is the first and an important factor to analyze the managerial style of executives in different companies. In this study the age of respondents has been divided into five categories.

Table 3 indicates that a majority of respondents belonged to 30 – 40 (36.6 percent) and 40-50 (35.71 percent) year categories, followed by 20 – 30 and 50 – 60 year categories. Less than one percent was of the age over 60 years.

Most of the lower level managers, 55.35%, belonged to the age group of 30-40 years whereas about one-third were below 30 years of age. Managers above 40 years of age were nearly 15% in number.

In the middle level manager category, about two-third belonged to the age group of 40-50 years, 17.85 percent were in the group 30 – 40 years, 13.39% belonged to 50 – 60 years. About five percent comprised below 30 or above 60 year groups.

TABLE 3: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF AGE

| Age | No. of Respondents | | Total |
|------------|--------------------|--------------|------------|
| | Lower level | Middle level | |
| 20-30 | 35 (31.25) | 5 (4.46) | 40 (17.85) |
| 30-40 | 62 (55.35) | 20 (17.85) | 82 (36.60) |
| 40-50 | 10 (8.92) | 70 (62.5) | 80 (35.71) |
| 50-60 | 5 (4.46) | 15 (13.39) | 20 (8.92) |
| 60 & above | - | 2 (1.78) | 2 (0.89) |
| Total | 112 (100) | 112 (100) | 224 (100) |

Note: The figures in brackets indicate the percentages.

EDUCATIONAL BACKGROUND

Educational background is a very important factor, which affects the behaviour of an individual to a very large extent. Table 4 indicates a majority of respondents (55.35%) were found to be having an educational level of graduation and 44.64% of the respondents were post-graduates.

Furthermore, among the lower level managers 71.42 percent of the respondents were graduates and 28.57 percent were post-graduates. Among middle level managers 60.71 percent of the respondents were post graduates and 39.28 percent were graduates.

TABLE 4: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF EDUCATIONAL QUALIFICATION

| Educational Qualification | No. of Respondents | | Total |
|---------------------------|--------------------|--------------|-------------|
| | Lower level | Middle level | |
| Graduate | 80 (71.42) | 44 (39.28) | 124 (55.35) |
| Postgraduate | 32 (28.57) | 68 (60.71) | 100 (44.64) |
| Total | 112 (100) | 112 (100) | 224 (100) |

Note: The figures in brackets indicate the percentages.

TOTAL WORK EXPERIENCE

The next important factor under study was the total work experience of the executives. On the basis of the total work experience the executives were classified into five categories, i.e.

- Less than 5 years,
- Between 5 and 10 years,
- Between 10 and 15 years,
- Between 15 and 20 years and
- More than 20 years.

Table 5 shows that around one-third of executives have a total experience of 5 to 10 years, about 20 percent each have an experience of 10 – 15 years, below 5 years and between fifteen and twenty years and below five percent have an experience in excess of 20 years.

In case of lower level managers nearly 90 percent of the managers possess an experience of below 10 years with just about 10% having an experience more than that.

At the middle level, over seventy percent of the respondents have an experience which ranges between 10 to 20 years. About one-fifth managers have a governing experience below 10 years and less than 10 percent are of an experience of over 20 years.

TABLE 5: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF TOTAL WORK EXPERIENCE

| Total Work Experience (Years) | No. of Respondents | | Total |
|-------------------------------|--------------------|--------------|------------|
| | Lower level | Middle level | |
| < 5 | 46 (41.07) | - | 46 (20.53) |
| 5-10 | 54 (48.21) | 22 (19.64) | 74 (33.03) |
| 10-15 | 6 (5.35) | 44 (39.28) | 50 (22.32) |
| 15-20 | 6 (5.35) | 38 (33.92) | 44 (19.64) |
| > 20 | - | 8 (7.14) | 8 (3.57) |
| Total | 112 (100) | 112 (100) | 224 (100) |

Note: The figures in brackets indicate the percentages.

TOTAL WORK EXPERIENCE IN PRESENT COMPANY

On the basis of the total work experience in the present company the executives were categorized into five categories, i.e.

- i) Less than 5 years,
- ii) Between 5 to 10 years,
- iii) Between 10 to 15 years,
- iv) Between 15 to 20 years and
- v) More than 20 years.

Table 6 shows that about one-third of the respondents have an experience below 5 years in the same company. Over 80% have an experience between 0 and 15 years in the company in which they are working now.

At the lower level, nearly two-third of the executives had an experience of less than 5 years in the present company while the rest had experiences ranging between 5 and 10 years.

In the case of middle level managers above 40% of the executives have an experience between 10 and 15 years in the same company which shows stability. Above ninety five percent of the managers have stayed in the same company for more than 5 years.

TABLE 6: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF EXPERIENCE IN PRESENT COMPANY

| Experience in Present Company (Years) | No. of Respondents | | Total |
|---------------------------------------|--------------------|--------------|------------|
| | Lower level | Middle level | |
| < 5 | 73 (65.17) | 4 (3.57) | 77 (34.37) |
| 5-10 | 39 (34.82) | 23 (20.53) | 62 (27.67) |
| 10-15 | - | 48 (42.85) | 48 (21.42) |
| 15-20 | - | 32 (28.57) | 32 (14.28) |
| >20 | - | 5 (4.46) | 5 (2.23) |
| Total | 112 (100) | 24 (100) | 224 (100) |

Note: The figures in brackets indicate the percentages.

LEVEL OF MANAGEMENT

Table 7 shows that an equal number of managers have been selected at both the middle and lower levels of management.

TABLE 7: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF LEVEL OF MANAGEMENT

| Level of Management | No. of Respondents | Percentage |
|---------------------|--------------------|------------|
| Middle | 112 | 50 |
| Lower | 112 | 50 |
| Total | 224 | 100 |

MONTHLY INCOME

Table 8 shows that more than half of the executives under study had a monthly income below Rs. 20,000 and nearly one-third of the managers had incomes ranging from Rs. 20,000 to Rs. 30,000.

Almost nine-tenth of the lower level managers had a monthly income of less than Rs. 20,000 while close to 85% of the middle level managers had incomes above Rs. 20,000.

TABLE 8: FREQUENCY DISTRIBUTION OF EXECUTIVES IN TERMS OF MONTHLY INCOME

| Monthly Income (Rs.) | No. of Respondents | | Total |
|----------------------|--------------------|--------------|------------|
| | Lower level | Middle level | |
| < 10,000 | 62 (55.35) | - | 62 (27.67) |
| 10,000 – 20,000 | 37 (33.03) | 18 (16.07) | 55 (24.55) |
| 20,000 – 30,000 | 13 (11.6) | 56 (50) | 69 (30.8) |
| 30,000 – 40,000 | - | 32 (28.57) | 32 (14.28) |
| > 40,000 | - | 6 (5.35) | 6 (2.67) |
| Total | 112 (100) | 112 (100) | 224 (100) |

Note: The figures in brackets indicate the percentages.

ANALYSIS OF MANAGERIAL STYLES OF EXECUTIVES

1. DOMINANT STYLES OF EXECUTIVES

Table 9 shows that more than 40 percent of the managers have got rescuing style as dominant style. Resilient and supportive styles accounted for around 12% each of the managers. The rest of the styles each had an individual share of fewer than ten percent wherein task obsessive and sulking styles had no takers.

TABLE 9: FREQUENCY DISTRIBUTION OF THE STYLES OF ALL THE MANAGERS IN TERMS OF DOMINANT STYLE

| Rank | Style | Frequency | Percentage |
|------|-----------------|-----------|------------|
| 1. | Rescuing | 180 | 42.25 |
| 2. | Resilient | 54 | 12.67 |
| 3. | Supportive | 54 | 12.67 |
| 4. | Innovative | 39 | 9.15 |
| 5. | Problem solving | 39 | 9.15 |
| 6. | Normative | 33 | 7.74 |
| 7. | Prescriptive | 18 | 4.22 |
| 8. | Aggressive | 3 | 0.7 |
| 9. | Bohemian | 3 | 0.7 |
| 10. | Confronting | 3 | 0.7 |
| 11. | Task obsessive | - | - |
| 12. | Sulking | - | - |
| | Total | 426 | 100 |

The total is more than 224 because each manager can have more than one dominant style.

1.1 DOMINANT STYLES OF EXECUTIVES WORKING AT MIDDLE LEVEL

The most favored style, as can be seen from Table No. 10, is the rescuing style and it accounts for more than forty percent of the respondents. Each of the other 11 styles has a contribution of less than 15%. Supportive, resilient and problem solving styles occupy the second, third and fourth positions. Bohemian, sulking and task obsessive styles were adopted by none of the managers.

TABLE 10: FREQUENCY DISTRIBUTION OF MIDDLE LEVEL MANAGERS IN TERMS OF DOMINANT STYLE

| Rank | Style | No. of managers | Percentage |
|------|-----------------|-----------------|------------|
| 1 | Rescuing | 95 | 43.98 |
| 2 | Supportive | 29 | 13.42 |
| 3 | Resilient | 26 | 12.03 |
| 4 | Problem solving | 23 | 10.64 |
| 5 | Innovative | 17 | 7.87 |
| 6 | Normative | 14 | 6.48 |
| 7 | Prescriptive | 8 | 3.7 |
| 8 | Aggressive | 2 | 0.92 |
| 9 | Confronting | 2 | 0.92 |
| 10 | Bohemian | - | - |
| 11 | Sulking | - | - |
| 12 | Task obsessive | - | - |
| | Total | 216 | 100 |

Total middle managers were 112. The frequency comes out to be greater than 112 because one manager can have more than one dominant style.

1.2 ANALYSIS OF DOMINANT STYLES OF EXECUTIVES WORKING AT LOWER LEVEL BY USING FREQUENCY DISTRIBUTION

Table 11 shows that out of all styles for lower level executives the major share is of rescuing style (40.47%). The rest of the styles have an individual contribution of less than 15% in each case with resilient, supportive and innovative styles following the rescuing style. None of the managers adopted the sulking style for dominance.

TABLE 11: FREQUENCY DISTRIBUTION OF ALL THE STYLES OF LOWER LEVEL MANAGERS IN TERMS OF DOMINANT STYLES

| Rank | Style | Dominant Style (No. of managers) | Percentage |
|------|-----------------|----------------------------------|------------|
| 1. | Rescuing | 85 | 40.47 |
| 2. | Resilient | 28 | 13.33 |
| 3. | Supportive | 25 | 11.9 |
| 4. | Innovative | 22 | 10.47 |
| 5. | Normative | 19 | 9.04 |
| 6. | Problem solving | 16 | 7.61 |
| 7. | Prescriptive | 10 | 4.76 |
| 8. | Bohemian | 3 | 1.42 |
| 9. | Aggressive | 1 | 0.47 |
| 10. | Confronting | 1 | 0.47 |
| 11. | Task obsessive | - | - |
| 12. | Sulking | - | - |
| | Total | 210 | 100 |

Total middle managers were 112. The frequency comes out to be greater than 112 because one manager can have more than one dominant style.

2. TWO-SAMPLE ANALYSIS RESULTS

HYPOTHESIS

H₀: There is no significant difference between variances in scores of managerial styles at middle level and lower level of management.

H₁: There is a significant difference between variances in scores of managerial styles at middle level and lower level of management.

(Variable 1: Middle level, Variable 2: Lower level)

1) Supportive style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 7.857142857 | 8.053571429 |
| Variance | 1.997425997 | 2.267374517 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.880942245 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H₀.

2) Sulking style

No executive at either the middle or lower level uses the sulking style as his dominant managerial style.

3) Normative style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 9.651785714 | 10.01785714 |
| Variance | 8.463240026 | 10.08976834 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.838794286 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H₀.

4) Aggressive style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 8.160714286 | 8.25 |
| Variance | 2.730694981 | 2.945945946 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.926933159 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

5) Problem solving style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 11.83035714 | 9.866071429 |
| Variance | 3.799790862 | 9.792712355 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.388022309 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the lower critical value, so, reject H_0 and accept H_1

As is evident from the table above there is a significant difference in the observed variances and the variation is quite visible in the lower level managers.

6) Bohemian style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 8.0625 | 8.401785714 |
| Variance | 3.590653153 | 5.918194981 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.606714237 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the lower critical value, so, reject H_0 and accept H_1 .

A difference can be seen in variances and the variances are more pronounced in the lower level managers as compared to middle level managers.

7) Resilient style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|---------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 11.96428571 | 12.04464286 |
| Variance | 3.332046332 | 3.376367439 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.986873139 | |
| P(F<=f) one-tail | 0.472315301 | |
| F Critical one-tail | 0.730820737 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

8) Rescuing style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 14.41964286 | 14.14285714 |
| Variance | 0.984475547 | 1.601029601 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.614901527 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the lower critical value, so, reject H_0 and accept H_1 .

A difference can be seen in variances and the variances are more pronounced in the lower level managers as compared to middle level managers.

9) Confronting style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 8.678571429 | 8.375 |
| Variance | 4.418275418 | 4.290540541 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 1.029771279 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

10) Prescriptive style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 9.169642857 | 9.348214286 |
| Variance | 8.898889961 | 9.05783462 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.982452245 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

11) Innovative style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|-----------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 9.642857143 | 10.39285714 |
| Variance | 9.655083655 | 9.898326898 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 0.975425822 | |
| F Critical two-tail (upper limit) | 1.466 | |
| F Critical two-tail (lower limit) | 0.682 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

12) Task obsessive style

| F-TEST TWO-SAMPLE FOR VARIANCES | | |
|---------------------------------|-------------|-------------|
| | Variable 1 | Variable 2 |
| Mean | 8.321428571 | 8.214285714 |
| Variance | 2.832689833 | 2.584298584 |
| Observations | 112 | 112 |
| Df | 111 | 111 |
| F | 1.096115538 | |
| P(F<=f) one-tail | 0.314807014 | |
| F Critical one-tail | 1.368324121 | |

Result: Since the calculated value is less than the critical value, so, do not reject H_0

CONCLUSIONS

Out of 224 managers studied at both middle and lower levels of management 42.25% of the managers had rescuing style as a dominant style which is a NOT-OK nurturing parent style. This may be due to the executive's lack of confidence in his subordinate. The total number of executives using NOT-OK styles as dominating styles is around 48% which is not a healthy trend. None of the managers had sulking or task obsessive styles.

12.67% each of the managers used resilient and supportive style as a dominant style whereas the percent of managers who had innovative and problem solving style as a dominant style was 9.15. 7.74 percent of the managers utilized normative style as a principal style. The percentage of executives using OK styles of leadership as dominant style is approximately fifty two.

The results of F-test show that there is no significant difference between the twelve managerial styles of executives working at lower level and middle level of management except for problem solving style (an ok-style) and bohemian & rescuing styles (both not-ok styles). The differences arise because of pronounced variances at lower levels.

RECOMMENDATIONS

1. The principal style used by managers is rescuing style which is a NOT-OK style so; it is required that suitable training is provided to the managers so that more of OK styles are used.
2. The proportion for problem solving (OK) attitudes is low for lower levels of management. Training should be undertaken to improve this attitude at lower levels.
3. The scores for confronting style (OK) are also low. An attempt for changing the behavioral patterns for such styles should be made.

SCOPE FOR FURTHER RESEARCH

The present study was conducted on only the manufacturing companies of Punjab. But, as the service industry is assuming a great significance and contributes a major portion to the GDP of India, so, the study can further include the service organizations. The scope of the study had been the state of Punjab but the same study can include more states of India.

REFERENCES

1. Bajpai, N. (2010). Business Statistics, Pearson, pp. 342-367.
2. Brown, M. (1982) Leadership among High School Pupils, Teach And Educate, No. 559.
3. Burns, J.M. (1978) True Leadership, Psychology Today 12, pp. 46-54.
4. Dubin, R. (1970) Human Relations In Education. Prentice Hall Of India.
5. Halpin, A.W. (1959) The Leadership Behavior Of School Superintendents. Midwest Administration Center.
6. Havinghurst, R.J. (1972) Educational Leadership for the Seventies, Phi Delta Kappan 53, pp. 403-406.
7. Hemphill, J.K. (1955) "Towards A Contingency Theory of Leadership", Organization Behaviour and Human Performance, 12, pp. 62-82.
8. Kiran, P. (2001) Leadership Styles, M.B.A. Edu., S.M.U.
9. Kotler, P. (1997). Marketing Management Analysis, Planning, Implementation, and Control, Prentice Hall of India, pp. 117-123.
10. Likert, R. (1969) The Nature of Highly Effective Groups in Organizations and Human Behaviour, Carver, F.D. and Sergiovanni, T.J., eds Mc Graw Hill.
11. Lipham, J.M. and Hoe (1974) The Principals Foundations And Function, Harper and Row.
12. Malhotra, N.K. and Dash, S. (2009). Marketing Research: An Applied Orientation, Prentice Hall of India, pp. 76-91, 333-351.
13. Pareek, U. (1997). Training Instruments For Human Resource Development, Tata McGraw-Hill Publishing Company Limited, pp. 181-191, 222-229.
14. Roger, C.R. (1961) On Becoming A Person. Houghton Mifflin.
15. Sergiovanni, T.J. (1992) Moral Leadership: Getting At The Heart Of School Improvement, Jossey Books.
16. Spikes, F. (1979) Choosing A Personal Leadership Style, Lifelong Learning 3, pp. 3-9.
17. Weber, M. (1947) The Theory of Social and Economic Organizations, New York: Oxford University Press.

FINANCIAL LEVERAGE AND IT'S IMPACT ON COST OF CAPITAL AND CAPITAL STRUCTURE**SHASHANK JAIN****STUDENT****SHAHEED SUKHDEV COLLEGE OF BUSINESS STUDIES****UNIVERSITY OF DELHI****DELHI****SHIVANGI GUPTA****STUDENT****SHAHEED SUKHDEV COLLEGE OF BUSINESS STUDIES****UNIVERSITY OF DELHI****DELHI****HAMENDRA KUMAR PORWAL****ASSOCIATE PROFESSOR****SHAHEED SUKHDEV COLLEGE OF BUSINESS STUDIES****UNIVERSITY OF DELHI****DELHI****ABSTRACT**

Cost of financing increases as a firm continue to lever itself. Though Cost of Debt as well as overall cost of financing decreases with higher leverage initially but after a certain point of time even they begin to escalate as suppliers of funds starts demanding higher return for increased risk. But Cost of Equity increases as soon as firm becomes more levered. By taking IT and Infrastructure sectors, this paper seeks to establish these theoretical concepts. As the research is conducted at a point of time, it doesn't take Cost of Debt over the years into consideration. But still this research leads to significant conclusion. Cost of financing as well as Cost of Debt is negatively correlated with financial leverage while Cost of Equity is positively correlated. The research takes 20 companies into consideration. Further research can be carried out on this aspect. Also, through the use of Modigilani Miller approach on capital structure, it also seeks to find undervalued and overvalued firms in the IT and Infrastructure sector.

KEYWORDS

Cost of Capital, Financial leverage, valuation of IT and Infra structure firms.

INTRODUCTION

Capital requirement poses as one of the most crucial challenges to the financial manager. Cost of capital refers to the minimum amount of return that a company must earn from its operations for it to breakeven. So, if a firm is earning more than it's cost of capital it is a profit making venture. The required rate of return depends upon the various risk factors of the firm, risks perceived by the investors and many other factors.

Risk and Return's relationship is based on the assumption that the investors must be paid higher return for higher degree of risk otherwise; they will not provide these funds. Generally, larger the proportion of long term debt in the firm's capital structure more is the financial risk due to the interest and principal repayments involved. To sustain such type of a Capital Structure a firm needs to be earnings higher operating profits, otherwise, it can be forced into cash insolvency. As the firm goes on leveraging itself, probability of cash insolvency and further legal insolvency keeps on increasing. This has to be compensated by the company by paying higher rate of interest. On the other hand, if the larger proportion of the capital structure is in the form of equity there are little or no fixed financial charges that a firm has to bear. But the risk perceived by the investors in such type of investment is relatively more so it will have to be compensated by a higher rate of return to them which will increase the cost of capital of the firm. So, a fine balance has to be maintained in debt and equity component to keep the cost of capital of the firm to its minimum.

Cost of Equity is generally computed using the capital asset pricing model (CAPM)² or the Arbitrage Pricing Model (APT)³.

Pricing model delivers discount rate used in valuations, especially in pricing shares. CAPM delivers discount rate (RRR, required rate of return for equity holders, which is equal to the cost of equity for a company). Because all investors want to be on the CML (Capital Market Line), an asset's covariance with the market portfolio appeared to be the relevant measure of risk. This model is used to determine whether the asset is undervalued, properly valued or overvalued in our study. An asset is priced "fairly" if the market price is equal to the equilibrium price provided by CAPM. Whenever a stock is overvalued, it falls below the security market line (SML)⁴; whenever it is undervalued, it falls above the SML.

LEVERAGE

In general, the term 'leverage' refers to the responsiveness or influence of one variable over some other variable. In financial terms, leverage refers to the use of various financial instruments (Debt) to increase the potential return of an investment. Most companies use debt to finance its operations. Leverage helps both investor as well as the firm to operate. But this comes with a greater risk to both of them as leverage magnifies both gains and losses. So, with optimum utilization of the leverage a company can increase its shareholder wealth but if it fails to do so, the interest expense and credit risk can destroy the shareholder value.

²Capital asset pricing model (CAPM) indicates what should be expected or required rates of return (RRR) on the risky assets (which is equal to cost of equity, discounting rate used to value equity, and investment projects). It also shows how to create aggressive and conservative portfolios. It answers the question, which assets should be selected to achieve positive economic profits (value added, wealth created, goodwill, NPV).

³APT is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macro-economic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient. The model-derived rate of return will then be used to price the asset correctly - the asset price should equal the expected end of period price discounted at the rate implied by the model. If the price diverges, arbitrage should bring it back into line. The theory was proposed by the economist Stephen Ross in 1976.

⁴The Security Market Line represents the relation between rate of return and risk measured by the beta coefficient. The Security Market Line reflects the risk-return combinations available for all risky assets in the capital market at a given time. Investors choose investments that are consistent with their risk preferences; some prefer only low-risk investments and others select high-risk investments.

Some of the commonly used leverages are:

Operating leverage – It establishes the relationship between Sales and EBIT.

- **Degree of operating leverage** – The percentage change in a firm's operating profit (EBIT) resulting from a 1 percent change in output (sales).

Financial leverage – It establishes the relationship between EPS and EBIT.

- **Degree of financial leverage** – the percentage change in a firm's EPS (Earning per Share) resulting from a 1 percent change in operating profit (EBIT).

Separately, operating leverage deals with the business risk⁵ complexion of the firm and financial leverage deals with the financial risk⁶ complexion of the firm. But a firm has to look into the overall risk (Business + Financial Risk) of the firm. Combined leverage is not a distinct type of leverage analysis; rather it is a product of the OL and FL.

- **Degree of Combine Leverage** – The percentage change in firm's EPS (earning per Share) resulting from a 1 percent change in Sales.

With the theoretical concepts in place, we seek to establish it practically. For our research purpose, we have chosen two sectors- Infrastructure and IT. While Infrastructure sector is debt laden, IT possess almost zero debt. Analysis of two sectors with contrasting capital structures will strengthen our research in an effort to establish concrete hypothesis.

Apart from that, we seek to find out value of a firm as per provisions of various capital structure theories and compare it to market capitalization of a firm. Thus, we intend to arrive at valuation of a firm on whether it is overvalued or undervalued.

LITERATURE REVIEW

Darren J. Kisgen (2006) in his research "Credit Ratings and capital structure" examined to what extent credit ratings directly affect capital structure decisions. His paper outlined discrete costs (benefits) associated with firm credit rating level differences and tests whether concerns for these costs (benefits) directly affect debt and equity financing decisions. Through the analysis on number of companies that were nearing their credit revision and leverage levels, he concluded that Firms near a credit rating upgrade or downgrade issue less debt relative to equity than firms not near a change in rating. This behavior is consistent with discrete costs (benefits) of rating changes but is not explained by traditional capital structure theories. In regressions including dummy variables that account for a firm being close to a ratings change-both near a Broad Ratings change and near a Micro Ratings change-firms near a ratings change issue approximately 1.0% less net debt relative to net equity annually as a percentage of total assets than firms not near a ratings change. The Broad Rating results are consistent with managers being concerned with ratings-triggered costs (benefits) to the firm and the effects of regulations on bond investors.

Carlos A. Molina (2005) in his research "Are Firms Underleveraged?" studied the effect of firm's leverage on default probabilities as represented by firm's ratings. He used firm's unobserved risk and firm's leverage as a tool to reflect their impact on firm's ratings. He then through the use of regression equations calculated the leverage on the ratings and thereby on default probabilities. He concluded that leverage's effect on ratings is 3 times stronger than it is if the endogeneity of leverage is ignored. This stronger effect results in a higher impact of leverage on the ex ante costs of financial distress, which can offset the current estimates of the tax benefits of debt.

Gershon N. Mandelker and S. Ghon Rhee (1984) in their research "The impact of Degrees of Operating and Financial Leverage on Systematic Risk of common stock" demonstrated how two types of leverage contribute to systematic risk of a common stock. Also they discussed interrelationships between the two. Through the study on 255 manufacturing firms between 1957-1976 they successfully concluded that the degrees of operating and financial leverage explain a large portion of the variation in beta. The conjecture that firms engage in trade-offs between DOL and DFL seems to have gained strong empirical evidence in our study. We found a significant correlation between the two types of leverage.

Martin Lally (2002), in his research "Time Varying Market Leverage, the Market Risk Premium and the Cost of Capital" strongly criticized MM approach on cost of capital propositions on two accounts: it is not a function of market leverage, and it implies, absent taxes and default risks, that an average firm's WACC varies with its own leverage. He then proposed new estimator of MRP which would overcome these problems. Furthermore the relationship between this MRP estimator and market leverage is theoretically modeled rather than statistically estimated, and hence avoids estimation problems inherent in time varying MRP estimators of the latter kind.

The Brattle Group in his research "The Effect of Debt on Cost of Equity", Jan 2005 reinforced the idiom that incorporation of Debt magnifies the Cost of Equity. They used simple models to make the reader understand how use of more debt increases financial leverage and consequently Ke. They also urged the readers to use appropriate rate of returns on investments that conforms to both Kd and Ke.

Ivo Welch, Brown University, RI and NBER, in his research (2011), "Two Common Problems in Capital Structure Research: The Financial- Debt-To-Asset Ratio and Issuing Activity Versus Leverage Changes", pointed out two common problems in capital structure research. First, although it is not clear whether non-financial liabilities should be considered debt, they should never be considered as equity. Yet, the common financial-debt-to-asset ratio (FD/AT) measure of leverage commits this mistake. Thus, research on increases in FD/AT explains, at least in part, decreases in non-financial liabilities. Future research should avoid FD/AT altogether. The paper also quantified the components of the balance sheet of large publicly traded corporations and discusses the role of cash in measuring leverage ratios. The paper suggested researchers should instead use either the liabilities-to-assets ratio, or, if they want to focus on financial leverage only, the FD/CP ratio.

Second, it said that equity-issuing activity should not be viewed as equivalent to capital structure changes. Empirically, the correlation between the two is weak. The capital structure and capital issuing literature are distinct.

Alexander Kurshev and Ilya A. Strebulae (2005) in their research "Firm Size and Capital Structure", have tried to establish that firm size is empirically strongly positively related to capital structure. A number of intuitive explanations can be put forward to account for this stylized fact, but none have been considered theoretically. This paper starts bridging this gap by investigating whether a dynamic capital structure model can explain the cross-sectional size- leverage relationship. The driving force that we consider is the presence of fixed costs of external financing that lead to infrequent restructuring and creates a wedge between small and large firms. We find four firm size effects on leverage. Small firms choose higher leverage at the moment of refinancing to compensate for less frequent rebalancing. But longer waiting times between refinancing lead on average to lower levels of leverage. Within one refinancing cycle the relationship between leverage and firm size is negative. Finally, there is a mass of firms opting for no leverage. The analysis of dynamic economy demonstrates that in cross-section the relationship between leverage and size is positive and thus fixed costs of financing contribute to the explanation of the stylized size-leverage relationship. However, the relationship changes the sign when we control for the presence of unlevered firms. The paper concludes by noting findings provide a clear signal of the need for further research in this area, heading on from investigating other factors effecting firm size-leverage relationship.

Malcolm Baker and Jeffery Wurgler (2002), in their research "Market Timing and Capital Structure", bring out the well known that firms are more likely to issue equity when their market values are high, relative to book and past market values, and to repurchase equity when their market values are low. We document that the resulting effects on capital structure are very persistent. As a consequence, current capital structure is strongly related to historical market values. The research was carried out with a sample of companies whose IPO could be determined, and the behavior of leverage was studied during the IPO time. The results suggest the theory that capital structure is the cumulative outcome of past attempts to time the equity market.

Thorsten Hens and Sven C. Steude (2006), in their research "The Leverage Effect without Leverage: An Experimental Study", National Centre of Competence in Research Financial Valuation and Risk Management, Working Paper No. 318, June 2006, reinforce Black's (1976) leverage effect by using Experimental stock

³Business Risk – The inherent uncertainty in the physical operations of the firm. Its impact is shown in the variability of the firm's operating income (EBIT).

- DOL is only one component of business risk and becomes "active" only in the presence of sales and production cost variability.
- DOL magnifies the variability of operating profits and, hence, business risk.

⁶Financial Risk --The added variability in earnings per share (eps) -- plus the risk of possible insolvency -- that is induced by the use of financial leverage. Debt increases the probability of cash insolvency over an all-equity-financed firm.

markets to add some evidence that Financial markets does not necessarily stem from the financial leverage of the firm. The paper presents large number of markets in which the leverage effect is observed although the underlying asset does not exhibit a financial leverage at all. The researchers used four experimental stock markets in a controlled setting to find that although the capital structure of the underlying firm never changes, a leverage effect in traded asset prices is observed. It ends on a note for further research to see if the magnitude of the leverage effect changes when an asset which exhibits different degrees of financial leverage is introduced.

Kheder Alaghi (2012), Armenian State Agrarian University, Armenia, in his research, "Operating Leverage and Systematic Risk", studied the effect of operating leverage in the systematic risk of listed companies in Tehran Stock Exchange. In this study, operating leverage (OL) as independent variable and systematic risk (β) as the dependent variable are considered. $SIG \leq 0.05$ means H_0 hypothesis is rejected; otherwise there is no adequate reason for rejecting H_0 . For testing the hypothesis of this study, linear regression technique has been used. According to the results obtained, H_0 is confirmed because $SIG = 0.20 > 0.05$. Thus, operating leverage has no effect on the systematic risk of listed companies in Tehran Stock Exchange.

Almut E. D. Veraart , and Luitgard A. M. Veraart (2010), in their research "Stochastic volatility and stochastic leverage", proposed the new concept of stochastic leverage in stochastic volatility models. Stochastic leverage refers to a stochastic process which replaces the classical constant correlation parameter between the asset return and the stochastic volatility process. We provide a systematic treatment of stochastic leverage and propose to model the stochastic leverage effect explicitly, e.g. by means of a linear transformation of a Jacobi process. Such models are both analytically tractable and allow for a direct economic interpretation. In particular, they proposed two new stochastic volatility models which allowed for a stochastic leverage effect: the generalized Heston model and the generalized Barndorff-Nielsen & Shephard model. They investigated the impact of a stochastic leverage effect in the risk neutral world by focusing on implied volatilities generated by option prices derived from their new models and also studies the influence of leverage effect and volatility feedback effect on return-volatility regressions. They found an analytically tractable asset price model which allows for an easy economic interpretation of both stochastic volatility and stochastic leverage.

Dileep R. Mehta, Edward A. Moses, Benoit Deschamps and Michael C. Walker (1980), in his research "The influence of Dividends, Growth, and Leverage on share prices in the Electric Utility Industry:" demonstrated the effect of changes in financial policy variables, viz. dividend payout, leverage & growth, with a capital market equilibrium framework. They also devised an integrative valuation model for valuation of firm within a capital market context. Dividend & leverage policies relevance has been tested on samples of 55 electric utilities & empirical estimates reveal that investors do not exhibit indifference toward dividend distribution.

Hayne E, Leland and Klaus BjerreToft (1996) in his research "Optimal Capital, Endogenous Bankruptcy and the term structure of Credit Spreads " develops a model of optimal leverage & risky corporate bond prices for arbitrary debt maturity. They prove that bankruptcy can occur at asset values that may either lower or higher than the principal value of debt as well as that optimal leverage depends upon debt maturity & is markedly lower when the firm is financed by short term debt. Results of this study illuminate how the twin dimensions of optimal capital structure amount & maturity, represent a tradeoff between tax advantage, bankruptcy costs and agency costs.

DATA SELECTION

For research analysis purpose, two sectors have been chosen- Infrastructure and Information Technology. From both the sectors 10 companies have been chosen. These 10 companies represent their Indices CNX Infra and CNX IT. Also, they form highest market capitalization in these sectors. Thus they can be assumed to be representative of their respective sectors.

Data relating to elements of Financial Statements is as on 31st Mar 2011 as when the research was carried out, data for FY 2012 was not available. This data has been sourced from Software ACE EQUITY.

Beta Data has been sourced from reuters.com and Market Capitalization data has been sourced from moneycontrol.com. Data relating to Market Capitalization and Beta is as on 6th Mar 2012.

Data relating to Market Risk Premium has been taken from the works of Aswath Damodaran.

DATA ANALYSIS METHODOLOGY

All the analysis with respect to Cost of Debt, Cost of Equity, WACC, Leverages and capital structure has been made in MS Excel so as to get accurate results.

Interest costs have calculated as percentage of debt, adjusted for tax. And hence Cost of Debt has been calculated.

Cost of Equity has been calculated as CAPM method.

Degree of leverage has also been calculated as per their standard formulas.

Finally, Coefficient of Correlation has been calculated between leverages and cost of both the forms of financing.

After obtaining positive correlation between Cost of equity and Financial Leverage they are regressed to obtain an equation calculating Cost of Equity through Financial Leverage.

Also, value of the firm has been calculated as per Capital structure theories and has been compared to their market capitalization. And thus, it has been determined whether they are undervalued or overvalued.

