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Foreword

It is my great pleasure to present before you the current issue of our Research Bulletin. I believe this volume will be of immense help to the researchers and readers in the fields of economics, management and accounting.

Accounting seeks to provide information for economic decision making. The complexity of the modern organisation is a reflection of the increasing sophistication of demands of its clientele and unprecedented technological advancement. The performance of any organization for a given accounting period is measured through matching of revenues earned with the costs incurred. Recent years have seen a tremendous upsurge in the cost and management accounting and these developments have important implication for the academicians as well as for the professionals.

Financial governance helps in knowing whether an organization is managing its resources in a cost efficient manner to demonstrate accountability. The efficiency and effectiveness of an organisation can be measured by examining its activities in different areas. It is true that the social implications of corporate activities are numerous and at the same time the stakeholders are also many. It is, therefore, necessary to structure the annual report carefully to provide relevant information to all concerned so as to reflect corporate performance accurately.

The present volume of the Research Bulletin contains varied topics of interest namely, Banking, Stock Market, Cost Strategies in Industries, Foreign Direct Investment, Corporate Governance, etc.

I am confident that readers will definitely enjoy reading the rich research based contents of it.

CMA Suresh Chandra Mohanty
President
The Institute of Cost Accountants of India

Chairman's Communiqué

I feel privileged to place before you the current issue of the Research Bulletin. The issue presents a panorama of research papers and case studies on Cost, Management and various Finance related issues prevailing in the economy.

Research constitutes the backbone of any socio-economic activities. Our Research Bulletin aims at disseminating research output and providing information about recent developments in the relevant fields; thus, it is very natural to visualise the contents of the bulletin befitting to the need of the society.

The research articles pertain to the major areas like Corporate Governance, Agriculture, Cost Management, MSME, Banking Sector, Capital Market and Sustainability, to name a few. The articles seek to expound the issues and challenges faced by the organisation and efficiently resolving those obstacles through the implementation of competitive measures. Successful operation of any organisation largely depends upon the effective and efficient utilisation of its scarce resources. Proper utilisation and judicious use of resources can make the organisation more competitive.

I would like to thank my fellow members on the Research, Innovation & Journal Committee, esteemed Members of the Editorial Board for their valuable inputs in this current volume of the Research Bulletin, eminent authors and also like to appreciate the timely efforts put in by the officials of Directorate in arranging for the release of the publication and also others who were directly or indirectly involved in this process.

This issue of the Research Bulletin comprises of seventeen articles written by authors of repute. Hope you will find it a valuable acquisition.

With best wishes,



CMA Manas Kumar Thakur
Chairman, Research, Innovation & Journal Committee
The Institute of Cost Accountants of India

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Impact of Operational Efficiency on Overall Profitability- A Case Study of Gujarat Industries Power Company Limited

Amritpal Singh Dhillon

Hardik Vachhrajani

Abstract :

This study applies Karle Pearson's coefficient correlation tool to measure the impact of operational efficiency on overall profitability of Gujarat Industries Power Company Limited, based on published data during 2005-06 to 2010-11. Accounting Ratio i.e. Activity Ratio is a more important source of operational efficiency & overall profitability. Activity ratios include those ratios, which highlight upon to activity and operational efficiency of the business firm. Operational efficiency refers to the profitable, efficient and judicious use of resources (financial) available to an organization in perfect consonance with clearly laid-down financial policies relating to the operation. Using Karle Pearson's coefficient correlation tool, correlation has been calculated & examined that insignificant positive correlation between operational efficiency and overall profitability exists, during research period. 't'-test was applied to accept & reject null hypothesis.

Key Words : *Accounting Ratio Analysis, Operational Efficiency, Overall Profitability, Activity Ratio.*

Introduction :

Accounting ratios reveals the inter-relationship that exists among the different items appeared in the financial statements. Such ratio analysis is a very effective tool and is used extensively since a long past. It is an extremely well-known & widely acknowledged mean of communicating processed information in a nutshell form to the decision takers i.e. management as per its requirement.

Ratio analysis tries to establish the significance of one numerical figure with another numerical figure on the basis of its relationship. No doubt, in today's financial world, ratio analysis is a very vital tool. Through such analysis, one can draw a rough sketch of the financial health, profitability, capital structure, solvency, weakness, etc. of an organization. Whether an organization is financially sound or not, how much shock absorbing capacity it has, whether its prospect is good or bleak that can be adjudged with the help of ratio analysis. Sometimes the tool of ratio analysis is compared with the blood pressure, pulse or temperature of a human being. As a medical expert diagnose the disease and comes to a conclusion as to the health of an individual with the help of such symptoms, similarly a financial analyst makes a critical assessment of an organization's financial health with the help of different ratios. He also suggests for the measures needed to overcome the weakness, if any detected through such analysis. Ratio analysis of an organization's financial statements is of interest to a number of parties, mainly, shareholders, creditors, financial executives etc. Shareholders are interested with earning capacity of the an organization :

Creditors are interested in knowing the ability of an organization to meet its financial obligations and financial executives are concerned with evolving analytical tools that will measure and compare costs, efficiency, liquidity and profitability with a view to making intelligent decisions. Ratios are crucially significant source for management accounting. The significance of ratio analysis lies in the fact that it presents facts on a comparative basis and enables the sketch of inferences regarding the performance of an organization. Ratio analysis is relevant in assessing the performance of an organization in respect of the following aspects:

- Financial position
- Liquidity position
- Overall solvency
- Operating efficiency
- Overall profitability
- Inter organization & inter-department comparison
- Trend analysis for making effective decisions.

Thus, the present study is attempt to measuring of operational efficiency and its impact on overall profitability of GIPCL. It is concluded that there is no significance correlation between operational efficiency and overall profitability of GIPCL.

Conceptual Framework :

How to measure operational efficiency?

A market circumstance that exists when participants can carry out transactions and obtain services at a value that equates reasonably to the actual costs requisite to provide them. An operationally efficient market allows investors to carry out transactions that progress the market further toward the overall objective of prudent capital allocation, without being chiseled down by extreme frictional costs, which would trim down the risk/reward profile of the transaction.

"Operational Efficiency is - what occurs when the right combination of people, process, and technology come together to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level. The end result is that resources previously needed to manage operational tasks can be redirected to new, high value initiatives that bring additional capabilities to the organization."-Ensynchanization"- Ensynch

Operational efficiency yet a dimension of the usefulness of the ratio analysis, relevant from the management's viewpoint, are that it highlights the level of competence & effectiveness in the management and asset utilization. The various activity ratios measure this kind of operational efficiency. In fact, the solvency of an organization dependent upon the sales revenues generated by its assets utilization - total as well as its components. Activity ratios include those ratios, which highlight upon to activity and operational efficiency of the business firm. Operational efficiency refers to the profitable, efficient and judicious use of resources (financial) available to an organization in perfect consonance with clearly laid-down financial policies relating to the operation. In order to examine the efficiency and profitableness in making use of resources as well as the wisdom and farsightedness in

observing the financial policies laid down in this regard, certain ratios are being used and they are collectively called as Activity Ratios or Performance Ratios. It is significant to note that these ratios are always expressed as turnover. All ratios coming into this category are calculated with reference to sales or cost of sales and are expressed in number of times, i.e., rate of turning over or rotation. The following ratios can be calculated to judge the operational efficiency of an organization or the effectiveness of assets utilization.

1. Inventory Turnover -

   This ratio measures how fast the inventory is moving through an organization and generating sales. It is calculated by dividing the cost of goods sold by the average inventories -

   $$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

   $$\text{Average Inventory} = \frac{[\text{Opening Stock} + \text{Closing Stock}]}{2}$$

2. Debtors Turnover -

   A firm sells goods & services on cash or credit basis. When the firm extends credit to its customers, book debts (Debtors or Account Receivable) are created in the firm's books. Debtors are expected to be converted into cash over short period and thus included in current assets. Debtors include the amount of B/R and Book Debts at the end of accounting period. Financial analysts employ two ratios to judge the liquidity of debtors - Debtors Turnover and Average collection period. Debtors Turnover establishes the relationship between credit sales and Average debtors. That is, it measures the number of times the debtors/receivables rotate in a year in terms of sales. It shows how quickly debtors are converted into cash.

   $$\text{Debtors Turnover} = \frac{\text{Credit Sales}}{\text{Average Debtors}}$$

   $$\text{Average Debtors} = \frac{[\text{Opening Balance} + \text{Closing Balance}]}{2}$$

   The purpose of this ratio is to measure the liquidity of the Receivables or to find the period over which Receivables remain uncollected. The second type of the ratio for measuring the liquidity of a firm's debtors is the Average collection period. This ratio is, in fact, interrelated with, and dependent upon, the Receivable Turnover Ratio. Debt collection period is calculated by -

   $$= \frac{\text{Months/Days in a year}}{\text{Debtors Turnover}}$$

3. Creditors Turnover Ratio -

   This ratio is similar to Debtors Turnover. It compares the accounts payable with the total credit purchases. It tries to signify the credit period enjoyed by the organization in paying creditors. Accounts payable comprises of both i.e. sundry creditors and bills payable. It is calculated as follows -

$$\text{Creditor Turnover} = \frac{\text{Net Credit Purchases}}{\text{Average Accounts Payable}}$$

$$\text{Average Payment Period} = \frac{\text{Months or Days in a year}}{\text{Creditors Turnover}}$$

4. Working Capital Turnover -

   This ratio measures the efficiency of the working capital employed. This ratio finds out the relation between cost of sales and working capital. It helps in determining the liquidity of a firm in as much as it gives the rate at which inventories are converted to sales and then to cash.

   $$\text{Working Capital Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Net Working Capital}}$$

   [Net working capital = Current Assets - Current Liabilities]

5. Capital Turnover -

   Sometimes the effectiveness and efficiency of the operations are judged by comparing the sales or cost of goods sold with amount of capital employed and not with assets held in the business, though the expected results is same in both the cases. Capital employed in the business may be classified as short-term & long-term capital or as a working capital & fixed capital or borrowed capital & owned capital. The capital turnover is computed as follows -

   $$\text{Capital Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Capital Employed}}$$

   [Capital Employed = Total Assets - Current Liabilities]

6. Total Assets Turnover -

   Assets are used to generate sales. Therefore, a firm should manage its assets efficiently to maximum sales. The relationship between sales and assets is called assets turnover. The firm can compute total assets turnover simply by dividing sales by total assets.

   $$\text{Total Assets Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Total Assets}}$$

   This ratio shows the firm's ability in generating sales from all financial resources committed to total assets.

7. Fixed Assets Turnover -

   It is used to assess the managerial efficiency with which an organization has utilized its investment in fixed assets and its overall activity. This ratio measures sales/cost of goods sold per rupee of investment in fixed assets.

   $$\text{Fixed Assets Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Net Fixed Assets}}$$

Overall Profitability :

Overall Profitability unlike outside parties which are interested in firm's financial position, the management is constantly concerned about the overall profitability of an organization.

That is, they are concerned about the ability of an organization to meet its long term as well as short-term obligations to its creditors, to ensure a rational return to its owners and secure optimum assets utilization of an organization. This is feasible if an integrated view is taken and all the ratios are taken and considered together.

The operating efficiency of an organization in terms of the efficient utilization of the resources is reflected in net profit margin. It has been observed that although a high profit margin is a test of better performance a low margin does not necessarily imply a lower rate of return on investments/assets turnover. Therefore, the overall operating efficiency of an organization can be assessed on the basis of a combination of the two.

Earning power is the overall profitability of an organization, is computed by multiplying net profit margin and assets turnover. The combined profitability is referred to as earning power/return on assets (ROA) ratio. The earning power of an organization may be defined as the overall profitability of an organization. This ratio has two elements profitability on sales as reflected in the net profit margin, and (ii) Profitability of assets which is revealed by the assets/investment turnover. The earning power or return on assets of an organization can be computed by multiplying the net profit margin and the assets turnover. Thus-

Earning Power = Net Profit Margin x Assets Turnover

$$\frac{\text{Earnings after taxes}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}$$

About Company :

GIPCL was incorporated in 1985 as Public Limited Company under the auspices of Government of Gujarat. The company is occupied in business of power sector i.e. power generation. The total present capacity of GIPCL is 815 Mega-Watt (MW). The company has a vision to transform itself into a national level player in power generation sector. It commissioned its foremost power project; a 145 MW gas based Combined Cycle Power Plant in 1992 at Vadodara. Power generated from this unit is distributed among its promoters in proportion to their original equity holding. The company expanded its capacity and commissioned 165 MW Naphtha & Gas based Combined Cycle Power Plant at Vadodara in 1997 & 250 MW Lignite based Power Plant at Nani Naroli, District Surat in 1999 as Independent Power Producer (IPP) with Power Purchase Agreement (PPA) with Gujarat Urja Vikas Nigam Limited (GUVNL). It also fulfills its requirement from its own Captive Lignite Mines (Mangrol & Vastan) for Surat Lignite Power Plant (SLPP). GIPCL has commissioned 2 x 125 MW SLPP Phase II in 2010. GIPCL also achieved milestone in the field of non-renewable source of energy by commissioning a 5 MW photovoltaic Solar Power Station at Vastan Mines in 2012. Government of Gujarat (GoG) has consented to allot 500 MW Expansion Phase-3 to GIPCL.

During the financial year 2010-11, sales of electrical energy stood at Rs. 1,07,795 lacs for the year as compared to Rs. 93,912 lacs of preceding year. It observed a boost of about 15%. Profit after Tax (PAT) was Rs. 16,295 lacs for the year as compared to Rs. 10,678 lacs of the preceding year. During the year, Gross Block increased from Rs. 1,93,602 lacs to Rs 3.52,656 lacs mainly due to capitalization of new expansion units 3 & 4 at SLPP.

Review of literature :

According to Srinivasan and Murugan(2008),- "A high creditors turnover ratio reveals that the creditors are being paid rapidly thus boosting up the credit worthiness of an organization. A very low ratio may signify that firm is not taking full advantage of credit facilities allowed by the creditors."

Andreas Dietrich and Andreas Mattig (2008) -"This paper proposes a link between the two concepts, using market maturity as intermediate. The fundamental argument is that the degree of structural transform dependency is positively mediated by financial market maturity. Utilizing a cross-country dataset, the paper provides evidence that the degree of financial market development mediates and hence ultimately sets the economic conditions in which banks compete. The outcomes have direct implication on economic policy when comparing emerging and established financial service systems".

Sireesha CH & Dr M.A.Joseph, (2011) - SBI had known its performance in banc assurance, whether it is contributing to the overall progress of the bank or not. The increase in the non-interest income, profit per employee, business per employee and decrease in the operating expense, staff cost, level of nonperforming assets by the bank for the last few years indicates that the financial performance of the state bank in banc assurance has been good and banc assurance has also contributed well to the overall progress of the bank.

D Maheswara Reddy and KVN Prasad (2011) - in their study revealed that the operational, financial, managerial performance of sample banks (Andhra Pragathi Grameena Bank and Sapthagiri Grameena Bank) with the help of standard deviation, mean difference and t value.

Joseph Jelsy and Vetrivel, (2012) - have studied the financial performance in connection with Activity Based Costing and concluded that better cost predictions, loss making products are identified. The ABC can be used for cost cutting, Decision support system (DSS) budgeting and better performance measurement in order to improve the financial performance of the companies.

KVN Prasad and D Maheswara Reddy (2012) - have explored the economic sustainability of five major banks in Indian banking sector by performance evaluation of public and private sector banks with the help of multi-variate analysis.

According to J.Batty, "Profit is a principal motivating factor for any business firm and the success of the business may be examined on the basis of return on capital employed.

Objectives of the Study :

The present study outlined following objectives-

- To measure the operational efficiency of GIPCL
- To analyze the impact of operational efficiency on overall profitability of the company.

Research Methodology

The pattern of research methodology, which pertains to this paper, shown below-

Period of the study

The period of the study covers from 2005-06 to 2010-11.

Type of Data

The present study used only secondary data. The secondary data was collected from annual

reports, books, websites and journals to facilitate proper understanding of the study.

Research Hypothesis :

Ho: There is no significant positive correlation between operational efficiency and overall profitability of the GIPCL.

Scope of the Study :

The research paper covers one of the leading & important power generation company i.e. Gujarat Industries Power Company Limited (GIPCL) only.

Limitations of the Study :

Limitations are always a part of any kind of research work, as the report is mainly based on secondary data; proper care must be taken in knowing the limitations of the required study.

i) This analysis is based on only monetary information, analysis of the non monetary factors are ignored.

ii) The financial performance of the company is shown just for the last five years, ending 2009-10. Hence, any uneven trend before or beyond the set period will be the limitations of the study.

iii) As per the requirement of the study some data have been grouped and sub grouped.

iv) There is also scope for further research by incorporating other important variables within the industry as well as outside the power generation industry.

Tool for analysis :

The data collected from the annual reports were arranged sequentially and tabulated in the systematic order. In order to analysis and interpretation of the data simple statistical tools like average, Ratio analysis and correlation analysis were used as found necessary. And is order to examine the validity of above said null hypothesis 't' test was used.

Data Analysis and Interpretation :

Table - 1: Activity Ratios- As a tool for measuring operational efficiency

Activity Ratios								
Year	**Inven -tory Turn over**	**Debtors Turn over**	**Cre-ditors Turn over**	**Working Capital Turn over**	**Capital Turn over**	**Total Assets Turn over**	**Fixed Assets Turn over**	**Average of Activity Ratio**
2005-06	6.73	7.07	5.07	2.63	0.41	0.34	0.44	3.24
2006-07	7.76	7.35	5.08	2.77	0.44	0.38	0.49	3.47
2007-08	9.35	6.82	6.79	24.62	0.48	0.41	0.45	6.99
2008-09	11.91	6.67	8.24	-15.15	0.60	0.49	0.49	1.89
2009-10	8.36	5.94	5.79	-5.98	0.41	0.34	0.33	2.17
2010-11	8.71	6.39	5.62	-19.68	0.43	0.36	0.36	0.31
Average	8.81	6.71	6.10	-1.80	0.46	0.39	0.43	3.01

Source : Data compiled from annual reports of GIPCL

Table-1 reveals that GIPCL is transforming its inventory into receivables through sales at 8.81 (average value) or 9 times in a year. In other words, it holds average inventory of: 365/8.81 = 41 days. The reciprocal of inventory turnover gives average inventory holdings. When the number of days in a year (say, 365) are dividend by inventory turnover. To judge whether company's inventory turnover is good or not, it was compared with the past ratios (from 2005-06 to 2010-11) as well as average. The company's trend in inventory turnover ratio is given in table-1. It is clear that the GIPCL's efficiency in transforming its inventories is continuously range bound with 8.81 (average value). The company's utilization of inventories in generating sales is good; the yearly holding of all types of inventories is increasing.

Table - 1 reveals that Average debtors turnover of GIPCL is 6.71 times. In other words company is able to turnover its debtors 6.71 times in a year and its book debts remain outstanding for: 365 /6.71 = 54.40 or 54 days. Company's average collection period has been increasing. It has increased from 52 days in 2005-06 to 57 days in 2010-11. The increase may be due to change in the economic conditions and/or laxity in managing receivables. The debtor's turnover of the company is 6.71 times, it is very high low, which clearly indicating that the management of credit is required to be managed more efficient.

The creditor turnover of the company is 6.10 (average) times. Which is very low and signifying that GIPCL is taking full advantage of credit facilities by negotiating aggressively with creditors. The working capital turnover ratio is -1.80 times. In 2007-08 is 24.62 which is very high and reflecting that company's management is using their working capital with effectively in the operation of business as compared to 2010-11 as well as average. Except 2007-08, Working capital turnover is not encouraging for the company. Table 1 reveals that capital turnover ratio of the company is 0.46 times. This ratio is very low as well as showing more use of capital and resulting in a comparatively lower generation of sales. Total Assets turnover ratio of the company is looking 0.39 times. The total assets turnover of 0.39 times shows that GIPCL generates a sale of Rs.0.39 for one rupee investment in fixed and current assets together. The fixed assets turnover of 0.43 times shows that GIPCL generates a sale of Rs.0.43 for one rupee investment in fixed assets. Therefore company is required to manage its assets more efficiently to maximize sales. The profitability of an organization is measured in relation to investment. The term investment may refer to total assets, Capital employed or the owner's equity. The efficiency of an organization is judged by the amount of profit. Profitability can be calculated or measured in terms of relationship between assets and net profit. It is also known as profit to assets ratio, which measures the profitability of investments.

Table-2: Rate of Return on Assets Ratio- A tool for measuring overall profitability

Year	Return on Assets Ratio (ROA)
2005-06	7.00
2006-07	10.78
2007-08	5.40
2008-09	4.06
2009-10	4.47
2010-11	6.45
Average	6.36

Source: Data compiled from annual reports of GIPCL

Table-2 reveals that company's ROA ratio was 7 percentages in 2005-06 which is gradually declining and it came down at 4.06 percentages in 2008-09 and 6.45 percentages in 2010-11. In 2006-07 exceptional performance has been noticed. The average return on assets is 6.36. This ratio is very low and indicating that company's efficiency of utilization of assets in generating revenue is to be improved.

Table-3: Integrated Analysis of Ratios

Particular	**Years**					
	2005-06	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**
Net Sales	75659.32	79558.02	93554.57	115499.01	93911.89	107794.91
Net Profit	11481.47	18291.57	10229.06	8531.76	10678.41	16294.97
Total Assets	163961.93	169656.85	189554.29	210319.18	238651.46	252515.44
Profit Margin (2/1) (%)	15.18	22.99	10.93	7.39	11.37	15.12
Assets Turnover (1/3) (In times)	0.46	0.47	0.49	0.55	0.39	0.43
ROA ratio (4 x 5) (%)	7.00	10.78	5.40	4.06	4.47	6.45

Source: Data compiled from annual reports of GIPCL

Table-3 reveals integrated analysis of the ratios of the GIPCL. These ratios provide better insight about financial and economic analysis of an organization. This analysis is revealed that overall profitability and operational efficiency of an organization is good.

Operational Efficiency v/s overall Profitability

Keeping in view the objective of study, the impact of operational efficiency on overall profitability of the company correlation is calculated. To examine the relation between operational efficiency and overall profitability of the company. The Karle Pearson's coefficient correlation tool is applied as follows -

Here: x = Average of overall activity Ratio (overall efficiency)

y = Return on Assets Ratio (overall profitability)

$$r = \frac{\sum dxdy - \frac{\sum dx . \sum dy}{n}}{\sqrt{\sum dx^2 - \frac{(\sum dx)^2}{n} \times \sum dy^2 - \frac{(\sum dy)^2}{n}}}$$

Table-4 : Calculation of Correlation

Year	Average of overall Activity Ratio (x)	dx Assumed Mean	dx^2	Return on Assets Ratio (ROA) (y)	dy Assumed Mean	dy^2	dxdy
2005-06	3.24	2.93	8.58	7.00	2.95	8.68	8.63
2006-07	3.47	3.16	9.96	10.78	6.72	45.22	21.22
2007-08	6.99	6.68	44.60	5.40	1.34	1.80	8.95
2008-09	1.89	1.58	2.50	4.06	0	0.00	0.00
2009-10	2.17	1.86	3.45	4.47	0.42	0.17	0.78
2010-11	0.31	0	0.00	6.45	2.40	5.74	0.00
N=6		Σdx= 16.20	Σdx^2= 69.10		Σdy= 13.83	Σdy^2= 61.62	$\Sigma dxdy$ =39.58

Source: Data compiled from annual reports of GIPCL

r = + 0.08 (insignificant positive correlation)

For testing the validity of 'r','t' test was applied as following

$$t = \frac{r}{\sqrt{1-(r)^2}} \times \sqrt{n-2}$$

$$= 0.16$$

The above is also confirmed by the t-test according to which null hypothesis is accepted (because calculated value, 0.16 is lower than table value 2.776 at 5% significance level) it means there is an insignificant positive correlation between operational efficiency and overall profitability of the company. In other words when operational efficiency of the company is good or bad, one can't judge about the overall profitability. Hence we can say that operational efficiency has an insignificant impact on the overall profitability of an organization.

Fact Findings :

1) The operational efficiency of the company is good and referring to the profitability, efficiency and judicious use of resources available to the GIPCL in perfect consonance with clearly laid down financial policies relating to the operation when compared within power manufacturing industry.
2) If we look at profitability ratio like ROA, it is found that not only the profitability of the company has improved in 2010-11 as compared to 2008-09 & 2009-10, but profitability in terms of sales as well as profit also has significantly improved.
3) The company has been able to use capital employed more effectively in 2006-07. When capital turnover has improved from 0.41 times in 2005-06 to 0.44 times in 2006-07

having a positive impact on ROA.

4) The improvement both in profitability and activity is the indicator of all-round efficiency in the operations and fund utilization.
5) Profit margin of the company has been decreased from 22.99% (2006-07) to 7.39% (2008-09) which is a bad sign. It means operating expenses had been increased significantly.
6) The performance of debt collection is unfavorable.
7) The performance of creditors turnover is encouraging with 6.10(average value)

Recommendations :

The Return on Assets ratio is a central measure of the overall profitability and operational efficiency of an organization. It shows the interface of profitability and activity ratios. It implies that the performance of an organization can be enhanced either by generating additional sales volume per rupee of investment or by escalating the profit margin per rupee of sales. The following recommendations are being offered which may help in increasing operational efficiency and overall profitability of the company -

a) The company can increase the rate of return on assets by increasing production.
b) The profitability of the company can be increased by decreasing operating expenses.
c) Return on assets can be improved by increasing one or both of its components viz., the profit margin and the investment turnover in any of the following ways -
   - Increasing the profit margin
   - Increasing the investment turnover
   - Increasing both profit margin and investment turnover.