ANALYSIS

INFRASTRUCTURE WACC

| | Power Grid | NTPC | NHPC | L & T | BHEL | JP Associate | Adani Power | Crompton Greaves | Bharti Airtel | R Power |
|------------------------------|------------|------------|-----------|-----------|-----------|--------------|-------------|------------------|---------------|-----------|
| Cost of Capital | | | | | | | | | | |
| Cost of Debt | | | | | | | | | | |
| Total Debt | 43230.15 | 44139.26 | 15975.81 | 7161.11 | 163.35 | 21707.64 | 17346.06 | 13.40 | 11897.50 | 1554.05 |
| Interest | 2791.34 | 2149.08 | 494.13 | 747.52 | 54.73 | 1503.21 | 316.83 | 20.69 | 340.90 | 42.35 |
| Interest as % of debt | 6.5% | 4.9% | 3.1% | 10.4% | 33.5% | 6.9% | 1.8% | 154.4% | 2.9% | 2.7% |
| PBT | 3824.73 | 12049.60 | 2878.43 | 5832.91 | 9005.67 | 1754.51 | 823.77 | 927.01 | 8725.80 | 253.67 |
| Tax | 1127.84 | 2947.01 | 711.76 | 1945.86 | 2994.47 | 586.73 | 300.02 | 232.68 | 1008.90 | -20.88 |
| Tax as % of PBT | 29.5% | 24.5% | 24.7% | 33.4% | 33.3% | 33.4% | 36.4% | 25.1% | 11.6% | -8.2% |
| Kd [Int (1-Tax Rate)] | 4.6% | 3.7% | 2.3% | 7.0% | 22.4% | 4.6% | 1.2% | 115.6% | 2.5% | 2.9% |
| Cost of Equity | | | | | | | | | | |
| Risk Free Rate of Return | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% |
| Beta | 0.66 | 0.7 | 0.66 | 1.52 | 0.85 | 1.95 | 1.4 | 1.16 | 0.68 | 1.58 |
| Market Return | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% |
| Ke (CAPM) | 15% | 15% | 15% | 23% | 17% | 27% | 22% | 19% | 15% | 23% |
| Debt In Cap Structure(BV) | 43,230.15 | 44,139.26 | 15,975.81 | 7,161.11 | 163.35 | 21,707.64 | 17,346.06 | 13.40 | 11,897.50 | 1,554.05 |
| Equity In Cap Structure (MV) | 51,274.21 | 143,759.67 | 25647.05 | 75,659.74 | 67,553.76 | 14,799.97 | 15,892.46 | 8,682.59 | 127,578.02 | 35,274.47 |
| Total | 94,504.36 | 187,898.93 | 41,622.86 | 82,820.85 | 67,717.11 | 36,507.61 | 33,238.52 | 8,695.99 | 139,475.52 | 36,828.52 |
| Debt Weight | 0.46 | 0.23 | 0.38 | 0.09 | 0.00 | 0.59 | 0.52 | 0.002 | 0.09 | 0.04 |
| Equity Weight | 0.54 | 0.77 | 0.62 | 0.91 | 1.00 | 0.41 | 0.48 | 0.998 | 0.91 | 0.96 |
| WACC | 10% | 13% | 10% | 21% | 17% | 14% | 11% | 20% | 14% | 22% |
| Leverages | | | | | | | | | | |
| Contribution | 7018.54 | 15328.71 | 3277.08 | 9121.34 | 12891.95 | 4534.39 | 1331.77 | 1486.88 | 26645.85 | -50.23 |
| EBIT | 6,616.07 | 14,198.68 | 3,372.56 | 6,580.43 | 9,060.40 | 3,257.82 | 1,140.60 | 947.70 | 9,066.70 | 296.02 |
| EBT | 3,824.73 | 12,049.60 | 2,878.43 | 5,832.91 | 9,005.67 | 1,754.51 | 823.77 | 927.01 | 8,725.80 | 253.67 |
| Operating Leverage | 1.06 | 1.08 | 0.97 | 1.39 | 1.42 | 1.39 | 1.17 | 1.57 | 2.94 | -0.17 |
| Financial Leverage | 1.73 | 1.18 | 1.17 | 1.13 | 1.01 | 1.86 | 1.38 | 1.02 | 1.04 | 1.17 |
| Combined Leverage | 1.84 | 1.27 | 1.14 | 1.56 | 1.43 | 2.58 | 1.62 | 1.60 | 3.05 | -0.20 |
| Corr(Kd and CL) | -0.001 | | | | | | | | | |
| WACC & CL | -0.411 | | | | | | | | | |
| Ke and CL | -0.101 | | | | | | | | | |
| Kd & FL | -0.335 | | | | | | | | | |
| WACC & FL | -0.474 | | | | | | | | | |
| Ke & FL | 0.355 | | | | | | | | | |

INFORMATION TECHNOLOGY WACC

| | TCS | Infosys | Wipro | HCL Tech | Mphasis | Tech Mahindra | OFSS | Patni | Rolta | Hexaware |
|------------------------------|------------|------------|------------|-----------|----------|---------------|-----------|----------|----------|----------|
| Cost of Capital | | | | | | | | | | |
| Cost of Debt | | | | | | | | | | |
| Total Debt | 251.01 | 0.1 | 4744.10 | 1030.16 | 243.63 | 1806.40 | 0.10 | 1.20 | 1383.42 | 0.10 |
| Interest | 16.40 | 1 | 58.60 | 101.39 | 2.52 | 99.90 | 0.21 | 2.93 | 53.30 | 1.76 |
| Int as % of debt | 7% | 1000% | 1% | 10% | 1% | 6% | 210% | 244% | 4% | 1760% |
| PBT | 13366.33 | 11096.00 | 5705.50 | 1289.88 | 911.58 | 806.00 | 1,034.40 | 590.18 | 557.87 | 254.55 |
| Tax | 2390.35 | 3110.00 | 861.80 | 91.60 | 129.57 | 109.30 | 66.41 | 90.39 | 62.51 | 22.57 |
| Tax as % of PBT | 18% | 28% | 15% | 7% | 14% | 14% | 6% | 15% | 11% | 9% |
| Kd [Int (1-Tax Rate)] | 5% | 720% | 1% | 9% | 1% | 5% | 197% | 207% | 3% | 1604% |
| Cost of Equity | | | | | | | | | | |
| Risk Free Rate of Return | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% |
| Beta | 0.66 | 0.56 | 0.86 | 0.89 | 0.98 | 1.22 | 0.87 | 0.86 | 1.37 | 1.17 |
| Market Return | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% | 9% |
| Ke (CAPM) | 15% | 14% | 17% | 17% | 18% | 20% | 17% | 17% | 21% | 20% |
| Debt In Cap Structure(BV) | 251.01 | 0.1 | 4744.1 | 1030.16 | 243.63 | 1806.4 | 0.1 | 1.2 | 1383.42 | 0.1 |
| Equity In Cap Structure (MV) | 222,144.58 | 162,234.13 | 105,267.38 | 34,069.13 | 8,782.35 | 8,262.57 | 21,938.02 | 7,353.34 | 1,511.65 | 3,551.46 |
| Total | 222395.59 | 162234.23 | 110011.48 | 35099.29 | 9025.98 | 10068.97 | 21938.12 | 7354.54 | 2895.07 | 3551.56 |
| Debt Weight | 0.00 | 0.00 | 0.04 | 0.03 | 0.03 | 0.18 | 0.00 | 0.00 | 0.48 | 0.00 |
| Equity Weight | 1.00 | 1.00 | 0.96 | 0.97 | 0.97 | 0.82 | 1.00 | 1.00 | 0.52 | 1.00 |
| WACC | 15% | 14% | 16% | 17% | 17% | 17% | 17% | 17% | 13% | 20% |
| Leverages | | | | | | | | | | |
| Contribution | 13773.63 | 14571 | 11114.6 | 3070.44 | 1620.79 | 2891.1 | 1224.08 | 837.97 | 1264.41 | 326.26 |
| EBIT | 13,381.83 | 11,098.00 | 5,764.10 | 1,391.27 | 913.39 | 905.90 | 1,034.39 | 593.11 | 611.17 | 256.31 |
| EBT | 13,366.33 | 11,096.00 | 5,705.50 | 1,289.88 | 911.58 | 806.00 | 1,034.40 | 590.18 | 557.87 | 254.55 |
| Operating Leverage | 1.03 | 1.31 | 1.93 | 2.21 | 1.77 | 3.19 | 1.18 | 1.41 | 2.07 | 1.27 |
| Financial Leverage | 1.00 | 1.00 | 1.01 | 1.08 | 1.00 | 1.12 | 1.00 | 1.00 | 1.10 | 1.01 |
| Combined Leverage | 1.03 | 1.31 | 1.95 | 2.38 | 1.78 | 3.59 | 1.18 | 1.42 | 2.27 | 1.28 |
| Corr(Kd and CL) | -0.394 | | | | | | | | | |
| WACC & CL | 0.018 | | | | | | | | | |
| Ke and CL | 0.583 | | | | | | | | | |
| Kd & FL | -0.339 | | | | | | | | | |
| WACC & FL | -0.169 | | | | | | | | | |
| Ke & FL | 0.661 | | | | | | | | | |

CAPITAL STRUCTURE (INFRASTRUCTURE)

[U/V – Undervalued]

O/V – Overvalued]

| | TCS | Infosys | Wipro | HCL Tech | Mphasis | Tech Mahindra | OFSS | Patni | Rolta | Hexaware |
|---------------------------|------------|------------|------------|-----------|----------|---------------|-----------|----------|----------|----------|
| Profit for Eq. Sh.holders | 13,366.33 | 11,096.00 | 5,705.50 | 1,289.88 | 911.58 | 806.00 | 1,034.40 | 590.18 | 557.87 | 254.55 |
| (As per approach) | | | | | | | | | | |
| Ke | 15% | 14% | 17% | 17% | 18% | 20% | 17% | 17% | 21% | 20% |
| Value Of Equity | 89466.734 | 79031.339 | 34083.0346 | 7583.069 | 5115.488 | 4034.034 | 6146.168 | 3525.568 | 2615.424 | 1303.379 |
| Value Of Debt | 251.01 | 0.1 | 4744.1 | 1030.16 | 243.63 | 1806.4 | 0.1 | 1.2 | 1383.42 | 0.1 |
| Value of the Firm | 89717.744 | 79031.439 | 38827.1346 | 8613.23 | 5359.12 | 5840.43 | 6146.27 | 3526.77 | 3998.84 | 1303.48 |
| Market Capitalisation | 222,144.58 | 162,234.13 | 105,267.38 | 34,069.13 | 8,782.35 | 8,262.57 | 21,938.02 | 7,353.34 | 1,511.65 | 3,551.46 |
| Valuation | O/V | O/V | O/V | O/V | O/V | O/V | O/V | O/V | U/V | O/V |

CAPITAL STRUCTURE (INFORMATION TECHNOLOGY)

[U/V – Undervalued]

O/V – Overvalued]

| | Power Grid | NTPC | NHPC | L & T | BHEL | JP Associate | Adani Power | Crompton Greaves | Bharti Airtel | R Power |
|---------------------------|-------------|------------|-----------|-----------|-----------|--------------|-------------|------------------|---------------|-----------|
| Profit for Eq. Sh.holders | 3,824.73 | 12,049.60 | 2,878.43 | 5,832.91 | 9,005.67 | 1,754.51 | 823.77 | 927.01 | 8,725.80 | 253.67 |
| (As per approach) | | | | | | | | | | |
| Ke | 15% | 15% | 15% | 23% | 17% | 27% | 22% | 19% | 15% | 23% |
| Value Of Equity | 25600.60241 | 78755.5556 | 19266.6 | 25718.3 | 54088.11 | 6608.324 | 3813.75 | 4768.57 | 57710.317 | 1092.463 |
| Value Of Debt | 43,230.15 | 44,139.26 | 15,975.81 | 7,161.11 | 163.35 | 21,707.64 | 17,346.06 | 13.40 | 11,897.50 | 1,554.05 |
| Value of the Firm | 68830.75241 | 122894.816 | 35242.41 | 32879.41 | 54251.46 | 28315.96 | 21159.81 | 4781.97 | 69607.817 | 2646.513 |
| Market Capitalisation | 51,274.21 | 143,759.67 | 25,647.05 | 75,659.74 | 67,553.76 | 14,799.97 | 15,892.46 | 8,682.59 | 127,578.02 | 35,274.47 |
| Valuation | U/V | O/V | U/V | O/V | O/V | U/V | U/V | O/V | O/V | O/V |

REGRESSION ANALYSIS**REGRESSION BETWEEN Ke AND FL**

| | Ke | FL |
|------------------|-----|------|
| Power Grid | 15% | 1.73 |
| NTPC | 15% | 1.18 |
| NHPC | 15% | 1.17 |
| L & T | 23% | 1.13 |
| BHEL | 17% | 1.01 |
| JP Associate | 27% | 1.86 |
| Adani Power | 22% | 1.38 |
| Crompton Greaves | 19% | 1.02 |
| Bharti Airtel | 15% | 1.04 |
| R Power | 23% | 1.17 |
| TCS | 15% | 1.00 |
| Infosys | 14% | 1.00 |
| Wipro | 17% | 1.01 |
| HCL Tech | 17% | 1.08 |
| Mphasis | 18% | 1.00 |
| Tech Mahindra | 20% | 1.12 |
| OFSS | 17% | 1.00 |
| Patni | 17% | 1.00 |
| Rolta | 21% | 1.10 |
| Hexaware | 20% | 1.01 |

SUMMARY OUTPUT

| Regression Statistics | | | | | | | | | |
|------------------------------|-------------|----------------|----------|----------|----------------|-------------|-------------|-------------|--|
| Multiple R | 0.418603908 | | | | | | | | |
| R Square | 0.175229231 | | | | | | | | |
| Adjusted R Square | 0.129408633 | | | | | | | | |
| Standard Error | 0.031743719 | | | | | | | | |
| Observations | 20 | | | | | | | | |
| ANOVA | | | | | | | | | |
| | df | SS | MS | F | Significance F | | | | |
| Regression | 1 | 0.003854 | 0.003854 | 3.824246 | 0.066221 | | | | |
| Residual | 18 | 0.018138 | 0.001008 | | | | | | |
| Total | 19 | 0.021992 | | | | | | | |
| Coefficients | | | | | | | | | |
| | | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% | |
| Intercept | 0.11464185 | 0.035519 | 3.227646 | 0.00467 | 0.04002 | 0.189263907 | 0.04002 | 0.189264 | |
| Financial Leverage | 0.059161978 | 0.030253 | 1.955568 | 0.066221 | -0.0044 | 0.122721369 | -0.0044 | 0.122721 | |

CONCLUSION**IMPACT OF LEVERAGES OF A FIRM ON ITS COST OF FUNDS****INFRASTRUCTURE**

Infra Firms are supposed to be heavily indebted because of major Capex plans they undertake which entail huge funds. In our Research Project we have taken infrastructure companies with highest market capitalization and as per theoretical literature, debt forms major portion of capital structure of these companies.

One of significant result our research has produced is that Leverage of a company whether Combined or Financial doesn't really impact Cost of Debt (K_d) of the company. In fact, since there is negative correlation, cost of debt appears to move in opposite direction with respect to Leverage. But since there is low negative correlation, it can't be concluded that Cost of debt moves in exactly opposite direction.

Since Debt forms major portion of capital structure of Infra Firms, correlation between overall cost of capital and Leverage has also turned negative. This holds the theoretical concept true which says that as leverage increases, weighted average cost of capital comes down during initial period.

Also one of the most significant conclusions we can arrive by our analysis is impact of leverages on cost of Equity. Positive correlation between Leverages and cost of equity suggests that K_e moves in tandem with leverages i.e. risk. As the risk of the firm increases, Equity Shareholder's demand in form of return also increases, and thus cost of equity increases. Especially correlation of 0.355 between K_e and Financial leverages suggests that as the Financial Leverage increases, equity shareholders start demanding higher rate of return than the ones which are not leveraged.

INFORMATION TECHNOLOGY

Historically, theoretically and practically non-leveraged firms, these firms have minor debt in their capital structure. Our sample of companies also proves that. Since it was concluded from the infrastructure companies that Leverages just don't impact cost of debt (K_d), analysis on IT companies just reinforced that.

While having high equity proportion in total capital structure, positive correlation between K_e and Combined Leverage, K_e and Financial Leverage and WACC and Financial Leverage concludes that as the firms become more leveraged (i.e. risky), equity shareholder's expectations in the form of returns also achieve new heights and thus cost of equity to the firm increases.

VALUE OF FIRM AS PER CAPITAL STRUCTURE THEORIES AND DETERMINATION OF FIRM'S VALUATION WITH RESPECT TO ITS MARKET CAPITALISATION

Going by the valuations, only two firms Power Grid, NHPC, JP Associate and Adani Power appear to be undervalued in infra space but in IT Sector, only one firm Rolta is undervalued and thus makes a good buy as per capital structure theories. But because of the limitations of these theories, it should not be considered sole deciding factor for investment purposes.

REGRESSION BETWEEN COST OF EQUITY AND FINANCIAL LEVERAGE

At the significance level of 0.05, regression equation obtained cannot be considered significant as f value=0.066. Since it was carried out on 20 companies only, it failed to produce significant results marginally. Further research can be carried out in this respect such that to calculate Cost of Equity through Financial Leverage.

REFERENCES

1. Carlos A. Molina, "Are Firms Underleveraged? An Examination of Effect of Leverage on Default Probabilities", The Journal of Finance, Vol. 60, No. 3 (June 2005), pp. 1427-1459.
2. Darren J. Kisgen, "Credit Ratings and Capital Structure" The Journal of Finance, Vol. 61, No. 3 (June 2006), pp. 1035-1072.
3. Dileep R. Mehta, Edward A. Moses, Benoit Deschamps and Michael C. Walker, "The influence of Dividends, Growth, and Leverage on share prices in the Electric Utility Industry: an Econometric Study, The Journal of Financial and Quantitative Analysis", Vol. 15, No. 5 (Dec, 1980), pp. 1163-1196.
4. Gershon N. Mandelker and S. Ghon Rhee, "The impact of Degrees of Operating and Financial Leverage on Systematic Risk of Common Stock", The Journal of Financial and Quantitative Analysis, Vol. 19, No. 1 (Mar. 1984), pp. 45-57.
5. Hayne E. Leland and Klaus BjerreToft, "Optimal Capital, Endogenous Bankruptcy and the term structure of Credit Spreads", The Journal of finance, Vol. 51, No. 3, Papers and Proceedings of the Fifty Sixth Annual Meeting of the American Finance Association, San Francisco, California, January 5-7, 1996 (July, 1996), pp. 987-1019.
6. in.reuters.com (Beta value)
7. Ivo Welch, "Two Common Problems in Capital Structure Research: The Financial- Debt-To-Asset Ratio and Issuing Activity Versus Leverage Changes", Brown University, RI and NBER, International Review of Finance, 11:1, 2011: pp. 1-17.
8. Malcolm Baker and Jeffery Wurgler, Market Timing and Capital Structure", Journal of Finance, Vol. LVII, No. 1, FEB. 2002, pp. 1-32.
9. Martin Lally, "Time Varying Market Leverage, the Market Risk Premium and the Cost of Capital", The Journal of Business, Finance and Accounting, Vol. 29(9), Nov/Dec. 2002, 0306-686X.
10. The Brattle Group for Edison Electric Institute "The Effect Of Debt on Cost of Equity", Jan 2005.
11. www.idbicapital.com (Financial data)
12. www.moneycontrol.com (Financial data)
13. www.nseindia.com (Indices information)

REACH OF INTERNET BANKING

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ABSTRACT

In the 1990s, the banking sector in India saw greater emphasis being placed on technology and innovation. Banks began to use technology to provide better quality of services at greater speed. The Internet Banking is becoming one of the fastest growing technologies that is playing a significant role in the daily lives of human beings. Internet Banking and Mobile Banking made it convenient for customers to do their banking from geographically diverse places. Banks also sharpened their focus on rural markets and introduced a variety of services geared to the special needs of their rural customers. The Internet is slowly gaining popularity in India. The Internet Banking is changing the banking industry and is having the major effects on banking relationships. Internet Banking involves delivery of banking products and services. At present many of the banks around the world have web presence in form of ATMs, Internet Banking, Support services etc. In the world of banking, the development in information technology has an enormous effect on development of more flexible payment methods and more-user friendly banking services. Electronic Banking services are new and the development and diffusion of these technologies by financial institutions is expected to result in more efficient banking system.

KEYWORDS

internet banking, banking sector.

INTRODUCTION

Banking in India originated in the last decades of the 18th century. The oldest bank in existence in India is the State Bank of India a government-owned bank that traces its origins back to June 1806 and that is the largest commercial bank in the country. Central banking is the responsibility of the Reserve Bank of India 1935 formally took over these responsibilities from the then Imperial Bank of India, relegating it to commercial banking functions. After India's independence in 1947, the Reserve Bank was nationalized and given broader powers. In 1969 the government nationalized the 14 largest commercial banks; the government nationalized the six next largest in 1980.

Currently, India has 96 scheduled commercial banks (SCBs) - 27 public sector banks (that is with the Government of India holding a stake), 31 private banks (these do not have government stake; they may be publicly listed and traded on stock exchanges) and 38 foreign banks. They have a combined network of over 53,000 branches and 17,000 ATMs. According to a report by ICRA Limited, a rating agency, the public sector banks hold over 75 percent of total assets of the banking industry, with the private and foreign banks holding 18.2% and 6.5% respectively.

DEFINITION OF E-BANKING

E-Banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels, E-banking includes the systems that enable financial institution customers, individuals of businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet. Customers access e-banking services using an intelligent electronic device, such as a personal computer, personal digital assistant, automated teller machine, Touch tone telephone. While the risks and controls are similar for the various e-banking access channels, this booklet focuses specifically on Internet-based services.

SALIENT FEATURES OF INTERNET BANKING

- Easily adoptable by customers.
- Easy to deploy and maintains.
- Cost effective solution.
- Enables the bank to reach its customers on the net.
- Reduce rush at the counters of the bank.
- Enables the customers of the bank to access information from anywhere and at any time.
- Balance and transaction history search.
- Transaction history export.
- Order new statements.
- Mobile banking.
- Transfers.
- Pay bills with BPAY
- Receive bills online with BPAY view
- Pay anyone payments.
- Multi payments
- SMS banking services

OBJECTIVES OF STUDY

- To analyze the reach of internet banking
- To analyze awareness among customers using internet banking
- To analyze the level of security among customers in using these services
- To analyze the popularity of the internet banking service in customers as users and non users along with reasons.

FUNCTIONS OF INTERNET BANKING

- Issue Demand Drafts online
- Transfer funds to own and third party accounts
- Credit beneficiary accounts using the VISA Money Transfer, RTGS/NEFT feature
- Generate account statements
- Setup Standing Instructions
- Configure profile settings
- Use e Tax for online tax payment
- Use e Pay for automatic bill payments
- Interface with merchants for railway and airline reservations
- Avail DEMAT and IPO services

INTERNET BANKING IN INDIA

- The Reserve Bank of India constituted a working group on Internet Banking. The group divided the internet banking products in India into 3 types based on the levels.
- **Information Only System:** General purpose information like interest rates, branch location, bank products and their features, loan and deposit calculations are provided in the banks website. There exist facilities for downloading various types of application forms. The communication is normally done through e-mail. There is no interaction between the customer and bank's application system. No identification of the customer is done. In this system, there is no possibility of any unauthorized person getting into production systems of the bank through internet.
- **Electronic Information Transfer System:** The system provides customer- specific information in the form of account balances, transaction details, and statement of accounts. The information is still largely of the 'read only' format. Identification and authentication of the customer is through password. The information is fetched from the bank's application system either in batch mode or off-line. The application systems cannot directly access through the internet.
- **Fully Electronic Transactional System:** This system allows bi-directional capabilities. Transactions can be submitted by the customer for online update. This system requires high degree of security and control. In this environment, web server and application systems are linked over secure infrastructure. It comprises technology covering computerization, networking and security, inter-bank payment gateway and legal infrastructure.

HIGHEST INTERNET USER COUNTRIES IN THE WORLD**FIGURE 1: HIGHEST INTERNET USER COUNTRIES IN THE WORLD**

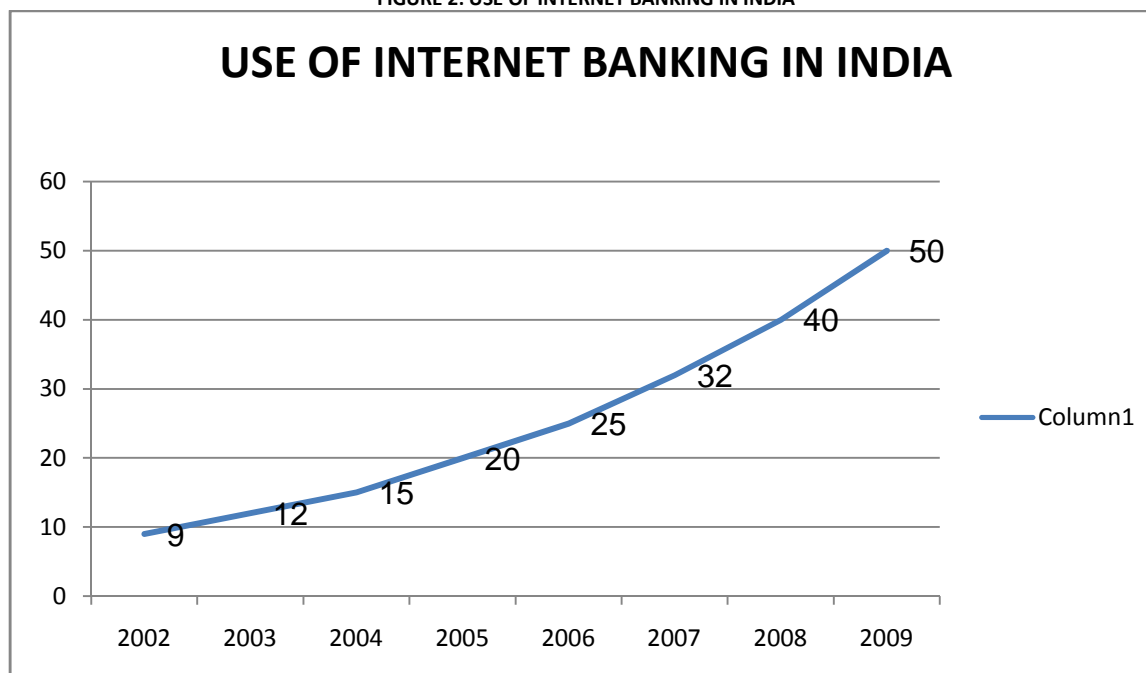
| # | Country or Region | Population, 2009 Est | Users Latest Data | % Population (Penetration) | Growth 2000-2009 | % of World Users |
|-------------------------|--------------------------------|----------------------|----------------------|----------------------------|------------------|------------------|
| 1 | China | 1,338,612,968 | 360,000,000 | 26.9 % | 1,500.0 % | 20.8 % |
| 2 | United States | 307,212,123 | 227,719,000 | 74.1 % | 138.8 % | 13.1 % |
| 3 | Japan | 127,078,679 | 95,979,000 | 75.5 % | 103.9 % | 5.5 % |
| 4 | India | 1,156,897,766 | 81,000,000 | 7.0 % | 1,520.0 % | 4.7 % |
| 5 | Brazil | 198,739,269 | 67,510,400 | 34.0 % | 1,250.2 % | 3.9 % |
| 6 | Germany | 82,329,758 | 54,229,325 | 65.9 % | 126.0 % | 3.1 % |
| 7 | United Kingdom | 61,113,205 | 46,683,900 | 76.4 % | 203.1 % | 2.7 % |
| 8 | Russia | 140,041,247 | 45,250,000 | 32.3 % | 1,359.7 % | 2.6 % |
| 9 | France | 62,150,775 | 43,100,134 | 69.3 % | 407.1 % | 2.5 % |
| 10 | Korea South | 48,508,972 | 37,475,800 | 77.3 % | 96.8 % | 2.2 % |
| 11 | Iran | 66,429,284 | 32,200,000 | 48.5 % | 12,780.0 % | 1.9 % |
| 12 | Italy | 58,126,212 | 30,026,400 | 51.7 % | 127.5 % | 1.7 % |
| 13 | Indonesia | 240,271,522 | 30,000,000 | 12.5 % | 1,400.0 % | 1.7 % |
| 14 | Spain | 40,525,002 | 29,093,984 | 71.8 % | 440.0 % | 1.7 % |
| 15 | Mexico | 111,211,789 | 27,600,000 | 24.8 % | 917.5 % | 1.6 % |
| 16 | Turkey | 76,805,524 | 26,500,000 | 34.5 % | 1,225.0 % | 1.5 % |
| 17 | Canada | 33,487,208 | 25,086,000 | 74.9 % | 97.5 % | 1.4 % |
| 18 | Philippines | 97,976,603 | 24,000,000 | 24.5 % | 1,100.0 % | 1.4 % |
| 19 | Vietnam | 88,576,758 | 21,963,117 | 24.8 % | 10,881.6 % | 1.3 % |
| 20 | Poland | 38,482,919 | 20,020,362 | 52.0 % | 615.0 % | 1.2 % |
| TOP 20 Countries | | 4,374,577,583 | 1,325,437,422 | 30.3 % | 359.9 % | 76.4 % |
| Rest of the World | | 2,393,227,625 | 408,556,319 | 17.1 % | 461.5 % | 23.6 % |

From the above figure 1, India is the fourth largest internet user countries in the world. The reach of internet banking has also increased in India due to the internet usage increase.

USE OF INTERNET BANKING IN INDIA FOR LAST FEW YEARS**TABLE 1: USE OF INTERNET BANKING IN INDIA**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------|------|------|------|------|------|------|------|------|
| Increase % | 9 | 12 | 15 | 20 | 25 | 32 | 40 | 50 |

FIGURE 2: USE OF INTERNET BANKING IN INDIA



The number of internet banking users has increased from 9% in 2002 to 50% in 2009 due to increase in internet services.

Multiple services can be offered through online banking such as – bill payment services, Fund transfer, railway ticket booking etc.

Internet banking is changing the banking industry and is having the major effects on banking relationships. The net banking thus, "now is more of a norm rather than an exception in many developed countries" due to the fact that it is the economical way of providing banking services. Banking is now no longer confined to the traditional brick and mortar branches, where one has to be at the branch in person, to withdraw cash or deposit a cheque or request a statement of accounts. There is need to scan and analyze the market and respond to the needs of customers and to generate awareness regarding advantages of internet banking.

SWOT ANALYSIS OF INTERNET BANKING

STRENGTH

- Aggression towards development of the existing standards of banks
- Strong regulatory impact by central bank to all the banks
- Presence of intellectual capital to face the change in implementation with good quality
- Fully computerized and techno savvy
- A person can access his account from anywhere he is
- A person can do banking transactions like funds transfer to any account, book ticket, bill pay at any time of the day

WEAKNESS

- High bank service charges. All the bank charges highly to the customers for the services provided through internet banking
- Poor technology infrastructure
- Ineffective risk measures
- Easy Access of internet banking account by wrong people through email ids
- When the server is down the whole process is handicapped

OPPORTUNITIES

- Increasing risk management expertise
- Advancement of technologies, strong asset base would help in bigger growth
- Safety of using internet banking is robust, so more internet banking users in future
- The international scope of internet banking provides new growth perspectives and internet business is a catalyst for new technologies and new business processes

THREATS

- Banks provides all services through electronic computerized machines and this creates problems to the less educated people
- Inability to meet the additional capital requirements
- Huge investment in technologies
- Internet banking will be replaced by mobile banking

INFERENCE OF SWOT ANALYSIS

With the growth of internet at a rapid pace and the people's time constraints, internet banking is used widely used for all the banking transaction purpose all over the world. Banking working hours is not limited to internet banking as the banking account can be accessed throughout the day.

ADVANTAGES

- Eliminates the use of paper and replaces it with computer screens.
- No need to stand in line at the bank, because all you have to do is log on to the internet access your account.
- It is safe, hassle free, saves hours of time a month.
- Greater reach to customers.
- Quicker time to market.
- Ability to introduce new products and services quickly and successfully.
- Ability to understand its customer needs.
- Customers are given access to information easily across any location.
- Greater customer loyalty.

- It is convenient.
- There are no geographical barriers.
- Getting quarterly statements from the bank, transferring funds to outstation.
- Services can be offered at a miniscule cost.

WHY CONSUMER ARE NOT USING INTERNET BANKING

- Risk
- No perceived need
- Lack of knowledge about the service
- Inaccessibility
- Lacking the human touch
- Pricing concerns
- IT fatigue
- Inertia
- Managerial implications

DIFFICULTIES

- The RBI does not still allow inter-bank funds transfer through the net since the Cyber laws are still not in place. Once allowed, this could pave the way for smooth cash management.
- Security also continues to remain a major issues especially in the case of corporate, as bulk transactions are done in a day.
- Bankers are aware of the fact reliable transaction technology as well as management of the security perceptions of customers are the keys to success.
- The infrastructural costs of providing such services are quite high.
- Limited criteria in online trading.
- Delay in fund transfer.
- When server downs the whole process handicapped.
- Technical problems occur sometimes which affect customers badly.
- Late processing also sometimes in some services create a hurdle causing delay.
- Late security level in the service to cope with hacking problem.

FINDINGS

- In the users ratio of internet banking 65% of customers are using this service.
- More banks are connecting to the any software company to running the E-banking service. In these services the SBI banks is top in service of E-banking.
- The services that are mostly used by maximum customers are transactions, online trading, bill payment, shopping etc.
- The mode of the cash deposit in bank is for use to online transaction cash, cheque & e-banking.
- Different banks different charge on online service.
- Although there is some feeling of insecurity also but still due to the multi-features service and business class prefer it.

SUGGESTIONS

- To prevent online banking from remaining customers to prompt this service through advertising company.
- After repairing this basic deficiency, banks must ensure that their service is competitive.
- Bank should provide the services in different languages.
- All the complaints felt by the customers should be considered with seriousness and solution based approach to keep them satisfied in long run,
- The bank should extend their tie-up contracts with other various institutions whether financial or non-financial for convenience of its customers.
- Bank should extend the technology which is used in internet banking in order to remove the difficulties.

CONCLUSION

Internet banking has become a necessary survival weapon and is fundamentally changing the banking industry worldwide. Today, the click of the mouse offers customers banking services at a much lower cost and also empowers them with unprecedented freedom in choosing vendors for their financial service needs. The rise of Internet banking is redefining business relationship with the customers. The International scope of Internet banking provides new growth perspectives and Internet business is a catalyst for new technologies and new business processes. The reach of Internet banking has rapidly increased due to the Telecommunication Infrastructure development in India.

REFERENCES

1. Adoption of Internet Banking: An Empirical Investigation of Indian Banking Sector By Balwinder Singh, Reader, Department of Commerce and Business Management, Guru Nanak Dev University, Amritsar, India.
2. Data Protection in Consumer E-banking Journal of Internet Banking and Commerce, April 2006, vol.11, no.1 (<http://www.arraydev.com/commerce/jibc/>)
3. ICICI Bank Consumer Banking in India, www.icicibank.com
4. Internet Banking Comptroller's Handbook October 1999
5. Project on SWOT analysis of ICICI Bank, www.scribd.com/doc/13163460/Swot-of-ICICI-Bank
6. The Indian internet banking journey, www.icmrindia.org > ... > Human Resource Management
7. Towards online banking by Soutiman Das Gupta, Soutimand@networkmagazineindia.com
8. Why consumers are not using Internet Banking : a qualitative study by Philip Gerrard Nanyang Business School – Singapore, www.emeraldinsight.com/0887-6045.htm

THE PROPOSED GOODS AND SERVICE TAX REGIME: AN ANALYSIS OF THE DIFFERENT MODELS TO SELECT A SUITABLE MODEL FOR INDIA

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ABSTRACT

This paper analyses the problem in the present taxation framework to find out the need for new taxation regime. Analysing the proposed Constitution (115th Amendment) Bill, 2011 (hereinafter referred as GST Bill), the paper attempts to find out the impact of the bill economically as well as constitutionally. The Paper has observed certain flaws in the bill which left the dream of a Pan-India Indirect taxation unaccomplished. Besides from it, the bill is also alleged to disturb the balance of federalism in the country and creating loss to the state revenue. The Paper believes in striking the correct balance in both the arenas and hence put forth certain recommendations for the solution of the above problems with an eye to achieve a balance.

KEYWORDS

Goods and Service Tax, Indirect Taxes, VAT, GST Models.