Conclusions :

In the light of the present study it can be concluded that there is insignificant positive correlation between operational efficiency and overall profitability of the company. There are other important variables apart from activity ratios that are hampering the Return on Assets (ROA) considerably. Profit margin had suddenly dropped from 22.99% (2006-07) to 7.39% (2008-09) and then steadily started increasing in subsequently years. It might be possible such a drastically change or shift in paradigm is due to new projects taken by GIPCL during research period. But looking into the overall situation of power generation industry the performance of GIPCL is quite a good and very much favorable within the power generation sector. Since this research is limited to certain variables like activity ratios and ROA. This research also opens the door for further research too.

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Is Profitability related to Capital Structure Decisions in Indian Cement Industry? An Empirical Investigation through Factor Analysis Approach

Arindam Banerjee

Anupam De

Abstract:

This study is basically undertaken so as to investigate the independent variables on which the dependent variable i.e. the profitability depends upon for the firms belonging to the Indian Cement Industry. The independent variables taken into consideration for the study which might have some impact on the profitability of Indian Cement Industry are "Business Risk", "Size of the Firm", "Growth Rate", "Debt Service Capacity", "Degree of Operating Leverage", "Dividend Payout" and "Financial Leverage". The above variables determining the Capital Structure of a firm has been taken into consideration after a thorough literature review. It is observed from the study that "Size of the firm" and "Business risk" are significant factors influencing the profitability of the firms of the Indian Cement Industry.

Key Words: *Capital Structure, Financial Ratios, Factor Analysis, Multiple Regression Analysis, Return on Assets.*

Introduction:

In finance, one of the most important areas is capital structure. Capital structure of a firm is the combination of debt and equity with which a firm can maximize its market value. Some companies do not plan their capital structures; it develops as a result of the financial decisions taken by the financial manager without any formal policy and planning. Financing decisions are reactive and they evolve in response to the operating decisions. These companies may prosper in short-run, but ultimately they may face considerable difficulties in raising funds to finance their activities. With unplanned capital structure, these companies may also fail to economize the use of their funds. To determine the optimal capital structure is perhaps one of the important functions of Finance Manager. Thus, capital structure has always been an important, challenging and a central issue in corporate finance. Profitability is one of the important criteria for existence of companies. Financial performance has been measured in this paper by Profitability Ratio (i.e. Return on Asset) .Profitability is very vital variable for a firm because if a firm's profitability is high then the lenders or shareholders will show interest on that firm. A firm having a high profitability and sales turnover would not rely on debt capital but if it goes for external financing, it would face no difficulty in bearing the fixed charges associated with it. The study seeks to investigate whether Profitability represented by Return on Asset is related to Capital Structure Decisions. Factor Analysis approach has been utilized in the study to investigate the relationship.

Back Ground of Indian Cement Industry :

The year 1991 was the one when the process of liberalization and globalization hit the Indian economy and pushed our country to break open the "Inward Looking" policy when the emphasis was accorded to protectionism and import substitution. Since 1991, India has proved to be a key player in the world.

The infrastructural development in India has seen a tremendous boost after 1991. With the

increase of construction activities in India it is observed that there is an upward trend in the demand for quality building material and similar products. Cement is an important constituent in construction activities resulting in the growth of Cement Industry.

Today, India is second major cement producing country following China with approximately having 137 large and 365 mini cement plants. 64% of the demand in cement industry is derived from the housing sector in India and it accounts for about 7-8% of the global production[1]. Despite the fact that the cement industry has grown at a rapid rate in the last decade reflecting a compounded growth of 8% still the per capita consumption remains low compared to the world average. In long term various drivers that will result in rapid growth in the Cement Industry would depend upon infrastructural spending, rapid growth in rural housing and peaking interest rate. The growth prospects in Indian Cement Industry are very much closely linked with growth of overall economy, real estate and construction industry in general. Some of the leading companies in Indian Cement Industry include Gujarat Ambuja Cement, ACC, JK Cements etc. These are some of the reasons why cement industry is considered to be one of the sunrise industries in India Hence the purpose for selecting cement industry is to understand factors influencing the profitability of Indian Cement Industry which is considered to be one of happening industry in Indian Scenario with a lot of potential growth opportunities in the future.

Literature Review:

A thorough literature review has been made by us while conducting the study. The various variables used by us in the study have been extracted after scanning through various literatures. It is proposed to present briefly some of the research studies conducted by different researchers pertaining to the present study:

Keshar J. Baral (2004) in his research paper "Determinants of Capital Structure: A Case Study of Listed Companies of Nepal" published in The Journal of Nepalese Business Studies has tried to determine the factors determining the capital structure of companies listed in Nepal Stock Exchange. A cross sectional analysis was done taking into consideration industries from different sectors like trading, commercial banks, hotels etc. It was found from the result that size, growth rate and earning rate are statistically significance influence on capital structure decisions.

Onaolapo Adekunle A and Kajola Sunday O (2010) in their research paper titled "Capital Structure and Firm Performance: Evidence from Nigeria" published in European Journal of Economics, Finance and Administrative Sciences have concluded from their study that debt ratio has a significantly negative impact on the firm's financial measures. They have employed ordinary least square as a measure of estimation. The variables used for financial measures in paper were Return on Assets and Return on Equity.

Shahjanpour, Ghalambor and Aflatooni (2010) in their research paper "The Determinants of Capital Structure Choice in Iranian Company" published in International Research Journal of Finance and Economics have tried to determine the various factors which affect the capital structure of the company listed in Tehran Stock Exchange. Correlation Technique

[1]**Source :** http://www.equitymaster.com/research-it/sector-info/cement/Cement-Sector-AnalysisReport.asp

was utilized to test the problem of multi collinearity and finally regression analysis was run. From the analysis it was found that liquidity was negatively related to capital structure while payout ratio was positively related to capital structure. Non Debt Tax shield was not related. It was concluded that majority of the items were consistent with pecking order theory.

Ali Saeedi and Iman Mahmoodi (2011) in their research paper titled "Capital Structure and Firm Performance: Evidence from Iranian Companies published in International Research Journal of Finance and Economics have tried to establish a relationship between Financial Performance and Capital Structure. Various ratios have been taken as a measure of financial performance like Return on Assets, Return on Equity, and Earning per Share. Capital Structure measures taken into consideration includes Long term Debt, Short Term Debt and Total Debt ratio. It is concluded from the study that there is a negative relationship between Return on Asset and Capital Structure Decisions.

Nour Abu-Rub (2012) in his research paper titled "Capital Structure and Firm Performance: Evidence from Palestine Stock Exchange published in Journal of Money, Investment and Banking have tried to investigate into the relationship between financial performance and Capital Structure. In the financial performance parameters he has taken Return on Asset, Return on Equity, Earning per share and Tobin Q ratio as dependent variables. The paper concluded that Capital Structure has a positive impact on Firm's financial performance.

R. Zeitun and G. G. Tian (2007) in their research paper "Capital structure and Corporate Performance: Evidence from Jordan" published in Australasian Accounting Business and Finance have considered Return On Assets (ROA) and Tobin's Q as the most powerful measures of performance in Jordan case. The paper concluded that firm's capital structure has a significant negative impact on firm's financial performance.

Ong Tze San and Teh Boon Heng (2011) in their research paper titled "Capital Structure and Corporate Performance of Malaysian Construction Sector" have investigated into the relationship of capital structure and financial performances. Return on Asset has been taken as one of the variables for financial performance. The paper concluded that there is a significant relationship between the Capital Structure and Financial performance.

Nadeem Ahmed Sheikh and Zongjun Wang (2011) in their research paper "Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan," have tried to investigate into the factors determining the capital structure of 160 firms listed in Karachi Stock Exchange during 2003-2007. The multi - regression model was run and it was concluded from the study that profitability, tangibility, earning volatility, liquidity are negatively related to leverage while firm size is positively related to leverage. It is also observed that non Debt tax shield and Growth opportunity has no significance influence on capital structure.

Objective of the Study:

This study is basically undertaken so as to investigate the independent variables on which the dependent variable i.e. the profitability depends upon for the firms belonging to the Indian Cement Industry.

The independent variables taken into consideration for the study which might have some impact on the profitability of Indian Cement Industry are "Business Risk", "Size of the

Firm", "Growth Rate", "Debt Service Capacity", "Degree of Operating Leverage", "Dividend Payout" and "Financial Leverage".

Theoretical Framework:

The various variables taken into consideration for the study have been defined in brief:

I) Profitability (Dependent Variable): It is taken as Return on Total Assets.

(ROA = EBIT/TOTAL ASSETS) where EBIT= Earnings before Interest and Tax

II) Independent Variables:

A) Size of the Firm: The logarithm of sale of the firms. Size = Log (Sales).

B) Business Risk: The coefficient of variation in Earnings before Interest and Tax.

Business Risk = σ EBIT/ μ EBIT (Standard Deviation of EBIT/Average EBIT)

where EBIT= Earnings before Interest and Tax

C) Growth Rate: The compound growth rate of total assets.

Growth Rate (Assets) = $\{(TA_n/TA_{n-1})\ ^\wedge\ (1/n)\ 1\}$

TA_n=total assets at the end of the observed period i.e. 2011

TA_o=total assets at the beginning of observed period

D) Dividend Payout: The ratio of dividend to total income available to shareholders. Here, dividend includes only dividend paid and proposed.

Dividend Payout: DIV/PAT [Where DIV =Dividend Paid and PAT = Profit After tax)

E) Debt Service Capacity Ratio: It is taken in terms of interest coverage ratio.

Debt Service Capacity Ratio = EBIT/Interest ,where EBIT= Earnings before Interest and Tax

F) Degree of Operating Leverage: It is taken as a percentage change in EBIT as a proportion of percentage change in sales.

$DOL = \{(EBIT_t - EBIT_{t-1})/ EBIT_{t-1}\} \div \{(Sales_t - Sales_{t-1})/ Sales_{t-1}\}$

Where,

$EBIT_t$ = Earnings before Interest and Tax of the t^{th} year.

$EBIT_{t-1}$ = Earnings before Interest and Tax of the $t-1^{th}$ year

$Sales_t$ = Net Sales of the t^{th} Year

$Sales_{t-1}$ = Net Sales of $t-1^{th}$ Year

G) Financial Leverage : The ratio of average Total debt to average Total assets. The total debt includes both Current liabilities & provisions and Borrowings.

FL =TD/TA (TD = Total Debt ; TA = Total Assets)

Research Methodology:

Source of Data: This study is conducted based on secondary data of the selected companies of Indian Cement industry. Using Prowess Database software, list of all the cement companies has been determined which are listed and permitted to trade in BSE and NSE. Apart from this, information has also been obtained from Centre for Monitoring Indian

Economy (CMIE) and annual financial statements downloaded from websites of respective companies while conducting our research.

Sampling and Population:

For the purpose of this study, the listed number of companies from Indian Cement Industry which are listed and permitted to trade in BSE and NSE is taken as the population. Overall 60 cement companies were extracted from Prowess Database Software. Due to unavailability of information of one form or other out of 60 Companies, 38 Companies were finally selected. The required variable for the study has been extracted for 38 Companies ranging from time period of 1999-2000 to 2010-11.

Empirical Analysis:

The purpose of the study is to test if the Profitability is related to Capital Structure Decisions of the firms belonging to Indian Cement Industry. The entire analysis and results has been discussed below.

Step 1. Factor Analysis is conducted using SPSS 16 on the seven independent variables i.e. "Business Risk", "Size of the Firm", "Growth Rate", "Debt Service Capacity", "Degree of Operating Leverage", "Dividend Payout" and "Financial Leverage". Factor analysis is basically defined as a statistical process to identify a small number of factors that can be used to represent relationships among sets of interrelated variables. The various observations while conducting Factor Analysis are as follows:

Observation I: It can be observed from Table 1 that KMO is greater than .50 then hence Factor Analysis can be conducted. Bartlett test of Sphericity test the null hypothesis that the original correlation matrix is an identity matrix. According to the Bartlett test it is observed from the analysis that the significance value is less than .05 (i.e. .001) hence factor analysis is appropriate. **Table 1: KMO and Bartlett's Test:**

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.528
Bartlett's Test of Sphericity	Approx. Chi-Square	26.587
	df	21.000
	Sig.	.001

Observation II: It can be observed from **Table 2** that before extraction, SPSS has identified 7 linear components within the data set. The Eigen value associated with each factor represents the variance explained by that particular linear component. SPSS also displays the Eigen value in terms of percentage of variance. It is observed that SPSS has extracted 3 Principle Component with Eigen Values greater than 1 explaining 65% of the variance.

Table 2 : Total Variance Explained

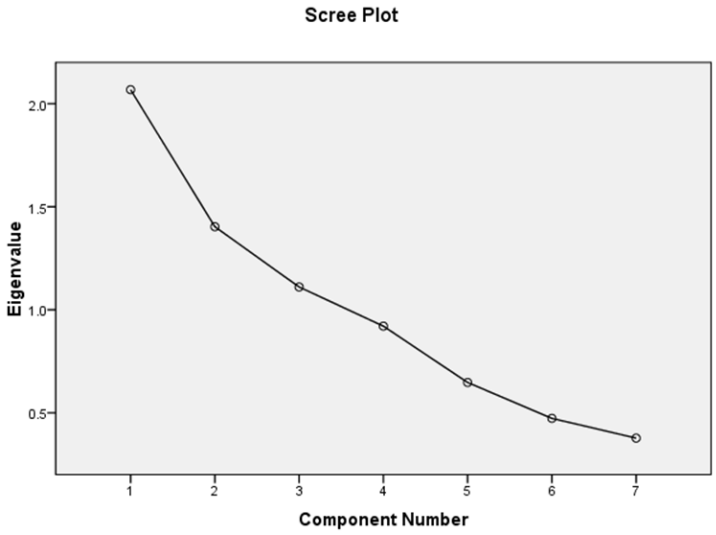
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.068	29.542	29.542	2.068	29.542	29.542	1.840	26.280	26.280
2	1.403	20.042	49.584	1.403	20.042	49.584	1.608	22.971	49.251
3	1.111	15.868	65.452	1.111	15.868	65.452	1.134	16.201	65.452
4	.921	13.152	78.604						
5	.647	9.247	87.851						
6	.473	6.760	94.611						
7	.377	5.389	100.000						

Extraction Method: Principal Component Analysis.

Observation III:

The above observation is also validated by Scree Plot. It can be observed from Graph 1 (Scree Plot) that out of 7 Principle Component only 3 Factors have Eigen Values above 1 hence we can expect to have 3 Principle Components in the data.

Graph 1: Scree Plot:



Observation IV: It can be observed from **Table 3** that SPSS has extracted 3 factors as per the Rotated Component Matrix. The three factors identified are defined as below along with their loadings:

Factor 1 comprising of a) Business Risk (.801) (b) Growth Rate (.785) c) Financial Leverage (-.697)

Factor 2 comprising of a) Size of the firm (.780) b) Degree of Operating Leverage (-.693) c) Debt Service Capacity (.586).

Factor 3 comprising of Dividend Pay Out (.947)

The Variables having highest loading in each Factor is taken into consideration while running the regression analysis. As per the Table 3 Business Risk (.801) from Factor 1, Size of the firm (.780) from Factor 2 and Dividend Payout (.947) from Factor 3 has been taken into consideration as Independent Variables while running the regression analysis.

Table 3. Rotated Component Matrix:

Rotated Component Matrix

	Component		
	1	2	3
Business Risk	.801		
Growth Rate	.785		
Financial Leverage	-.697		
Size of the firm		.780	
Degree of Operating Leverage		-.693	
Debt Service Capacity		.586	
Dividend PayOut			.947

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Step 2. Regression Results:

Multiple regression was run in SPSS 16.0. Profitability Ratio was taken as the dependent variable and other variables like "Business Risk", "Size of the firm", and "Dividend Payout" (having the highest loading factor) as Independent variables as per the model.

R square can be defined as the percentage of the variance in the dependent variable that can be explained by all of the independent variables taken together. It can be observed from Table 4 that R square is .266 i.e. 26.6% of the dependent variable (Profitability Ratio) is explained by Independent variables

Table 4: Regression Result (R Square)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.516[a]	.266	.178	.05597

a. Predictors: (Constant), Dividend Pay Out , Business Risk, Size of the firm

It can be observed from **Table 4.1** that Business Risk (t value of 2.049 and p value of .041) and Size of the firm (t value of 2.311 and p value of .029) are significant variables

determining the Profitability of the firms. Multi-Colinearity is the undesirable situation where the correlations among the independent variables are strong. Variance Inflation Factor (VIF) basically helps to assess the Multi Collinearity problem. The VIF (Variance Inflation Factor) of the independent variables is less than 2 hence Multi-Collinearity problem does not exist. From the beta coefficient of the Size of the Firm (.404) and Business Risk (.353) it can be stated that both the variables are positively influencing the profitability of the firms of Indian Cement Industry.

Table 4.1: Regression Result

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-.072	.060		-1.185	.247		
Business Risk	.070	.034	.353	2.049	.041	.988	1.012
Size of the firm	.035	.015	.404	2.311	.029	.959	1.043
Dividend Pay Out	.001	.019	.008	.044	.965	.960	1.042

a. Dependent Variable: Profitability

Step 3.

Durbin Watson Test is required to check the data tends to Time series Data or the Data is Stationary one. It is observed from Table 5 that the Durbin Watson is 2.296 which are out of the range of -1.5 to +1.5 which proves that the data is not a time series data, it is stationary one and Regression analysis can be done.

Table 5: Durbin Watson Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.516[a]	.266	.178	.05597	2.296

a. Predictors: (Constant), Dividend PayOut , Business Risk, Size of the firm

b. Dependent Variable: Profitability

Conclusion:

It has been an endeavor in this section to rank the significant variables influencing Profitability of Indian Cement Industry as per their beta values and identify the most important variable influencing the profitability.

The result is displayed in the **Table 6** below:

Table 6: Significant Variables: "Business Risk" and "Size of the firm", along with t-values and Beta:

Independent Variables	t values	Beta	Influence on Profitability
Size of the firm (1)	2.311	.404	**Positive**
Business Risk (2)	2.049	.353	**Positive**

It is observed from Table 4.1 that "Business Risk" and "Size of the Firm" are significantly influencing the profitability of the firms belonging the Indian Cement Industry. If we rank the variables **(Table 6)** namely "Business Risk" and "Size of the firm" as per their Beta Values it can said that Size of the firm with Beta Value of .404 ranks as the most significant variable influencing the Profitability of the firms of the Indian Cement Industry while Business Risk with beta value of .353 ranks second important variable influencing the profitability of the Indian Cement Industry.

Business Risk is defined in the study as COV (Coefficient of variation) of Earning before Interest and Tax and hence a very important variable from financial point of view. It is seen from the study that it is positively influencing the profitability meaning that if the business risk increases, the profitability also increases. Business risk is basically highlights the fluctuation in the Earning before Interest and Tax. If there is a greater fluctuation in the Earning before Interest and Tax it will naturally affect the profitability as it is also measured by EBIT/Assets and hence the profitability will also fluctuate accordingly.

It is also observed from the study that Size of the firm is positively related to the Profitability of the Cement industry. With the increase of the Size, the profitability also increases. Size has been taken as the logarithm of Sales. Hence with increase of sales turnover there is a probability that profitability of the firms of the Indian Cement Industry will also increase.

These facts conclude that "Size of the firm" and "Business risk" play a major role influencing the profitability of firms in Indian Cement Industry. It has to be monitored by concerned authority in a proper and timely manner and there should be effective utilization of the available resources to maximize the profitability of the Indian Cement Industry.

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Cost Management Experiences in Logistics and Shipping Firms

C Samuel Joseph

Abstract:

In the recent past many changes have taken place in the world economy in general and service firms in particular. The business environment is turbulent and laced with uncertainty which is continuously changing and is full of opportunities and challenges. Companies are necessitated to change their business practices, technologies and adapt to newer ways to contain and manage costs even more aggressively in order to gain competitive advantage. In this study the author underscores the importance of Cost Management, by realizing its overriding role in determining the sustainable growth. The present study tries to analyze firms in logistics and shipping firms in India.

Key Words: *Cost Management, Sustainable Growth, Business Practices, Technologies, Competitive Advantage, Logistics and Shipping firms.*

Introduction :

Business in the modern world is much about process than about the product. Any measure that involves an element of cost which facilitate to evaluate the long term effects of a product or process. Cost Management System is a management planning and control system with the primary objective of producing quality goods and services at the lowest possible cost. It is oriented towards innovative and better management of the cost of men, material and minutes (Time).

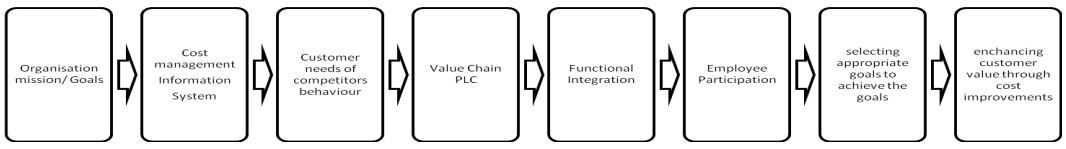
Strategic Cost Management :

Shank and Govindarajan (1993) define strategic cost management as "the managerial use of cost information explicitly directed at one or more of the four stages of strategic management: (1) formulating strategies, (2) communicating those strategies throughout the organization, (3) developing and carrying out tactics to implement the strategies, and (4) developing and implementing controls to monitor the success of objectives".

Cost Management aims at awareness, measurement, responsibility and improvement of cost elements and profit.

Cost is universal and most highly visible performance metric for indicating project success. Top management and Control professionals always prioritize the cost management. Cost management should be regarded as a process requiring the integration of separate discipline and involve the expertise of internal and external experts. Effective cost management requires the implementation of methodologies and steps that are repeatable and can be integrated with organization goals.

Conceptual Framework for Strategic Cost Management



Logistics Cost :

Cost of Logistics means cost of performing various logistic activities including cost of planning and managing a range of logistic activities such as transportation, receiving, inspecting, storing and distribution of goods. Besides, the other costs involved are packing, paperwork, brokerage charges to intermediaries, duties etc., The Logistics Cost in India (13 per cent of GDP) are much higher than those in developed countries (11 per cent of GDP). These points out the need for achieving efficiencies. It is to be noted that India's Logistics costs are likely to grow at 7 - 8 per cent per annum for the next three years as per a recent World Bank Study.

Since mid 1970's soaring costs of energy, raw materials, transportation and capital have made companies to think cost as a crucial factor. The main aim of logistics is to provide the desired level of customer service efficiently with least cost. So the need of the hour is to establish a logistics cost management system. Such initiative will make all the logistics activities balanced to optimum.

IT penetration :

Information Technology is able to establish a lead in supply chain management process. Today, IT solutions are being used for all supply chain management functions. For instance most of the ports use Electronic Data Interchange (EDI) facility for electronic transmission of data. Such attempts largely help in optimising operational costs. Innovative logistics solutions have enabled conventional forwarders to use newer and improved methods of transportation for their services resulting in customer retention as well as customer acquisition.

Review of Literature :

According to Shank & Govindarajan (1997), cost management can lead to an effective control of spending and can ensure an advantage against the competition. Costs affect all organizations' areas and activities and are determined by the set of management decisions.

During 1980s, new cost management practices dominated over traditional managerial accounting. Those were shaped by a more complex operational environment in which there was need for the information to reflect the changes . (Johnson and Kaplan, 1987; Johnson, 1992; Bacic, 1994). The commonality in the criticisms, besides the proposition and discussion on specific practices, is the finding that the cost management should also consider environmental factors external to firms, creating a new knowledge field and professional practice called Strategic Cost Management.

The adoption of strategic cost management practices by the companies has been the subject of several studies across the world (Reckziegel, Souza and Diehl, 2007, Marques et al, 2003, Ferreira, Silva and Batalha, 2010; Muniz, 2010, Souza, Collaziol and Damacena, 2010) (Guilding, Cravens and Tayler, 2000; Bowhill and Lee, 2002; Dekker and Smidt, 2003, Waweru, Hoque and Uliana, 2005; Cinquini and Tenucci, 2006; Cadez and Guilding, 2007; Zoysia and Herath, 2007; Noordin, Zainuddin and Tayler, 2009; Angelakis, and Thério Floropoulos, 2010).

It is to be noted that there are only few studies related to logistics industry despite their economic relevance. The present study attempts to understand the best strategic cost

management practices as used by logistics and shipping companies.

Some of the studies related to strategic cost management practices are given below;

Hansen and Mowen (2001), strategic cost management uses cost information to develop and identify superior strategies, capable of producing a sustainable competitive advantage.

Cinquini and Tenuci (2006) The analyzed SCM practices were classified according to three factors discussed in the study viz, Processes and Activities Clients and Competitors. The authors conclude that external analysis of costs comes from the recognition that only internal efficiency is no longer sufficient for the effectiveness of the company.

Marcos Antonio Souza and Katia Arpino Rasia (2012) focused their study on Strategic Cost Management Practices adopted by Brazilian Agribusiness with an objective, to identify, in Brazilian agribusiness segment, which practices strategic cost management. The authors concluded by saying that, the practices of SCM show heavier usage. The benefits, limitations and disadvantages from the use of practices deserve to be highlighted for the paradoxical situation of high importance, low utilization and high difficulty degree of implementation found by some. The level of competition has no importance in the adoption of neither practices, nor the capital structure (open/closed) has relation to the type of strategy used.