INTRODUCTION

 *Taxes are what we pay for civilized nations"*

-Oliver Wendell Holmes Jr⁷

The term "tax" reminds of a famous fiction character *Robinhood* who used to loot the riches to help out the poor. Similarly the tax takes out the money from taxable entities to create a civilized nation. The term 'civilized nation' hereby includes fulfilling both national interest as well as the local interest. Considering this, both centre and state government levies taxes with *Robinhood* like intention of local and national interest. The implementation of the *Robinhood* intention of levying the tax in India is also complex and harsh for the tax payers. Hence the taxpayer, in order to meet his ends, needs to evade and avoid the taxes creating a loss for both nation and state. In the light of these problems, the government is trying to come up with tax reforms in the form of Direct Tax Code (hereinafter referred as DTC) and Goods and Services Tax (hereinafter referred as GST). This paper tries to analyse whether the GST regime as proposed by the central government will be able to serve the purpose of national interest while striking a balance between both state and centre level.

With an eye to provide a lucid description on this new taxation regime, this paper is classified into five parts. Part I of the paper explains the instant taxation regime and points out the loopholes in the contemporary provisions. Part II reviews the proposed GST regime. Part III tries to analyse the impact of new regime. Part IV tries to explain the state's problem and solutions imparted for this world all over the world. Part V being conclusive part of the essay tries to find out answers of the issues and controversies with regard to new regime.

I. NEED FOR TAX REFORMS IN INDIA: AN ANALYSIS OF CONTEMPORARY TAXATION FRAMEWORK

"Necessity is the mother of invention"

The defects or flaws in the present legal framework create a necessity for new legislation or amendments. Hence this part tries to analyse the present regimes and problems in it.

1.1. ANALYSIS OF PRESENT LEGAL FRAMEWORK FOR COLLECTION AND DISTRIBUTION OF INDIRECT TAXES

India being a federal country believes in the concept of distribution of the power of levying the taxes between the state and the centre. In India, the Seventh Schedule of the Constitution is entrusted to divide the powers among the three lists viz. centre list, States list and Concurrent list.⁸ However there is no test laid down for this distribution of power thereby. Even, a study of federation all over the world shows that there is no fixed formula or set formula for division of the power between the state and the centre. A basic test to be applied to ascertain the allotment of subject matters between the centre and state governments is that the functions of the national interest should go to centre and those of the regional interest should go to the state. However the importance of the subject matter is quite a circumstantial and subjective matter to decide and hence this test falls flat.

Coming to the distribution of the power of levying taxes in India, the centre collects all the direct taxes like income tax, corporate tax etc. along with few indirect taxes like service Tax, excise duty and customs duty. On the other hand, the state is empowered to tax indirect taxes like VAT on goods, CST and local taxes. In the present scenario, these funds coming out of these taxes for states are unable to furnish their requirements. This hampers the works of local development in the respective states. This problem of the state had been predicted by the constituent Assembly at the time of the formation of the Constitution. Hence they put provision for the tax sharing in certain tax collections of the centre and the concept of grant-in-aid in our Constitution. The states, from initial year of the independence, were depended upon the share of revenue collected and allotted by the centre. Centre, after the year 2000, on the recommendation of tenth finance commission, amended Article 270 to allot a share of the net proceeds of all the taxes and collected by them except in few circumstances. As per Article 270(2), the percentage for it can be prescribed from time to time.⁹ In reality, this work of deciding the percentage distribution comes into the hands of Finance Commission. Additionally, states are given full share in taxes in course of sale or purchase of inter-state trade or commerce and taxes on consignment of goods in course of inter-state trade or commerce. Even after this, the conditions of the states are not satisfactory and states like Bihar, Uttar Pradesh etc. normally demands for the special packages considering their weak financial and social status in comparison to the other states.

The Present indirect taxation regime is also criticised majorly for the two reasons i.e. firstly, the non-uniformity of the rates and complexities involved and secondly, the tax evasion by non-disclosure of sales and supply of goods or services. The centre cause of the above problems can be mirrored in the following statement of Gurucharan Das:-

⁷ Oliver Wendell Holmes, Jr, in the case of *Compania General de Tabacos de Filipinas v. Collector of Internal Revenue*, 1904.

⁸ *Schedule VII (List I, II, III)*, Constitution of India, 1950.

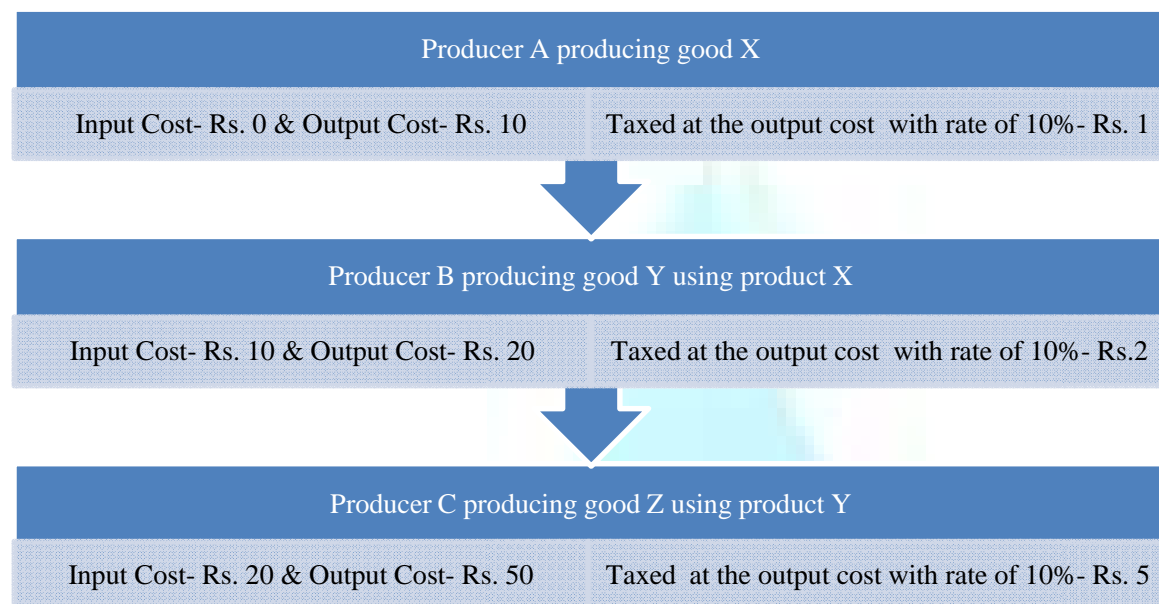
⁹ *Article 270 (2)* Constitution of India, 1950.

"In India today, a truck takes 40 hours to deliver goods from Delhi to Bombay. Of this, only 24 hours are spent driving; the remaining 16 hours are spent negotiating bribes at octroi check nakas. Thanks to the Golden Quadrilateral, driving time has declined significantly. But the pain and corruption of octroi posts still remains."¹⁰

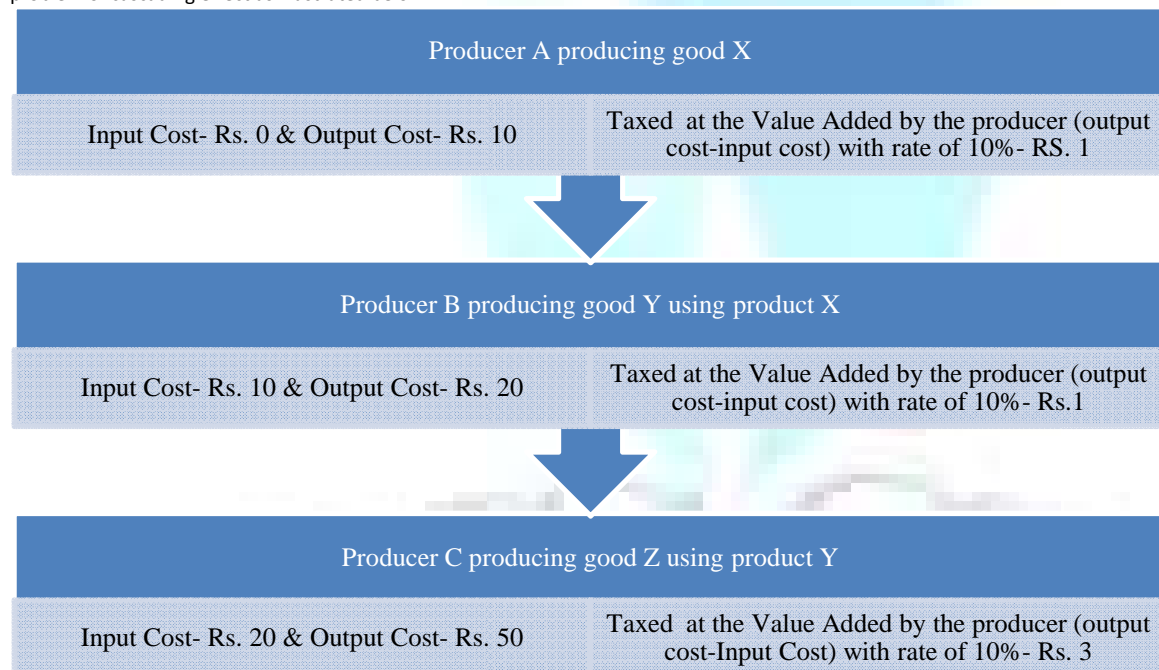
All these problems in the present taxation regime paved the way for the GST Regime. However it is still facing challenges from the states as they have fear of getting their condition worse in this regime.

1.2. IMPLEMENTATION OF THE VALUE ADDED TAXES IN INDIA: A HALF WAY SOLUTION IN THE ARENA OF INDIRECT TAXATION

As cited in one of the illustration given above, people used to pay taxes at several levels. There was no system of getting a rebate on the taxes paid previously while paying the inputs.¹¹ This is also known as cascading effect. The effect of this Cascading effect could be explained with the example shown below:



Value Added Tax (hereinafter referred as VAT) is only a method of levying tax on the base of the value added by enterprise in the product and hence solves the problem of cascading effect as illustrated below:



It also aims to reduce multiple rates of taxation and is an attempt to bring uniformity in the tax rates.

The Centre implemented the VAT first time in 1986 as MODVAT for the selected commodities. Centre increased the number of the commodities while implementing CENVAT in 2002-03. Consequently, Service tax was also included in CENVAT in 2003-04. Presently, VAT consolidated its position with 21 states implementing it in 2005.¹²

The implementation of VAT cherished business all over the country. However the present taxation regime has not put a full stop on the harsh effects of multiple taxes. Neither State VAT nor CENVAT is a success in order to put an end on the multiple amount of taxes which a businessmen need to pay to transact his business. Taxes like surcharges, additional customs duties etc. are not included in CENVAT. State VATs also have the same story. Adding salt on this wound, the companies need to pay Interstate Sales Tax for the delivery of goods produced and already taxed in one state. Hence the multiplicity of the taxes is a big

¹⁰ Gurucharan Das, *Answer to black money is to pass GST*, available at <http://post.jagran.com/answer-to-black-money-is-to-pass-gst-1307886857> (12 Dec., 2011).

¹¹ *Goods and Services Tax: A Primer*, available at <http://mostlyeconomic.com/wordpress.com> (15 Dec., 2011).

¹² Amol Agrawal, *India's Goods & Service Tax – A Primer* available at <http://www.stcpd.com> (29 August, 2012).

problem.¹³ Additionally services are taxed only by the centre and hence it creates a problem for states when a good is being sold within a service provided. All these complexities are still looking for a solution in the form of GST regime.

1.3. MULTIPLICITY OF TAXES AS A HURDLE TO CONDUCT BUSINESS IN INDIA

"To the biggest question of the present day, the answer lies in the history book."

Jawahar Lal Nehru's vision is often referred as admixture of Marx's socialism and Gandhi's self reliance or *Swaraj*. In concise manner, the vision of India or primarily Nehru is based on the Russian model and hence was anti-industrialist. To bring the development of India into the mainstream, T.T. Karamchari, the then Finance Minister of India, introduced taxes at the rate of 87.5%. Even, J.R.D. Tata conceded in a private conversation with Gurcharan Das, the Ex-Vice President for Procter & Gamble, in his book that he used to pay more than 100% tax.¹⁴ This multiplicity and mammoth size of tax rates basically rooted the practice of tax evasion and avoidance. Even the reputed industrialists like Aditya Birla used international route for circumventing tax and rigidity of *license raj*. Aditya Birla inaugurated several companies outside Indian peninsula mostly in eastern Asia. These companies stood out of Indian Capital and even used Indian raw material for their production. However it will be wrong to allege any allegation of tax evasion or other such allegations Aditya Birla. In reality, Aditya Birla got frustrated with licensing problem and tax of more than 100% which lead him to only viable option of expanding Business Empire outside India.

This kind of taxation and fiscal policy basically opened up path for a parallel economy in India with lot of tax evasion and avoidance. India entered into the Liberalisation era in 1991 under the guidance of P.V. Narshima Rao, the then Prime Minister of India. However the problem of multiplicity of tax rates did not get over with the starting of Liberalisation era. An illustration showing the problem with the multiplicity of taxation can be observed below.

ILLUSTRATION

If 'A' is indulged in manufacturing and selling of Textile, then firstly he will be charged the Professional tax. As he is also engaged in selling of the textile he will be charged for the Sales tax. For importing the goods he will be charged Central Sales Tax, Customs Duty and Octroi. As he gets an income by selling the goods he should pay Income Tax. As the textile will be manufactured in the factory Excise Duty should be paid. 'A' shall also pay Municipal tax for having a Factory/Warehouse/Office. For the business purposes if A withdraws more than permitted amount from the bank then he will have to pay the Cash Handling Tax. If he takes or gives any of the any service then he has to pay a Service tax. When 'A' goes out of station for business he has to pay the Fringe Benefit Tax. As 'A' is Accumulating wealth from his business he shall also pay the Wealth tax. When 'A' has a good turnover he shall pay the Turnover tax and otherwise he shall pay the Minimum Alternative Tax. Now this examples illustrates the problem of multiplicity of taxes.

By paying so many kinds of taxes, an assessee is either discouraged to start up his own business or forced to commit tax evasion. The only hope for elimination of this harshness is in the form of DTC and GST as these laws will consolidate and revitalise the Indian taxation laws. This paper is only with respect to one of the major branches of the tax regime i.e. indirect taxation. The change agent of this arena is GST regime which is making way through the Constitution (115th Amendment) Bill, 2011 (hereinafter referred as GST Bill). However there are several questions being raised on this GST Bill which is analysed further in the coming parts.¹⁵

II. THE NEW INDIRECT TAXATION REGIME: A BIRD EYE VIEW OF CONSTITUTION (115TH AMENDMENT) BILL, 2011 AND COMPARATIVE ANALYSIS WITH OTHER MODELS

The Goods and Service Tax is a comprehensive value added tax on goods and services levied at each stage of supply chain. This part of the paper analyses the concept and Indian version of GST. Additionally, a critical and comparative analysis of the bill is also presented in order to understand the intricacies of the bill.

2.1. CONCEPT ANALYSIS OF GST

"World over, Goods and Services attract the same rate of Tax. This is the foundation of GST."

- P. Chidambaram

As discussed above, the major problem in the recent taxation structure is of the complexity involved in it. In an illustration cited above, it is noticed that there is double digit numbers of the taxes and tax rates which a businessmen need to take care of. Hence as stated by P. Chidambaram and quoted above, the basic object to bring GST was to consolidate all the indirect taxes into one and charge the tax at a single rate. Eminent tax economist Prof. Charles McClure identifies six characteristics of a well designed GST in a federal system which is also cited by Dr. Vijay Kelkar, Chairman of the Thirteenth Finance Commission, in his speech¹⁶:-

- Uniform rate of taxation within a given jurisdiction, ideally at a single rate.
- Sales would be taxed under the destination principle.
- Low costs of compliance and administration.
- Each level of government to set its own tax rate subject to agreed ceilings and/or floors.
- A substantively Common tax base for Central and State governments.
- Substantial Co-operation in tax administration between all levels of government.¹⁷

Kelkar also put up in his speech that the first two are important for economic reasons; the third for administrative reasons and the fourth for political reasons, the last two come into play in a system of multilevel finance such as we have in our country.¹⁸ On the very outset of it, GST looks like to remove all the complexities involved in transacting business in India as cited above in part I and explained in a illustration thereby.

Additionally, GST is a value added tax which again somehow reduces the burden of the tax payers. GST, in a manner, can also be called as an extension of VAT regime as it is just a VAT replacing several taxes. Hence it is bigger in scope than VAT but have a same nature. This regime is presently awaiting a constitutional amendment which is to be passed. Hence to understand the Indian version of this concept, the analysis of the proposed 115th Amendment of the Constitution is indispensable.

2.2. THE CONSTITUTION (115TH AMENDMENT) BILL, 2011: A PERIPHERAL ANALYSIS

The Constitutional amendment is necessary for implementing GST in the country as it involves a consolidation of several taxing power. Hence the need of the constitutional amendment cannot be surpassed. Now the Government is proposing 115th amendment for rolling out GST regime in India. The basic feature of the GST regime that can be deduced from this bill is as follows:-

2.2.1. CONCURRENT GST AT BOTH LEVELS

The bill proposes a collection of GST at both level and by both governments i.e. State and Central government.¹⁹ The Central GST (hereinafter referred as CGST) comprises of Central excise Duty, Additional Excise Duties, Additional Customs Duty known as Countervailing Customs Duty, Special Additional Customs Duty, Service Tax, Cesses and Surcharges. On the other hand, State GST comprises of VAT/Sales Tax, Local Taxes like Entertainment Taxes, Luxury Taxes, Tax on lottery,

¹³ Sriram P Govind, *Goods and Service Tax : Will the Proposed Indirect Tax Reform Change Business and Tax Dynamics in India ?* available at <http://www.nujslawreview.com> (30 August, 2012).

¹⁴ GURUCHARAN DAS, *INDIA UNBOUND* 88 (Penguin Publication, 2001).

¹⁵ Pre Legislative Briefing Council, *A Report on the Constitutional (115th Amendment) Bill: GST*, Submitted to the Standing Committee, Finance of Lok Sabha on 23 May, 2011.

¹⁶ Dr. Vijay Kelkar, *Address at the FICCI National Executive Committee Meeting on "Flawless Goods and Services Tax for Promoting Growth and Employment"* available at <http://www.fincopindia.nic.in> (12th October, 2009).

¹⁷ Referred in *Supra* note 5.

¹⁸ *Id.*

¹⁹ THE CONSTITUTION (115TH AMENDMENT) BILL, 2011, Clause 2.

betting etc, Service Tax, Entry Tax not in lieu of octroi.²⁰ The requisite changes in lists of Schedule VII are also proposed in bill.²¹ The tax payers will need to maintain the two separate accounts for the two GST which can be bit troublesome.

As there are separate accounts for the two, a business can get input tax credit paid on CGST can only be utilized for paying Output tax on CGST. Likewise, SGST input tax credit can only be adjusted for output tax SGST. There cannot be cross utilization of Input Tax between CGST and SGST.

2.2.2. INTER-STATE GST

Inter State Sales as per the present taxation framework formulates a huge source for the revenue in the hands of the states. However the bill introduces Article 269A under which the centre is now empowered to collect Inter-State GST (hereinafter referred as IGST) on an interstate sale from the exporting state and transfer it to the importing state. The revenue collected under it will be apportioned between the states between centre and state as prescribed and decided by the Parliament.

2.2.3. THRESHOLD EXEMPTIONS

The traders earning above the threshold determined shall be taxed under GST at both the levels. The threshold limit will be kept uniform across the country. Hence it seems to be beneficial for the small traders as well as reduces the burden of the government.

2.2.4. GST COUNCIL AND DISPUTE SETTLEMENT AUTHORITY

GST Council and GST Dispute Settlement Authority are also to be set up under the bill. GST Council will make recommendations on all key matters pertaining to GST like taxation rates under both CGST and SGST, exemptions from GST etc.²² It will comprise of:-

- Union Finance Minister (Chairman)
- Finance Ministers from states (Members)²³

The Dispute Settlement Authority will resolve disputes amidst Union/States/members with respect to GST. It will comprise of:-

- A judge from Supreme Court or Chief Justice from a high court and appointed by President of India on the recommendation of Chief Justice of India.
- Two other members should be experts from field

of law/ economics/ public affairs on the recommendation of GST Council.²⁴

2.3. THE 115TH CONSTITUTION AMENDMENT BILL, 2011: A CRITICAL EVALUATION

2.3.1. MULTIPLICITY OF TAX REGIMES

The GST was proposed with the noble idea of a single pan-India Indirect Taxation regime. However it had now itself created dual and concurrent tax regimes. Hence it has achieved its objective upto a certain extent but is unable to fulfil the dream of pan-India Indirect Taxation.

2.3.2. STATES AUTONOMY AND RESOURCES

The states are alleging this bill to take away their autonomy by reducing their power to tax. Additionally they visualise its implementation as a loss for their revenues. This has been dealt in detail in the Part IV of this paper.

2.4. COMPARATIVE MODEL

2.4.1 AUSTRALIA

In Australia, the GST is implemented in the beginning of the last decade on 1st July, 2000. The GST was introduced by the virtue of Division 9 of the *A New Tax System (Goods and Services Tax) Act, 1999* (Cth). It is collected by the centre on the most goods and services transactions in Australia at the rate of 10%. Taxable supplies include goods wholly within Australia, from or to Australia or real property in Australia. Certain types of supplies are free of GST, examples include fresh unprocessed food, medical services, education courses, childcare, exports, pre-owned real estate and going concerns. In Australian Model, the net proceeds belonging to the states are passed to the states in entirety.²⁵

Australian GST

Subject Matter: most goods and services transactions in Australia

Statute: Division 9 of the *A New Tax System (Goods and Services Tax) Act 1999* (Cth)

Introduction Date: 1 July 2000

Tax Rate: 10%

Information derived from <http://www.ato.gov.au>

2.4.2. CANADA

GST in Canada is a multi-level value added tax introduced in Canada on January 1, 1991. The key person working behind bringing these reforms were the then Prime Minister Brian Mulroney and his finance minister Michael Wilson. The Goods and Services Tax is defined in law at Part IX of the Excise Tax Act. GST is levied on supplies of goods or services purchased in Canada and include most products, except certain politically sensitive essentials such as groceries, residential rent, and medical services, and services such as financial services. It is collected at the rate of 5%. The revenues of the GST are kept with the centre. Seeing the same problems as noticed presently in India, Harmonised Sales Tax was brought by the Centre in collaboration with the states of Nova Scotia, New Brunswick and Newfoundland. Its rate is 13% except 15% for Nova Scotia. HST is administered by the Canada Revenue Agency, with revenues divided among participating governments according to the formula accepted by the both. Even such consensus model can also be brought in India.²⁶

Canadian HST

Subject Matter: most goods and services transactions in states of Nova Scotia, New Brunswick and Newfoundland

Statute: Consensus based taxation

Introduction Date: January 1, 1991

Tax Rate: 5% (15% for Nova Scotia)

Information derived from <http://www.oag-bvg.gc.ca>

²⁰ The Empowered Committee of State Finance Ministers, *First Discussion Paper on Goods and Services Tax in India*, available at <http://www.finmin.nic.in> (10 Dec., 2011).

²¹ THE CONSTITUTION (115TH AMENDMENT) BILL, 2011, Clause 17.

²² THE CONSTITUTION (115TH AMENDMENT) BILL, 2011, Clause 12.

²³ *Id.*

²⁴ *About GST(Australia)*, available at <http://www.ato.gov.in> (28 Aug., 2012)

²⁵ *Ibid.*

²⁶ *About GST(Canada)*, available at <http://www.oag-bvg.gc.ca> (28 Aug., 2012)

2.4.3. NEW ZEALAND

GST is a tax on most goods and services in New Zealand, most imported goods, and certain imported services. GST was introduced in New Zealand in the year 1986. Subsequently, it was raised to 12.5% on 1 July 1989 and was further increased to 15% on 1 October 2010.²⁷ Presently GST being value added tax is added to the price of taxable goods and services at a rate of 15%.

Taxable items include the following for the purpose of the GST:-

- Goods include all types of personal and real property, except money.
- Services cover everything other than goods or money.
- Taxable goods and services are part of the business or taxable activity. This means you supply or receive taxable goods and services for a consideration (money, compensation, reward) but not necessarily for profit. We refer to taxable goods and services as “taxable supplies”.²⁸

The tax is here deposited to the Inland Revenue Department and didn't get distributed among the provinces.

New Zealand GST

Subject Matter: Three subjects shown in body

Statute: Taxation (GST and Miscellaneous Provisions) Act, 2000

Introduction Date: 1 October 2010

Tax Rate: 15%

Information derived from <http://www.ird.govt.nz>

2.4.4.CHINA

In China, the centralised VAT was implemented in *lieu* of State Taxes. China, in order to satisfy the needs of the states, In going to this model, had assured the provinces that they would continue to get what they did under the previous arrangement and that changes in revenue shares would be phased in over an extended period of 15 years.²⁹ A similar kind of the promise is also being given by the Indian government but the states are not assured of it in India. However the line is needed to be drawn somewhere so that larger country interest along with local interest can be achieved.³⁰

Chinese VAT

Subject Matter: Subject matter of all State Taxes

Introduction Year: 1984

Tax Rate: 17% (13% for reduced VAT)

Information derived from <http://www.tax.gov.cn>

2.4.5. UNITED KINGDOM

Value Added Tax (VAT) is a tax on consumption levied in the United Kingdom by the national government. It was introduced in 1973 and is the third largest source of government revenue after income tax and national insurance. It is administered and collected by HM Revenue and Customs. All businesses that provide 'taxable' goods and services and whose taxable turnover exceeds the threshold must register for VAT.³¹ The threshold has been £77,000 since April 2012. VAT is levied on most goods and services provided by registered businesses in the UK. The default VAT rate is the standard rate, 20% since 4 January 2011. Some goods and services are subject to VAT at a reduced rate of 5% (such as domestic fuel) or 0% (such as most food and children's clothing).

UK VAT

Subject Matter: Goods and services provided by registered businesses in United Kingdom.

Introduction Year: 1973

Tax Rate: 20% (reduced rates for certain categories)

Information derived from <http://www.hmrc.gov.in>

²⁷ About GST(New Zealand), available at <http://www.ird.govt.nz/gst/gst-registering/gst-about/> (3 Apl., 2012)

²⁸ Ibid.

²⁹ Ibid.

³⁰ About GST(China), available at <http://www.tax.gov.cn> (28 Aug., 2012).

³¹ About GST(United Kingdom), available at <http://www.hmrc.gov.in> (28 Aug., 2012).

2.4.6. COMPARATIVE PROFIT ANALYSIS

The GST regime has been successful in several parts of the world. It has brought profits all across the country. A brief analysis of the profits is presented below in the tabular form³²:-

| | Australia | New Zealand | Canada | United Kingdom |
|-------------------|----------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------|
| Introduction Year | 2000 | 1986 | 1991 | 1973 |
| Administration | Australian Taxation Office | Inland Revenue Department | Canada Revenue Agency | HM Revenue & Customs |
| Price Change | Short run off effect | Short run spike in prices, no longer run increase | Short run spike in prices, no longer run increase, price regulatory body | Short run spike in prices |
| Economic Growth | Introduced during sustained economic growth period | Introduced at the end of recession subsequent upswing | Introduced in the midst of major recession, criticized as Compounding problems | Introduced during good economic conditions |
| Revenue Effect | Revenue exceeded expectations | Revenue exceeded expectations | Revenue exceeded expectations | Revenue exceeds expectations |
| Current Account | Slight improvement since introduction | Rapid immediate improvement, longer term stabilization | Dramatic improvement since introduction of GST NAFTA | Improvement since introduction |
| Rate of Tax | 10% (0 % on essential items) | 15% | 5% (federal GST) with exemption for small businesses | 20% |

III. GST REGIME AND PERSPECTIVES TO LOOK ON IT

"Everyone on this earth cannot be the owner of same eyes"

The ideas and perspectives differ from person to person. At macro level, it could be said that every bunch of the persons have their own perspective to see the developments. Similarly, in this part several such perspectives are provided below to understand the pros and cons coming out of this new indirect taxation regime.

3.1. INDIAN ECONOMY**3.1.1. GST WITH RESPECT TO GROWTH RATE**

National interest is the above all the benefits which anything can provide. The introduction of GST as quoted by Apex Chamber of ASSOCHAM could increase GDP growth rate by 1.4 to 1.7 per cent with an annual revenue increase of Rupees 1.2 Lakh Crore at current level.³³ This will also result into a boost in Tax GDP from 1.5% to 2%.³⁴

3.1.2. GST WITH RESPECT TO BLACK MONEY

Before moving into any further analysis on this issue, it should be kept into mind that there are two kinds of Black money i.e. the one lying outside India and other existing within India. This bill will put an end on the latter category of the black money. In generic terminology, the black money stems from a transaction which has evaded taxes. An example of such a black money in the present day is as follows:-

*"When a citizen buys toothpaste from a chemist shop but refuses a bill because the shop keeper informs him that the toothpaste will cost 10% more, he helps the shopkeeper evade taxes and generates black economy."*³⁵

The Goods and Service Tax will discourage such cash transactions as the shop keeper will lose credit for the taxes paid at the earlier stages of manufacture and distribution if he does not provide a bill. Hence it is our honest appeal from all people who is interested to bring black money back to India, to ask the government and the other political parties to accept the GST regime.

3.2. PROVINCIAL ECONOMIES IN INDIA

There is difference among the perspectives of states. A group consisting Gujarat, Madhya Pradesh, Uttar Pradesh, Bihar etc. alleges it to be an assault on their state autonomy and federal structure of the country resulting into a revenue loss for them and hence they are not in favour of bringing it. This tussle has resulted into three failed drafts of GST Bill. Moreover they are still proposing GST regime in India without the constitutional amendment against the fourth draft of the GST Bill. A brief analysis of it is given in the next section. On the other hand, certain states are prepared for this new tax regime.

3.3. BUSINESSMAN PERSPECTIVE

Businessman will be heavily benefited from GST regime as it will offer them a uniform and simple taxation regime. Additionally, it will also bring Indian manufacturers an edge over the Chinese manufacturers as the costs of production will be turned down. As per ASSOCHAM, overall cost and thus prices of goods manufactured in India may reduce by 10%.³⁶ This will bring Indian economy in competition with cheap Chinese markets in terms of prices. However, as explained above, the businessman will not be able to evade taxes by not providing a bill for the transaction. Hence an illegal source for their tax free black income will be gone.³⁷ Finally, a statement of Newton's law can be cited in light of the circumstances of the businessmen:-

"Every action has an equal and opposite reaction"

It is correct to conclude on the basis of this that everything comes up with a price attached. Now the businessmen need to be honest to ripe the fruits of GST and this price seems to be fair and in the favour of national interest.

3.4. CONSUMER PERSPECTIVE

The consumer will be winner in this whole deal as they will get both a bill for their transaction as well as the cheap production. This step may even solve the problem of raising prices with respect to several products. Additionally, the consumers' rights for the remedy will also be strengthened by the bill of the transaction in their hands.³⁸

IV. ANALYSIS OF PROBLEMS OF STATES

In the road of enforcing this system, there is a huge tussle going on between states and centre. The states anticipate a huge loss in revenue collection of the states and hence criticise this bill. On the other hands, the centre tries to ensure the state to cover up the losses of the state with an eye on the boost in their revenue as well as simplification of indirect taxation regime.

³² *Goods and Services Tax: A Primer*, available at <http://mostlyeconomics.wordpress.com> (29 Aug., 2012).

³³ Also see ASSOCHAM: *Rational GST regime can improve tax revenues by Rs 1.2 lakh crore*, available at <http://www.commodityonline.com/news/assocham-rational-gst-regime-can-improve-tax-revenues-by-rs-12-lakh-crore-41339-3-1.html> (19 Dec., 2011).

³⁴ *Id.*

³⁵ *Supra* note 4.

³⁶ *Supra* note 27.

³⁷ *Id.*

³⁸ S. S. Singh, *Consumer Protection in India: Some Reflections* available at <http://www.consumereducation.in> (29 Aug., 2012).

4.1. UNDERSTANDING THE PREDICAMENT AND POSITION OF STATES

Presently the fiscal demands of the states are huge because of their responsibility to provide for development, welfare and social services activities like Education, housing, health, agriculture etc. Presently, the states use to levy octroi tax on the entry of any good for consumption, sales tax on goods, taxes on the advertisements other than news paper and radio advertisements and taxes on luxuries like entertainment taxes on the theatres etc. for satisfying these needs.

The GST Bill is going to provide a concurrent power to states to collect GST on the entries given in the List II subsuming all mentioned taxes like State VAT/Sales Tax, entertainment tax (unless it is levied by the local bodies), Luxury Tax, Taxes on lottery, betting and gambling, tax on advertisements, State Cesses and Surcharges insofar as they relate to supply of goods and services and Entry Tax, not levied by local bodies. *Prima facie*, it seems to be a delightful deal to get a right to levy value added taxes on both goods and services in lieu of subsuming above mentioned taxes.

However when GST Bill is read in entirety, it looks like a façade for taking the rights of levying taxes by the states. Now the states will be taken away the power to levy the tax on the advertisements other than news paper and radio advertisements as the entry 52 of the List II is going to be omitted as per the GST Bill. The State will have power to make laws with regard to octroi and luxuries items. However these taxes on both these subject matters will be collected and levied by the local bodies as mentioned in the GST Bill. On the whole, this will take a source of income from the hand of the government resulting into loss in their revenues and will give it to the local bodies mentioned thereby.³⁹ Additionally it also puts two restrictions on the collection of sales tax. The state is now debarred from collection sales tax on the following matters:-

- sale in the course of inter-State trade or commerce.
- sale in the course of international trade and commerce of, petroleum crude, high speed diesel, natural gas, motor spirit (commonly known as petrol), aviation turbine fuel and alcoholic liquor for human consumption.

Hence considering this states like Uttar Pradesh etc. are not in the favour of it as it looks like an unfair deal to them. However the bill also puts up an additional advantage to the state as power to levy tax on the sale of the services because now Entry 92C of List I is removed and term "goods" is removed from Entry 54 of list II. Now it is to be checked after the implementation that whether this remains a beneficial deal or not.

In the bill, there is a provision for establishment of the Tribunal for covering up the losses of the state after adjudicating it. This is also being referred as insufficient by a group of states because the tribunal cannot be considered as the furnished assurance with effect to this. Hence to consider this bill as detrimental to the states and an assault on the states autonomy is totally valid upto an extent.⁴⁰

4.2. UNDERSTANDING THE PREDICAMENT OF THE CONSTITUTIONAL ASSEMBLY

The Constituent Assembly had foresighted the poor conditions of the states at the time of the drafting Constitution. The framers of the Constitution had themselves realised that the States' taxing powers would not enable them to raise adequate revenues to meet their needs.⁴¹ On the other hand, they were pretty sure that in spite of Centre's expansive and expensive responsibilities, Centre's taxing powers could raise sizeable revenue.⁴² Considering all this, the Constituent Assembly made provisions for grant in aids and tax sharing schemes for the states.⁴³

The vision of the Constituent Assembly became a reality when the Constitution came into force. The picture of state governments except few like Gujarat etc. is really poor. These states rely heavily on the provision of grant-in-aids and tax sharing scheme for meeting their ends.

V. CONCLUSION AND RECOMMENDATIONS

"Striking the correct balance is the key."

At this point, the lots of important issues are involved but what is most important is striking the correct balance. In order to do so, it is necessary to consider the national as well as provincial states keeping in mind the intention of constituent assembly and fundamentals of tax administration. The benefit to the tax administration can only be gained when there is a single Pan-India GST. Additionally, considering the local interests and intent of the constituent assembly, the revenue coming out of the state and its entries shall be given in entirety with a back up of amount if there is any loss to state in revenue.