Sheikh Mohammed Rafiul Huque (2007) focused on the value chain system in the tea industry of the developing countries and associated problems with an attempt to underscore the strategic solutions in the light of the strategic accounting model of the developed countries. Two countries Bangladesh (a developing country) and Japan (a developed country) were selected for the study. The study concludes that the tea estates in Bangladesh reluctantly maintain the tea bushes which further reduces tea production and abruptly affects yield and quality of green leaves. This in turn raises cost in the value chain and lessens price of tea in the auction market.

Vijay Govindarajan and John K. Shank (1992) argue that the role of management control depends on the strategy being followed and that effective control systems are differentiated depending on strategy. They conclude that management accounting as it is reflected in management control systems and should be redirected to explicitly consider the strategic issues that a firm faces.

Robert L. Tichacek, (2006) addresses cost management and its primary significance as a measure of project success. The authors says the project management and project controls professionals must be willing to expend the effort and intelligence necessary to properly manage it. The article concludes with a note that effective cost management requires implementation of methodologies and steps that are repeatable from project to project and can be integrated with organization goals.

Need And Methodology :

Need for the study :

Rising prices, shifting fuel rates, global competition, varying labor rates and rising health insurance costs have made cost control a moving target. Sometimes when one set of expenses are made under control, in the meantime, another area begins experiencing cost overruns. A company can reduce existing expenses or eliminate unnecessary expenses or modify

business strategies which affect the types of business expenses or replace higher expenses with lower expenses for same items. The current situation emphasizes how important is to take a strategic view toward managing cost reductions. Managers believe that cost reductions should permanently change the way their organizations will operate.

Design & Methodology of the study :

The type of study adopted is descriptive and analytical. Relevant factors are taken into consideration with reference to the subject matter. The sample consists of the investigated firms belonging to Logistics & Shipping business and the sampling frame were drawn from Exim (India) Year Book 2011 (A Most Comprehensive Directory for The Cargo & Logistics Industry in India). Out of 100 questionnaires distributed a valid response of 25 were obtained and processed. The sample is not confined to any jurisdiction and it was wide spread and concentrated on firms engaged in Logistics and Shipping business.

Objectives of the study :

1. To understand the cost management experiences and practices in the logistics and shipping firms.
2. To study the extent to which logistics and shipping firms achieve its business objectives in concurrence with cost management activities.

Analysis & Discussions :

After identifying the sampling unit, a total of 100 questionnaires were circulated and officials contacted, After repeated reminders, the researcher was able to obtain 25 usable responses and the same has been processed for analysis. The results of the analysis are presented and discussed as under.

Background of the Logistics & Shipping Firms :

The Indian logistics sector, which was pegged at US$75.19 billion in 2009, has greatly evolved with enhancement and improvisation of logistics services. In the past, logistics was limited to movement of goods through rail, road and waterways from restricted number of cities and ports. Presently, logistics services are not only restricted to the movement of goods but have expanded to include warehousing, storage, packaging, disposal, tracking, supply chain management and much more.

The industry has grown rapidly since the past 10 years and various drivers have contributed to the rapid growth of the sector. Major drivers of this robust growth are initiatives undertaken by the government, increased usage of IT, improved service offerings and organised nature of retail and manufacturing sectors, among others.

The background of the logistics and shipping firms surveyed is tabulated and presented below in Table No.1

Table No. 1 - Background of the Logisitics and Shipping Firms

S.No.	Demographics	Frequency	Percentage
I	Existence of the Co.		
	1 - 5	01	04
	6 - 10	08	32
	10 and above	16	64
II	Annual Turnover		
	>50 lacs	05	20
	50 - 100	12	48
	100 - 150	07	28
	150 - 200 lacs	01	04
III	Level of Competition		
	Great Extent	18	72
	Some Extent	05	20
	Not at all	02	08
IV	Cost Management System		
	Yes	24	96
	No	01	04

Source: *Computed*

It is observed from Table 1, that majority (64%) of the logistics and shipping firms responded to this survey are in existence for 10 years and above. The annual sales turnover of 48% of the firms constitute a sales turnover of Rs.50 to Rs.100 lakhs which is followed by firms with a sales turnover ranging from Rs.100 to Rs.150 lakhs (28%)

Most of the firm surveyed work under a heavy competition (72 per cent), and 28 per cent under moderate competition. Almost all the firms have expressed that they do have Cost Management System implemented in their organization (96 per cent).

Actions taken by Firms Regarding Cost Management :

The action taken by the logistics and shipping firms in the last one financial year with regard to cost management to achieve their business objectives are tabulated in Table No.2. The frequency distribution shows the number of firms.

Table No. 2 - Action Initiated By Firms Regarding Cost Management

S.No	Action Taken	Frequency	
		Yes	No
1	Lay offs	11	14
2	Job Eliminations	11	14
3	Employee Benefits Reduction	15	10
4	Reduction in Promotional Expenses	18	7
5	Shared Services	12	13
6.	Service Process Design	10	15
7	Strategic Sourcing	7	18
8	BPR	4	21

Source: *Computed*

The table no.2 describes that the logistics and shipping firms achieve their business objectives through cost management initiatives. Reduction of promotional expenses, tops high in the list where a majority of 72 per cent of the respondents have conveyed. Followed by most popular cost reduction initiatives like employee benefits reduction,(60 per cent of firms),shared services (48 per cent of firms) making layoffs (44 per cent of firms) eliminating jobs (44 per cent of firms) among other things which they consider to be of prime importance. Thus it is observed that the firms used cost management initiatives mainly to reduce their administrative and operational expenses. The other areas like strategic sourcing, business process reengineering is of least popular among the firms.

Cost Reduction Achieved in the last one Financial year :

Over a period of 12 months the logistics and shipping companies could able to reduce cost considerably. It is reported that 52% of the firms could reduce it to 10 -12 percent and 36 per cent of the firms to 25 -30 per cent. At the same time there are 8% of the firm could reduce the cost to above 30 per cent. The results are given below in Table No.3

Table No.3 - Cost Reduction achieved in the Past 12 Months

S.No	Cost Reduction	Frequency	Percentage
1	Upto 10 per cent	01	04
2.	10 - 20 per cent	13	52
3	25 - 30 per cent	09	36
4	Above 30 per cent	02	08

Source: *Computed*

It is understood from table 3 is that only two firms under survey were aggressively implemented the cost reduction initiatives in the last one financial year. Whereas other firms just follow the suit and it is right time the other firms also join the bandwagon to achieve the extra mileage in the operations.

Functional Areas To Be Concentrated By Logisitics And Shipping Firms To Achieve Cost Reduction :

Strategic cost management is believed to be a lever that can help logistics and shipping firms achieve profitability. Responses to the survey indicate that the functional areas concentrated for cost reduction are, financial accounting, information technology, operations, human resources, sales & marketing, quality and purchase, research & development and legal are shown in table 4

Table No.4 - Preferences oOf the Functional areas for Cost Reduction

S.No	Functional Domain	Ranks
1	Human Resource	I
2	Customer Service	II
3	Research & Development	III
4	Sales & Marketing	IV
5	Financial Accounting	V
6	Operations	VI
7	Quality & Purchase	VII
8	Information Technology	VIII
9	Legal	IX

Source: *Computed*

Among the broad functional areas to be concentrated by firm's human resource, is considered to be very important functional area ranked as most popular cost reduction measures. This can be well related and proved vide table 2 were the firms give much importance to employee related actions. Followed by it other functional areas including customer service, research and development among other things are also considered by the logistics firms.

Difference between strategic Cost Management practices based on Business Classification:

Table no.5 shows the Strategic Cost Management Practices initiated by logistics and shipping firms which include i)budget, ii) cost analysis, iii) value chain iv) activity based costing, v) total quality management, vi) target costing, vii) balance score card etc., They were compared with sample firms viz., Small/Medium/Large to understand the significant difference among them. The results are tabulated in table no.5

Table No.5 - Analysis of Variance between Strategic Cost Management practices based on Business Classification

S.No.	SCM Practices	F	Significance
1	Budget (ABB)	1.209	0.283
2.	CAS - I	0.171	0.683
3.	Cost Analysis	0.046	0.833
4.	Value Chain	0.006	0.941
5	TQM	9.720	0.005*
6.	Activity Based Costing	0.002	0.963
7.	Balance Score Card	6.430	0.018*
8.	Life cycle costing	0.171	0.683
9.	Kaizen	1.612	0.217
10	JIT	0.004	0.949
11	Strategic Positioning Analysis	0.171	0.683
**Significant at 5 % level*			

Source: *Computed*

The ANOVA test was conducted to determine whether there are differences between SCM practices and the business classification. The importance of calculating F value is due to the analysis of the significance of the variances between the means.

It is observed from the table 5 that most often used SCM practices by the logistics firms, are total quality management (0.005) and Balance Score card (0.018) which shows significant difference with the size of the firms. It is also inferred that the SCM practices are widely dependant on the large/medium/small size and the experience of the firms. As some of the SCM techniques calls for professional input, which the medium and small firms are not able to afford, because of their inherit limitations in getting qualified skilled professionals and also of inadequate technological resources. Whereas, the large sized firms are able to invest comfortably on these areas to get a competitive advantage. With the technical advancements in operations and IT domain, logistics firms need to consider and use SCM tools to plan for value creation and value addition in a phased manner.

Despite the benefits emphasized by literature on the various SCM tools the logistics firms should notice it and adapt to their situation considering their potential benefits for the firms as a whole.

Difference between Strategic Cost Management Practices and Turnover :

One more ANOVA test was performed to find out the significant difference between SCM practices considered earlier (vide table 5) to find out any significant difference with the turnover of the logistics and shipping firms. The results are given under the table 6

Table No.6 - Analysis of Variance between Strategic Cost Management Practices and Turnover

S.No.	SCM Practices	F	Significance
1	Budget (ABB)	3.641	0.043*
2.	CAS - I	2.493	0.106
3.	Cost Analysis	1.038	0.371
4.	Value Chain	3.753	0.040*
5	TQM	20.993	0.000*
6.	Activity Based Costing	2.057	0.152
7.	Balance Score Card	4.129	0.030*
8.	Life cycle costing	2.493	0.106
9.	Kaizen	0.298	0.748
10	JIT	1.735	0.200
11	Strategic Positioning Analysis	2.493	0.106
*Significant @ 5 % level			

Source: *Computed*

The differences in the ANOVA indicate relationship between select SCM practices with the different magnitude of turnover of the logistics firms. Based on the F distribution it is inferred that the logistic firms emphasizes budgeting, value chain analysis, total quality management, and balance score card as trump card to achieve maximum turnover as the differences for these variables is significant for a p value of lesser than 0.005. Thus, it is understood that use of these variables are justified as it creates an ambience for implementation of other SCM practices.

Conclusion :

An overview of the analysis shows that there is an imbalance between the use and non use of the various SCM practices. Out of the 11 practices surveyed the firms use only three or four of them and remaining unused or rarely used. Though the various research articles and literature claim good benefits on such SCM practices, the firms are slow to adapt to these in full scale. One of the limitations across the firm is lack of professional input and the author emphasize the use of the services of Cost and Management Accountant at every stage of the implementation process till the firms achieve high degree of utilization of a practice. It can be concluded from the study that the implementation of the strategic cost management practices even more with some rigor will serve its purpose to achieve reduction of cost and thereby increasing the savings in the operations of the firms and also enable the firm to sustain the volatile business environment and still contribute significantly to GDP.

Finally, there is a tremendous scope in future for further studies on these lines. It is believed that this pilot study will pave way for such efforts taken on cross dimensional angles which will bring forth benefits directly and indirectly at the micro and the macro levels and also add knowledge significantly to the cost management literature.

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A Pragmatic Study on the Economic Performance of Century old State owned Telecom Services in India

D. Selvaraj

Abstract :

The Century old State owned Department of Telecommunication in India continues to generate net operating revenue since its inception. The operating ratio had shown a declining trend over the years. This is on account of decrease in staff expenses and cost of operation. The reduction in "telephone and employees ratio" is also the other reason for the downfall. The expenditures were not increasing at the same ratio of increase in revenue. There was also a steady increase in profit with a corresponding increase in the ACGR. This is the positive side of the performance of the Telecom Department. The surpluses were generated merely by increasing the tariff in many years. The percentage of return on investments increased gradually up to a certain year and started to decline thereafter. The rate of return on investment was less than the requirement of return for the position of no-profit or no-loss operation save alone the rate required for making the entire business totally self-dependent and self-financing.

Key Words : *Telecom, DoT, Economic Performance.*

Introduction :

The Telecommunications came to India almost about the same time as in other advanced countries. The erstwhile Posts and Telegraphs (P&T) Department occupied a small corner of the Public Works Department (PWD) in 1851. A regular separate Department was opened around 1854. Thereafter it remained as a natural monopoly for more than a century until it was converted as Company, the BSNL in 2000.