The current model of GST suggested in GST bill is just a Skelton without any flesh and even looks like a façade to take over certain state powers by the centre. Hence there is a necessity for India to move for a full fledged centralised GST as suggested above. In the end, on the viability of centralised GST, a statement of Sushil Kumar Modi is apt to cite:-

"If they can have one currency Euro and common tax regime, then India with 28 states is capable of achieving it."

REFERENCES**ARTICLES**

1. Sharp, Jerry (2011), "State Taxation of Interstate Businesses and the Multistate Tax Compact: The Search for a Delicate Uniformity", Colombia Journal of Law and Social Problems Vol. 11 223 (2011).
2. Bhutani, Mukesh (2011), "Changing tax laws and blurring lines", Business Standard (April 25, 2011).
3. Mukhopadhyay, Sukumar (2011), "How harsh can a levy of tax in a Budget be", Business Standard (February 28, 2011).

BOOKS

4. Ahmad, Ehtisham & Stern, Nicholas Herbert (1991), "The theory and practice of tax reform in developing countries", Cambridge University Press, Cambridge.
5. Anderton, Clare (2008), "Economics", Pearson Education India, India.
6. Blinder, Alan S. (1974), "The Economics of Public Finance", Brookings Institution Press, USA.
7. Bullock, Charles Jesse (1906), Selected readings in public finance, Ginn & company, UK.
8. Caine, William Sproston (1888), A Trip Round the World in 1887-8, G. Routledge and sons, New York.
9. Cordes, Joseph J and Ebe, Robert D. I (2005), "Encyclopedia of Taxation and Tax Policy", The Urban Institute.
10. Cossa, Luigi (1888), "Taxation: its principles and methods", G. P. Putnam's sons, England.
11. Creedy, John (1999), "Modelling indirect taxes and tax reform", Edward Elgar Publishing, UK.
12. Daniels, Winthrop More (1899), "The Elements of Public Finance", H. Holt, London.
13. Eshag, Éprime (1983), "Fiscal and monetary policies and problems in developing countries", Cambridge University Press, Cambridge.
14. Gupta, Alka (2001), "Public Finance and Tax Planning", Anmol Publications Pvt. Ltd., New Delhi.
15. Hyman, David M. (1990), "Public Finance: A Contemporary Application of Theory to Policy", Dryden Press, Chicago, USA.
16. Jain, M. P. (2005), "The Constitutional Law", Wadhwa Publication, New Delhi.
17. Kumar, N. (2008), "Public Finance Theory & Practice", Anmol Publications Pvt. Ltd, New Delhi.
18. Mill, John Stuart (2004), "Principles of Political Economy", Hackett Publishing, US.
19. Narayan, B.N. (2005), "Public Finance", Anmol Publications Pvt. Ltd., New Delhi.
20. Okamoto, Akira (2004), Tax Policy for aging societies: lessons from Japan, Springer, UK.
21. Peterson, George E. (1994), "Big-city Politics, Governance, and Fiscal Constraints", The Urban Institute, USA.

³⁹ T. R. JAIN, S. J. KAUR & ASHOK GUPTA, INTERNATIONAL TRADE AND PUBLIC FINANCE 41 (FK Publications, New Delhi, 2011).

⁴⁰ *Id.*

⁴¹ Referred in M.P. JAIN, THE CONSTITUTIONAL LAW 636 (Wadhwa Publication, 2005).

⁴² Referred in *Supra* note 35.

⁴³ *Id.*

22. Rajagopalachar , K. (1993), "Business Economics" (Atlantic Publishers & Dist, New Delhi.
23. Redmond , Gerry & Sutherland, Holly (1998), "The Arithmetic of Tax and Social Security Reform", Cambridge University Press, Cambridge.
24. Sundharam , K. P. M. (1964), "A text book of economic theory", Ratan Prakashan Mandir, Lucknow.
25. Surhone, Lambert M & Timpledon, Miriam T (2010), "Progressive Tax", VDM Verlag Dr. Mueller AG & Co. Kg, UK.
26. Vickrey & Spencer , William (1947), "Agenda for Progressive Taxation", The Ronald Press Company, USA.

WEBSITES

27. About GST, available at <http://www.ird.govt.nz/gst/gst-registering/gst-about/> (3 Apl., 2012)
28. Indian Indirect Taxes in Union Budget, retrieved from <http://www.economywatch.com/budget/india/indirect-taxes.html> on 21 April, 2011.
29. Robin, P. (2011): India 2010-11, retrieved from <http://business.mapsofindia.com/india-tax/structure/rates.html> on 22 April, 2011.



ESTIMATION OF STOCK OPTION PRICES USING BLACK-SCHOLES MODEL**DR. S. SARAVANAN****ASST. PROFESSOR****DEPARTMENT OF MANAGEMENT STUDIES****ANNA UNIVERSITY OF TECHNOLOGY****TIRUCHIRAPPALLI****G. PRADEEP KUMAR****STUDENT****DEPARTMENT OF MANAGEMENT STUDIES****ANNA UNIVERSITY OF TECHNOLOGY****TIRUCHIRAPPALLI****ABSTRACT**

This paper attempted to predict the accuracy of the Black-Scholes option pricing model in pricing the stock option contracts for the selected 8 companies. The study uses the Black-Scholes model along with its parameters to estimate the stock option contracts prices. This helps in finding whether the stock options are rightly priced or not. The study finally attempts to identify the pricing errors between the Market price of the option contracts and the calculated option prices. This is done with the help of Mean Absolute Percentage Error and Mean Absolute Deviation tools. The results of the study indicate that there were only a small difference between the calculated prices and the market price of the option contracts.

KEYWORDS

Stock option, Option pricing, Black-Scholes model, MAPE, MAD.

INTRODUCTION

There have been significant developments in the securities market in India during the recent decade years particularly with the introduction of derivative products since June 2000. The introduction of derivatives was well received by stock market players since derivatives serve as a risk reducing tool for the high volatile financial markets. An option contract is a type of derivatives contract, which has gained much attention by the investors. A option contract is a right to buy/sell a specified quantity of the underlying asset for a certain agreed price at a specified future date. There are different models for option pricing and valuation that are proposed by different researchers and academicians. Among them the Black-Scholes (1973) option pricing model serves the important and widely used option pricing models.

RESEARCH ON OPTION VALUATION

James D. Macbeth and Larry J. Merville (1979) attempted to test the Cox call option valuation model for constant elasticity of variance diffusion processes against the black-Scholes call option valuation model. They found that the Cox Valuation model fits market prices of call options significantly better than the Black-Scholes Model. Hull and White (1987) shows that, when volatility is constant. The Black-Scholes implied volatility of an at-the-money option approximately equals the expected future volatility over the life of the option. Jayanth R. Varma (2002) evaluated the volatility pricing of the index options with the help of the Black Scholes option pricing formula and the Garch (1, 1) model and has found severe mispricing in Indian Index options. He has also established the significant difference in volatility smiles for call and put options.

Shih-Pei Hsing (2003) examined the hedging positions of the options by comparing GARCH deltas with the help of Black – Scholes model with the GARCH (1, 1) Model with respect to moneyness of the option contract. Jonathan Kinlay (2005) tried to discover whether the forecasting models using high end-frequency data and incorporating both long and short-term memory effects is capable of outperforming implied volatility in forecasting. Misra and et al (2006) aimed at finding out the determinants of the implied volatility and the study resulted in higher volatility for deeply in-the-money and deeply out-of-the-money options than the at-the-money options. Shamiri

Dash and ET AL (2009) used GARCH models to forecast underlying stock volatility, and used the forecasted volatility in the Black-Scholes model in order to determine whether the corresponding options are fairly priced or not. Neelam Mundra and Ravi Agarwal (2009) examined the implied volatility function for selected individual equity call options from Indian Stock market and analysed the extend of mispricing volatility.

Vanitha Tripathi and Sheetal Gupta tested the predictive accuracy of the Black-Scholes model in pricing the Nifty index option contracts. It also examined whether the skewness and kurtosis adjusted Black-Scholes model gives better results than the original Black-Scholes model. Ravi Agarwal and ET AL (2010) the study examines the reasons for the differences between the theoretical option pricing formula and the prevailing market prices and to study the conformance of implied volatilities to volatility smile/skew.

DATA

This study takes into consideration of only 8 stocks for the estimation of the stock option prices. The period of the stock prices considered is for 3 years starting from 1st January, 2009 to 31, December, 2011. This helps in estimation the stock option prices for the day on 1st, January, 2012. The list of companies shown for the study is presented below,

TABLE 1: SHOWING LIST OF SELECTED COMPANIES

| S.no | Name of the Company |
|------|---------------------------------------------|
| 1 | Axis Bank Ltd. |
| 2 | Bajaj Auto Ltd. |
| 3 | ICICI Bank Ltd. |
| 4 | Infrastructure Development Finance Co. Ltd. |
| 5 | Jai Prakash Associates Ltd |
| 6 | Punjab National Bank |
| 7 | Sesagoo Ltd. |
| 8 | Tata Consultancy Services Ltd. |

METHODOLOGY

The study is executed by calculating the stock option prices using the Black-Scholes option pricing model for the Call option and Put options prices of the stock options for four different strike prices for all the contracts respectively. Later the calculated option prices are compared with the market prices using the Mean Absolute Deviation and Mean Absolute Percentage Error.

BLACK-SCHOLES OPTION PRICING MODEL

Fischer Black and Myron Scholes (1973) made a major contribution in the subject matter of derivatives when they developed the theoretical model for the pricing of European options on non-dividend paying stocks. The model influenced the academicians and practitioners in a great way to price and hedge European options. The Black-Scholes model for pricing of European options assumes constant volatility and Gaussian log-returns. The Black-Scholes formulas for option prices at time Zero (0) of a European call option on a non-dividend paying stock and the European put option on a non-dividend paying stock are,

For Call option the formula is,

$$c = S_0 N(d_1) - Ke^{-rT} N(d_2)$$

For put option the formula is,

$$p = Ke^{-rT} N(d_2) - S_0 N(d_1)$$

Where,

$$d_1 = \frac{\ln(S_0/K) + (r + \sigma^2/2)T}{\sigma\sqrt{T}}$$

$$d_2 = \frac{\ln(S_0/K) + (r - \sigma^2/2)T}{\sigma\sqrt{T}}$$

or

$$d_2 = d_1 - \sigma\sqrt{T}$$

Where the variables are,

S_0 is the stock price of the underlying stock at time zero

K is the strike price

e has the value 2.7128

r is the risk free rate

T is the time to expiry

σ is the stock price volatility

\ln is the Natural logarithm

$N(x)$ is the cumulative probability distribution function

MEAN ABSOLUTE DEVIATION AND MEAN ABSOLUTE PERCENTAGE ERROR

The Mean Absolute Deviation and Mean Absolute Percentage Error were used to test the check the efficiency of the predicted values of share prices and option prices with the market prices.

ESTIMATION OF OPTION PRICES USING BLACK-SCHOLES MODEL

The option prices for both call option and put options are calculated using the Black-Scholes option pricing formula. The stock option prices are estimated for 4 different strike prices, i.e. two strike prices above the market price of the share and two strike prices lesser than the market share price of the stock. The tables below show the estimated call option prices and the put option prices along with its strike price.

ESTIMATION OF CALL OPTION PRICES

Using Black-Scholes Option Pricing Model the call option prices are estimated for four different strike prices. The strike prices are chosen as two strike prices above the current market price of the underlying stock and two strike prices lesser than the current market price of the underlying stock. The call option prices for the selected 8 companies are shown below:

TABLE 2: ESTIMATION OF CALL OPTION PRICES

| S.No | Name of the company | Strike Price | Calculated Call option Price |
|------|---------------------|--------------|------------------------------|
| 1 | AXIS BANK | 760 | 62.50 |
| | | 780 | 51.01 |
| | | 800 | 41.04 |
| | | 820 | 32.54 |
| 2 | BAJAJ AUTO | 1350 | 171.43 |
| | | 1400 | 139.46 |
| | | 1450 | 111.63 |
| | | 1500 | 87.94 |
| 3 | ICICIBANK | 660 | 60.05 |
| | | 680 | 48.27 |
| | | 700 | 38.15 |
| | | 720 | 29.65 |
| 4 | IDFC | 85 | 9.47 |
| | | 90 | 6.40 |
| | | 95 | 4.09 |
| | | 100 | 2.48 |
| 5 | JPASSOCIATE | 45 | 8.84 |
| | | 50 | 5.48 |
| | | 55 | 3.11 |
| | | 60 | 1.63 |
| 6 | PNB | 750 | 42.21 |
| | | 760 | 36.78 |
| | | 780 | 27.37 |
| | | 800 | 19.84 |
| 7 | SESAGOA | 140 | 20.41 |
| | | 150 | 13.66 |
| | | 160 | 8.55 |
| | | 170 | 5.02 |
| 8 | TCS | 1000 | 196.08 |
| | | 1050 | 157.12 |
| | | 1100 | 122.82 |
| | | 1150 | 93.62 |

Source: Computed

Table 2 shows the call option prices estimated using the Black-Scholes model. The call option prices of the companies for four different strike prices show that the option price becomes lesser as the strike price of the option becomes higher and option prices become high when the strike prices becomes lower. This shows that the strike prices nearer to the market price of the underlying stock will always be high and vice versa.

ESTIMATION OF PUT OPTION PRICES

Using Black-Scholes Option Pricing Model the put option prices are estimated for four different strike prices. The strike prices are chosen as two strike prices higher than the current market price of the underlying stock and two strike prices lesser than the current market price of the underlying stock. The put option prices for the selected 8 companies are shown below

TABLE 3: ESTIMATION OF PUT OPTION PRICES

| S.No | Name of the company | Strike Price | Calculated Put option Price |
|------|---------------------|--------------|-----------------------------|
| 1 | AXIS BANK | 760 | 25.49 |
| | | 780 | 33.94 |
| | | 800 | 43.91 |
| | | 820 | 55.36 |
| 2 | BAJAJ AUTO | 1350 | 42.01 |
| | | 1400 | 59.89 |
| | | 1450 | 81.92 |
| | | 1500 | 108.08 |
| 3 | ICICIBANK | 660 | 47.00 |
| | | 680 | 58.28 |
| | | 700 | 70.72 |
| | | 720 | 84.22 |
| 4 | IDFC | 85 | 2.27 |
| | | 90 | 4.19 |
| | | 95 | 6.87 |
| | | 100 | 10.24 |
| 5 | JPASSOCIATE | 45 | 1.06 |
| | | 50 | 2.69 |
| | | 55 | 5.30 |
| | | 60 | 8.81 |
| 6 | PNB | 750 | 23.78 |
| | | 760 | 28.32 |
| | | 780 | 38.86 |
| | | 800 | 51.27 |
| 7 | SESAGOA | 140 | 2.90 |
| | | 150 | 6.12 |
| | | 160 | 10.99 |
| | | 170 | 17.42 |
| 8 | TCS | 1000 | 14.58 |
| | | 1050 | 25.47 |
| | | 1100 | 41.02 |
| | | 1150 | 61.68 |

Source: Computed

Table 3 shows the put option prices estimated using the Black-Scholes model. The put option prices of the companies for four different strike prices show that the option prices becomes lesser as the strike price of the option becomes higher and option prices become high when the strike prices becomes lesser. This shows that the strike prices nearer to the market price of the underlying stock will always be low and vice versa. This significance is in contradiction to the call option pricing strategy.

COMPARISON OF THE MARKET PRICES AND THE CALCULATED OPTION PRICES

The calculated option prices are compared with the market prices of the options under the different strike prices chosen for the study. This helps in knowing the accuracy of the estimated option prices. The comparison is done between the market prices and the option prices estimated historical volatility. The comparison is done for the call and put options under different strike prices. The comparison is done by estimating the deviation and error of estimation using the tools Mean Absolute Deviation and the Mean Absolute Percentage Error. The comparison of the prices are explained in the further sections

COMPARISON OF THE CALCULATED CALL OPTIONS PRICES WITH THE MARKET PRICES OF THE CALL OPTIONS

The comparison of the market prices and the calculated call option prices for different strike prices using the Mean Absolute Deviation and Mean Absolute Percentage Error. The results of the comparison are displayed below,

TABLE 4: COMPARISONS OF MARKET PRICES AND THE CALCULATED CALL OPTION PRICES

| S.No | Name of the company | Strike Price | Market price | Calculated Call option Price | MAD | MAPE |
|------|---------------------|--------------|--------------|------------------------------|-------|------|
| 1 | AXIS BANK | 760 | 60.9 | 62.50 | 0.80 | 3% |
| | | 780 | 42.45 | 51.01 | 4.28 | 20% |
| | | 800 | 32.8 | 41.04 | 4.12 | 25% |
| | | 820 | 24.9 | 32.54 | 3.82 | 31% |
| 2 | BAJAJ AUTO | 1350 | 150.4 | 171.43 | 10.52 | 14% |
| | | 1400 | 113.7 | 139.46 | 12.88 | 23% |
| | | 1450 | 73.4 | 111.63 | 19.12 | 52% |
| | | 1500 | 50.35 | 87.94 | 18.80 | 75% |
| 3 | ICICIBANK | 660 | 57.6 | 60.05 | 1.22 | 4% |
| | | 680 | 45 | 48.27 | 1.64 | 7% |
| | | 700 | 33.35 | 38.15 | 2.40 | 14% |
| | | 720 | 23.9 | 29.65 | 2.87 | 24% |
| 4 | IDFC | 85 | 9.45 | 9.47 | 0.01 | 0% |
| | | 90 | 6.15 | 6.40 | 0.13 | 4% |
| | | 95 | 3.55 | 4.09 | 0.27 | 15% |
| | | 100 | 1.95 | 2.48 | 0.26 | 27% |
| 5 | JPASSOCIATE | 45 | 8.95 | 8.84 | 0.05 | 1% |
| | | 50 | 5.1 | 5.48 | 0.19 | 7% |
| | | 55 | 2.5 | 3.11 | 0.31 | 25% |
| | | 60 | 1 | 1.63 | 0.32 | 63% |
| 6 | PNB | 750 | 43.8 | 42.21 | 0.79 | 4% |
| | | 760 | 30.7 | 36.78 | 3.04 | 20% |
| | | 780 | 28.7 | 27.37 | 0.66 | 5% |
| | | 800 | 13.05 | 19.84 | 3.40 | 52% |
| 7 | SESAGOA | 140 | 20.25 | 20.41 | 0.08 | 1% |
| | | 150 | 11.5 | 13.66 | 1.08 | 19% |
| | | 160 | 6.5 | 8.55 | 1.03 | 32% |
| | | 170 | 2.85 | 5.02 | 1.08 | 76% |
| 8 | TCS | 1000 | 185 | 196.08 | 5.54 | 6% |
| | | 1050 | 138 | 157.12 | 9.56 | 14% |
| | | 1100 | 94 | 122.82 | 14.41 | 31% |
| | | 1150 | 62.75 | 93.62 | 15.44 | 49% |

Source: Computed

From Table 4 it is inferred that the Mean absolute deviation for the market prices and the calculated prices of call options. The MAD values were ranging from 0.01 to 19.12. The comparison shows that the deviations were either minimum or zero for the lowest strike prices for all the selected call options. Relatively it was increasing for the higher strike prices.

The Mean percentage error value was ranging between 76 percent and 0 percent. The MAPE percentage becomes higher as the strike price of the option contracts is higher. This shows that the calculated prices were slightly higher than the market price of the option contracts.

COMPARISON OF THE CALCULATED PUT OPTIONS PRICES WITH THE MARKET PRICES OF THE PUT OPTIONS

The comparison of the market prices and the calculated put option prices for different strike prices using the Mean Absolute Deviation and Mean Absolute Percentage Error. The results of the comparison are displayed below,

TABLE 5: COMPARISONS OF MARKET PRICES AND THE CALCULATED PUT OPTION PRICES

| S.No | Name of the company | Strike Price | Market price | Calculated Put option Price | MAD | MAPE |
|------|---------------------|--------------|--------------|-----------------------------|-------|------|
| 1 | AXIS BANK | 760 | 28 | 25.49 | 1.26 | 9% |
| | | 780 | 35.7 | 33.94 | 0.88 | 5% |
| | | 800 | 46.1 | 43.91 | 1.09 | 5% |
| | | 820 | 56.6 | 55.36 | 0.62 | 2% |
| 2 | BAJAJ AUTO | 1350 | 16.7 | 42.01 | 12.65 | 152% |
| | | 1400 | 29.65 | 59.89 | 15.12 | 102% |
| | | 1450 | 35 | 81.92 | 23.46 | 134% |
| | | 1500 | 72.05 | 108.08 | 18.02 | 50% |
| 3 | ICICIBANK | 660 | 17.3 | 47.00 | 14.85 | 172% |
| | | 680 | 24 | 58.28 | 17.14 | 143% |
| | | 700 | 32 | 70.72 | 19.36 | 121% |
| | | 720 | 41.4 | 84.22 | 21.41 | 103% |
| 4 | IDFC | 85 | 2.1 | 2.27 | 0.09 | 8% |
| | | 90 | 3.6 | 4.19 | 0.30 | 16% |
| | | 95 | 6 | 6.87 | 0.43 | 14% |
| | | 100 | 8.8 | 10.24 | 0.72 | 16% |
| 5 | JPASSOCIATE | 45 | 0.9 | 1.06 | 0.08 | 18% |
| | | 50 | 2.15 | 2.69 | 0.27 | 25% |
| | | 55 | 4.5 | 5.30 | 0.40 | 18% |
| | | 60 | 8.05 | 8.81 | 0.38 | 9% |
| 6 | PNB | 750 | 32.55 | 23.78 | 4.38 | 27% |
| | | 760 | 27.4 | 28.32 | 0.46 | 3% |
| | | 780 | 48.7 | 38.86 | 4.92 | 20% |
| | | 800 | 49.8 | 51.27 | 0.73 | 3% |
| 7 | SESAGOA | 140 | 2.95 | 2.90 | 0.02 | 2% |
| | | 150 | 5.9 | 6.12 | 0.11 | 4% |
| | | 160 | 9.75 | 10.99 | 0.62 | 13% |
| | | 170 | 16.65 | 17.42 | 0.39 | 5% |
| 8 | TCS | 1000 | 6.15 | 14.58 | 4.21 | 137% |
| | | 1050 | 11.15 | 25.47 | 7.16 | 128% |
| | | 1100 | 20.45 | 41.02 | 10.29 | 101% |
| | | 1150 | 35.4 | 61.68 | 13.14 | 74% |

Source: Computed

From table 5 it is evidenced that the Mean absolute deviation was less than 1 for 15 options of various strike prices. The MAD values were between 0.02 and 23.46. The Mean percentage error value was ranging between 172 percent and 2 percent. This shows that the calculated option prices were higher than the market price of the options.

CONCLUSION

The present study tests the predictive accuracy of the BS model in pricing the stock options for the selected companies and examines whether the estimated stock option prices are the same that of the original market prices. The basic assumptions of the Black-Scholes Model like the Log-normal property of the stock prices, constant volatility, etc were also estimated before the estimation of the stock option prices. The study takes the stock price values for the study period from January 1, 2009 till December 31, 2011. The results conclude that calculated option prices were almost same of the market price when the strike prices are lower and the difference becomes more as the strike price becomes larger than that of the underlying asset price. This is evidenced by the Mean Absolute Deviation results and the Mean Absolute Percentage Error results. Thus it can be concluded that the market stock option prices are relatively underpriced than the theoretically calculated prices which is a good indicator that the exchange allows a buyer friendly environment.

REFERENCES

1. Agarwal, Ravi, and Et Al, (2010), "Options Mispricing in Indian Derivatives markets – A Multiple Models Application Framework", Working paper series, BIMTECH
2. Chance, M. Don and Brooks, Robert, "Derivatives and Risk Management Basics", 2E, Cengage, 2009, pp – 23-53
3. Dash, Mihir, Dagha, K, Jay, Sharma, Pooja and Singhal, Rashmi, (2009), "GARCH models for Forecasting Volatility and determining Arbitrage in Options", Working paper series, Alliance Business School
4. Dubofsky, David, "Option and Financial Futures – Valuation and Uses", 2E, McGraw Hill, International Edition. 1992.
5. Fisher, Donald E and Jordan, Ronald J, "Security Analysis and Portfolio Management", 6E, Pearson Education Inc, pp – 550-570
6. Gupta, S.L, Derivatives Management - Theory, Concepts and Problems, 5E, PHI, 2008, pp – 349-437
7. Hsing, Shih-Pei, (2003), "Comparison of f Positions of the GARCH(1, 1) and the Black-Scholes Model
8. Hull, C. John and White, Alan (1987), "The pricing of options on assets with stochastic volatilities", journal of Finance, Vol. 42, pp 281-300
9. Hull, John C and Basu, Sankarshan. "Options, Futures and other Derivatives", 7E, Pearson Education Inc., 2007, pp 197-253, 279-318, 487-501
10. Kinlay, Jonathan (2005), "Forecasting and Trading Volatility in the S&P 500 Index – An Empirical Test of Options Market Efficiency", <http://www.investment-analytics.com>, July 10, 2012
11. Krishnaswamy, K. N, Siva Kumar, Appa Iyer and Mathirajan, M, "Management Research Methodology – Integration of Principles, Methods and Techniques", 1E, Pearson Education, 2007.
12. Levin, Richard I and Rubin, David S., "Statistics for Management", 7E, Pearson Education Inc, 2009, pp-69-158, 567-646, 791-860.
13. Macbeth, D. James and Merville, J. Larry, (1979) "Tests of the black-Scholes and Cox Call option Valuation Models, Journal of Finance, Vol. 35, No 2, pp 285-301
14. Misra, Dheeraj, Kannan, R and Misra, D. Sangeeta (2006), "Implied Volatility surfaces: A study of NSE Nifty Options", International Research Journal of Finance and Economics, Vol.6, pp. 7-23
15. Mundra, Neelam and Agarwal, Ravi (2009), "Mispricing in Indian Derivatives Markets: An Analytical Study of Option Contracts", Working paper series, BIMTECH

16. Redhead Keith, "Financial Derivatives – An Introduction to Futures, Forwards, Options and Swaps", 3E, PHI Learning, 2008,
17. Reilly, Frank K and Brown, Keith C, "Investment Analysis and Portfolio Management", 8E, Cengage Learning, 2006, pp – 172-185
18. Shamiri, Ahmed, Zaidi, Isa and Hassan, Abu, (2008), "Forecasting Volatility for Financial market Risk Management: Application to Malaysian Stock Market Returns", European journal of Economics, Finance and Administrative Sciences, Vol.14, pp. 127-134
19. Tripathi, Vanitha and Gupta, Sheetal, (2010),"Effectiveness of the Skewness and Kurtosis adjusted Black-Scholes Model in Pricing Nifty Call options", Working paper Series, Delhi School of Economics
20. Varma, Jayanth Rama, "Derivatives and Risk Management", 1E, Tata McGraw Hill, 2007.
21. Varma, R. Jayanth, (2002), "Mispricing of Volatility in the Index Options Market", Working paper no. 2002-04-01, Indian Institute of Management, Ahmedabad



MIS AND MANAGEMENT

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ABSTRACT

In today's business world, there are varieties of information systems such as TPS, DAS, KWS, MIS, DSS, ES, CSCWS, GDSS and ESS. Each plays a different role in organizational hierarchy and decision making process. In this article the authors have selected two main information systems, namely, MIS and DSS. After discussing the decision making process based on each concept, its characteristics, relations, connections of each concept to decision-making process have been determined. At the same time, different models and figures are presented to enrich the discussion and to highlight precisely the status of each MIS and DSS information system in organizational decision making.

KEYWORDS

Management information system, Decision support system, Managers, Decision making process.

INTRODUCTION

For the last twenty years, different kinds of information systems are developed for different purposes, depending on the need of the business. Transaction Process Systems (TPS) function in operational level to process large amount of data for routine business transactions of the organization, Office Automation Systems (OAS) support data workers and Knowledge Work Systems (KWS) support professional workers. Higher-level systems include Management Information Systems (MIS) and Decision Support Systems (DSS). Expert System (ES) applies the expertise of decision makers to solve specific, unstructured problems. At the strategic level of management, there is Executive Support Systems (ESS). Group Decision Support Systems (GDSS) and the more generally described Computer Supported Collaborative Work (CSCW) systems aid group level decision making of a semi structured or unstructured decision. In the present article the authors discuss two kinds of information systems, namely, MIS, and DSS, and then their characteristics, interrelationship and their relations with decision-making process in an organization.

ABOUT MIS

MIS is popularly known as the Management Information System. MIS is considered as one such method of generating information which is used by management of organization for decision Making, control of activities, operations etc. During the period 1940 to 1960 computers were commercially used for census and payroll work. This involved large amount of data and its processing. Since then the commercial application exceeded the scientific applications for which the computer were mainly intended for. MIS is an information System which helps in providing the management of an organization with information which is used by management for decision making.

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HISTORY

Kenneth and Jane Loudon identify five eras of MIS evolution corresponding to five phases in the development of computing technology: 1) mainframe and minicomputer computing, 2) personal computers, 3) client/server networks, 4) enterprise computing, and 5) cloud computing.

The first (mainframe and minicomputer) era was ruled by IBM and their mainframe computers; these computers would often take up whole rooms and require teams to run them - IBM supplied the hardware and the software. As technology advanced these computers were able to handle greater capacities and therefore reduce their cost. Smaller, more affordable minicomputers allowed larger businesses to run their own computing centers in-house.

The second (personal computer) era began in 1965 as microprocessors started to compete with mainframes and minicomputers and accelerated the process of decentralizing computing power from large data centers to smaller offices. In the late 1970s minicomputer technology gave way to personal computers and relatively low cost computers were becoming mass market commodities, allowing businesses to provide their employees access to computing power that ten years before would have cost tens of thousands of dollars. This proliferation of computers created a ready market for interconnecting networks and the popularization of the Internet.

As the complexity of the technology increased and the costs decreased, the need to share information within an enterprise also grew, giving rise to the third (client/server) era in which computers on a common network were able to access shared information on a server. This allowed for large amounts of data to be accessed by thousands and even millions of people simultaneously.

The fourth (enterprise) era enabled by high speed networks, tied all aspects of the business enterprise together offering rich information access encompassing the complete management structure.

The fifth and latest (cloud computing) era of information systems employs networking technology to deliver applications as well as data storage independent of the configuration, location or nature of the hardware. This, along with high speed cell phone and wifi networks, led to new levels of mobility in which managers access the MIS remotely with laptops, tablet PC's, and smart phones.

TERMINOLOGY

The terms MIS, information system, ERP and, information technology management are often confused. Information systems and MIS are broader categories that include ERP. Information technology management concerns the operation and organization of information technology resources independent of their purpose.

TYPES

Most management information systems specialize in particular commercial and industrial sectors, aspects of the enterprise, or management substructure.

- Management information systems (MIS), per se, produce fixed, regularly scheduled reports based on data extracted and summarized from the firm's underlying transaction processing systems to middle and operational level managers to identify and inform structured and semi-structured decision problems.

- *Decision support systems (DSS)* are computer program applications used by middle management to compile information from a wide range of sources to support problem solving and decision making.
- *Executive information systems (EIS)* is a reporting tool that provides quick access to summarized reports coming from all company levels and departments such as accounting, human resources and operations.
- *Marketing information systems* are MIS designed specifically for managing the marketing aspects of the business.
- *Office automation systems (OAS)* support communication and productivity in the enterprise by automating work flow and eliminating bottlenecks. OAS may be implemented at any and all levels of management.
- *School management information systems (MIS)* cover school administration, and often including teaching and learning materials.

ADVANTAGES

The following are some of the benefits that can be attained for different types of management information systems.

- Companies are able to highlight their strengths and weaknesses due to the presence of revenue reports, employees' performance record etc. The identification of these aspects can help the company improve their business processes and operations.
- Giving an overall picture of the company and acting as a communication and planning tool.
- The availability of the customer data and feedback can help the company to align their business processes according to the needs of the customers. The effective management of customer data can help the company to perform direct marketing and promotion activities.
- Information is considered to be an important asset for any company in the modern competitive world. The consumer buying trends and behaviours can be predicted by the analysis of sales and revenue reports from each operating region of the company.

ENTERPRISE APPLICATIONS

- *Enterprise systems*, also known as *enterprise resource planning (ERP)* systems provide an organization with integrated software modules and a unified database which enable efficient planning, managing, and controlling of all core business processes across multiple locations. Modules of ERP systems may include finance, accounting, marketing, human resources, production, inventory management and distribution.
- *Supply chain management (SCM)* systems enable more efficient management of the supply chain by integrating the links in a supply chain. This may include suppliers, manufacturers, wholesalers, retailers and final customers.
- *Customer relationship management (CRM)* systems help businesses manage relationships with potential and current customers and business partners across marketing, sales, and service.
- *Knowledge management system (KMS)* helps organizations facilitate the collection, recording, organization, retrieval, and dissemination of knowledge. This may include documents, accounting records, and unrecorded procedures, practices and skills.

DEVELOPING INFORMATION SYSTEMS

"The actions that are taken to create an information system that solves an organizational problem are called *system development*". These include *system analysis, system design, programming/implementation, testing, conversion, production* and finally *maintenance*. These actions usually take place in that specified order but some may need to repeat or be accomplished concurrently.

Conversion is the process of changing or converting the old system into the new. This can be done in four ways:

- Direct cutover – The new system replaces the old at an appointed time.
- Pilot study – Introducing the new system to a small portion of the operation to see how it fares. If good then the new system expands to the rest of the company.
- Phased approach – New system is introduced in stages.

Definition of MIS: A Management Information System is used to transform data into useful information as needed to support managerial decision making with structured decisions (formally called programmed decisions) which are those that are based on predictable patterns of activity.

MIS based on four major components (McLeod, 1986).

1. **Data gathering:** Data pertinent to the operations of the organization are gathered from both external and internal sources.
2. **Data entry:** The above data is inputted and stored in database at the information processing core of the system.
3. **Data transformation:** Data is transformed into useful information through the application of computer software programs and judgments made by technical staff and other system users.
4. **Information Utilization:** This method information is retrieved as needed by the management and technical personnel and applied to a wide variety of decisions related to the conduct of organizational operations.

(or)

A Management Information System is a network of communication channels and information processing centers collecting information from its sources of origin.

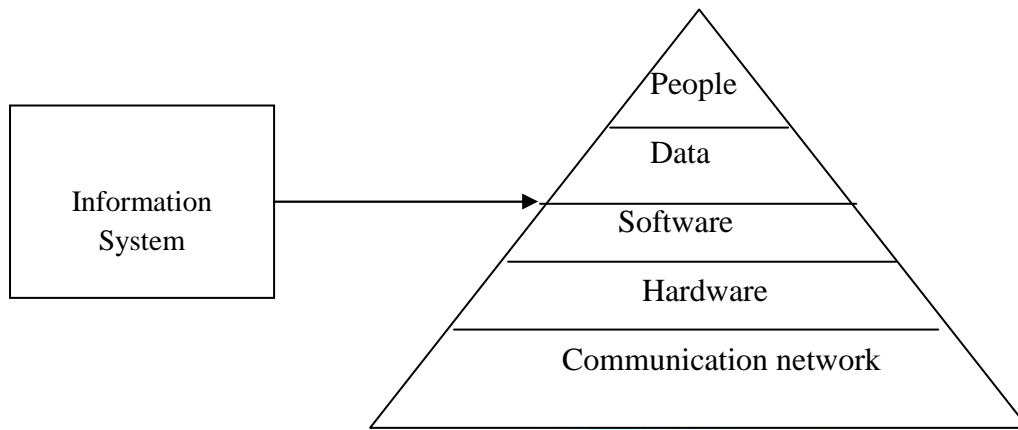
- i) Storing, updating, collecting and processing it.
- ii) Supplying the processed information to the various users managing the organization.