The Government was following its own policy on conducting the operation of the telecom services and free to prescribe, modify and revise the tariff under the powers conferred on it in the Indian Telegraph Act 1885. The telecom development was in slow pace until the end of the seventies and the fund requirements for development were met out of the budgetary support from the Government.

At the beginning of the 7th Plan in 1985, the Government decided to focus on improving the sector and amended the Indian Telegraph Act 1885 and bifurcated the P&T Department into two Departments, Department of Telecom (DoT) and Department of Posts (DoP). The DoT was responsible for the operation and maintenance of telecom services in the Country. In 1986, the MTNL and VSNL were established. MTNL provides telecom services in the Country's two biggest markets, Delhi and Mumbai. VSNL was the exclusive provider of international telecom services in India up to 2002.

Telecom Commission was established in 1989 as an exclusive body under the Ministry of Communications, to make policy decisions. In 1994, the Government announced National Telecom Policy (NTP-1994), which included as its objectives, ensuring availability of

telephone on demand, providing fixed line telephone services at affordable prices and provided private sector participation in the Telecom. In 1994, the "NTP 1994" was announced whereby the Government accepted that telecom was a sufficiently important one for the common man.

An independent Regulatory Authority, the TRAI was formed in 1997, which was entrusted with the power to regulate tariff for telecom services. The Regulatory Body was strengthened by amending the TRAI Act in 2000. A separate body known as Telecom Dispute settlement and the adjudications Tribunal of India (TDSAT) to adjudicate the disputes between service providers and between service providers and Licensing Authority

In October 2000, the DoT, which was functioning as a monopoly Department under the Government of India for more than a century was converted as BSNL, a Company registered under the Companies Act 1956 and allowed to operate as one of the operators in the telecom Sector.

The Indian telecommunication services and their evolution from a government-controlled monopoly to a multi-service competitive sector/service are of great interest to policy makers, researchers and users of Telecommunication services. Telecommunications is today one of the World's most dynamic economic sectors. Unlike in the olden days when relatively a territory of interest mainly to engineers, telecom today seems to be everybody's proper playing field.

Keeping all the above developments and changes in view, it is considered necessary for the researchers to analyze the Economic performance of the telecom entity until it was converted as a Company in 2000, hence this study.

Objectives of the Study :

The main objectives of this study is to evaluate the Economic performance of the century old State owned Telecom Services (DoT) in the country till it was converted as BSNL, a Company registered under the Companies Act 1956 in the year 2000 and made to operate as one of the operators in the Telecom Sector. The Economic performance of the State owned Telecom Services in India could be evaluated with the help of criteria like profitability and various other financial parameters.

Operating Revenue and Profit :

The telecom sector continues to generate net operating revenue since its inception. The operating revenue, operating expenses, net operating revenue and net profit after considering other revenue and expenditure are shown in Table-1 (a) & 1 (b)

Table-1 (a) Table showing the Operating revenue, operating expenses, net operating revenue and net profit on selected years. (Rs in Crores)

Year	Operating Revenue	Operating Expenses	Net operating Revenue	Other Revenue	Other Expenses	Net Profit
1	2	3	4	5	6	7
1970	131.08	100.67	30.41	0	7.77	22.64
1974	229.10	155.00	74.10	16.49	43.78	46.81
1980	592.64	349.32	243.32	22.43	86.70	179.04

1985	1307.86	947.26	360.60	85.96	170.11	371.77
1990	2777.48	1479.98	1297.50	163.59	310.65	1150.44
1995	7653.72	2897.69	4756.03	511.55	1291.87	3975.71
2000	18628.59	7261.42	11367.17	961.08	353.20	11975.05
Source: DoT annual reports of various years						

Table-1 (b). A Table showing the ACGR* of Operating revenue, operating expenses, net operating revenue and net profit on selected periods.

Year	No. of years	Operating Revenue	Operating Expenses	Net operating Revenue	Other Revenue	Other Expenses	Net Profit
1	2	3	4	5	6	7	8
1970-74	4	14.98	11.39	24.94	-	54.07	19.91
1974-80	6	17.16	14.50	21.92	5.26	12.06	25.06
1980-85	5	17.15	22.08	8.19	30.83	14.43	15.74
1985-90	5	16.26	9.33	29.19	13.73	12.80	25.35
1990-95	5	22.47	14.38	29.67	25.61	32.98	28.15
1995-2000	5	19.47	20.17	19.04	13.44	-22.85	24.67

Source: Constructed from the data available in GoI, DoT. Annual reports and Indian Telecom Statistics of various years. * ACGR- Annual compounding growth rate

It is clear from the Table-1 that the DoT, which was earning a negligible profit of Rs 22.64 Crores in 1970, had earned an impressive profit of Rs 11975.05 Crores in 2000. Beginning with the nineties, the DoT started to earn more profits. It was Rs 1150.44 Crores in 1990, Rs 3975.71 Crores in 1995 and Rs 11975.05 Crores in 2000 with the ACGR of 15.74 percent for the period from 1980-85, 25.35 percent from 1985 to 1990, 28.15 percent from 1990-95 and 24.67 percent from 1995 to 2000. The rate of growth was highest with 28.15 percent during the sub period from 1990 to 1995.

Return on Investment :

The expenditure of DoT on investment consists of

(I) Interest on capital borrowed from general revenue at 11 percent p.a.

(II) Depreciation of assets, which can be assumed as 5 percent, averaged for all types of equipments.

(III) Operating and Maintenance expenditure on operative staff, Engineering maintenance, spares etc. which can be taken as 6 percent The total of all the above elements put together comes to 22 percent p.a. This percentage is applicable from 1994 onwards. Prior to that it was 18 percent as the percentage of the element interest on capital was 7 percent while the percentage of all other elements remain the same.

A minimum return of 22 percent (16 percent prior to 1994) (for interest, depreciation and maintenance) is thus required for no-profit, no-loss operation. However, in addition to the above

a profit of 12 percent has to be made for providing a surplus to invest for future growth. The Ministry of Finance, Government of India has stipulated that all projects of the Government of India should yield a minimum of economic return and internal rate of return of 12 percent on the investment over and above the return required for meeting the cost of operation.

Overall, therefore, a return of 34 percent (28 percent prior to 1994) on the investment is necessary for making the entire business totally self-dependent and self-financing.

5. Investment per Del [*1]:

The number of DELs added year-wise, total capital investment and the capital investment per DEL from 1970-71 to 1999-2000 are shown in Table-2. The Capital investment per DEL was less than Rs 20000/- up to 1980-81 and suddenly shot up to 31000/- per year in 1981-82. Thereafter, it had gone to the peak of Rs 48,000/- and gradually reduced to Rs 21,893/- in 1999-2000.

Table-2 Number of DELs added year wise, capital investment and investment per DEL *

Sl No	Year	Number of DELs Added (In thousands)	Capital investment (Rs in Crores)	Capital investment per DEL (In Rupees)
1	2	3	4	5
	1979-80	148.3	261.15	17609
2	1980-81	133.4	259.60	19460
3	1981-82	146.5	454.25	31006
4	1982-83	169.3	533.09	31487
5	1983-84	201.5	541.60	26878
6	1984-85	231.0	724.84	31378
7	1985-86	268.0	850.50	31735
8	1986-87	320.6	785.24	24492
9	1987-88	314.4	1062.20	33785
10	1988-89	365.7	1657.11	45313
11	1989-90	423.0	2071.26	48965
12	1990-91	485.2	2214.22	45635
13	1991-92	735.2	2787.52	37915
14	1992-93	986.8	3901.93	39541
15	1993-94	1228.9	4743.61	38600
16	1994-95	1769.8	5815.86	32862
17	1995-96	2183.10	7231.26	33124
18	1996-97	2903.23	7530.22	25937
19	1997-98	3802.39	8646.10	22739
20	1998-99	4128.96	9450.34	22888
21	1999-2000	5724.23	12532.27	21893

Source: Constructed from Annual reports of DoT and Indian Telecom Statistics of Various years.
[*1] DEL: Direct Exchange Line that is a telephone connection directly connected the Exchange

As in 2000, investment per DEL is Rs 22,000 and Annual revenue per DEL is Rs 6528/- as shown in Table-2 and Table-3

Revenue and Expenditure per Del :

The year wise revenue (total including telex and telegraphs), the number of working DELs during the year and the revenue per DEL per annum are shown in Table-3

Table-3 Year wise revenue, Total working DELs and revenue per DEL *

Sl No.	Year	Year wise revenue (Rs in Crores)	Total working DELs (In thousands)	Revenue per DEL (Rs)
1	2	3	4	5
1	1980-81	657.80	2149.5	3060
2	1981-82	769.54	2296.0	3352
3	1982-83	937.83	2465.3	3804
4	1983-84	1086.07	2666.8	4073
5	1984-85	1242.63	2897.8	4288
6	1985-86	1307.86	3165.8	4131
7	1986-87	1238.23	3486.4	3552
8	1987-88	1657.87	3800.8	4362
9	1988-89	2358.59	4166.5	5661
10	1989-90	2777.48	4589.5	6052
11	1990-91	3458.93	5074.7	6816
12	1991-92	3998.32	5809.9	6882
13	1992-93	4693.82	6796.7	6906
14	1993-94	6267.99	8025.6	7810
15	1994-95	7653.72	9795.3	7814
16	1995-96	9676.24	11978.4	8078
17	1996-97	12185.89	14881.63	8189
18	1997-98	14590.31	18684.02	7809
19	1998-99	17637.52	22812.98	7731
20	1999-2000	186.28.59	28537.20	6528

Source: GOI, DoT Annual accounts and Indian Telecom Statistics of DoT for various years. * DEL: Direct Exchange Line

The revenue per DEL has stabilized around Rs 4000/- per annum for 3 years in 1983-84-85 and around at Rs 6800 for 3 years from 1991-92-93 and increased to the peak of Rs 8189 in 1996-97 and thereafter started to decline. It stood at Rs 6528 in 1999-2000. The revenue per DEL has been worked out based on the revenue for the year and the number of DELs working during the financial year.

The total demand for telephone services and the ACGR[2] of DELs, Waiting list and total demand are shown in Table-4 (a) and Table-4 (b)

Table-4(a) Table showing the demand for Telephone connections. (Fig. In thousands)				
Year	**DELs**	**Waiting List**	**Total Demand**	**Percentage of Increase in DELs**
1	2	3	4	5
1984	2666	737	3403	
1985	2897	839	3736	9.76
1986	3165	986	4151	11.11
1987	3486	1125	4611	11.08
1988	3800	1287	5087	10.33
1989	4166	1420	5586	9.80
1990	4589	1713	6302	12.83
1991	5074	1961	7035	11.62
1992	5809	2287	8096	15.08
1993	6796	2846	9642	19.09
1994	8025	2497	10522	9.13
1995	9795	2153	11948	13.55
1996	11978	2277	14255	19.31
1997	14881	2894	17775	24.69
1998	18684	2706	21390	20.33
1999	22812	1983	24795	15.92
2000	28537	3681	32218	29.94
Source: GoI, DoT. Annual reports and Indian Telecom Statistics of various years. ACGR[2] - Annual Compounding Growth Rate				

Table -4(b) ACGR of DELs, waiting list (Fig in thousands)					
Block of Years	**No. of Years**	**DELs (Value)**	**ACGR**	**Waiting List(Value)**	**ACGR**
1	2	3	4	5	6
1974-80	6	1156.27 - 2016.06	9.71	405.10 - 335.55	- 3.09
1980-85	5	2016.06 - 2897.80	7.53	335.55 - 838.70	20.11
1985-90	5	2897.80 - 589.50	9.63	838.70 - 1713.40	15.36
1990-95	5	4589.50 - 9795.30	16.35	1713.40 - 2152.90	4.67
1995-2000	5	9795.30 - 28537.00	23.85	2152.90 - 3680.60	11.32
Source: Constructed from the data available in GoI, DoT. Annual reports and Indian Telecom Statistics of various years.					

The Table-3 reveals that the revenue per DEL had increased steadily from Rs 3060 in 1981 to Rs 8189 in 1997 and thereafter started to come down and stood at Rs 6528 in 2000. It could be seen that there is a definite correlation between the revenue per DEL and the demand for the telephone.

The Table-4 reveals that the DELs and waiting list had steadily increased every year. The waiting list for telephone increased from 7.37 lakhs in 1984 to 28.94 lakhs in 1997 and the DELs increased from 26.66 lakhs to 1.49 Crores during the same period. The trend revealed that when more and more telephone connections are provided, the revenue per DEL comes down. The reason behind this downfall is that while the revenue from rental (fixed charge) may increase proportionately to the increase in telephone connections, the revenue from local call charges (variable revenue) may not increase in the same proportion.