(or)

Management information systems (MIS) is an organized approach to gathering information from company operations and making a strategic management decision. Developing quality characteristics for gathering information is essential to making solid management decisions.

BASIC COMPONENTS OF MIS

Management Information System like any other Information System, use people, **data, software, hardware and other communication networks** and technologies as basic components to collect, transform and disseminate information in an organization



OBJECTIVES OF MIS

Managers play a key role in any organization. They are responsible for taking decisions appropriate to the need of the market. Information systems have become the main tool used by managers in decision making. Managers perceive information as the driving force to achieve success in any business. Hence there is a need for MIS as: Support of its business process and operations Support of decision making by its employees and managers Support of its strategies for competitive advantage-Gaining a strategic advantage The major roles of the business applications of a Management Information System may be represented in the pyramid form as shown below:

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Support of its business process and operations

Support of decision making by its employees and manager

Support of its strategies for competitive advantage-Gaining a strategic advantage

THE BASIC CHARACTERISTICS OF AN EFFECTIVE MANAGEMENT INFORMATION SYSTEM ARE AS FOLLOWS:

1. MANAGEMENT-ORIENTED

The basic objective of MIS is to provide information support to the management in the organization for decision making. So an effective MIS should start its journey from appraisal of management needs, mission and goal of the business organization. It may be individual or collective goals of an organization. The MIS is such that it serves all the levels of management in an organization i.e. top, middle and lower level.

2. MANAGEMENT DIRECTED

When MIS is management-oriented, it should be directed by the management because it is the management who tells their needs and requirements more effectively than anybody else. Manager should guide the MIS professionals not only at the stage of planning but also on development, review and implementation stages so that effective system should be the end product of the whole exercise in making an effective MIS.

3. INTEGRATED

It means a comprehensive or complete view of all the sub systems in the organization of a company. Development of information must be integrated so that all the operational and functional information sub systems should be worked together as a single entity. This integration is necessary because it leads to retrieval of more meaningful and useful information.

4. COMMON DATA FLOWS

The integration of different sub systems will lead to a common data flow which will further help in avoiding delicacy and redundancy in data collection, storage and processing. For example, the customer orders are the basis for many activities in an organization viz. billing, sales for cashing, etc. Data is collected by a system analyst from its original source only one time. Then he utilizes the data with minimum number of processing procedures and uses the information for production output documents and reports in small numbers and eliminates the undesirable data. This will lead to elimination of duplication that simplify the operations and produce an efficient information system.

5. HEAVY PLANNING-ELEMENT

The preparation of MIS is not a one or two day exercise. It usually takes 3 to 5 years and sometimes a much longer period. So the system expert has to keep 2 things in mind – one is that he has to keep future objectives as well as the firm's information well in advance and also he has to keep in mind that his MIS will not be obsolete before it gets into action.

6. SUB SYSTEM CONCEPT

When a problem is seen in 2 sub parts, then the better solution to the problem is possible. Although MIS is viewed as a single entity but for its effective use, it should be broken down in small parts or subsystems so that more attention and insight is paid to each sub system. Priorities will be set and phase of implementation will be made easy. While making or breaking down the whole MIS into subsystems, it should be kept in mind that the subsystems should be easily manageable.

7. COMMON DATABASE

This is the basic feature of MIS to achieve the objective of using MIS in business organizations. It avoids duplication of files and storage which leads to reduction in costs. Common database means a "Super file or Master file" which consolidates and integrates data records formerly stored in many separate data files. The organization of the database allows it to be accessed by each subsystem and thus, eliminates the necessity of duplication in data storage, updating, deletion and protection.

8. COMPUTERISED

MIS can be used without a computer. But the use of computers increases the effectiveness and the efficiency of the system. The queries can be handled more quickly and efficiently with the computerized MIS. The other benefits are accuracy, storage capacity and timely information.

9. USER FRIENDLY/FLEXIBILITY

An MIS should be flexible i.e. there should be room for further modification because the MIS takes much time in preparation and our environment is dynamic in nature. MIS should be such that it should be used independently by the end user so that they do not depend on the experts.

10. INFORMATION AS A RESOURCE

Information is the major ingredient of any MIS. So, an MIS should be treated as a resource and managed properly

11. RELEVANCE

Information should be relevant to the strategic decision that company management is currently reviewing. Because companies may review several business opportunities at one time, avoiding information not relating to the decision is essential.

12. ACCURATE

MIS information should be accurate and avoid any inclusions of estimates or probable costs. Making decisions based on estimates can lead to cost overruns or lower profits from future operations.

13. TIMELY

Many management decisions are based on information from a certain time period, such as quarterly or annual periods. Information outside of the requested time frame may skew information and lead to an improperly informed decision.

14. EXHAUSTIVE

MIS information gathering should resemble an upside-down triangle. The early stages of information gathering should be exhaustive, including all types of company information. As management narrows its decision-making process, the information is refined to include only the most relevant pieces.

15. COST-EFFECTIVE

The MIS needs to be a cost-effective and efficient system for gathering information. Most of these systems are developed internally, creating costs that cannot be passed to clients.

17. MIS is mainly designed to take care of the needs of the managers in the organization.

18. MIS aids in integrating the information generated by various departments of the organization.

19. MIS helps in identifying a proper mechanism of storage of data.

20. MIS also helps in establishing mechanism to eliminate redundancies in data.

21. MIS as a system can be broken down into sub systems.

22. The role and significance of MIS in business and its classification is explained. It is possible to understand the various phases of development in MIS based on the type of system required in any organization.

23. It supports transaction handling and record keeping.

24. It is also called as integrated database Management System which supports in major functional areas.

25. It provides operational, tactical, and strategic level managers with easy access to timely but, for the most, structured information.

26. It supports decision-making function which is a vital role of MIS.

27. It is flexible which is needed to adapt to the changing needs of the organization.

28. It promotes security system by providing only access to authorized users.

29. MIS not only provides statistical and data analysis but also works on the basis on MBO (management by objectives). MIS is successfully used for measuring performance and making necessary change in the organizational plans and procedures. It helps to build relevant and measurable objectives, monitor results, and send alerts.

30. Coordination: MIS provides integrated information so that all the departments are aware of the problem and requirements of the other departments. This helps in equal interaction of the different centers and connects decision centers of the organization.

31. Duplication of data is reduced since data is stored in the central part and same data can be used by all the related departments.

32. MIS eliminates redundant data.

34. It helps in maintaining consistency of data. It is divided into subsystems. Handlings with small systems are much easier than an entire system. This helps in giving easy access of data, accuracy and better information production.

35. MIS assembles, process, stores, Retrieves, evaluates and disseminates the information.

IMPACT OF MIS

Electronic communication increases the overall amount of communication within the organization. You can find the following advantages obtained from MIS.

- a) Quicker information availability
- b) Anytime anywhere access to information
- c) Promotes non redundancy
- d) Quick decision-making
- e) Fast actions undertaken
- f) Effective productivity
- g) Reduced transaction rate

Information can be stored, retrieved, and communicated far more easily and effectively. There is an enormous role of information technology (IT) on operations. The following can be the examples you can list for the areas in which MIS is used. When you go to any vendor and ask for catalogues of the product then smart catalogues and databases for simpler customer/ vendor will help you and the vendor in coordination. When you are traveling or driving, the transponder-equipped vehicles can re-route you in real time. Voice-recognition systems for greater warehouse inventory accuracy, collaborative editing of graphics documents by geographically-remote individuals, and even electronic storage/retrieval of documents to reduce volume. You will see the texts and images in electronic forms are effective in communicating ideas from source to destination. When you access money through your credit cards, ATM cards, smart cards you can find that it is technology driven which revolves around wireless electronic gadgets, internet and money cards. When you use it for your identity proof it is your identity cards that detect you from the list of users.

A computerized management information system (MIS) in all registered clients, counseling sessions, and all medical visits provided to the clients with respect to hospital management system of any major hospitals. Non-computerized data from previous years only documented the number and location of counseling sessions while the new MIS provides much more specific and detailed data. The impact of computer-based information systems on manager's work reflects decisions made by managers themselves about how the technology is used. The impact of MIS is not an individually stable and predictable. As a manager at any organization you can use non linear on-going process of change that evolves over time and situations. In an organization you can develop a system, shape it and also react it to any different way.

MIS in the field of education system also playing a very significant role where we come across usage of LCDs, Smart boards, internet etc in class rooms. In the traffic control system, an Intelligent Transportation System (ITS) disseminates real-time traffic information to travelers. It helps travelers in making their route choice decisions based on the traffic congestion information and make proper decision making in predicting the traffic congestion and choosing the right choice. In the tourism MIS has led to radical changes in booking system, tourist information system, hotel facilities, accommodation facilities, transportation modes available, images of the facilities that could be provided etc.

We cannot limit the impact of MIS to some specific areas. It has wide range of applications and has a unique impact on each system. Now, MIS has become very important fact of all the information systems that we cannot view any system without MIS.

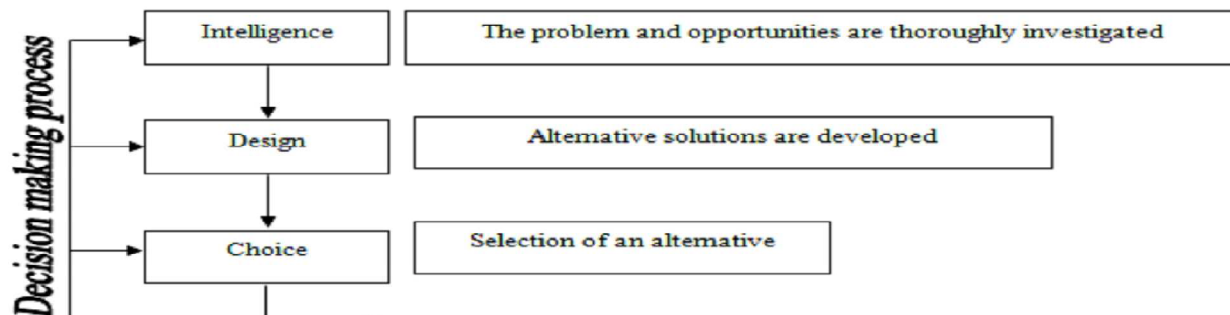
DECISION MAKING PROCESS

In the 1950s, Herbert Simon and James March for the first time introduced a different decision making framework for understanding organizational behavior. Although they labored on the bureaucratic model by emphasizing on individual work in rational organizations and thus behaving rationally, their model added a new dimension: The idea that a human being's rationality is limited. By offering a more realistic alternative to classical assumption of rational in decision-making, this model supported the behavioral view of individual and organizational functioning. The model suggested that when an individual makes decision, he examines a limited set of possible alternatives rather than all available options. "He accepts satisfactory or good enough" choices, rather than insist on optimal choices. He makes choices that are good enough because he does not search until he finds perfect solution to a problem (Gordon, 1993). Simon divided kinds of decisions into two basic types: programmed and non programmed decisions.

a) **Programmed decisions** are routine and repetitive decisions, and the organization typically develops specific ways to handle them. For this kind of routine repetitive decisions, standard arrangement decisions are typically made according to established management guidelines.

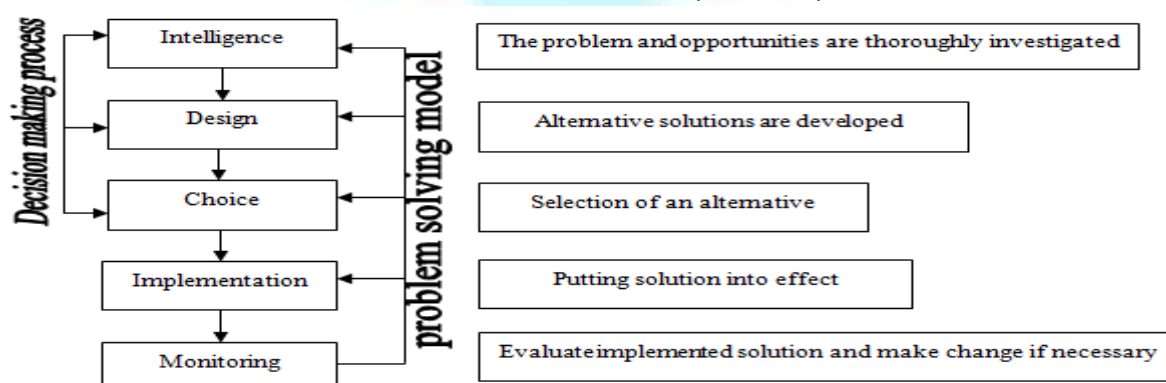
b) **Non-programmed decisions**, in contrast, are typically one-shot decisions that are usually less structured than programmed decisions (Certo, 1997). Simon's model of decision-making has three steps (Figure 1). www.ccsenet.org/ijbm International Journal of Business and Management Vol. 6, No. 7; July 2011 Published by Canadian Center of Science and Education 165

FIGURE 1: STEPS IN SIMON'S MODEL (SIMON, 1997)



After Simon, Huber (1980) expanded the model for decision making process and added two steps into Simon's model (Figure 2).

FIGURE 2: STEPS IN HUBER'S MODEL (HUBER, 1980)



After them, Gorry and Morton (1971) classified decisions by its structure into three levels; **structured decision**, in which the ingredients, or variables, that comprise a decision are known and they can be measured quantitatively.

Unstructured decision is one that the ingredients, or variables, that comprise a decision can not be measured quantitatively.

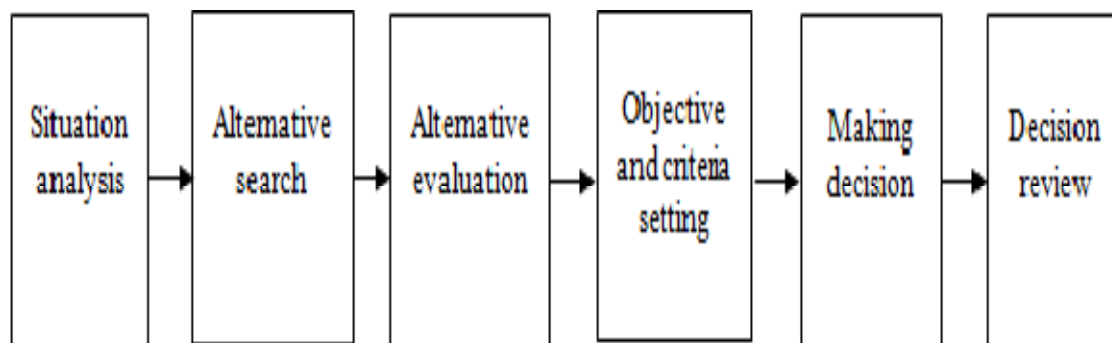
Semi structured decision is in between structured and unstructured decisions. Usually most business decisions are semi structured. Then Gorry and Morton continued on computer applications in terms of the degree of structure in the decision they are intended to make and the management level that they support (Gorry, Michael, 1971). Figure 3 shows the Gorry and Morton grid.

FIGURE 3: THE GORRY AND MORTON GRID (GORRY & MICHAEL, 1971)

| | | Management levels | | |
|------------------------------|-----------------|-----------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------|
| | | Operation control | Management Control | Strategic planning |
| Degree Of Decision Structure | Structured | Accounting receivable Order entry Inventory Control | Budget analysis Engineered cost Short term Forecasting | Tanker fleets mix Warehouse and factory location |
| | Semi structured | Production scheduling Cash management | Variance analysis overall budget Budget preparation | Mergers and acquisition New product planning |
| | Unstructured | PERT/ Cost System | Sale and production | R&D planning |

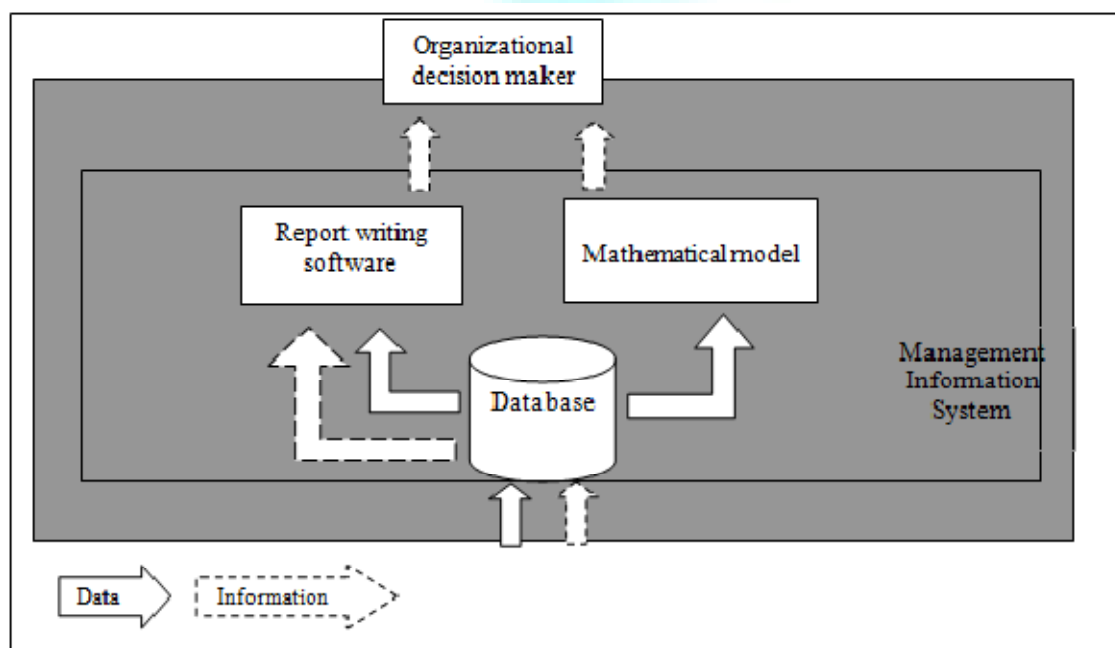
A review of decision making literature reveals that the core process of decision making process consists of mainly six steps which are shown in Figure 4.

FIGURE 4: THE SIX-STEP DECISION MAKING PROCESS (SIMON, 1997)



The six-step decision making process increases the likelihood that a high quality, accepted decision will result (Certo, 1997).

FIGURE 5: AN MIS MODEL (RAYMOND, 1990)



MANAGEMENT INFORMATION SYSTEM (MIS)

Management information system (MIS) is one of the major computer based information systems. Its purpose is to meet the general information need of all the managers in the firm or in some organizational subunit of the firm. Subunit can be based on functional areas on management levels. There are many definitions for MIS, but one of the most appropriate definitions describes management information system (MIS) as "an organizational method of providing past, present and projected information related to internal operations and external intelligence. It supports the planning, control and operation functions of an organization by furnishing uniform information in the proper time frame to assist the decision makers" (Waston, 1987). The information in MIS describes the firm or one of its major systems in terms of what has happened in the past, what is happening now and what is likely to happen in the future. The information is made available in form of periodic reports, special reports and output of mathematical simulations. All managers use the information output as they make decisions to solve the firm's problems (Raymond, 1990).

AN MIS MODEL

An MIS model is illustrated in Figure 6. The database contains the data provided by accounting information system. In addition, both data and information are entered from the environment. The data based content is used by software that produces periodic and special report, as well as mathematical model that simulate various aspects of the firm operations. The software output is used by people who are responsible for solving the firm's problems. Note that some of the decision maker might exist in the firm's environment. The environment will involve once the firm bonds together with other organizations such as suppliers to form an Inter Organizational Information System (IOS). In such case, the MIS supplies information to the other member of the IOS (Raymond, 1990).

MIS CHARACTERISTICS

In general, management information systems have a number of characteristic, which include the following:

- ♣ **Report with fixed and standard formation.** For example scheduled reports for inventory control may contain the same type of information placed in the same location on the reports.
- ♣ **Have report developed and implemented using information system personnel, including systems analysts and computer programmer.** Typically analysts and programmers are involved in developing and implementing MIS reports. User is normally involved in the design of the reports, but they are not typically involved in writing the computer programs to produce them.
- ♣ **Require formal request from user.** Because information systems personnel typically develop and implement MIS reports, a formal request to the information systems department for report is usually required.
- ♣ **Produce scheduled and demand reports.** The major type of reports produced by an MIS is scheduled; demand reports (Stair, 1992).
- ♣ **External data is not captured by the organization but is used by the MIS.** (i.e., customer, supplier and competitor information). www.ccsenet.org/ijbm

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THE ROLE OF MIS IN DECISION MAKING PROCESS

The MIS and its organizational subsystems contribute to decision making process in many basic ways. Nowadays, some of the organizations use MIS to assist managers for decision making. For example, to assist decision-makers in extracting synthesized information from a massive database such as the Current Public

Transport Record (CPTR) of Durban (CPTR), the Durban Unicity Council decided to make use of a Public Transport Management Information System (PTMIS) developed by Stewart Scott. This system is for use by transport planners and managers (Louw et al, 2001). Power (2002) has stated that making decisions is an important part of working in business environment. Companies often make decisions regarding operational improvements or selecting new business opportunities for maximizing the company's profit. Companies develop a decision-making process based on individuals responsible for making decisions and the scope of the company's business operations. A useful tool for making business decisions is a management information system (MIS). Historically, the MIS was a manual process used to gather information and funnel it to individuals responsible for making decisions.

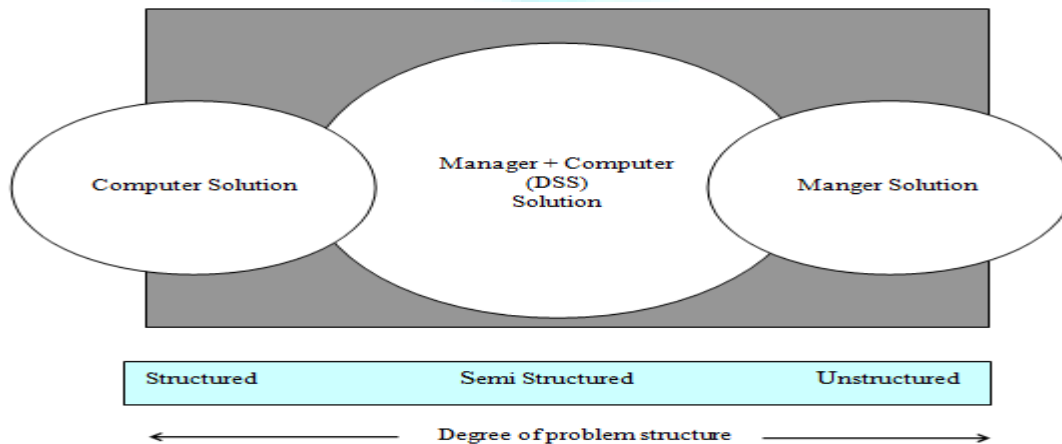
1 Organization-wide information resource: The MIS is an organization – wide effort to provide decision making process information. The system is a formal commitment by executive to make the computer available to all managers. The MIS sets the stage for accomplishments in the other area, which is DSS, the virtual office and knowledge based systems.

2 Situation analysis, problem identification and understanding: The main idea behind the MIS is to keep a continuous supply of information flowing to the management. Afterward by data and information gathered from MIS system, make decisions.

DECISION SUPPORT SYSTEM (DSS)

A decision support system or DSS is a computer based system intended for use by a particular manager or usually a group of managers at any organizational level in making a decision in the process of solving a semi structured decision (Figure 7). The DSS produces output in the form of periodic or special report or the results of mathematical simulations (Raymond, 1990). It is difficult to pinpoint that are completely structured or unstructured. The vast majorities are semi structured. This means that the DSS is aimed at the area where most semi structured decision is needed to be made.

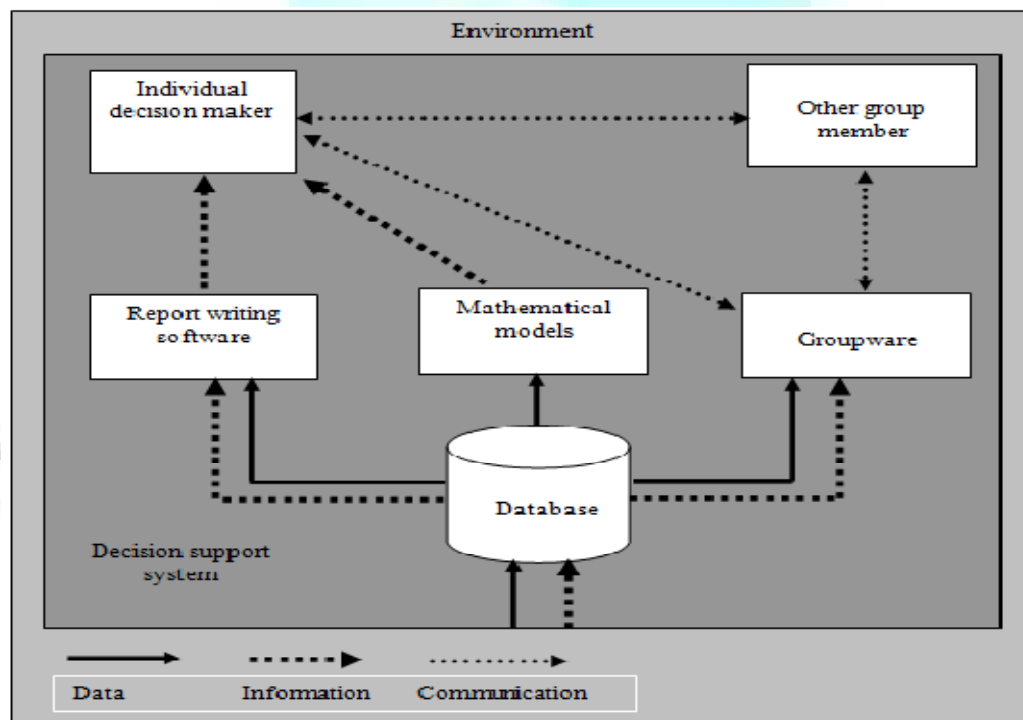
FIGURE 7: THE DSS FOCUSES ON SEMI STRUCTURED PROBLEMS (RAYMOND, 1990)



A DSS MODEL

A DSS model includes four parts as follows (Figure 8) (Raymond, 1998).

FIGURE 8: A DSS MODEL (RAYMOND, 1998)



- **Data base** produces both internal and environmental data, which are stored in the database.

- **Report writing software** produces both periodic and special reports. Periodical reports are prepared according to a schedule and typically they are produced by software, which is coded in a procedural language such as COBOL or PL/I. The special report is prepared in response to unanticipated information need and takes form of database by users who use the query language of a DBMS or fourth generation language.

- **Mathematical model** produces information as a result of either simulation that involves one or more components of the physical system of the firm or facts of its operations. Mathematical models can be written in any procedural programming language. However, special model languages make this task easier and have the potential of doing a better job.

- **Groupware** enables multiple decision makers, working together as a group, to reach solutions. In this particular situation, the term GDSS, or a group decision support system is used. Perhaps the decision makers represent a committee or a project team. The group members communicate with one another both, directly and by means of the group ware. The reports writing software and mathematical model have always been regarded as necessary DSS ingredients. As the DSS concept was broadened to provide support to two or more decision maker working together as a team or committee, the idea of special group oriented software or groupware, became a reality.

DSS CHARACTERISTICS

Decision support system has a number of characteristics, which include following:

- **DSS provide support for decision maker mainly in semi structured and unstructured situations** by bringing together human judgment and computerized information. Such problem can not be solved (can not be solved conveniently) by other computerized systems, such as MIS.
- **DSS attempts to improve the effectiveness of decision-making** (accuracy, timeliness, quality) rather than its efficiency (cost of making the decision, including the charges for computer time) (Davis & Olson, 1985). www.ccsenet.org/ijbm International Journal of Business and Management Vol. 6, No. 7; July 2011 Published by Canadian Center of Science and Education 167
- **DSS provides support to individuals as well as to groups.** Many organizational problems involve group decision-making. The less structured problem frequently requires the involvement of several individuals from different departments and organizational levels.
- **Advanced DSS are equipped by a knowledge component**, which enables the efficient and effective solution of very difficult problems (Turban & Aronson, 1998).
- **A DSS can handle large amount of data** for instance advanced database management package have allowed decision makers, to search database for information. A DSS can also solve problems where a small amount of data is required.
- **A DSS can be developed using a modular approach.** With this approach, separate functions of the DSS are placed in separate modules - program or subroutines-allowing efficient testing and implement of systems. It also allows various modules to be used for multiple purposes in different systems.
- **A DSS has a graphical orientation.** It has often been said that a picture is worth a thousand words. Today's decision support systems can help managers make attractive, informative graphical presentations on computer screens and on printed documents. Many of today's software packages can produce line drawing, pie chart, trend line and more. This graphical orientation can help decision makers a better understanding of the true situation in a given market place.
- **A DSS support optimization and heuristic approach.** For smaller problems, DSS has the ability to find the best (optimal) situation. For more complex problems, heuristics are used. With heuristic, the computer system can determine a very good-but not necessarily the best- solution. This approach gives the decision maker a great deal of flexibility in getting computer support for decision making activities.
- **A DSS can perform "what – if" and goal – seeking analysis.** "What – if" analysis is the process of making hypothetical change to problem data and observing impact of the results. In with "what – if" analysis, a manager can make changes to problem data (the number of automobiles for next month) and immediately see the impact on the requirement for subassemblies (engines, windows, etc.) (Stair, 1992).

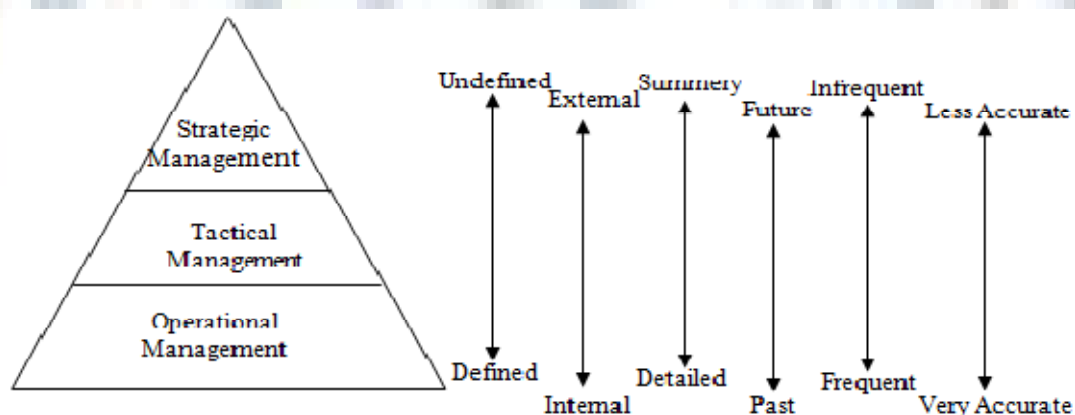
THE ROLE OF THE DSS IN THE PROCESS OF DECISION MAKING

Previously it was mentioned that the MIS is best suited in identifying problems and helping managers understanding them to make suitable and correct decisions, but the main weakness of MIS is that it is not aimed at the specific need of the individual and group decision makers. Very often the MIS does not provide exactly the information that is needed to solve problems for individual and group decision making. DSS is tailored to the specific need of the individual and group managers. Therefore, the DSS can extend this support through the remaining steps (in objective and criteria setting, alternative search, alternative evaluation, making the decision and decision review) of the decision making. Finally DSS has more roles in decision-making and problem solving than MIS (Raymond, 1998). The other researches such as the following confirm this idea: Uma (2009) has stated that a Decision Support System is an integrated set of computer tools allowing a decision maker to interact directly with computer to retrieve information useful in making semi structured and unstructured decisions. Example of this decisions include such things as merger and acquisition decisions, plant expansion, new product decisions portfolio management and marketing decisions. Nokhbatolfoghahaayee et al (2010) have introduced a fuzzy decision support system (FDSS) with a new decision making structure, which can be applied to manage the crisis conditions in any large scale systems with many parameters. After receiving both functional variables of the system and fault signals, the FDSS makes proper decisions to make up and repair the distorted situation and the affected elements of the network according to its data base established through experience gathered from expert managers and decision models properly developed. These decisions are expressed in the form of some scenarios with different desirability degrees, which are determined by some properly developed fuzzy multi-criteria decision making methods, helping the manager choose the best one according to his discretion. Alonso et al (2010) have presented an implemented web based consensus support system that is able to help, or even replace, the moderator in a consensus process where experts are allowed to provide their preferences using one of many types (fuzzy, linguistic and multi-granular linguistic) of incomplete preference relations. These studies show the important and role of MIS during managers' decision making process.

DISCUSSION

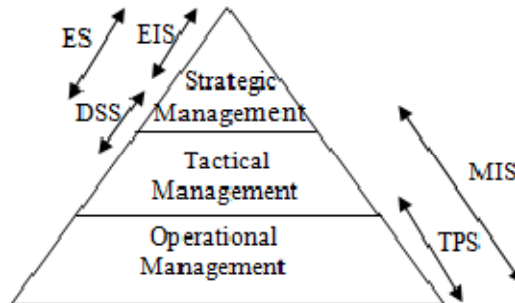
Managers in all levels of organization hierarchy need precise and suitable data and information to make decisions that increase organizational performance. Such concept suggests an informational need of supervisory level is different from top level. At the same time the type of information also at each level is different. At lower level, supervisors need defined, clear, precise, quantifiable and internal organizational information but at the top level a manager needs undefined, future oriented, infrequent, summarized, relatively, non quantifiable and mostly external information. Such concept is illustrated in Figure 9. Quantifiable information could be gathered from external environment if suitable. Management Information Systems are placed in organizational information system such as CSCWS, GDSS and ESS. And some of organization environment elements such as www.ccsenet.org/ijbm International Journal of Business and Management Vol. 6, No. 7; July 2011, 168 ISSN 1833-3850 E-ISSN 1833-8119 socio-cultural factors like birth rate, population rate, competitor's share of market and so on could be quantifiable data and be considered and used it the process of top level management decision making process.

FIGURE 9: INFORMATION AND DECISION-MAKING (CERTO, 1997)



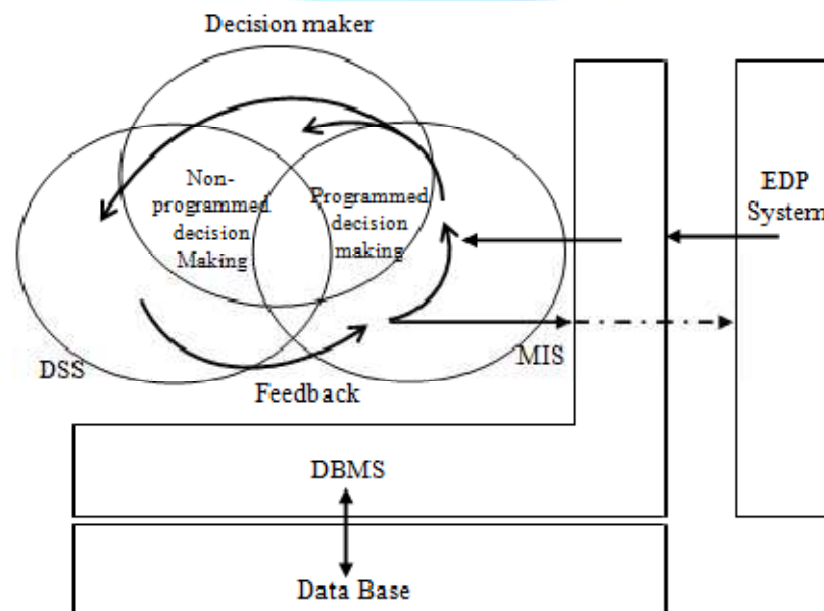
In general, different kinds of data and information are suitable for decision-making in different levels of organizational hierarchy and require different information system to be placed. Such system could have explicit effect on each step of decision process in solving problems. At the same time each information system can not fulfill complete information needs of each level, but rather different information systems if integrated in different levels could satisfy information needs of a level and at the same time fulfill part of information needs of other levels. For example TPS fulfills the lower level needs of an organization but MIS furnishes data and information for lower and middle level management needs (Note 1) On the other hand, DSS furnishes information for middle level and higher level of organizational hierarchy and ES fulfills only higher level managerial needs. Clearly by segregating each IS, its particular function could be recognized and it's overlapping distinguished. The role of different information systems is depicted in Figure 10.

FIGURE 10: ORGANIZATION AND INFORMATION SYSTEM (DAVIS & OLSON, 1985)



The perceived concepts, which are based on the role of MIS and DSS in the decision making process, especially with emphasize on MIS and DSS which provide information services for middle and higher level managers in the process of decision making are integrated in Figure 11.

FIGURE 11: TRANSFERRING DATA FROM EDP SYSTEM TO DBMS AND MANAGERS' DECISION MAKING PROCESS



In Figure 11 it could be noted that data from EDP system transfers to DBMS and helps managers to make programmed and non-programmed decisions (Note 2). The flow of data after moving from EDP system to DBMS will move from MIS level to DSS and at the same time part of processed data will be restored in EDP system.

CONCLUSION

Apart from variety of information system in business world, MIS and DSS were the main concern of present article. It was found that MIS is best suited to identify problems and help management to understand them to make suitable decisions. At the same time, MIS is not aimed to help particular and specific need of the individual and group decision making. On the other hand DSS are tailored to the specific need of individual and group managers. Therefore, it could be concluded, that DSS can extend its support to the same steps of decision making process and has more roles in decision-making and problem solving than MIS. Due to some practical limitations, may be some of steps of decision making process to be chosen and the others to be removed. It is important to consider which ones are preferred to the other ones. In future works can study on the role of other information systems for managers' decision making and comparative it to DSS and MIS.

REFERENCES

1. Alonso, S., Herrera-Viedma, E., Chiclana, F., & Herrera, F. (2010). A web based consensus support system for group decision making problems and incomplete preferences. *Information Sciences*, 180(23), 1 December. 4477-4495.
2. Certo, S. C. (1997). *Modern Management, diversity, quality, ethics and the global environment*, 7th Ed, New Jersey, Prentice-Hall Inc.
3. Davis, G.B., & Olson, M.H. (1985). *Management Information Systems, conceptual foundation, structure and development*, 2nd. New York, McGraw-Hill.
4. Gordon, J.R. (1993). *A diagnostic approach to organizational behavior*, 4th Ed, New York, Prentice-Hall Inc, Englewood Cliffs, NJ.
5. Gorry, G. A., & Michael M.M.S. (1971). A. Framework for Management Information System. *Sloan, Management Review*, 13 (Fall), 55-70
6. Huber, G. P. (1980). *Managerial decision making*. Glenview, IL: Scott, Foresman and Co.
7. Louw, J.J., Van Zyl, N.J.W., & Meintjema, J. (2001). Development of a public transport management Information system to assist decision-making in the restructuring of public transport in Durban. 20th South African Transport Conference South Africa, 16 – 20 July. 'Meeting the Transport Challenges in Southern Africa' Organised by: Conference Planners, Conference Papers Produced by: Document Transformation Technologies.

8. Nokhbatolfoghahaayee, H., Menhaj, M.B., & Shafiee, M. (2010). Fuzzy decision support system for crisis management with a new structure for decision making. *Expert Systems with Applications*, 37(5), May. 3545-3552.
9. Power, D. J. (2002). *Decision Support Systems: Concepts and Resources for Managers*. Editor, DSSResources.COM. Quorum Books division, Greenwood Publishing.
10. Raymond McLeod, Jr. (1998). *Management Information Systems*, 6th Ed. New Jersey: Prentice Hall.
11. Raymond, McLeod, Jr. (1990). *Raymond, Information Systems*. New York, Macmillan Publishing Company.
12. Simon, H. (1997). *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations*, 4th Ed. The Free Press.
13. Stair, R.M. (1992). *Principles of Information Systems: A Managerial Approach*. Boston: Boyd and Fraser Publishing Company.
14. Turban, E., & Aronson, J.E. (1998). *Decision Support Systems and Intelligent Systems*, 5th Ed., New Yourk: Prentice-Hall.
15. Uma, V.D. (May 13, 2009). Role of Decision Support System for Decision-Making Process in Global Business Environment. From ezinearticles.com, Date Access: 1 Feb.2011. [Online] Available <http://ezinearticles.com/?Role-of-Decision-Support-System-For-Decision-Making-Process-in-Global-Business-Environment&id=2315787>
16. Waston, H.J., Carroll, A. B., & Mann, R. I. (1987). *Information Systems for Management*. Plano, TX: Business Publications Inc.



REFORMS IN INDIAN FINANCIAL SYSTEM: A CONCEPTUAL APPROACH**PRAVEEN KUMAR SINHA****ASST. PROFESSOR****DAYANANDA SAGAR ACADEMY OF TECHNOLOGY & MANAGEMENT****UDAYAPURA****ABSTRACT**

Finance occupies a very vital part of our life. The very recognition of a given country all over the world is very much based on the financial position. The way one calls an advanced economy or the "Developed country" of "Developing country" or even Back word or under developed country is all the result of the financial position. The country "India" had faced financial problems in the past especially in the post Independence period because of the limitations and restrictions due to the rules and regulation. This had even spread to the after the independence period. In 1990's the world had problems and India had more. It was even used to be called as the "License Raj". Not able to with stand the pressures it had even sold a portion of Gold to the World Bank which is the Apex body world over to come out of the situation. India could go through plenty of reforms under the guidance of the experts and today it is in a very comfortable position. From the word "Underdeveloped Country" tag to the nomenclature of "Developing country" the path is very clear and candid. What are these reforms this country could witness? How this country managed or even managing? What are the steps that are taken and what is the political will that has shown remarkable paradigm shift. Why the pundits and the financial experts have been predicting India to be one of the super powers in a decade from now? The questions that are raised above could be answered getting deep into the financial system which has been finding the stability in the past two decades.

KEYWORDS

Financial Reforms, Financial system, Indian economy, Nationalisation.

INTRODUCTION

The financial system of a country comprises of financial markets, financial intermediation and financial instruments or financial products. Financial system acts as nerve system of a nation's economy. A nation's economic development is largely relying on the effective and efficient financial system of that nation. The financial system consists of many subsystems like financial services, banks, financial institutions etc. Generally developing countries financial system is also in the process of development. In any economy both organized and unorganized financial system plays a distinct role. The unorganized system had played the role of financial system for Indian mass rural population for a long time. However the rules and guidelines for unorganized sector were self defined. The players in this sector includes, village grocery shops, indigenous banker, chit fund, moneylender, landlords, traders (dealing with advancing money against the harvest of local food grain, natural resource like Non-Timber Forest Products) inter lending by relatives and friends etc. The objective of this segment was to channelize the saving of rural population at the exorbitant cost. After independence the government of India has decided to bring the organized financial system which will provide financial services to the population at the cheaper rate or government decided rate. The private sector was not so well developed. So for economic development the government has charted out five year plan. Developing a sound financial system was the inherent part of the plan. As we know economic development of a nation relies on the soundness of that nation's financial system. It induces generation and transformation savings into entrepreneurial efforts.

Indian financial system has gone series of reforms since Independence. However India's path of reforms has been different from most other emerging market economies. It has been a measured, gradual, cautious, and steady process, devoid of many flourishes that could be observed in other countries. The objective of this paper is to give a synoptic account of the reforms in financial sector and monetary policy and it is followed by an assessment of these reforms in terms of outcomes and the health of the financial sector.

DEVELOPMENT IN INDIAN FINANCIAL SYSTEM AFTER INDEPENDENCE

The government of Indian started developing the financial system by in fluxing capital and nationalization of private sector. The first major step in this field was the nationalization of Life and Non- life Insurance. After independence the vast majority of Indian population approximately, 97% were uninsured. So to provide them risk cover and to reach mass population, LIC was constituted. Around 245 private insuring bodies were merged together to form Life Insurance Corporation of India in the year 1956. Then the nationalization of non-life business in 1971 and general insurance business or GIC came into existence. If we talk about the banks, Reserve Bank of India (RBI) was declared the apex bank or central bank soon after independence. Imperial bank of India which was constituted in the year 1921 was converted to State Bank of India. As we won't have private bank in place State Bank of India uses to meet the demand of population. RBI use to reach the mass rural population through the SBI branches. The development of insurance and banking sector was prioritize because the government wants to bring the small savings of the population in the economy in lieu of financial services. Secondly the development of the economy was a big task because Indian Economy after independence was regarded as third world economy.

For long term investment the development of capital market was necessary. However the Indian capital market was not properly developed before Independence. Agriculture was the main occupation but long term lending to the agricultural sector was not common. The growth of industrial securities market was handicapped because there were very few companies and number of securities traded in the stock market was very small. Most of the British companies operating in India depend on London capital market for funds. A fair chunk of capital market consisted of gilt-edged market for government and semi-government securities. There were few individual investors who were the affluent classes in the urban and rural areas. Banks and insurance companies have to prefer government securities and to a small extent the fixed interest bearing debenture because of many restrictions by the government on these institutions. Specialized issue houses were common only in the western countries and the agency houses use to do all underwriting business at that time. However the shape of capital market changed leap and bound after independence. Since independence the Indian capital market has been growing significantly and the volume of savings and investment has shown a steady rise. Various type of encouragement and tax relief measures exist in the country to promote savings. A very important indicator of the growth of Capital Market is the growth of joint stock companies. Government in the process of developing financial market established many key organizations at the central level like IDBI in 1964, UTI in 1964 to cater the need of investors who are confined to medium risk. IRBI was established in the year 1971 and EXIM bank in the year 1982. At the state level SFCs and SIDCs was established. These organizations at the centre and state level are called as lending organization and the Narashimham committee has called them Development Financial Institutions (DFIs). All these institutions were developed to cater the long term and short term financial need of the population. Government of India has taken all necessary steps to develop the financial system. But somewhere in the Indian Financial System there was a big gap, which necessitates the major reforms in the Indian Financial System in 1991.

CAUSES FOR MAJOR REFORMS IN 1991

Until the beginning of the 1990s, the state of the financial sector in India could be described as a classic example of "financial repression" a la MacKinnon and Shaw. The sector was characterized, inter alia, by administered interest rates, large pre-emption of resources by the authorities and extensive micro-regulations directing the major portion of the flow of funds to and from financial intermediaries. Year 1991 was the crucial year for Indian economy as financial sector reforms took a centre stage for economic liberalization. This can be attributed to crisis which seriously doubted Indian economy credibility involving the financial

sector. The balance of payments crisis threatened the international credibility of the country and pushed it to the brink of default. The trade deficit was very large to cover. At that time government of India doesn't have enough reserve to cover even ten days imports. Secondly the grave threat of insolvency confronting the banking system. The banking system has concealed these problems for years with the help of defective accounting policies. Moreover, many of the deeper rooted problems of the Indian economy in the early nineties were also strongly related to the financial sector. The problem of financial repression in the sense of McKinnon-Shaw (McKinnon, 1973; Shaw, 1973) induced by administered interest rates pegged at unrealistically low levels. Large scale pre-emption of resources from the banking system by the government to finance its fiscal deficit. Excessive structural and micro regulation that inhibited financial innovation and increased transaction costs. Relatively inadequate level of prudential regulation in the financial sector. Poorly developed debt and money markets and outdated (often primitive) technological and institutional structures that made the capital markets and the rest of the financial system highly inefficient.

Apart from above we also find that Insurance companies – both life and non-life – were all publicly owned and offered very little product choice. In the securities market, new equity issues are governed by a plethora of complex regulations and extensive restrictions. There was very little transparency and depth in the secondary market trading of such securities. Interest rates on government securities, the predominant segment of fixed-income securities, were decided through administered fiat. The market for such securities was a captive one where the players were mainly financial intermediaries, who had to invest in government securities to fulfill high statutory reserve requirements. The end result was low levels of competition, efficiency and productivity in the financial sector, on the one hand, and severe credit constraints of the productive entities, on the other, especially for those in the private sector. The other major drawback of this regime was the scant attention that was placed on the financial health of the intermediaries.

FINANCIAL SECTOR REFORMS IN 1991

Since the initiation of reforms in the early 1990s, the Indian economy has achieved high growth in an environment of macroeconomic and financial stability. The period has been marked by broad based economic reform that has touched every segment of the economy. These reforms were designed essentially to promote greater efficiency in the economy through promotion of greater competition.

The main objectives of the financial sector reform process in India initiated in the early 1990s were:

- Remove financial repression that existed earlier.
- Create an efficient, productive and profitable financial sector industry.
- Enable price discovery, particularly, by the market determination of interest rates that then helps in efficient allocation of resources.
- Provide operational and function autonomy to institutions.
- Prepare the financial system for increasing international competition.
- Promote the maintenance of financial stability even in the face of domestic and external pressure.

The reforms in the various financial sectors were on the recommendation of various committees. This committee not only focuses on operational flexibility but also on social responsibility. Attempts were made to develop the commercial decision making and the market efficiency. As pointed by Governor Reddy (Reddy, 2002 a), the approach towards financial sector reforms in India is based on 'Panchasutra' or five principles:

- Cautious and appropriate sequencing of reforms measures.
- Introduction of norms that are mutually reinforcing.
- Introduction of complementary reforms across sectors (most importantly, monetary, fiscal and external sector).
- Development of financial institutions.
- Development of financial markets.

Now we will discuss the reforms which have shaped the current Financial Systems in India.

A. REFORMS IN BANKING SECTOR

PRUDENTIAL MEASURES

- Introduction and phased implementation of international best practices and norms on risk-weighted capital adequacy requirement, accounting, income recognition, provisioning and exposure.
- Measures to strengthen risk management through recognition of different components of risk, assignment of risk-weights to various asset classes, norms on connected lending, risk concentration, application of marked-to-market principle for investment portfolio and limits on deployment of fund in sensitive activities.

COMPETITION ENHANCING MEASURES

- Granting of operation autonomy to public sector banks, reduction of public ownership in public sector banks by allowing them to raise capital from equity market up to 49% of paid-up capital.
- Transparent norms for entry of Indian private sector, foreign and joint-venture banks and insurance companies, permission for foreign investment in the financial sector in the form of Foreign Direct Investment (FDI) as well as portfolio investment, permission to banks to diversify product portfolio and business activities.

MEASURES ENHANCING ROLE OF MARKET FORCES

- Sharp reduction in pre-emption through reserve requirement, market determined pricing for government securities, disbanding of administered interest rates with a few exception and enhanced transparency and disclosure norms to facilitate market discipline.
- Introduction of pure inter-bank call money market, auction-based repos-reserve repos for short-term liquidity management, facilitation of improved payments and settlement mechanism.

INSTITUTIONAL AND LEGAL MEASURES

- Setting up of Lok Adalats, debt recovery tribunals, asset reconstruction companies, settlement advisory committees, corporate debt restructuring mechanism, etc. for quicker recovery/restructuring. Promulgation of Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest (SARFAESI) Act and its subsequent amendment to ensure creditor rights.
- Setting up of Credit Information Bureau for information sharing on defaulters as also other borrowers.
- Setting up of Credit Information Bureau for information sharing on defaulters as also other borrowers.
- Setting up of Clearing Corporation of India Limited (CCIL) to act as central counter party for facilitating payments and settlement system relating to fixed income securities and money market instruments.

SUPERVISORY MEASURES

- Establishment of the Board for Financial Supervision as the apex supervisory authority for commercial banks, financial institutions and non-banking financial companies.
- Introduction of CAMELS supervisory rating system, move towards risk-based supervision, consolidated supervision of financial conglomerates, strengthening of off-site surveillance through control returns.
- Recasting of the role of statutory auditors, increased internal control through strengthening of internal audit.
- Strengthening corporate governance, enhanced due diligence on important shareholders, fit and proper tests for directors.

TECHNOLOGY RELATED MEASURES

- Setting up of INFINET as the communication backbone for the financial sector, introduction of Negotiated Dealing System (NDS) for screen-based trading in government securities and Real Time Gross Settlement (RTGS) system.

B. REFORMS IN GOVERNMENT SECURITIES MARKET**INSTITUTIONAL MEASURES**

- Administered interest rates on government securities were replaced by an auction system for price discovery.
- Automatic monetization of fiscal deficit through the issue of ad hoc Treasury Bills was phased out.
- Primary Dealers (PD) were introduced as market makers in the government securities market.
- For ensuring transparency in the trading of government securities. Delivery versus Pay (DvP) settlement system was introduced.
- Repurchase agreements (repo) were introduced as a tool of short term liquidity adjustment. Subsequently, the Liquidity Adjustment Facility (LAF) was introduced. LAF operates through repo and reverse auctions to set up a corridor for short-term interest rate. LAF has emerged as the tool for both liquidity management and also signaling device for interest rates in the overnight market.
- Market Stabilization Scheme (MSS) has been introduced, which has expanded the instruments available to the Reserve Bank for managing the surplus liquidity in the system.

INCREASE IN INSTRUMENTS IN GOVERNMENT SECURITIES MARKET

- 91-day Treasury bill was introduced for managing liquidity and benchmarking. Zero Coupon Bonds, Floating Rate Bonds, Capital Indexed Bonds were issued and exchange traded interest rate futures were introduced. OTC interest rate derivatives like IRS/FRA were introduced.

ENABLING MEASURES

- Foreign Institutional Investors (FIIs) were allowed to invest in government securities subject to certain limits.
- Introduction of automated screen-based trading in government securities through Negotiated Dealing System (NDS). Setting up of risk-free payments and settlement system in government securities through Clearing Corporation of India Limited (CCIL). Phased introduction of Real Time Gross Settlement System (RTGS).
- Introduction of trading of government securities on stock exchanges for promoting retailing in such securities, permitting non-banks to participate in repo market.

C. REFORMS IN FOREX MARKET**EXCHANGE RATE REGIME**

- Evolution of exchange rate regime from a single currency fixed-exchange rate system to fixing the value of rupee against a basket of currencies and further to market-determined floating exchange rate regime.
- Adoption of convertibility of rupee for current account transactions with acceptance of Article VIII of the Articles of Agreement of the IMF. De facto full capital account convertibility for nonresidents and calibrated liberalization of transactions undertaken for capital account purposes in the case of residents.

INSTITUTIONAL FRAMEWORK

- Replacement of the earlier Foreign Exchange Regulation Act (FERA), 1973 by the market friendly Foreign Exchange Management Act, 1999. Delegation of considerable powers by RBI to Authorised Dealers to release foreign exchange for a variety of purposes.

INCREASE IN INSTRUMENTS IN FOREX MARKET

- Development of rupee-foreign currency swaps market.
- Introduction of additional hedging instruments, such as, foreign currency-rupee options. Authorised dealers permitted to use innovative products like cross-currency options, interest rate and currency swaps, cap/collars and forward rate agreements (FRSs) in the international forex market.

LIBERALIZATION MEASURES

- Authorized dealers permitted to initiate trading positions, borrow and invest in overseas market subject to certain specifications and ratification by respective Banks' Boards. Banks are also permitted to fix interest rates on non-resident deposits, subject to certain specification, use derivative products for asset-liability management and fix overnight open position limits and gap limits in the foreign exchange market, subject to ratification by RBI.
- Permission to various participants in the foreign exchange market, including exporters, Indian investing abroad, FIIs, to avail forward cover and enter into swap transactions without any limit subject to genuine underlying exposure.
- FIIs and NRIs permitted to trade in exchange traded derivative contracts subject to certain conditions.
- Foreign exchange earners permitted to maintain foreign currency accounts. Residents are permitted to open such accounts within the general limit of US\$25,000 per year.

D. INSURANCE SECTOR REFORMS

Insurance Sector Reforms was commissioned by 'Malhotra Committee' which was headed by former Finance Secretary & RBI Governor R.N. Malhotra. The objective was to create more efficient & competitive financial system.

Key recommendations of the reforms

- Structure: government stake should be 50% in insurance companies.
- Competition: Private Companies with a minimum paid up capital of Rs.1bn should be allowed to enter the sector.
- No Company should deal in both life and general insurance through a single entity.
- Foreign companies may be allowed to enter the industry in collaboration with the domestic companies.
- Regulatory Body: The insurance act should be changed. An insurance regulatory body should be set up. Controller of insurance-a part of the Finance Ministry – should be made independent.
- Investments: Mandatory Investments of LIC Life Fund in government securities to be reduced from 75% to 50%. GIC and its subsidiaries are not to hold more than 5% in any company.
- Customer Service: LIC should pay interest on delay on payment beyond 30 days. Insurance companies must be encouraged to set up unit link pension plans.

E. REFORMS IN DEBT MARKET

In the early nineties, the Indian debt market was best described as a dead market. Financial repression and over-regulation were responsible for this situation.

Reforms have eliminated financial repression and created the pre-conditions for the development of an active debt market:

- The government reduced its pre-emption of bank funds and moved to market determined interest rates on its borrowings. Simultaneously, substantial deregulation of interest rates took place as described earlier.
- Automatic monetization of the government's deficit by the central bank was limited and then eliminated by abolishing the system of *ad hoc* treasury bills.

Several operational measures were also taken to develop the debt market, especially the market for government securities:

- Withdrawal of tax deduction at source on interest from government securities and provision of tax benefits to individuals investing in them
- Introduction of indexed bonds where the principal repayment would be indexed to the inflation rate.
- setting up of a system of primary dealers and satellite dealers for trading in government securities
- Permission to banks to retail government securities
- Opening up of the Indian debt market including government securities to Foreign Institutional Investors.

CONCLUSION

One of the most important areas of economic reform lies in the financial system. On one hand, finance is the 'brain' of the economy, and the skills of the financial system shape the efficiency of translation of gross capital formation into GDP growth. These reforms have reshaped the contour of existing financial

system. The current financial system is changing the way in which the customer perceives the risk. So government has decided to implement the reforms for the betterment of the economy and the population. However the pace at which reforms were implemented was slow. The reforms have attained the pace particularly after 1991. At the same time, it is true that India has avoided the financial sector problems that plagued Latin America in the eighties and are confronting East Asia today. It is tempting (and perhaps fashionable) to adopt a posture of smug satisfaction and point to East Asia as a vindication of the slow pace of liberalization in India.

REFERENCES

1. A paper on Financial Sector Reforms in India by Dr. Rakesh Mohan.
2. A paper on Indian Financial Sector Reforms: A Corporate Perspective, by Jayanth R. Varma.
3. Managerial Aspects of Emerging Indian Financial System: An Assessment by Dr. Teki Surayya Associate Professor, National Institute of Financial Management.
4. Reforming the Indian _Financial system, by Ajay Shah, Ila Patnaik.

WEBSITES

5. www.google.com
6. www.investopedia.com.
7. www.wikipedia.com



NATURAL RUBBER PRODUCTION IN INDIA

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ABSTRACT

India's natural rubber production surges 3.7% in 2010-11 and other countries have been successfully deploying their low-cost labour-forces and easily-available lands to expand in this sector, particularly India and China. The natural rubber consumption accounted for some 40% of the total amount of rubber consumed worldwide.

KEYWORDS

natural rubber, rubber production.

INTRODUCTION

Rubber was known to the indigenous peoples of the Americas long before the arrival of European explorers. In 1525, Padre d'Anghieria reported that he had seen Mexican tribes people playing with elastic balls. The first scientific study of rubber was undertaken by Charles de la Condamine, when he encountered it during his trip to Peru in 1735. A French engineer that Condamine met in Guiana, Fresneau studied rubber on its home ground, reaching the conclusion that this was nothing more than a "type of condensed resinous oil".

The first use for rubber was an eraser. It was Magellan, a descendent of the famous Portuguese navigator, who suggested this use. In England, Priestley popularized it to the extent that it became known as India Rubber. The word for rubber in Portuguese - borracha - originated from one of the first applications for this product, when it was used to make jars replacing the leather borrachas that the Portuguese used to ship wine.

As rubber is an important raw material that plays a leading role in modern civilization, chemists soon became curious to learn more about its composition in order to synthesize it. In the XIX century, work focused on this objective, soon discovering that rubber is an isoprene polymer. The Russians and the Germans broke fresh ground in their efforts to synthesize rubber. But the resulting products were unable to compete with natural rubber. It was only during World War I that Germany - pressured by circumstances - had to develop the industrialized version of this synthetic product. This was the springboard for the massive development of the synthetic rubber industry all over the world, producing elastomers. Natural rubber is a solid product obtained through coagulating the latex produced by certain plants, particularly the Brazilian rubber-tree (*Hevea Brasiliensis*). This raw material is usually tapped from the rubber tree, which is native to Amazonia. Although there a large number of species that exude secretions similar to latex when the bark is cut, only a few produce sufficient quantities of a quality adequate for exploitation on economic bases.

AIMS AND OBJECTIVE

The aims and objectives, for which the Federation is established, are:

1. To encourage, promote and protect the interests of waste tyre, rubber and plastics merchants, new and remould tyre manufacturers, dealers, rubber compounders, plastics and rubber recyclers, machinery manufacturers, dealers and remoulders in the exercise of their trade throughout the world.
2. To co-ordinate the interests of its members and to secure for them the advantage of mutual co-operation.
3. To encourage and promote the settlement of any disputes by conciliation, or arbitration and to nominate arbitrators or umpires on such terms, and in such cases, as may seem expedient.
4. To foster technical knowledge in the tyre, waste tyre, rubber and plastics trades, new and remould tyre trades, rubber compounds trade, plastics and rubber recycling trades, tyre remoulding industry, by the encouragement of research.
5. To do all such lawful things as the Federation may deem necessary or desirable for the furthering of the interests of the Federation, either alone or in conjunction with other trade organisations.

FACTS ON RUBBER PRODUCTION IN INDIA

India is the largest manufacturer of reclaim rubber. India is the third largest producer of rubber. India is at fourth position in respect to consumption of rubber goods. India is fifth largest for natural and synthetic rubber goods consumption.

India at present is not only catering the needs of domestic market but also fulfilling the International requirements. It is exporting these products to country like UAE, Germany, UK, USA and France. But as their consumption have reached to its saturation point in western countries so more avenues are explored in Asian countries for the export.

Demand for these products can never vanish as it has huge and varied number of industries to serve. From aviation to engineering, pharmaceutical and railways, all use one or other kind of rubber items. Thus there is always a scope for betterment. There are basically two types of rubber industries in India, one uses latex as a raw material and the other one uses rubber sheets for the production of rubber products.

There are various natural as well as manmade factors that helps in the intensification of rubber production in India. It has excessive rubber plantation area with ever growing local market to consume these products. Also there is an easy availability of raw material as well as labor. Moreover available of easy training in technical training institutes is further leading to the trained labor who are helping in the production and growth of this sector. Also with the change in the lifestyle of common man products made from quality rubber are in demand leading to the overall growth. Recently there has been seen 8% growth in this sector that on one hand has given India an economic boost whereas on other hand it has given livelihood to many homes. This is further increasing and giving way to rubber production machines, rubber cutting machines and other related industry instruments and machines.

REVIEW OF LITERATURE

The production and productivity of natural rubber should be enhanced in the medium- to long-term in order to meet the ever increasing demand, said Vijaylaxmi Joshi, additional secretary (plantations), Ministry of Commerce and Industry. The government can only make programmes and policies aimed at this, but it is up to the growers to implement them at the practical level in the field, she said. Rubber Board chairperson Sheela Thomas pointed out that in spite of the reasonably good prices of NR, the sector is facing several problems and these can be addressed by the joint efforts of the Board and the growers.

The board is aiming to enhance productivity of smallholdings so that growers benefit from the prevailing prices. The productivity of the holdings mainly depends on tapping methods. The highest productivity has been noticed in holdings where scientific tapping methods are adopted, she said. Good tapping depends on many factors such as girth and tapping height of trees, direction and slope of the tapping panel, depth and consumption of bark and time of tapping. Such holdings give sustainably good yield for many years and are comparatively free from diseases. The mass contact programme, Tapping 2011, is scheduled to be held from June 6 to July 22. It is aimed at creating awareness among the rubber growers about the significance of scientific tapping and to promote modern scientific practices in all spheres of rubber plantation industry.

Four thousand meetings with a participation of 150,000 growers and tappers will be arranged in the traditional rubber growing belt of Kerala, Tamil Nadu and Karnataka with the involvement of the Rubber Producers' societies, self-help groups, non-governmental organisations and other voluntary organizations, a Rubber Board press release said. In addition to the main theme of rubber tapping, topics like importance of replanting, climate change, quality planting materials, significance of scientific planting and maintenance of rubber plantations, safeguarding, use of Jebong knife, spraying of oil based fungicides using micron sprayers, scarcity of skilled tappers and strengthening of RPSs will also be discussed in the campaign meetings.

Two associations of rubber-consuming industries have asked for increasing the production of natural rubber in the country to meet the growing demand for value-added products domestically. Otherwise, the import of such products will go up, they say. Making a presentation to the Rubber Board here on Monday on their suggestions to be included in the 12th Five Year Plan proposals on the rubber sector, the All-India Rubber Industries' Association (AIRIA) and the Automotive Tire Manufacturers' Association (ATMA) said that taking a cue from China, the government should make urgent policy interventions to ensure timely availability of competitively priced rubber to the industries. "There is a growing deficit between domestic production and consumption of rubber. Rubber import is, therefore, inevitable; or else, import of finished products will take place, denying the opportunity of value-addition within the country," "In the past five years, the international scene has undergone a sea change. India stands at the cusp of opportunity to emerge as a low-cost producer of rubber products, both tire and non-tire. There is enough domestic demand to be catered to. However, the domestic natural-rubber deficit and the expensive imports have been inhibiting the full blossoming of the rubber industry in the country," he said.

Two-pronged strategy "A two-pronged strategy needs to be adopted to bridge the growing deficit between domestic production and consumption. The domestic production needs to be enhanced by taking up replanting as a top priority and undertaking major planting initiatives in non-traditional areas. However, enhancing natural-rubber production being a long-drawn-out affair, duty-free imports to the extent of domestic deficit need to be allowed every year," Rajiv Budhraj, director-general, ATMA, said.

In the past four financial years, the production of natural rubber has increased by only 1 per cent, while the consumption has increased by more than 15 per cent. In the current financial year, new capacities and major expansions undertaken by tyre companies to cater to the booming automobile industry will lead to an increase in consumption by 1.5 lakh tonnes. The industry has, therefore, reiterated its demand for a duty-free import of 2 lakh tonnes during the current financial year, he said. "In view of the widening gap between natural-rubber supply and demand, coupled with growth in tyre demand, a rise in volume of imports of finished products is likely, notwithstanding the adequate domestic capacity. As a result, value-addition from natural rubber to finished products, particularly tyres, will take place outside the country, especially in China, which has ensured adequate and timely availability of natural rubber to its industry through timely interventions, including acquisition of land outside the country," Mr. Budhraj said.

The Rubber Board has projected an increase in consumption by only 40,000 tonnes during the current financial year. Accordingly, the gap between production and consumption has been put at 75,000 tonnes, which is at wide variance with industry estimates based on actual capacity expansion. The conservative consumption estimates by the board could impact the desired policy-making for the rubber sector, he said.

Mr. Simon emphasised the need for appointing a development commissioner, similar to those in the jute and the textile sectors. He said the consumption of natural rubber by the non-tyre sector had gradually declined to 33 per cent. Even the absolute consumption by the sector had recorded a decline, which was worrying since India was on a major growth curve. The office of the development commissioner should oversee the development of the rubber industries, particularly small and medium enterprises, which had borne the brunt of an unprecedented increase in the rubber price and were turning unviable.

USES OF RUBBER

Rubber is used for making innumerable articles ranging from footwear, sports goods, cushions, insulated material for cable, pencil erasers to tyres and tubes. However, it is its use for making tyres and tubes of automobiles which is of greatest importance. Thus, indirectly, rubber helps in promoting the system of modern transport and communication. Malaysia will continue to play its dominant role in world's rubber production and export.

PROBLEMS OF THE RUBBER INDUSTRY

Kishore, present, the policies of the Malaysian Government are not as favourable to foreign investors as previously. The Government regulations, regarding benefits and wages to native workers, are more strict, and the taxes are higher. The rubber planters also face the problem of surplus production (it is because the huge areas are available for the rubber plantation), which results in lowered prices and profits. The abundant production of synthetic rubber in the U.S.A. and other countries has also given a great set back to marketing. The synthetic rubber, which is made from petroleum, coal, alcohol or other materials, is obtained at a very low cost of production. Another problem is the need to replace a large proportion of the trees, which are very old, with new ones of very high yield. The Government has laid a special tax on exported rubber, and the money, thus, raised is utilized for the cost of replanting trees. Because of all these hazards, the rubber planters are now converting the rubber estates to that of palm. But it does not mean that the rubber plantation system will discontinue. The synthetic rubber is excellent for certain purposes, but it is not yet as satisfactory as natural rubber for general purposes, such as tyres. As such, with an expanded role of the Government in the management of the rubber plantation, the production of rubber in Malaysia will undoubtedly continue, and, perhaps even increase in importance.

M SARITA VARMA, during a tough season of domestic rubber shortage, India has found some consolation. The country's natural rubber (NR) production growth in 2011 is poised to soar higher than the overall rubber output growth of ANRPC (Association of Natural Rubber Producing Countries). In absolute production volumes, however, India remains fourth among the nine top rubber producers.

The growth rate of rubber production in (January-December) 2011 in all ANRPC members is expected to be only 4.9%, according to the number-crunching by ANRPC countries. In the corresponding period, India's rubber production is anticipated to perk up by 5.7%. "Climatic conditions have been partial to Indian rubber plantations this season, while other rubber-producing countries like Malaysia and Thailand were affected by adverse situations like flood. Besides, India's NR productivity has retained its lead among peer rubber farmers," Sheela Thomas, chairman of Singapore-based International Rubber Study Group (IRSG), said, when contacted by FE.region in Central Kerala did not go through too much rain or too much dry climate in the first half of 2011. Shortage of skilled labour was a grave issue, she admitted. "But even labour shortage is manageable, provided there are higher wages," said Thomas, also chairman, Rubber Board. By and large, Indian rubber has stayed disease-resistant. "Supply from Vietnam during the third quarter of 2011 is expected to fall 9.4% on year due to severe oidium leaf disease in its upcoming rubber regions," says Tom Jose, Senior Economist, ANRPC. Among individual countries, only Philippines, Cambodia and Indonesia are estimated to post a higher rubber production growth than India in 2011. In the second quarter of 2011, China even shows a growth rate of minus 13.9% in NR output. According to all estimates, total supply from all ANRPC members during this year is anticipated at 9.959 million tonne. "This is 4%...higher than that of previous year," says Kamarul Baharain Bin Basir, secretary general, ANRPC in the latest statistical bulletin (July 2011) of the Kuala Lumpur-based rubber producers' outfit.

At the same time, ANRPC warns that globally the NR supply situation may stay tight till 2018. While giving its detailed statistical forecasts on global NR supply from 2012 to 2018, the report argues that supply is unlikely to grow beyond 3-4% during 2012. The shortage would be more acute after 2016, it says... what goes up must come down, they say. This need not be true when it comes to the price of natural rubber. Since year 2000, the price of natural rubber (RSS 4 Grade) in the Indian market has increased by 7-8 times, breaching the Rs 200 per kg-mark for the first time ever last November. It has stayed in the Rs 225-235 band in the first eight months of 2011 – a jump of around 60 per cent in the last 10 years. Interestingly, despite the steady rise in the price of natural rubber over the years, the demand for it has never slackened. While industrial users of rubber—mainly tyre companies—clamoured for the easing of import controls to keep their raw material costs under check, the high price of rubber has had a salubrious effect on rubber farming in India. Farmers in rubber growing states—Kerala, Karnataka, and the north eastern states of Tripura and Assam—are looking at fresh ways to increase acreage under rubber plantation and have intensified tapping efforts. Even farmers in states such as Gujarat, which do not have a history of rubber cultivation, are keen to take to rubber.