Percentage of Revenue/Investment per Del :

The revenue per DEL with reference to the investment per DEL gives the percentage of return on investment. This is worked out and shown in Table-5. For no profit no loss operation, the percentage of return shall be at least 22 percent after 1994 and 16 percent prior to that year. The return was less than 16 percent in all the years' up to 1990-91 and thereafter slightly increased to over 16 percent in 1991-92-93-94. The percentage increased gradually from 1990-91 and went up to 34.34 percent in 1997-98 and started to decline thereafter. The steep fall during 1981-82 is due to the steep increase in the investment per DEL during that year. The overall trend however is on the declining from 1997-98 onwards. This is indeed a matter of concern.

The required Economic rate of return and internal rate of return of any investments in Government should not be less than 12 percent over and above the return required to meet the cost of operation. Therefore, any investment in which the return is below 34 percent after 1994 and 28 percent prior to that year is not a viable one from the economic point of view.

Table-5 Revenue per DEL expressed as a percentage of investment per DEL

Sl No.	Year	Investment per DEL (Rs)	Revenue per DEL (Rs)	Revenue as a percent of investments per DEL (Rate of Return) (Rs)
1	2	3	4	5
1	1980-81	19428	* 2940	15.13
2	1981-82	30967	* 3315	10.17
3	1982-83	31434	* 3700	11.77
4	1983-84	31829	* 3855	12.11
5	1984-85	31335	4111	13.12
6	1985-86	31718	4136	13.04
7	1986-87	24492	* 3552	14.50
8	1987-88	33785	* 4362	12.91
9	1988-89	45313	* 5661	12.49
10	1989-90	48965	* 6052	12.36

11	1990-91	45635	* 6816	14.94
12	1991-92	37915	* 6882	18.15
13	1992-93	39541	6906	17.47
14	1993-94	38600	* 7810	20.23
15	1994-95	32862	* 7814	23.78
16	1995-96	33124	8078	24.39
17	1996-97	25937	8189	31.57
18	1997-98	22739	7809	34.34
19	1998-99	22888	* 7731	33.78
20	1999-2000	21893	* 6528	29.82

● Increase in tariff during the year. DEL : Direct Exchange Line
Source : Annual accounts and Indian Telecom Statistics of DoT for various years.

It could be seen from the above that as the rate of return on investment per DEL in most of the year is less than the cut off percentage of 34 percent after 1994 and 28 percent prior to that year, it does not meet even the minimum annual cost of interest, depreciation and maintenance.

Return on Investment :

The rate of return on investment per DEL. (RoR): The information given in Table-5 above reveals that the investment per DEL in 1981 was Rs 19428/- with the Rate of Return (RoR) of 15.13 percent and in 1998 it was Rs 22739/- with the RoR of 34.34 percent. The investment per line had increased steadily over the years and the RoR increased simultaneously. This is not a realistic situation in any commercial organizations unless the increase in investment is coupled with the increase in revenue.

The analysis shows that the rate of return on investment per DEL is 20.23 percent in 1992-93 and 23.78 percent in 1993-94. The revenue and the expenditure per DEL and the RoR during years are produced below.(From Table-5 & 6)

Years	Revenue Per DEL	Operating Expend. Per DEL	Surplus Per DEL	Percentage of operating Expend to Revenue	Rate of Return (RoR)
1992-93	6906	4532	2374	65.62percent	20.23percent
1993-94	7810	4338	3472	55.54percent	23.78percent

It is concluded that substantial surplus per DEL had been generated in 1992-93 and 1993-94. The percentage of expenditure per DEL to revenue had decreased from 65.62 percent in 1992-93 to 55.54 percent in 1993-94 resulted in an increase in RoR from 20.23 percent to 23.78 percent. The expenditure per DEL had also shown a downfall. In spite of all these favourable indicators, the Government has resorted to making changes in tariff during the year 1993-94.

The analysis concludes that a minimum return of 22 percent is required for no-profit, no loss operation. Table-5 reveals that prior to the year 1994-95 the Rate of Return (RoR) was less

than this cut off percentage. The financial condition and operation of DoT had not gone into negative merely on account of the reason of utilization of internal resources for investment; with the result there were practically no outgo of funds for discharging debt obligations.

Expenditure per DEL :

The revenue and expenditure, the expenditure incurred on operating expenses, depreciation and dividend paid to general revenue, which represents as an element in the interest on capital are shown in Table-6

Table-6 Revenue and Expenditure. (Rs in Crores)

Year	Revenue	Operating Expenses excluding Depre-ciation	Depre-ciation	Dividend paid to General Revenue	Total	Surplus
1	2	3	4	5	6	7
1980-81	* 657.80	413.52	68.51	31.90	513.93	143.87
1981-82	* 769.54	480.69	75.68	44.29	600.66	168.88
1982-83	* 937.83	600.70	89.87	63.82	754.39	183.44
1983-84	* 1086.07	687.11	109.93	87.89	884.93	201.14
1984-85	1242.63	817.64	134.23	123.13	1075.00	167.63
1985-86	* 1307.86	947.26	161.25	170.11	1278.62	29.24
1986-87	1238.23	1024.95	160.00	212.65	1397.60	(-)159.37
1987-88	* 1657.87	1185.62	194.46	NIL	1380.08	277.79
1988-89	* 2358.59	1304.91	236.39	160.66	1701.96	656.63
1989-90	* 2777.48	1479.98	301.99	180.37	1962.34	815.14
1990-91	* 3458.93	1682.21	387.90	220.27	2290.38	1168.55
1991-92	* 3998.32	1938.69	491.67	246.61	2676.97	1321.35
1992-93	4693.82	2183.71	639.52	257.13	3080.36	1613.46
1993-94	* 6267.99	2475.13	776.13	230.33	3481.59	2786.40
1994-95	7653.72	2897.69	976.29	269.76	4143.74	3509.98
1995-96	9676.24	3472.85	1223.29	279.19	4975.33	4700.91
1996-97	12185.89	4727.47	1524.44	292.34	6544.25	5641.64
1997-98	14590.31	5897.98	1832.33	286.50	8016.81	6573.50
1998-99	*17637.52	6709.48	2186.65	251.88	9148.01	8489.51
1999- 2000	* 18628.59	7261.42	2571.47	172.47	10005.36	8623.23

* Increase in tariff during the year.

Source : Annual accounts and Indian Telecom Statistics of DoT for various years.

The information in the above Table reveals that the total revenue had increased from Rs 657.80 Crores in 1980 to Rs 18628.59 Crores in 2000. At the same time, the expenditure had

also increased from Rs 413.52 Crores to 7261.42 Crores during the same period, resulting in a steady increase in surplus except in the year 1986-87. There was a negative performance in 1986-87 which is on account of carving out of MTNL from DoT and expenditure on staff expenses due to the Fourth pay commission recommendations.

The "*" in the Table-6 indicates that there were tariff changes in the relevant years. The surplus had jumped up in the years the tariffs were changed. There was surplus in 1992-93 to the tune of Rs 1613.46 Crores and it had increased to Rs 2786.40 Crores in 1993-94, with an increase of 72.70 percent and there was a change in tariff during that year.

Staff Expenses and Operating Ratios :

The expenditure per DEL along with the revenue per DEL and the expenditure expressed as a percentage of the revenue, that is the operating ratio are shown in Table-7 and the staff expenses, cost of operation and its expenses per DEL are shown in Table-8

Table-7 : Expenditure, Revenue and the percentage of expenditure of the revenue.

SL No.	Year	Expenditure Per DEL (Rs)	Revenue per DEL (Rs)	Percentage of Expend to Revenue (operating Ratio)
1	2	3	4	5
1	1980-81	2371	2940	81.33
2	1981-82	2616	3315	78.91
3	1982-83	3060	3700	82.70
4	1983-84	3318	3855	86.07
5	1984-85	3710	4111	90.25
6	1985-86	4039	4136	97.65
7	1986-87	4009	3552	112.87
8	1987-88	3631	4362	83.24
9	1988-89	4085	5661	72.16
10	1989-90	4276	6052	70.65
11	1990-91	4513	6816	66.21
12	1991-92	4608	6882	66.96
13	1992-93	4532	6906	65.62
14	1993-94	4338	7810	55.54
15	1994-95	4230	7814	54.13
16	1995-96	4154	8078	51.42
17	1996-97	4398	8189	53.71
18	1997-98	4291	7809	54.95
19	1998-99	4010	7731	51.88
20	1999-2000	3506	6528	53.71

Source : GoI, DoT. Annual reports and Indian Telecom Statistics of various years.

Table-8 Table showing the staff expenses, cost of operation and its expenses per DEL					
Year	**DELs (In 000)**	**Total Staff Expenditure (In Rs.Crores)**	**Expenses per DEL (Rupees)**	**Other cost of Operation (Rs in Cr)**	**Other cost of Operation per DEL (Rupees)**
1	2	3	4	5	6
1981	2149	273	1376.70	68.25	318
1982	2296	325	1638.51	81.27	354
1983	2465	403	1632.98	100.63	408
1984	2666	462	1732.00	115.44	433
1985	2897	547	1887.23	136.68	472
1986	3165	629	1986.76	157.20	497
1987	3486	692	1984.94	172.98	496
1988	3800	793	2086.66	198.23	522
1989	4166	855	2051.90	213.70	513
1990	4589	942	2053.58	235.60	513
1991	5074	1035	2040.70	258.86	510
1992	5809	1158	1992.79	289.41	498
1993	6796	1235	1817.76	308.84	454
1994	8025	1359	1693.71	339.80	423
1995	9795	1537	1569.29	384.28	392
1996	11978	1800	1502.46	449.91	376
1997	14881	2261	1519.67	565.35	380
1998	18684	3635	1945.43	290.13	155
1999	22812	4015	1760.06	323.78	142
2000	28537	4366	1529.96	168.39	59
Source : GoI, DoT. Annual reports and Indian Telecom Statistics of various years.					

The information given in the above Tables reveals that the operating ratio had shown a declining trend with 83.24 percent in 1988 to 53.7 percent in 1999-2000. This is on account of decrease in staff expenses and cost of operation per DEL from Rs 522 in 1988 to Rs 142 in 1999. The downfall in this indicator is on account of the introduction of high tech technologies in the telecom sector, which needed less manpower for operation and maintenance. The reduction in "telephone and employees ratio" is also the other reason for the downfall. This is the positive side of the performance of DoT.

Conclusion :

Keeping the above discussion in view, the following conclusions have been drawn:

- There was a steady increase in revenue per DEL up to a certain point of time and thereafter started to come down consequent on the increase in the number of DEL. The

reason behind this downfall is that while the revenue from rental (fixed charge) may increase proportionately to the increase in telephone connections, the revenue from local call charges (variable revenue) may not increase in the same proportion.

- The increase in total revenue is partly on account of the expansion of telecom network and partly on account of technical efficiency. Technological innovation had taken place in all spheres of telecom networks by way of inducting new technology telephone exchanges, replacement of good old overhead telephone lines by high tech transmission systems, replacement of non-electronic telephone exchanges. These are all contributed to the decrease in economics of operation and maintenance, increased customer satisfaction and thereby increased usage of services, which resulted in increased revenue. However, the quantum of such increase in revenue is not quantifiable.
- There was a steady increase in profit with a corresponding increase in the ACGR.
- The operating ratio had shown a declining trend with 83.24 percent in 1988 to 53.7 percent in 1999-2000. This shows more the number of DELs less the expenditure.
- The investment per telephone in the earlier years was much less and there was a substantial increase in the capital investment from 1981-82 onwards. It is seen that the capital investment per DEL also increased substantially from the same year.
- The percentage of return on capital was gradually falling from 1980-81. As more and more DELs were provided from year to year, the losses had been counter balanced the revenue earnings on telephones provided in the past.
- The study concludes further that a minimum return of 22 percent is required for no profit, no loss operation and prior to the year 1994-95 the Rate of Return (RoR) was less than this cut off percentage. The financial condition and operation of DoT had not gone into negative merely on account of the reason of utilization of internal resources for investment; with the result there were practically no out go of funds for discharging debt obligations.

The other inferences drawn based on this study are

- There was a continuous demand for the telephone services over the years.
- The increase in demand resulted in demand for more investment
- The increase in demand was met mostly from internal resources.
- Internal resources were generated by way of surpluses.
- The surpluses were created by increasing the revenue.
- The Expenditures were not increasing at the same ratio of increase in revenue.
- The surpluses were generated merely by increasing the tariff in many years.
- The return per DEL as a percentage of investment per DEL is far less than what it ought to be.

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FDI - A way to Economic Development in Post- globalization Era

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Abstract :

One of the ways to bring a change in management process and to bring a change towards the development of economy and business as a whole is through attracting Foreign Direct Investment. India being a demand driven economy, according to Keynesian theory, an increase in aggregate demand due to induced investment would lead to an increase in the national income and would thus lead to the overall development of the economy. It would further help in the generation of employment and would also result in the learning of a lot of innovative ways of managing business from the global giants like Walmart, Tesco, Carrefour etc. In this era of globalization, external sector vulnerabilities are also affecting Indian economy because of the rapid globalization of economy. In such a situation of uncertainty and low investment, encouraging FDI would stabilize the capital account deficit (CAD) and the economic position of the country. However western countries and Latin American countries including Brazil, Argentina, Uruguay and Colombia, where the corporate retailers control the entire supply chain of food and farmers had no alternatives but to sell to the selected corporate giants at the prices offered by them, witnessed a failure of FDI. Thus, the success of FDI in a country like India requires a strong control on part of government along with transparency in its functions and policy making so that the FDI can effect our economy only positively.