This frenzy for rubber growing may help reduce the demand-supply gap in the domestic market over the next three to five years, say experts from the Kottayam-based Rubber Board, a promotional body under the Ministry of Commerce and Industry. However, in their effort to cash in on existing plantations, many farmers

are postponing the re-planting of new trees. Typically, it takes seven years for a rubber tree to be ready for productive tapping. Experts say the effects of this delay in fresh plantation would be more visible toward 2017-2020 inevitably leading to a price hike. Most experts therefore expect the price of natural rubber to hover around the Rs 200 per kg mark in the near future, depending on global cues.

The demand for natural rubber has been consistently exceeding supply. FY2010, the production of natural rubber in the country stood at 831,400 tonnes, while its consumption was at 930,565 tonnes (India had to import 176,756 tonnes of natural rubber). Similarly, in FY2011, the country produced 861,950 tonnes of natural rubber against a consumption of 949,205 tonnes. Meanwhile, the global rise in demand for natural rubber has kept up the pressure on international prices as well. China, where the consumption of rubber has jumped sharply over the last decade, has emerged as the largest consumer of rubber in the world. In 2003, it consumed 15,38,000 tonnes of rubber, which rose to 36,34,000 tonnes in 2010, a whopping jump of 136 per cent. Growing demand from within India, the fourth largest producer of rubber and its second largest user, has further put pressure on the supply of the commodity. Major rubber producing countries like Indonesia, Malaysia Thailand and India have to cater to internal as well as external demands.

Dr James Jacob, Director (Research), Rubber Research Institute of India, points to something interesting. "There is direct correlation between GDP growth and rubber consumption," he says. India and China, for instance, have been growing at significant pace in the last three years. With global auto majors eyeing India as a hub for small car production, auto analysts do not expect any dip in demand for rubber to come from the automobile industry. "The auto industry accounted for 62 per cent of the demand for natural rubber in the country in 2010," says Alok Goyal, Deputy Secretary General, All India Rubber Industries Association.

Sheela Thomas, Chairperson, The demand-supply gap may narrow by 2015 due to increase in tapping. But it will widen by 2020, Rubber Board "Rubber farmers are finally getting a fair price," says Professor P Yageen Thomas, head of the Department of Statistics, University of Kerala. In the '80s and '90s, farmers were hit by huge fluctuations in rubber price so much so that many farmers in Kerala—which accounts for 80 per cent of India's natural rubber production — shifted to other crops such as coconut and cashew. But over the last ten years, rubber prices in India have moved in tandem with global rates. It's the sharp rise in the international prices of rubber that added to its price pressure within India. For example, the price of natural rubber (RSS 4 Grade) in Thailand moved from Rs 9,227 per 100 kg in July 2009 to Rs 28,039 per 100 kg in February 2011. "Prices in India for commodities like rubber mirror international trends," says Subhranil Dey, Research Analyst (Commodities-Fundamental), SMC Global Securities Ltd. "They are the price setters, we are the price takers."

According to an International Rubber Study Group, the global natural rubber demand is set to rise by 3.8% in 2011 and 5.4% in 2012. And, assuming normal growing conditions, global natural rubber production is also forecast to rise by 5.6 per cent in 2011 and 8.2 per cent in 2012. This, says experts, could provide some kind of respite in prices, but Jacob is quiet certain: "I don't expect to see a slump in rubber prices anytime soon."

S Chandrasekharan Nair, examine "The current level of natural rubber production could meet domestic industrial demand, Conversely, the land under rubber cultivation in certain major rubber producing countries has been declining. The total area under rubber cultivation in Malaysia was 13,25,600 hectares in 2003 but it was down to 10,28,840 hectares in 2010. "Farmers in Malaysia have been shifting to palm oil cultivation over the years," observes Dr K J Joseph, Chair Professor, Research Unit on Plantation Development at Trivandrum-based Centre for Development Studies.

Geojit Comtrade analyst Anand James points to the age-profile of rubber trees. "Rubber plantations are now ageing in India," he says. A Rubber Board presentation says that the share of rubber trees above the age of 22 has gone up from 24 per cent in 1990 to 36 per cent in 2009. A rubber tree is most productive between 10 and 25 years of its age. With ageing trees, India's production will take a dip unless re-plantation is done in a timely and effective manner, making way for the prices of rubber to remain high, but here's the catch—farmers may prefer not to replant because the rubber tree is non-productive for the first seven years of its life. "A farmer would think a bird in hand is worth two in the bush," says Rajiv Budhraj, Director General, Automotive Tyre Manufacturers' Association. "He doesn't know what the prices of rubber will be seven years or even seven quarters from now, so he will continue with lower production with an old tree than have nothing for the next seven years." This will reflect in India's production figures of natural rubber, more towards the end of the current decade, in the period 2017-2020, confirms Rubber Board chairperson Sheela Thomas. "The demand-supply gap is likely to increase by 2020," she says. She hastens to add that by 2015, the current gap in production and domestic consumption may narrow due to increase in tapping although Thomas believes that natural rubber's price line is likely to hover around the Rs 200 per kg mark in the near future.

Experts from Association of Natural Rubber Producing Countries point out that prices are likely to remain high internationally as a large number of rubber producing trees—which were planted during the 1980s—will have to be uprooted between 2012 and 2018, reducing the total area of plantations worldwide. Another concern among experts is the lower productivity of Indian rubber farms, largely due to the smaller size of holding. About 10% of rubber production comes from large estates. "Many small farms are tempted to turn into holiday resorts and residential homes, in which monetary returns are higher," says a Rubber Board official. Labour shortage in rubber farms and an approximately 50% jump in cost of labour in the last 12-18 months also have many farmers worried.

AS Mehta, Director (Marketing), JK Tyre And Industries "Imported rubber, a raw material for tyres, is of better quality and cheaper than domestic rubber." Many farmers, such as 62-year-old S Chandrasekharan Nair from the current level of production of natural rubber in the country could meet the domestic industry's demand. He says the government's policy of allowing cheaper import of rubber by tyre manufacturers (against their exports obligations) is distorting the market. The government, he says, is using the import route to keep a check on the domestic prices of rubber. "The import policy erodes the price of our product," agrees Dr SG Churchinben, a medical practitioner from, who also manages a family-owned 10-acre rubber plantation. Manufacturers such as JK Tyre Industries meet 15% of their demand for rubber through the import route. With reduced import duty, this rubber is of better quality and cheaper than domestic rubber, points out AS Mehta, Director-Marketing. Nair, who also runs a multi-lingual blog on rubber farming, considers this a missed business opportunity for Indian farmers. Over time, the Rubber Board plans to reduce farmers' dependence on a single industry and encourage the setting up of downstream industries like rubber band and balloon making units, units making medical gloves, etc., near rubber plantations and farms. Rubber wood is being promoted for making furniture and crafts. The long gestation period for which farmers have to nurture rubber trees before they start getting productive returns, the Board has advised State governments to incentivise farmers to remain in rubber farming. There is a drive to spread rubber growing among the North Eastern states. Tripura is already second to Kerala when it comes to acreage under rubber plantation. But as long as rubber prices remain perched in the Rs 200 per kg range, not many farmers are overtly complaining. The tyre industry might have to adjust to steep prices

INDIA'S NATURAL RUBBER PRODUCTION

India's natural rubber production has risen 3.7% in 2010-11 to 8,61,950 tons, according to Rubber Board. Revealing the data at the 165th Annual meeting of the Board here, Sheela Thomas, Rubber Board Chairman said that domestic production stood at 8,31,400 tons and anticipated production for 2010-11 was 9,02,000 tonnes. The anticipated consumption in 2010-11 was 9,77,000 tons.

B C Khatua, chairman of FMC said: "Our presentation to the working group was based on well founded facts and not mere sentiment. Today a farmer has multiple options for selling his products- either in a mandi or a spot exchange. While we are continuing with our awareness programme, what is not realised is that farmers need a sound price discovery system and thus, his interest is in futures market to plan and execute pricing of his sale rather than just selling the products in the spot market." However, we did not intervene since higher margins would have affected the genuine domestic consumers who were anyway fighting higher prices for procurement. Higher trade margins would have hurt genuine hedgers and traders.

Rubber production in India this season (Sep 2010) has rose by 4.3% because of the excessive rain and favorable natural conditions. Total rubber production this year is 77,500 tonnes as compare to 74,300 tonnes in Sep 2009. Moreover at present this industry is one of the fastest growing industries. It has about 6000 rubber manufacturing units. Through these units 35000 kinds of different rubber items are produced. Boom in the automobile industry is one of the biggest factors that has contributed to this magnanimous growth. If we look from the rubber tyre production perspectives, then we will see that tyre manufacturing has increased from 3.48 lakh tones (last year) to 3.75 lakh tonnes (this year). Also there has been seen growth in the production of natural rubber and there is an increase of 7.6%. These are the major contributing factors to the growth of rubber production.

TABLE - 1: WORLD RUBBER PRODUCTION AND CONSUMPTION ('000 tonnes)

| Year | Production | | | Consumption | | |
|-------|----------------|------------------|--------------|----------------|------------------|--------------|
| | Natural Rubber | Synthetic Rubber | Total Rubber | Natural Rubber | Synthetic Rubber | Total Rubber |
| 1998 | 6,634 | 9,880 | 16,514 | 6,570 | 9,870 | 16,440 |
| 1999 | 6,577 | 10,390 | 16,967 | 6,650 | 10,280 | 16,930 |
| 2000 | 6,762 | 10,870 | 17,632 | 7,340 | 10,830 | 18,170 |
| 2001 | 7,332 | 10,483 | 17,815 | 7,333 | 10,253 | 17,586 |
| 2002 | 7,326 | 10,877 | 18,203 | 7,556 | 10,874 | 18,430 |
| 2003 | 8,005 | 11,341 | 19,361 | 7,952 | 11,348 | 19,300 |
| 2004 | 8,744 | 11,961 | 20,707 | 8,718 | 11,840 | 20,558 |
| 2005 | 8,896 | 12,100 | 21,004 | 9,200 | 11,900 | 21,100 |
| 2006 | 9,706 | 12,653 | 22,444 | 9,677 | 12,691 | 22,368 |
| 2007 | 9,833 | 13,387 | 23,188 | 10,144 | 13,264 | 23,408 |
| 2008 | 10,042 | 12,743 | 22,779 | 10,173 | 12,603 | 22,776 |
| 2009 | 9,662 | 12,087 | 21,704 | 9,390 | 11,754 | 21,144 |
| 2010* | 10,291 | 14,002 | 24,293 | 10,671 | 13,858 | 24,529 |

Source: International Rubber Study Group (IRSG) Vol 65, No 7-9, January-March 2011

The Association of Natural Rubber Producing Countries (ANRPC), a 11-member international organisation, projects 6.2 per cent growth in the production of the commodity this year. The expected growth matches the 6.4 per cent increase registered in 2010. The latest estimates of ANRPC project global output to be at 10.06 million tonnes in 2011 as against 9.47 million tonnes last year.

The increase in output is expected due to a rise in the area under natural rubber. An additional 203,000 hectares has been brought under natural rubber this year. The total sown area is expected to be 7.19 million hectares compared with 6.99 million hectares in 2010. The average per hectare yield is likely to increase to 1,398 kg per hectare from 1,355 kg per hectare last year. Supply from Thailand, the world's largest producer, accounting for 34 per cent of the global supply, is likely to rise 5.5 per cent or 3.43 million tonnes this year due to area expansion. About 114,550 hectares of trees planted in 2004 and a portion of 173,000 hectares planted in 2005 are expected to be tapped now. ANRPC projects an increase of eight per cent in the supply from Indonesia and the estimated supply for this year is 2.95 million tonnes. As the world's second-largest producer, Indonesia accounts for 29 per cent of the total global supply. In Malaysia, supply would be around 975,000 tonnes as against 1.05 million tonnes targeted by the government.

TABLE - 2: INDIAN RUBBER PRODUCTION IN 2010 (in tonnes)

| Sl.No | Month | Prev.Bal. | Pro. | Imp. | Ava. | Cons. | Ex. | Mis. | Stock |
|-------|-------|-----------|--------|--------|--------|--------|--------|--------|--------|
| 1 | April | 200015 | 51520 | 10421 | 261956 | 73470 | 724 | -168 | 187930 |
| 2 | May | 187930 | 53550 | 19828 | 261308 | 71250 | 116 | -18 | 189960 |
| 3 | June | 189960 | 54255 | 20258 | 264473 | 74220 | 46 | 3917 | 186290 |
| 4 | July | 186290 | 50250 | 27100 | 263640 | 78910 | 06 | -1 | 184725 |
| 5 | Aug. | 184725 | 64740 | 20119 | 269584 | 79750 | 58 | -9 | 189785 |
| 6 | Sept. | 189785 | 74300 | 20172 | 284257 | 78765 | 554 | -12 | 204950 |
| 7 | Oct.r | 204950 | 88775 | 8574 | 302299 | 79950 | 2274 | -460 | 222535 |
| 8 | Nov. | 222535 | 93500 | 7124 | 323159 | 80500 | 4165 | -556 | 239050 |
| 9 | Dec. | 239050 | 100850 | 6504 | 346404 | 80250 | 2506 | -692 | 264340 |
| 10 | Jan. | 264340 | 97500 | 7645 | 369485 | 80500 | 2716 | -651 | 286920 |
| 11 | Total | 261956 | 261308 | 264473 | 263640 | 269584 | 284257 | 302299 | 369485 |

Source: International Rubber Study Group (IRSG) Vol 65, No 7-9, January-March 2011

TABLE - 3: PRODUCTION OF NATURAL RUBBER IN MAIN PRODUCING COUNTRIES 2010

| Sl.No | Year/Country | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-------|--------------|------|------|------|------|------|------|------|-------|------|------|
| 1 | Thailin | 2320 | 2615 | 2876 | 2984 | 2937 | 3137 | 3056 | 3090 | 3164 | 3253 |
| 2 | Indo | 1607 | 1630 | 1792 | 2066 | 2271 | 2637 | 2755 | 2751 | 2440 | 2592 |
| 3 | Mala | 882 | 890 | 986 | 1169 | 1126 | 1284 | 1200 | 1072 | 857 | 1000 |
| 4 | India | 632 | 641 | 708 | 743 | 772 | 853 | 811 | 881 | 820 | 884 |
| 5 | Vien | 313 | 331 | 364 | 419 | 482 | 555 | 606 | 660 | 724 | 770 |
| 6 | China | 478 | 527 | 565 | 573 | 541 | 538 | 588 | 548 | 643 | 671 |
| 7 | Sri lanka | 86 | 91 | 92 | 95 | 104 | 109 | 118 | 129 | 137 | 143 |
| 8 | Barazil | 88 | 89 | 94 | 101 | 107 | 108 | 116 | 123 | 104 | NA |
| 9 | Phillippines | 71 | 76 | 84 | 80 | 79 | 88 | 101 | 103 | 96 | 102 |
| 10 | Libera | 107 | 109 | 107 | 115 | 111 | 101 | 106 | 81 | 77 | NA |
| 11 | Cambo | 42 | 43 | 32 | 34 | 20 | 21 | 19 | 19 | 34 | 44 |
| 12 | Nigeria | 45 | 42 | 38 | 45 | 40 | 41 | 42 | 49 | 45 | NA |
| 13 | Others | 581 | 273 | 282 | 322 | 335 | 326 | 275 | 508 | 481 | NA |
| 14 | Total | 7252 | 7337 | 8020 | 8746 | 8904 | 9791 | 9801 | 10036 | 9617 | 9459 |

Source: International Rubber Study Group (IRSG) Vol 65, No 7-9, January-March 2011

India's supply may touch 884,000 tonnes this year, up 3.9 per cent from last year due to an estimated 14,000 hectares increase in the area and better yield. Incidentally, India at present has the highest natural rubber productivity across the globe. Production in other leading producing countries like Vietnam and China is also estimated to increase this year, according to ANRPC data. Vietnam will have a production of 755,000 tonnes, China (647,000 tonnes), Sri Lanka (153,000 tonnes), Philippines (99,000 tonnes) and Cambodia will supply 42,000 tonnes in the current year.

Domestic consumption has increased by 2 per cent in 2010-11. During 2010-11, growth in tyre production in the automotive sector grew by 23 per cent. Export of tyres also increased by 20 per cent. However, truck and bus tyre exports declined by five per cent. During 2010-11 fiscal, exports stood at 28,424 tonnes compared with 25,090 tonnes in the previous fiscal. Imports accounted for 1,77,482 tonnes, 73 per cent of which was through duty free channels. Rubber Board does not foresee any shortage for the commodity as the opening stock of rubber in 2011-12 was relatively high at 2,77,095 tonnes against 2,11,290 tonnes in 2010-11. Meanwhile, the Automotive Tyre Manufacturers Association (ATMA) has urged the rubber board to take steps to avoid delays in mandatory inspection of imported rubber which is affecting the raw material availability for manufacturers. The onus of ensuring quality of imported rubber should lie with the manufacturers and not the government, ATMA said.

The ministry of food and consumer affairs is not in favour of recommending a ban on forward trading of essential commodities. The ministry is currently working on the final recommendations based on suggestions made by a working group on consumer affairs headed by Narendra Modi and co-chaired by chief ministers of Maharashtra, Andhra Pradesh and Tamil Nadu. These recommendations then will be sent to the Prime minister thereafter. The working group had strongly recommended banning forward trading in essential commodities. The ministry, albeit is in favour of many recommendations made by the working group, especially those on reforming the Agricultural Produce Marketing Committees across states for bridging the gap between the wholesale and retail food prices and amending the Essential Commodities Act to check hoarding.

TABLE – 4: CONSUMPTION OF NATURAL RUBBER IN MAIN PRODUCING COUNTRIES

| Sl.No | Year/Country | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-------|--------------|------|------|------|------|------|------|-------|-------|------|
| 1 | China | 1330 | 1395 | 1538 | 2000 | 2266 | 2743 | 2812 | 2940 | 3460 |
| 2 | Usa | 974 | 1111 | 1079 | 1144 | 1159 | 1003 | 1018 | 1041 | 687 |
| 3 | India | 631 | 680 | 717 | 745 | 789 | 815 | 851 | 881 | 905 |
| 4 | Japan | 729 | 749 | 784 | 815 | 857 | 874 | 887 | 878 | 636 |
| 5 | Malasiya | 401 | 408 | 421 | 403 | 387 | 383 | 450 | 469 | 470 |
| 6 | Indonasia | 142 | 145 | 156 | 196 | 221 | 355 | 391 | 414 | 422 |
| 7 | Thailand | 263 | 278 | 299 | 319 | 335 | 321 | 374 | 398 | 399 |
| 8 | Korea | 332 | 326 | 333 | 352 | 370 | 364 | 377 | 358 | 330 |
| 9 | Brazil | 216 | 233 | 256 | 255 | 302 | 394 | 345 | 357 | 254 |
| 10 | Germami | 245 | 247 | 258 | 242 | 259 | 269 | 282 | 247 | 171 |
| 11 | France | 226 | 218 | 230 | 230 | 220 | 220 | 200 | 109 | 181 |
| 12 | Canada | 131 | 155 | 146 | 146 | 156 | 145 | 138 | 138 | 103 |
| 13 | Italy | 137 | 134 | 138 | 151 | 154 | 148 | 144 | 134 | 90 |
| 14 | Taiwan | 90 | 107 | 115 | 120 | 114 | 100 | 115 | 97 | 90 |
| 15 | Uk | 98 | 76 | 91 | 86 | 82 | 68 | 91 | 77 | 43 |
| 16 | Spain | 176 | 181 | 188 | 192 | 186 | 189 | 195 | 178 | 124 |
| 17 | Russian | 36 | 19 | 32 | 29 | 34 | 41 | 42 | 39 | 25 |
| 18 | Others | 1129 | 1084 | 1183 | 1263 | 1299 | 1345 | 1412 | 1327 | 1072 |
| 19 | Total | 7333 | 7554 | 7952 | 8718 | 9200 | 9677 | 10144 | 10173 | 9390 |

Source: International Rubber Study Group (IRSG) Vol 65, No 7-9, January-March 2011

TABLE – 5: COUNTRY-WISE EXPORT OF NATURAL RUBBER PRODUCTION

| Sl. NO | Year/Country | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--------|--------------|------|------|------|------|------|------|------|------|------|
| 1 | Thailand | 2042 | 2354 | 2574 | 2637 | 2632 | 2772 | 2704 | 2675 | 2726 |
| 2 | Indonasia | 1497 | 1502 | 1661 | 1875 | 2025 | 2287 | 2407 | 2296 | 1991 |
| 3 | Malasiya | 345 | 887 | 947 | 1106 | 1128 | 1131 | 1018 | 917 | 704 |
| 4 | Vitnam | 270 | 455 | 432 | 513 | 554 | 704 | 716 | 659 | 731 |
| 5 | Libra | 107 | 109 | 107 | 115 | 111 | 101 | 106 | 81 | 77 |
| 6 | India | 04 | 44 | 63 | 72 | 60 | 71 | 30 | 77 | 16 |
| 7 | Cambodia | 38 | 40 | 36 | 32 | 28 | 25 | 25 | 15 | 36 |
| 8 | Sri Lanka | 32 | 36 | 35 | 40 | 32 | 46 | 50 | 46 | 54 |
| 9 | Nigeria | 30 | 24 | 22 | 29 | 25 | 24 | 25 | 26 | 32 |
| 10 | Total | | | | | | | | | |

Source: International Rubber Study Group (IRSG) Vol 65, No 7-9, January-March 2011

FIG. 1

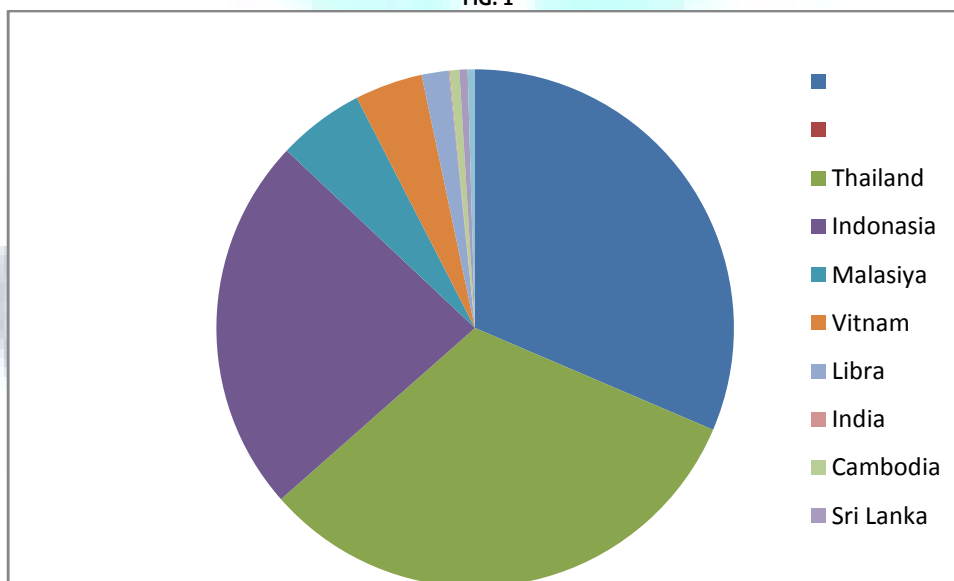


Table 5 shows that the country wise export of natural rubber production in indonica export value 1497 (24 %), whereas malaysian export value 345 tonnes in 5 percent of export vitnam in 4 percent, libra 12 percent, Combida 1 percent, SriLanka 1 percent the digram denote that export based of more than export of thiland.

CONCLUSION

The natural rubber trade underwent several radical transformations over the period 1870 to 1930. First, prior to 1910, it was associated with high costs of production and high prices for final goods; most rubber was produced, during this period, by tapping rubber trees in the Amazon region of Brazil. After 1900, and especially after 1910, rubber was increasingly produced on low-cost plantations in Southeast Asia. The price of rubber fell with plantation development at the same time, the volume of rubber demanded by car tire manufacturers expanded dramatically. Uncertainty, in terms of both supply and demand, (often driven by changing tire technology) meant that natural rubber producers and tire manufacturers both experienced great volatility in returns. The overall evolution of the natural rubber trade and the related tire manufacture industry was toward large volume, low-cost production in an internationally competitive environment marked by commodity price volatility and declining levels of profit as the industry matured.

REFERENCES

1. Akers, C. E. Report on the Amazon Valley: Its Rubber Industry and Other Resources. London: Waterlow & Sons, 1912.
2. Allen, Hugh. The House of Goodyear. Akron: Superior Printing, 1936.
3. Alves Pinto, Nelson Prado. Política Da Borracha No Brasil. A Falência Da Borracha Vegetal. São Paulo: HUCITEC, 1984.
4. AS Mehta, Director (Marketing), JK Tyre And Industries "Imported rubber, a raw material for tyres, is of better quality and cheaper than domestic rubber." . Business outlook India 17 September 2011.
5. Babcock, Glenn D. History of the United States Rubber Company. Indiana: Bureau of Business Research, 1966.
6. Barham, Bradford, and Oliver Coomes. "The Amazon Rubber Boom: Labor Control, Resistance, and Failed Plantation Development Revisited." *Hispanic American Historical Review* 74, no. 2 (1994): 231-57.
7. Barham, Bradford, and Oliver Coomes. "Wild Rubber: Industrial Organisation and the Microeconomics of Extraction during the Amazon Rubber Boom (1860-1920)." *Hispanic American Historical Review* 26, no. 1 (1994): 37-72.
8. Barham, Bradford, and Oliver Coomes. *Prosperity's Promise. The Amazon Rubber Boom and Distorted Economic Development*. Boulder: Westview Press, 1996.
9. Baxendale, Cyril. "The Plantation Rubber Industry." *India Rubber World*, 1 January 1913.
10. Blackford, Mansel and Kerr, K. Austin. BFGoodrich. Columbus: Ohio State University Press, 1996.
11. Brazil. Instituto Brasileiro de Geografia e Estatística. Anuário Estatístico Do Brasil. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1940.
12. Dean, Warren. *Brazil and the Struggle for Rubber: A Study in Environmental History*. Cambridge: Cambridge University Press, 1987.
13. Drabble, J. H. *Rubber in Malaya, 1876-1922*. Oxford: Oxford University Press, 1973.
14. Firestone, Harvey Jr. *The Romance and Drama of the Rubber Industry*. Akron: Firestone Tire and Rubber Co., 1932.
15. Kishore, A part time blogger, Word Press Developer and the Author of this blog, *Rubber Cultivation in Malaysia*, on February 3, 2010
16. M Sarita Varma the Financial Express, Saturday, Thiruvananthapuram, Jul 30, 2011
17. Santos, Roberto. *História Econômica Da Amazônia (1800-1920)*. São Paulo: T.A. Queiroz, 1980.
18. Schurz, William Lytle, O. D Hargis, Curtis Fletcher Marbut, and C. B. Manifold. *Rubber Production in the Amazon Valley* by William L. Schurz, Commercial Attaché, and O.D. Hargis, Special Agent, of the Department of Commerce, and C.F. Marbut, Chief, Division of Soil Survey, and C.B. Manifold, Soil Surveyor, of the Department of Agriculture. U.S. Bureau of Foreign and Domestic Commerce (Dept. of Commerce) Trade Promotion Series: *Crude Rubber Survey: Crude Rubber Survey: Trade Promotion Series*, no. 4. no. 28. Washington: Govt. Print. Office, 1925.
19. Sheela Thomas, Chairperson, *The demand-supply gap may narrow by 2015 due to increase in tapping. But it will widen by 2020.* Business outlook India 17 September 2011.
20. Shelley, Miguel. "Financing Rubber in Brazil." *India Rubber World*, 1 July 1918.
21. The Hindu, Online edition of India's National Newspaper, Sunday, May 15, 2011

QUALITY IMPROVEMENT IN FREE AND OPEN SOURCE SOFTWARE PROJECTS

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ABSTRACT

Free and Open Source software has had major impact on the computer industry. Free and Open Source software or FOSS allows the different groups to share their source code. Open source projects are developed by students as well as developers. Some of the best examples are MySQL, relational database, the Apache Web Server and the Sendmail mail transport agent. It has made life easy enabling us to develop applications pertaining to our requirements. We can use other applications by modifying their basic codes, thus enabling power into our hands. There is a scope in developing applications based on cyber security. It is easier and faster to process information. The sudden success and major adoption of this new and innovative software development strategy has raised many questions, attracted the interest of academics in a variety of disciplines and promoted interdisciplinary research. Licensed software guarantees unrestricted use, access to the source code, and the right to modify and to distribute source code. Free Software is associated with a strong philosophical focus on freedom, adherents of the open source movement stress features of the software, such as high quality. FOSS is now used in many areas, such as the Internet.

KEYWORDS

FOSS, MySQL, source code, Apache, Web Server, Send mail.

INTRODUCTION

FOSS is a combination of ideas of communities which cooperatively develop and share software and its source code can be traced back several decades to the origin of the modern computers. FOSS is a license model for software distribution. Unlike traditional software, this is inherently associated with the protection of proprietary rights. FOSS encompasses a class of licenses which give the user a number of rights and permissions. A FOSS development tool has led to the production of software of significant quality and functionality. There is growing interest in understanding and utilizing the process underlying FOSS development. Various FOSS applications such as Apache and Linux have attained major market share and often dominate their product categories. Major players in the IT sector such as IBM & HP have invested billions of dollars in FOSS development. Furthermore companies like Red Hat which commercialize Linux have attained considerable profit. The collaborative innovation process employed by FOSS projects is often seen as a major organizational innovation. In recent years new attention has been given in the literature to the identification of new processes in software production and other areas of technology that allow organizations to cope with rapid change

QUALITY IMPROVEMENT IN FOSS PROJECTS

The measurement of quality cannot directly be applied to FOSS projects which usually do not have an explicit design or written specifications. Nevertheless, the idea of fitness for purpose applies to any product including FOSS. Many different factors have to be taken into consideration for quality. After all, users have to download and install FOSS themselves and they will usually choose software which fulfils their needs and quality expectations. There are many approaches to quality improvement. The predominant view of quality improvement is process thinking. A high quality product can be created through a high quality process. Quality and productivity increase as 'process variability' Quality improvement can only be achieved in a company through the participation of everyone in the workforce. This view is the compatible with process improvement which takes all aspects of the process into account, including developers and other people participating in the development process. Process improvement view with the aim to find problems with processes employed by FOSS projects to identify ways to improve there process and to find best practices. There are many FOSS projects which have attained significant popularity and quality. There is also growing literature that empirically backs up the anecdotal evidence that FOSS is of higher than expected and there are other empirical studies which show that FOSS is comparable or better than proprietary, closed source software with regards to various quality factors. However these studies have to be regarded with some caution. First, it is not clear what software could act as a basis for comparison. Second, it is easy to misinterpret a given indicator. For example, a high number of reported defects can either indicate buggy and low quality software, but is could also mean that the software is rigorously tested. Finally code quality is only one measure of quality and there are other areas in which FOSS projects do not outperform closed source applications, such as usability.

QUALITY PROBLEMS

The qualities problems that have been identified are yet to be solved in the FOSS community are

- 1) **Unsupported code** : one of the unsolved problems is how to handle code that has previously been contributed but which is now unmaintained. A contributor might submit source code to implement a specific feature to an obscure hardware architecture. As changes are made by other developer, this particular feature has to be updated so that it will continue to work. Unfortunately, some of the original contributors may disappear and the code is left unmaintained and unsupported. Lead developers face the difficult decision of how to handle this situation.
- 2) **Configuration management**: many FOSS projects offer a high level of customization. While this gives users much flexibility, it also creates problems with testing. It is very difficult or impossible for the lead developer to test all combinations so only the most popular configurations tend to be tested. It is quite common that, when a new release is made, users report that the new version broke their configuration.
- 3) **Security updates** : updates in many cases they are made in a timely manner but some
- 4) **Users do not know to report bugs** as more users with few technical skills use FOSS, developers see an increase in useless bug reports. In many cases users do not include enough information in a bug report or they file duplicate bug reports. Such reports take unnecessary time away from actual development work. Some projects have tried to write better documentation about reporting bugs but they found that users often do not read the instructions before reporting a bug.
- 5) **Attracting volunteers**: a problem some projects face, especially those that are not very popular, is attracting volunteers. There are usually many ways of contributing to a project, such as coding, testing or triaging bugs. However, many projects only find prospective members who are interested in developing new features. Few contributors are interested in helping with testing or triaging bugs. As a result, developers have to use a large portion of their time for tasks other people could easily handle.
- 6) **Lack of documentation**: it is possible that the previous problem is related to the lack of documentation. Volunteers may want to contribute in an area but they might not know how to start. Little help is given to prospective contributors and almost no documentation exists. The lack of developer documentation also implies that there is no assurance that everyone follows the same techniques and procedures.
- 7) **Problems with coordination and communication**: in some projects, there are problems with coordination and communication which can have a negative impact on project quality. Sometimes it is not clear who is responsible for a particular area and therefore bugs cannot be communicated properly. There may also be duplication of efforts and a lack of coordination related to the removal of critical bugs.

PROBLEMS WITH THE FOSS

The different problems identified from the traditional development which are most commonly cited

- FOSS systems are built by potentially large numbers of volunteers
- Work is not assigned; people undertake the work they choose to undertake.
- There is no explicit system-level design, or even detailed design.
- There is no project plan, schedule or list of deliverables.

RELEASE MANAGEMENT IN FOSS

Release management in FOSS is an area which is largely unexplored. FOSS is characterized by a highly iterative development model in which new development releases are made available very frequently. The aim of the release approach is to gather feedback early and it allows the community to influence the direction of a project. The three types which have been identified are: development releases aimed at developers interested in working on the project or experienced users who need cutting edge technology major user releases based on a stabilized development tree these releases deliver significant new features and functionality as well as bug fixes to end user and are generally well tested minor releases as updates to existing user releases for example to address security issues or critical defects since developers are experts development releases do not have to be polished and are therefore relatively easy to prepare minor updates to stable releases also require little work since they usually only consist of one or two fixes for security or critical bugs on the other hand a new major user release requires significant efforts the software needs to be thoroughly tested, various quality assurance tasks have to be performed, documentation has to be written and the software needs to be packaged up in terms of release authority, it can be observed that major new user releases are typically performed by the project leader or a dedicated release manager where as development and minor user releases can also be prepared by a core member of the development team this again shows the significance that user releases have

| Project | Version control system |
|----------|------------------------|
| GCC | SVN |
| GNOME | CVS, SVN |
| Nano | CVS |
| Synaptic | Bzr |
| X.org | git, SVN |

Version Control Systems used by some Projects

PREPARATION OF STABLE RELEASES

The act of preparing a stable release for end-users is a complex set of tasks in which all developers of a project have to work together to deliver a high Quality product. While the specific release approach may differ from project to project a common pattern has been identified: staged progress towards a release where each stage is associated with increasing levels of control over the changes that are permitted. These control mechanisms are usually known as freezes since the development is slowly halted and eventually brought to a standstill.

The role of the release manager is diverse and demanding, because they have to interact with a large number of different people, understand technical issues but also know how to plan and coordinate. The following taxonomy of skills and characteristics which release managers need has been developed.

1. Community building: showing people that their input is useful. Release managers also need respect in the community in order to perform their work.
2. Strong vision: showing developers in which direction the project should be moving.
3. Discipline: saying 'no' Release managers have to focus on an overall goal and can not make everyone happy.
4. Judgment: gauging the risk and possible impact of a particular change.
5. Attention to detail walking through every line of code that has changed.
6. Good communication: writing release notes, asking for feedback, interacting with users.
7. Management skills: talking to people, organizing, planning, making sure that all the little things happen.

COMPARISON OF PROPRIETARY SOFTWARE AND FOSS

Quality in either FOSS or closed proprietary software is necessarily higher. However many participants felt that FOSS had a higher potential to achieve greater quality and can react faster to critical issues such as security bugs. There are various reasons for this

- 1) Its open nature promotes more feedback, which can be used to improve the software. Feedback can either be given in the form of bug reports or feature requests.
- 2) Motivation was higher in FOSS projects because volunteers could work on whatever they wanted. Open collaboration with other developers and input from others also increase the motivation to work on a piece of software. It is found that this increased motivation had positive effects on the quality of the software.
- 3) FOSS could attract better human resources because of its distributed nature. FOSS can benefit from a wider range of expertise and knowledge than a traditional software company can usually bring to bear on a problem. A downside of community projects compared to commercial development was the lack of resources and infrastructure.
- 4) It is very hard to compare open and closed development models because of the opposing philosophy of these models. Since closed source companies often hide their defects and source code, it is hard to make a comparison.

DEVELOPMENT AND QUALITY PRACTICES

One of the surprising insights gained was how greatly development practices and processes differed across projects. The identified practices can be categorized broadly into the following three areas

INFRASTRUCTURE

FOSS projects rely heavily on infrastructure that allows distributed development and collaboration. The important parts are

- 1) Bug Tracking System: These are used to capture feedback from users. They are often used to store both actual bug reports as well as feature requests
- 2) Version Control Systems: - These allow multiple people to work on the same code base concurrently and keep track of who makes which changes.
- 3) Automatic Builds: - These make sure that the newest code in the version control system still builds. The test builds can be done on a number of different hardware or software environments.
- 4) Mailing Lists: - Used for communication, both between developers and users.

PROCESSES

Foss development follows many processes but a large number of them are not documented anywhere – developers adhere to them implicitly.

- 1) Joining: projects require prospective members to follow specific, mostly undocumented, procedures in order to join a project. These procedures vary considerably across projects.

- 2) Release: different release policies are employed by projects but many follow freeze stages. A feature freeze is the point when no new features are to be incorporated into the code base but there is sufficient time to fix bugs.
- 3) Branches: these are used to differentiate between versions of a program, for example by having a stable and a development branch. New development tools which make branches easier to deal with, such as Arch, have had a significant impact on the development process.
- 4) Peer review: typically changes made to the version control system are reviewed by members of the projects, through in most cases; this form of peer review is not very well formalized. Developers hope that other project participants will look at their changes but there is often no assurance that this is the case in reality.
- 5) Testing: in order to ensure that a new release fulfils the standards of a project and that it has no major regressions i.e. bugs that affect functionality that previously worked), some projects have testing check lists. These check lists contain the most important functions and briefly describe how they can be tested. A release is only made when testers on different platforms have gone through the check list and have confirmed that the new version does not display major show-stoppers or regressions.
- 6) Quality assurance: some organize bug days or bug squashing parties to triage their outstanding bugs. During this work, duplicate bug reports are marked as such, old bugs are reproduced, and bugs are also fixed.

DOCUMENTATION

Contributed source code was checked by the lead developer of a project and then rejected because it did not confirm to the coding style, a style that was not clearly documented anywhere. However, some projects, mainly those that have a large number of contributors, have good documentation.

- 1) Coding styles: documentation aimed at developers which describes the style which should be used for the source code.
- 2) Code commit: documentation which describes when and who can make changes in project's version control system.

CONCLUSION

A FOSS project has been substantial development in a number of areas. Since large corporations and others increasingly depend on FOSS. FOSS production has traditionally been perceived as unstructured and unorganized and the majority of FOSS projects consist of voluntary contributors. Corporations can rely on the output of FOSS projects based on quality and study aspects of quality improvement and find ways to ensure high levels of quality in the output of FOSS projects. Release management has been chosen as the specific focus. Time based release strategy as a novel concept of release management worth investigation-in-depth. In contrast to traditional software development which is feature-driven, the goal of time based release management is to produce high quality release according to specific release interval. It is found that feature based release management in FOSS projects is often associated with lack of planning, which leads to problems, such as delays and how levels of quality. Since the FOSS projects consist of volunteers, it is difficult to perform planning because there is no guarantee that features will be ready in time for the next release.

FOSS methodology has been used to develop a significant body of software some with high quality, there have been major changes in the expectations of FOSS in recent years. FOSS is no longer seen as hobby projects done for fun, but significant economic factors are involved now. This increased economic interest in FOSS with millions of users and thousands of organizations relying on this collaboratively developed software has led to new requirements, such as the need for sustainability and reliance

REFERENCES

- 1) Aberdour ,M.(2007).achieving quality in open source software.IEEE software
- 2) Amor, J.J., J.M.Gonzalez-Barahona, G. Robles, and I. herreiz (2005).
- 3) Baetjer, H. (1997). Software as Capital. Los Alamitos, CA: IEEE Computer Society Press.
- 4) Baldwin, C.Y. and K.b Clark (1997). Managing in an age of modularity. Harvard Bussiness Review 75(5), 84-93.
- 5) Benkler, Y. (2002). Coase's penguin, or, Linux and the nature of the firm.
- 6) Cofin J (2006) : Analysis of open source principles in diverse collaborative communities
- 7) Daniel, S. L and K J Steward (2005). Cohension, structure and software quality observation. In E.Damiani, B. Fitzgerald, W.Scacchi, M. Scott and G.Succi (Eds), Open Source Systems, Volume 203
- 8) Eisenhardt, K.M. (1989). Building theories from case study research Academy of Management Review 14(4)
- 9) Gacek, C and B. Arief (2004). The many meanings of open source, IEEE software 21(1), 34-40
- 10) Halloran, T.J. and W.L. Scherlis (2002). High quality and open source software practices. In proceedings of the 2nd workshop on Oen Source Software Engineering, Orlando, FL, USA, ICSE.
- 11) ISO (1991). International Standard ISO/IEC 9126, Information Technology – Software product evaluation – Quality characteristics and guidelines for their use. Geneva : International Electro technical Commission.
- 12) Johnson, K (2001). A descriptive process model for open-source software development. Master's thesis, Department of Computer Science, University of Calgary.
- 13) Kelty, C. (2005). Free science. In J. Feller, B. Fitzgerald, S.A. Hissam
- 14) Measuring libre software using Debian 3.1 (Sarge) as a case study. Upgrade Magazine.
- 15) Yale Law journal 112(3), 369-446.

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ABSTRACT

The relationship between information and communication technology (ICT), productivity and economic growth has been established at the aggregate level. However, the mechanisms by which the effect occurs at the enterprise level are still unclear. Statistical agencies have developed indicators of the ability of firms to use ICT (e.g. infrastructure of ICT, diffusion of specific technologies) and some indicators of the actual use (e.g. goals and frequency of use). The next step is to produce estimates of the impact of the use of ICT. A recent study by the OECD sought to address this question using aggregate data for OECD member countries and micro data for India and the United States. A second phase of the OECD study will consist of a series of projects involving two or three countries, achieved through new micro obtained recently for about a dozen countries. This paper describes one of these projects, to assess the impact of ICT in Denmark, Japan and the United States. Each country has recently collected new data on the use of ICT at the company and conducted a preliminary analysis of them. In addition, each country differs from others in its market structure and its institutional structure. The next phase of the project is to develop estimates of the effect of the use of ICTs based on this new micro and to make and test hypotheses that reflect differences in market structures and institutional structures of these countries.

KEYWORDS

Economic growth, information and communication technology (ICT), micro data, productivity.

INTRODUCTION

The development of statistics on information society - seen as a structured and coherent statistical framework - has been on-going since the mid-ninety. The statistical framework can be described as a set of building blocks that provide flexibility and adaptability. At present, the international statistical framework developed by OECD member countries include the following categories: 1) investment in information and communication technology (ICT), 2) infrastructure of ICT, 3) sector ICT, 4) access to ICTs and use them by households and individuals, 5) access to ICTs and use them by companies, 6) access to ICTs and use them by the public sector, 7) e-commerce and 8) skills and level of education.

A feature of statistics on information society inherent the constant evolution of ICTs and their dissemination in all sectors of the economy and all segments of societies is that instead of being fully developed, the field of statistical observation is in constant revision. Existing indicators are out-dated as the needs of users of ICT change and should be replaced with new indicators reflecting new technologies to continue to meet the needs of users. A recent example is the adoption of the eEurope 2005, making the statistical offices of the Member States of the European Union challenged to develop indicators related to areas of public interest, such as e-learning (e-learning) and telehealth (or e-health). If I examine the statistics to monitor the use of ICT, initial statistical indicators developed were designed to measure the ability (readiness) to use ICT. At present, the statistical coverage, both in terms of indicators that countries, is good enough for the capacity (infrastructure, penetration) and for the Use (purpose, frequency, barriers, etc.). I am now entering the phase of compiling statistics on the impact of the use of ICT.

Measuring the electronic economy touches nearly every aspect of the economy. No statistical agency has the resources and expertise needed to independently solve all the problems of measurement and to fill any information gaps associated with measuring the electronic economy. Therefore, collaboration between the various statistical agencies is needed. This article describes some initiatives to develop measures of the impact of the use of ICT on business, launched by the statistical offices of Denmark, Japan and the United States. It outlines a collaborative project undertaken as part of the second study based on micro data ICT and growth collected by the OECD.

The article describes the collaboration between Denmark, Japan and the United States. These three countries differ in their geography, as well as the size of their population and economy. Denmark is a small European economy, but it has been, within the European Union, a leader in respect to the collection of data on the use of ICT by businesses and survey served as a model to the survey type adopted by the OECD. Japan, meanwhile, is a large economy and a major producer of ICT. Finally, the vigorous growth of the U.S. economy in the late ninety, growth largely attributed to ICT, has led the world to study the relationship between ICT and growth (e.g. Colechia and Schreyer, 2001; Bartlesman et al., 2002). The common thread between these three countries, and their right to participate in this collaborative study and based on micro data, is that all three come to collect detailed data on the use of ICT in one or more important areas of their economies.

1. MODES OF ACTION OF ICT AND PRODUCTIVITY GROWTH COMPANIES

Computers may affect productivity and business growth at least two ways. They can be used directly as input in the production process, so as a particular form of capital. This is the approach adopted by the authors of numerous studies conducted at national or industry, and studies at the institution or company (e.g., McGuckin et al. 1996, Brynjolfsson and Hitt, 2000, Dunne et al. 2000; Motohashi, 2001; Atrostic and Nguyen, 2002). Consider the case of steel. In modern steel mills, computers and automated processes are used to control production processes. Many business processes are computerised support. By example, computers can be used to maintain a database of customers, shipments, for accounting or payroll. Computers can replace paper-based systems without the need to change the underlying business processes. But computers can also be used to organise and simplify the underlying business processes. Put in networks, computers facilitate the standardisation of business processes such as order taking, inventory control, accounting services or monitoring of deliveries of products and become operational processes (e-business processes; Atrostic, Gates and Jarmin, 2000). These electronic processes are in place over computer networks that allow internal or external to easily exchange information from the process. Deliveries can be tracked live, stocks can be monitored automatically and suppliers warned when stocks reach a present level. The adoption of electronic business processes and automates links the existing business processes. They can also change the way business lead not only the process but also their business. The growing interest in supply chains illustrates the power what do computers affect the productivity growth outside the manufacturing sub-sectors that produce them. These effects occur; the least thinks it through organisational change. Many basic processes related to the supply chain are cited frequently as an example of successful implementation of electronic business processes, which, in turn, are supposed to move the location of the process to the participants in the supply chain. Brynjolfsson and Hitt (2000) argue that the effects of organisational changes may rival those of changes in production processes. From this perspective, computer networks represent a technology that improves productivity.

Although the authors of theoretical papers on ICT emphasise that this is an input multi-faceted, most are focus on the industry producing the ICT and on relatively simple indicators of the possible use of ICT by businesses. Relatively few studies (e.g. Greenan and Mairesse, 1996 for France, Motohashi, 2001 for Japan, Atrostic and Nguyen, 2002 for the United States; Bartlesman et al., 2002 for the comparison between the United States and India) is to determine how companies use ICT. Many studies focus on a single use of ICT, that is to say e-commerce.

2. MEASUREMENT OF COMMERCE TO THE EXTENT OF ELECTRONIC BUSINESS PROCESSES

By the mid-ninety, electronic commerce, and its projected growth and its expected influence on future arrangements doing business, especially on existing cross-border trade, have generated enormous interest. Therefore, in 1998, the OECD has been given the mandate of defining and measuring e-commerce (OECD Ministerial Conference, Ottawa). In 2000, OECD member countries have ratified two definitions of electronic transactions (electronic orders) based on a narrow definition and a broader definition of infrastructure communication. As defined in the OECD, the method by which the order is placed or received, the method of payment or the delivery circuit, determines whether the transaction is an Internet (running on the Internet) or an electronic transaction (conducted over computer networks). It is clear that the choice of the definition used has a strong influence on international comparisons of the level of electronic commerce (see Figure1). The variation in definitions used and the field observation investigation of a country to another makes it difficult to compare the electronic business. However, Figure1 shows that, until now, e-commerce is still underdeveloped in many countries and has not experienced the expected growth, so that one wonders whether it is justified focus on the study.

TABLE 1: ESTIMATES OF ELECTRONIC TRADING ON THE WEB AND INTERNET (PERCENTAGE OF SALES OR TOTAL REVENUES)

| | | | |
|---------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Expanded | | 2.04% (UK, 2000) | 5.83% (UK, 2000) |
| Business sector | | 0.40% (Canada, 2000) | |
| | | 0.40% (Australia, 1999-2000) | |
| Business sector (excluding finance and insurance) | 0.90% (Denmark, 2000) 0.70% (Finland, 2000) | 0.94% (UK, 2000) | 5.95% (UK, 2000) |
| Retail business | 0.10% (France, 1999) | 1.04% (UK, 2000) 0.40% (Canada, 2000) 0.30% (Canada, 1999) | 1.39% (UK, 2000) 0.91% (USA, 1st tr. 2001) 0.70% (USA, 1st tr. 2000) 0.63% (USA, 1st tr. 1999) |
| | Commerce on the web | Internet commerce | E-Commerce |
| | | | Expanded |

Source: OECD, Science, Technology and Industry Scoreboard 2001

Meanwhile, several studies reported in this volume, indicated consistently that the use of computers was associated with growth strong economic, especially the United States in the late ninety. How do computers influence their economic activity? It seems unlikely, until now, their main effect results from the relatively small number of activities related to electronic commerce over the Internet or other networks. Businesses use computers and computer networks for many other reasons, such as production management, advanced supply chain execution and support operations such as accounting. Yet while I know very little about these uses of computers, policy makers, scientists and statistical agencies have focused directly on the measurement of electronic commerce. This section describes different approaches taken by the offices Statistics Denmark, Japan and the United States to measure the impact of computers.

2.1 Denmark

Since 1998, Denmark's Statistik performs an annual survey on the use of ICT by businesses using a questionnaire almost identical to the standard questionnaire approved by the member countries of the OECD in October 2001. The questionnaire aims to provide guidelines for the measurement of indicators of the use of ICT, Internet and electronic commerce. It includes separate modules, independent, to make it flexible and adaptable to a rapidly changing environment. While the use of modules 'core' allows for comparable measures at international level, other modules can be added to meet the changing needs or the needs of a country's policy in this area. In 2001, Denmark's Statistik has added a module specific integration Internet sales in the ICT systems, the reasoning being that the eventual automation of business processes is the basic element of electronic commerce and the main reason to focus on this issue may affect business organisation and job creation. The results indicate that in Denmark, a company selling its three products or services on Internet sales has included at least one type of ICT system. By integration, it is understood that the receipt of orders through the home page is automatically connected to one or more systems ICT. In all, 25% of companies with sales over the Internet have integrated receipt of orders in systems for order fulfilment, as the production or delivery. The second type of integration is common billing systems (14%) and procurement of new orders for goods from suppliers (6%). In 11% of cases, the integration is other ICT systems, such as reservation systems, mail systems, etc.

2.2 The Japan

In Japan, the METI (Ministry of Economy, Trade and Industry) conducts the annual survey of ICT in the workplace since the seventies. This is an investigation at the company surveyed about 9500 computer users in Japan. The survey questionnaire covers all aspects of this use, the cost of information processing of various types, such as the cost of hardware, software and data processing services, the penetration of computers in the workplace and the conditions for using networks of information processing, etc. As part of the project to increase the statistics on ICT in Japan, the survey was expanded and the 2001 version includes new questions on electronic commerce and electronic business processes. The investigation of electronic commerce is conducted using the definitions of 'large' and 'restricted' Electronic Commerce in the OECD. Data on the use of electronic commerce for each category of purchases and sales between companies and the retail market are collected according to the type of e-business process. The survey indicated that 'placing and receiving orders' is commercial application for the most typical business e-commerce and that 'sales and inventory management' followed. It should be stressed that the business e-commerce includes transactions through EDI networks usual, and that the rate of diffusion of electronic commerce over the Internet among Japanese companies is much lower. The survey shows that e-commerce on the retail market, by the way of the Internet, does not win so popular with companies Japanese. The survey of ICT in the workplace is not only on activities related to electronic commerce and electronic business processes, but also a wide variety of activities related to ICT at the company, such as investment in equipment and software, the use of ICT by employees and use of communication technologies by businesses. However, the survey had to be aligned with the baseline survey on the structure and business activities (EBSA) to study the productivity and use of computer networks. EBSA is the census survey at the company's business covers all enterprises with least 50 employees and a capital of at least 30 million yen. This Inquiry is central to various forms of investigations at the company METI, in the sense that those on specific issues, including the survey of ICT in the workplace, are based a list of survey companies in the EBSA. The latter, itself, to provide data on the performance of firms, the activities of globalisation, R&D and other variables related to innovation.

2.3 The United States

The U.S. Census Bureau has collected data at the institutional level, on computer networks in American factories. This was done to medium supplement [Computer Network Use Supplement (CNUS)] at the Annual Survey of Manufactures (ASM) in 1999. The CNUS, which was conducted among 50000 institutions, included questions on the use of procurement methods and online ordering, the existence of computer networks, the type of network (EDI, Internet, both), about 25 business processes (such as the procurement, payroll, inventory, etc., conducted over computer networks, 'electronic processes') and use these networks to interact internally or with customers or suppliers of the institution. The CNUS focused on the use of computer networks rather than the existence of computers only. Initial results, based on responses from more than 38000 U.S. factories have been published in a report analytic in June 2001. Detailed tabulations were released in March 2002 (for the two broadcasts, visit www.census.gov/estates). As the CNUS data were collected as a supplement to the ASM, I can link to current and past data on the same establishments collected in the ASM and the 1999 Census of Manufactures (CM) in 1997 and 1992. These couplings can examine the links between the economic behaviour of institutions and their use of computer networks. According to provisional results, in the middle of 2000, manufacturing establishments that responded to CNUS were 'connected' (see Table1). Almost 90% had a computer network. Although more than 80% of responding institutions had Internet access, there are opportunities for further integration of electronic business processes.

TABLE 2: E-DELIVERY AND E-PROCUREMENT TO MID-2000 U.S. INSTITUTIONS MANUFACTURING SURVEY RESPONDENTS CNUS

| Status of e-procurement | Status of e-delivery | | | |
|-------------------------|----------------------|---------------------|--------------------|---------|
| | All establishments | Conducts e-delivery | Doesn't e-delivery | unknown |
| All establishments | 38985 | 12069 | 26462 | 454 |
| Conducts e-delivery | 13233 | 6063 | 7061 | 109 |
| Doesn't e-delivery | 25237 | 5901 | 19203 | 133 |
| unknown | 515 | 105 | 198 | 212 |

Source: Table B Manufacturing 1999 and mid-2000, www.census.gov/estates, 2001

3. OVERVIEW OF NEW ACTION OF ICT AND PRODUCTIVITY GROWTH

In principle, various methods of collecting data on the impact of ICT on growth and corporate performance should be introduced in the coming years. One of them is the enlargement of the survey type using existing modules on electronic business processes or the design of questions about the perceived benefits of using ICT. The reliability of this second option is questionable and one way to do would be to link the survey data on the use of ICT to economic data from other surveys in the company.

As mentioned above, the OECD launched a project of this genre whose report was presented in 2003. This article describes an initiative taken by the statistical offices of Denmark, Japan and the United States to use existing survey data to reach a better understanding of how ICTs affect performance of the company. The project is in the initial phase and the first step was to identify a number of important variables. As the statistics registers used by the three countries are not harmonised, the project is based on an analysis by country. I present below the individual projects and interim results.

3.1 Denmark

Statistics Denmark has developed a database containing data from three statistical registers (see also Appendix for a more detailed description) too namely:

- The database of the 1998 survey on the use of technology information by companies, conducted among 1,832 businesses;
- Statistics on company accounts for 1995 to 1999, covering all companies with more than 10 employees in manufacturing, construction and retail trade;
- The integrated database for the study of the labour market containing detailed information on each employee and his background personal.

The project aims firstly to profile companies that can be considered as representing the first group of users Internet, Intranet and Extranet and engaged in electronic commerce. Is it possible to identify links between the use of Internet, Extranet and E-commerce on the one hand, and the performance of the company or employee characteristics, on the other hand, at the micro level? The absence data on ICT investments and the need of having to use instead of data on the use of the Internet or an extranet as indicators of e-maturity of the company certainly hinders the Danish project. The work done so far has been to establish a database longitudinal covering the period from 1995 to 1999. These studies point to coupling starting at the enterprise level, data collected from 1832 companies that participated in the survey on the use of ICT in 1998 and those of the register statistics on company accounts covering the period from 1995 to 1999. Of 1832 companies, 853 in the registry statistics on company accounts for 1995-1999, as these cover only manufacturing, construction and retail trade. Analytical work has not started yet, but Table 2 gives an idea of information that could be extracted from this database.

3.2 The Japan

The data on computer networks for the analysis of productivity in Japan resulting from the combination of the survey of ICT in the workplace and the baseline survey on the structure and business activities (EBSA). However, the relationship between these two data sources is quite complex. EBSA is a large-scale survey covering all companies that meet a certain threshold for inclusion so that even longitudinal data covering a sufficient units for analysis. Every year it covers about 30000 companies, and panel data covering the period 1994 to 1998, cover approximately 18000 units observed. However, the most recent data available were those collected in August 2002 for 1999 and those collected in 2000 will be available in late 2002. The survey questionnaire covers a wide range of business activities, such as R&D, production and overseas outsourcing. The data collected include information from financial statements that can make calculations of productivity, as well as data on computer networks for the years 1991, 1994 and 1997. Therefore, it is possible to analyse the use of computer networks to the enterprise level using only data from the EBSA. Motohashi (2001) examines the impact of the use of computer networks by type of e-commerce based on data cross-EBSA 1991.

TABLE 3: PERCENTAGE GROWTH FROM 1995 TO 1997 AND FROM 1997 TO 1999 BY SECTOR AND USE OF INTERNET; DENMARK

| Industry | | Number of companies | Growth in value added (%) | | Growth in terms of full-time employment (%) | | Growth of value added per job (%) | |
|-----------------|----------------|---------------------|---------------------------|--------------|---------------------------------------------|-------------|-----------------------------------|--------------|
| | | | 95≥97 median | 97≥99 median | 95≥97 median | > 99 median | > 97 median | 97≥99 median |
| Manufacturing | Intranet 1997? | | | | | | | |
| | - Intranet | 568 | 13.2 | 4.3 | 3.5 | 0.0 | 7.0 | 5.0 |
| | + Intranet | 99 | 15.1 | 8.7 | 7.1 | 2.3 | 7.8 | 4.2 |
| | total | 667 | 13.8 | 4.8 | 3.8 | 0.0 | 7.1 | 4.8 |
| Construction | Intranet 1997? | | | | | | | |
| | - Intranet | 114 | 21.8 | 4.3 | 13.5 | -1.1 | 6.4 | 7.9 |
| | + Intranet | 11 | 29.8 | 24.0 | 16.7 | 10.9 | 7.9 | 4.4 |
| | total | 125 | 22.3 | 6.7 | 14.0 | -0.7 | 6.7 | 6.9 |
| Retail business | Intranet 1997? | | | | | | | |
| | - Intranet | 55 | 9.0 | 11.8 | 10.2 | -1.0 | -0.2 | 13.9 |
| | + Intranet | 6 | 22.1 | 7.8 | 6.4 | 0.6 | 15.4 | 4.3 |
| | total | 61 | 10.5 | 11.8 | 9.5 | 0.0 | 0.1 | 12.5 |
| Total | Intranet 1997? | | | | | | | |
| | - Intranet | 737 | 14.4 | 5.2 | 5.3 | 0.0 | 6.4 | 5.9 |
| | + Intranet | 116 | 17.5 | 10.0 | 7.8 | 3.0 | 7.9 | 4.3 |
| | total | 853 | 14.5 | 5.6 | 5.6 | 0.0 | 6.4 | 5.7 |

Source: Denmark's Statistik; ICT impacts database

The survey of ICT in the workplace provides more detailed and more up to date on activities at the enterprise level. Data from this annual survey are collected for 2000 already available, including detailed data on investment in ICT and electronic business processes, as mentioned in Section 2.2. However, as the sampling frame was changed considerably for the 2000 survey and the construction of panel data is difficult. The number of units observed in the 2000 survey of about 5000, but the coupling to the data of the previous year produces only 1 000 or less observations. If I couple the data with those of the panel of the EBSA for 1994 to 1998, the number of firms observed to almost 3000. Therefore, data from the survey of ICT in the workplace can be used to complement the panel data from the EBSA in that they provide additional detailed information and current technologies information.

In this paper, I present some elements of the relationship between the use of computer networks and corporate performance. To assess the relation of cause and effect between the use of technology Information and business performance, I use data EBSA panel covering the period from 1994 to 1998. (The survey of ICT in the workplace of 2000 provides data on the variables of use of ICT, but not on performance variables.) The results show that a company using system obtains ICT in general better results than a company not using ICT, both 'before' that 'after'. In this sense, it is impossible to assess the relationship of cause and effect from this table. In addition, it should be noted that the results for the applications of ICT for a specific sector, such as computer-aided design/computer-aided production (CAD/CAM) may reflect the effect of industry rather than the effects of the use of ICT. The next step should be a regression analysis taking into account the effect of the industry.

3.3. The United States

The results presented here are calculations made by Nguyen and Astrostic 2002 based on data collected from U.S. manufacturing establishments that responded to CNUS of 1999 (Table 3). These results are unweight and do not reflect the entire U.S. manufacturing sector, the totals are more likely to be representative of large manufacturing establishments (see Manufacturing 1999 and mid-2000 to www.census Government/estates). In addition, data from CNUS are coupled to the observations made for the same institution during the Annual Survey of Manufactures for 1999 and in the Economic Census for 1992 and 1997. Table 3 shows that the productivity of labour in the manufacturing establishments with U.S. computer networks was, on average, 30% higher than that of institutions with no network. Facilities with a network were significantly larger than those not being so.

TABLE 4: DEFINITIONS OF VARIABLES AND MEDIUM-SIZED SAMPLE OF INSTITUTE OF THE AMERICAN MANUFACTURING, 1999

| Variable | Definition* | Average Settlements | |
|--------------------------|-------------------------------------------------|---------------------|------------------|
| | | With networks | without networks |
| Labour productivity | Total value of shipments / Total employment | 284.79 | 222.39 |
| Labour productivity Jobs | Value Added / Total Employment Total employment | 133.65 | 103.29 |
| | | 235.70 | 118.64 |

Source: Atrostic and Nguyen (2002) based their calculations on data from the U.S. CNUS matched to the ASM.

The regression results by ordinary least squares (OLS) in Table 4 illustrate the effect of various control variables, corresponding to other facility characteristics (columns 1 to 3) and conditions previously existing in the institution (column 4). In theory, the gross output is the preferred measure of productivity of labour. Estimates based on this measure (columns 1 and 3) show that the productivity of labour in American manufacturing plants with networks is about 5% higher than that of institutions with no network. Estimates based on the measurement of labour productivity based on value added (column 2) show that productivity is about 11% higher for institutions with networks. These OLS estimates are robust to other specifications of the production function of Cobb-Douglas behind the model.

TABLE 5: RESULTS OF REGRESSION OF LABOUR PRODUCTIVITY; UNITED STATES DEPENDENT VARIABLE; LABOUR PRODUCTIVITY (T STATISTICS IN PARENTH)

| Independent variables | OLS estimates | | | Two-stage estimates |
|-----------------------------|-------------------|-------------------|-------------------|---------------------|
| | Gross output | Added value | Gross output | Gross output |
| | (1) | (2) | (3) | (4) |
| Constant | 2.678 (159.95) | 3.736 (144.57) | 2.830 (119.48) | 2.357 (32.50) |
| CNET | 0.046 (5.76) | 0.105 (7.85) | 0.033 (3.00) | (-) |
| Pr (CNET) | (-) | (-) | (-) | 0.505 (6.41) |
| SKILL | 0.043 (12.28) | 0.084 (14.12) | 0.039 (8.40) | 0.037 (8.12) |
| Log (K/L97) | 0.091 (39.86) | 0.186 (49.91) | 0.088 (28.81) | 0.084 (26.61) |
| MULTI | 0.114 (19.30) | 0.236 (24.17) | 0.101 (12.58) | 0.039 (3.31) |
| Log (M / L) | 0.515 (206.74) | (-) | 0.505 (148.93) | 0.506 (150.48) |
| Size 2 | -0.055 (7.92) | -0.049 (4.13) | -0.052 (5.52) | -0.047 (5.09) |
| Size 3 | -0.084 (12.43) | -0.077 (6.72) | -0.079 (8.88) | -0.073 (8.35) |
| Size 4 | -0.092 (11.25) | -0.097 (6.96) | -0.083 (7.77) | -0.071 (7.37) |
| Size 5 | -0.090 (8.74) | -0.107 (6.19) | -0.070 (5.23) | -0.065 (4.88) |
| Size 6 | -0.017 (1.21) | 0.012 (0.53) | -0.008 (0.460) | -0.004 (0.22) |
| Industry (NAICS 3-digit) | Yes | Yes | Yes | Yes |
| R ² | 0.756 | 0.261 | 0.750 | 0.756 |
| Number of establishments | 29.808 | 29.671** | 17.787*** | 17.787 |

Source: Atrostic and Nguyen (2002) based their calculations on data from the U.S. CNUS matched to the ASM and CM.

NOTE: ** The number of observations in column (2) is smaller than that in column (1) because many institutions have a value of zero.

*** The number of observations in columns (3) and (4) is smaller than in column (1) for two reasons. Several institutions have not answered the question of investment in computers in 1992 used to construct the measure Pr (CNET) in the two-stage regressions of the column. In addition, the measure Pr (CNET) takes into account the condition of the situation so could not be built for existing establishments in 1992 and 1999.

The estimates in column (4) take into account the effect of conditions existing prior to the institution and are based on the predicted probability of having a computer network in 1999 (Pr (CNET)) rather than the existence or absence of a real network in 1999 (CNET). The coefficients variables and Pr CNET (CNET) are

not directly comparable. A way to interpret the two-stage estimates is to compare the effects computer networks on the productivity of institutions at two points for determining the predicted probability of having a computer network. A good example regarding our data is the comparison of institutions located in the 10th and 90th percentile of the estimated probability of having a computer network. (Recall that about 12% of schools in our sample are not equipped with computer network.) The estimated probability that these institutions equip themselves with a computer network (based on the results of probity regression not shown here) are 0.8422 and 0.9671, respectively. Using the coefficient of 0.505 estimated from the probity regression for the variable $Pr(CNET)$ (column 4 of Table 2), I can calculate the expected gap in productivity between the two institutions, namely $0.505(0.9671 - 0.8422) = 0.0631$. The productivity gap means that an institution from the 10th percentile (less likely to have a computer network) to the 90th percentile (more likely to have a computer network) would increase the productivity of its workforce by 631%. Number of studies lead to the conclusion that the estimated effect of IT greatly reduces if one takes into account the conditions prevailing before adoption. But here, the estimate obtained by taking into account the effect of previous conditions is greater than 2 points to that obtained using OLS models.

CONCLUSION

This article provides a description of the first project under which each country is developing an analytical database for matching data from the new survey on the use of ICT to data from business surveys and, where appropriate, with other statistical records. From these databases, calculate basic statistics on the use of ICT. The results show that the most common uses of trade e-business in Japan were to receive and place orders and execute sales (about 20% of businesses reported each of these uses). The results for the United States show that 30% to 33% of U.S. manufacturing establishments were using the applications business e-commerce to make purchases of electronics and electronic delivery. Statistics for the manufacturing of Denmark and Japan will be calculated in the next step. Finally, I will issue a set of assumptions about the utilisation of ICTs and the likely changes as the industry or sector in the three countries. The assumptions are based on summary statistics and comparative differences in market structures and institutional structures of the three countries. For the main hypotheses, I conduct multivariate analysis, as performed regressions for India and the United States whose results were presented in the report of the first study based on micro data of the OECD or the U.S. results presented in this article, so as parallel as possible.

REFERENCES

1. Atrostic, B.K. and S. Nguyen (2002), "Computer Networks in U.S. Manufacturing", Centre for Economic Studies, U.S. Census Bureau, Working Paper, No. 02-01.
2. Atrostic, B.K., J. GATES, R. Jarmin (2000), "Measuring the Electronic Economy: Current Status and Next Steps", Centre for Economic Studies, U.S. Census Bureau, working paper, No. 00-10.
3. Bartlesman, E. A. Bassanini, J. Haltiwanger, R. Jarmin, S. Scarpetta and T.Schank (2002), "The Spread of ICT and Productivity Growth: Is Europe Really Lagging Behind in the New Economy?", OECD, June
4. Brynjolfsson, E. and LM Hitt (2000), "Beyond Computation: Information Technology, Organisational Transformation and Business Performance", Journal of Economic Perspectives, Fall.
5. Colecchia, A. and P. Schreyer (2001), "The Contribution of Information and Communication Technology to Output Growth: A Study of the G7 Countries", unpublished manuscript, OECD, May
6. Danmark's Statistik (2001), Statistiske Efterretninger, Serviceerhverv, 16
7. Dunne, T., J. Haltiwanger and L. FOSTER (2000), "Wage and Productivity Dispersion in U.S. Manufacturing: The Role of Computer Investment", NBER Working Paper, No. 7465.
8. Euroean Commission (2005), eEurope 2005, KOM (2002) 263final Greenan, N. and J. MAYOR (1996), "Computers and Productivity in France: Some Evidence", NBER Working Paper, No. 5836.
9. McGuckin, R., M. Streitwieser and M. DOMS (1996), "The Effect of Technology Use on Productivity Growth", CES-WP-96-2.
10. METI (2002), Survey on ICT Workplace 2001, preliminary report.
11. Motohashi, K. (2001), "Economic Analysis of Information Network Use: Organisational and Productivity Impacts on Japanese Firms", mimeo
12. OECD (2001), "Science, Technology and Industry has Scoreboard". Towards Knowledge based Economy.

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