Key Words: *FDI, Economic Development, Retail Sector, Technological Development and Innovations, Reduction in CAD, Globalization, Impact on Indian Economy and Indian Market.*

According to the United Nations Conference for Trade and Development (UNCTAD), FDI is 'investment made to acquire lasting interest in enterprises operating outside of the economy of the investor'. One of the ways to bring a change in management process and developing the economy and business as a whole is by attracting Foreign Direct Investment. India being a demand driven economy, according to Keynesian theory, an increase in aggregate demand due to induced investment would lead to an increase in the national income and would thus lead to the overall development of the economy. Thus, it will lead to an increase in GDP, initially through the FDI itself, but this will be followed by a positive multiplier effect on the receiving economy so that the final increase in national income is greater than the initial injection of FDI. It would further help in the generation of employment and would also result in learning of a lot of innovative ways of managing business from the global giants like Walmart, Tesco, Carrefour etc. UNCTAD (1999) reported that Transnational Corporations (TNCs) can complement local development efforts by (i) increasing financial resources for development; (ii) boost export competiveness; (iii) generate employment and strengthening the skill base; (iv) protecting the environment to fulfill commitment towards social responsibility; and (v) enhancing technological capabilities through transfer, diffusion and generation.

Let us have a small discussion on some of the positive changes which FDI is expected to bring in our economy. Coming to the retail sector, let us first discuss how the retail sector works and the prospective effect of FDI in the retail sector. In India at present, middleman described as adhatiyas preside over marts and regulate trading in foodgrains, vegetables and fruits. The farmers from one place generally cannot sell their produce to any other place directly, not even to the wholesalers, as per the Mandi Parishad rules which make it compulsory for farmers to bring their products to adhatiyas. Functionally speaking, these adhatiyas are close communities who control mandis all over India. It has been observed that most of the poor and low caste people came to entrepreneurship post 1991 - the era of liberalization (Devesh Kapur, The Centre of Advanced Study of India, University of Pennsylvania). This happened because liberalization opened doors for global competition and Indian businessmen had to fight globally to survive. Hence, instead of producing one product under one roof, industries witnessed an outsourcing of ancilliaries. This gave many people opportunities to become new entrepreneurs with the available opportunities. FDI in retailing with foreign players will also open new system of retailing with job opportunites to thousands of people across the country. The existing unorganized sector of money lenders, discourages new players and most often blocks the circulation of currency thereby hurting the economy. FDI propelled retail will provide finance to the system where even the existing people of the mandi system will find their place as new suppliers in meat, fish, chicken, eggs, fruits, vegetables, etc.

Apprehensions like such pricing behaviour can drive out existing small kirana stores and end up with creation of monopolistic power in the absence of these small stores seems to be quite irrelevant. In this aspect, we can feel the effect of big players like Walmart can be analyzed by analyzing the effect of the entry of some of the existing players like Food bazaar, Reliance Fresh, Spencers, etc.

Observations :

A survey was made in Kolkata analyzing the effect of big retail outlets like Food bazaar, Reliance Fresh, Spencers, etc on local grocery shops. Opinions of few shopkeepers were sought in areas comprising of New Town, Rajarhat and Tegharia where big retail stores like Big Bazaar, Spencers, Reliance Fresh have gripped the market. Most of the selected shops were located at close vicinity of these stores. The result was quite surprising. An important observation was that the shops which were not close to these stores were not affected at all by the sales. However, the shops observed that after these big stores opened in their neighbourhood, for the first two months, their sales fell by around twenty to twenty five percent. However, the sales revived after two months and continued increasing thereafter. The reason for such revival was that initially when these stores were opened, households started purchasing things in bulk trying to add points to their shopping cards generally provided by these big stores. However, soon after they started sending their maid servants for buying these grocery items, who inturn found it pretty complex to enter into such big stores. Further, there happens only a few counter for cash and the fear of a long queue generally makes people opt for the local kirana shop. In response to the operation of Food Bazaar, Reliance fresh, etc, these kirana shops located inside the housing complexes further brought a little innovation and better servicing like 'home delivery for orders above Rs 100 only', etc.

which for example in Reliance Fresh was for a minimum purchase of Rs 1000. Further, in order to gain the goodwill and loyalty of the customers and to build a good relationship with them, these shops also provided home deliveries to some regular customers, even at a purchase of less than Rs 100 on circumstances like sudden arrival of guests, etc. Another reason for the sale of these Kirana stores being revived was that the big stores offered a discount after accumulation of certain points in their card. However, the local shops offered some discounts immediately. People found it rather attractive to get an instant discount then to wait for a long time for points to get accumulated on regular purchase and then avail it. Hence the sales revived and kept on increasing.

In our survey, we also took their opinions on the decision of the government to allow 51% FDI in retail sector. In response to this, 75% of the local retailers said they do not have any problem with the government decision as they feel that neither their sales were much effected previously with the entry of these existing huge retail stores, nor would be affected in future also irrespective of whether it is a foreign entity like Walmart. According to them, in India where people are too busy in their lives, the sale of local Kirana shops would never stop. A little improvement in service and a good behavior can bring a lot of new customers. In this respect, a female entrepreneur, who owned a retail grocery store inside a housing complex in New Town mentioned, "When Reliance fresh and Food Bazaar and Spencers all opened at a distance of 0.5 kms from my shop, I had no option but to bring innovation in my existing business to enjoy the monopoly of my shop, which it did enjoy before the arrival of these big players. I instructed my staffs to provide much better service and include things like free home delivery, etc. to win new customers. Now my shop makes a sale of Rs 25,000 per day despite the existence of much bigger shops in close vicinity". Thus, arrival of Walmart, etc would actually lead to increased competition in retail space resulting in lower prices which is most likely to improve consumer welfare, giving benefits to the low income households the most. However, to a few section of these shopkeepers who denied a fall in their sales due to the existing big retail stores, the entry of Walmart on the contrary is unacceptable as these giants would not only resell, but would also make their own product by buy the raw materials directly from the producers and might keep a very low profit margin to sell their direct products as there would be no middleman.This, they fear, might affect their business adversely.

We also took the opinions of a few respondents in cities like Delhi who too felt buying from local grocery store or local vegetable seller is better and easier than taking it from Big Bazaar, etc. They found it boring and time consuming to go and shop themselves in big retail stores. Hence they preferred home delivery which the local shops provided them. They also feel that vegetables are available at a cheaper rate from the vegetable seller. Further, people are of unanimous opinion that the vegetables available with them are much fresh then those with Food Bazaar.

Local shopekeepers and dealers from small cities like Bhagalpur (Bihar) are of the opinion that setting up of big stores like V- Mart (since other big stores like Big Bazaar, Spencers, Reliance Fresh have not been set there yet) have definitely added new brands to consumers choice but the sale of small stores have not been affected much by these. Probably these brands have increased consumer spending thus without affecting the sale of the small stores

to a noticeable extent.

The FDI in retail may be particularly helpful in improving supply chain management through greater investment in infrastructure, including cold storage for farm and poultry products. India should now aspire to get the tag of developed nation which can never be possible with the traditional retailing system. All other developed nations too had mandi style of retailing before modern retailing came into existence. FDI would be one such tool of progress which can rewrite India's retailing history and help making it a developed nation.

Further, FDI in the retail sector would help farmers get a good price for their produce. It will also introduce new technology and investment in marketing agricultural produce and India should take full advantage of that. Agricultural supply chains in India are highly fragmented and inefficient, leading to losses to both producers and consumers. Consumers pay high prices but the benefit of these high prices do not reach the producers. The development of efficient and vertically integrated supply chains in agriculture can take care of these issues. Again, going by the example of the Western countries and in Latin American countries including Brazil, Argentina, Uruguay and Colombia, the corporate retailers control the entire supply chain of food and farmers have no alternatives but to sell to the selected corporate giants at the prices offered by them. Also these corporations often force the farmers to push them for a single crop cultivation by using genetically modified seeds and extensive use of pesticides for their maximum profit, thereby destroying the fertility of the soil. In all cases, relatively smaller farm sizes are much more productive per unit area -200 to 1,000 percent more productive-than are larger ones. In the United States, the smallest farms, those of 27 acres or less, have more than 10 times greater dollar output per acre than larger farms. While in the U.S. this is largely because smaller farms tend to specialize in high value crops like vegetables and flowers, it also reflects relatively more attention devoted to the farm, and more diverse farming systems. Thus forcing the farmers for a single crop production has made the farmers lose the fertility and the potential capacity of the land for production.

In this era of globalization, external sector vulnerabilities are also affecting Indian economy because of the rapid globalization of economy. FDI would further lead to an increase in the productive capacity due to a rightward shift of the Aggregate Supply curve. Producers will have access to the latest technology from abroad and the need for import would be reduced as the same goods can now be manufactured in the domestic economy. This would further help in the reduction of Current Account Deficit, which is the difference between inflow and outflow of foreign exchange, due to the reduction in export. Capital Account Deficit can be managed by improving debt inflows. However, this has long term costs for debt sustainability and increases refinancing risk over time. Therefore, there is an urgent need to step up non-debt creating inflows, especially in form of FDI. In a situation of uncertainty and low investment, encouraging FDI would also stabilize the Capital Account Deficit as FDI represents an inflow (credit) on the capital account and the economic position of the country. FDI is a way of compensating for the lack of domestic investment, and can help 'kick-start' the process of economic development.

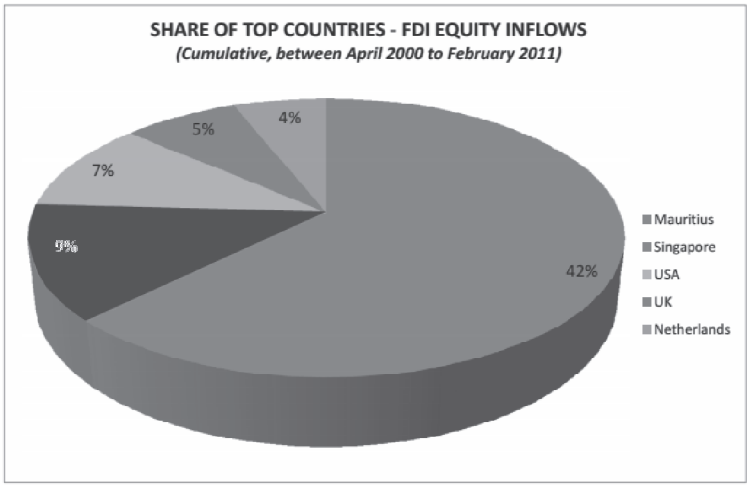
We would now see the GDP growth of India during the period 2007-11and the proportion of FDI on the GDP and would analyse how much has it contributed to the growth of GDP so far. Let us first have a look at the FDI inflows in India from top five countries of the world:

Table 1: Equity FDI Inflows to India, 2006-07 to 2010-11

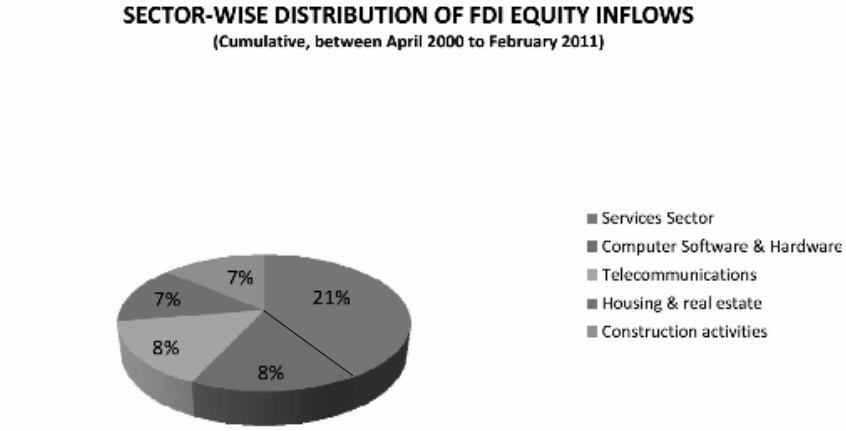
(Per cent)

Sectors	2006-07	2007-08	2008-09	2009-10	2010-11
Sectoral shares (Per cent)					
Manufactures	17.6	19.2	21.0	22.9	32.1
Services	56.9	41.2	45.1	32.8	30.1
Construction, Real estate and mining	15.5	22.4	18.6	26.6	17.6
Others	9.9	17.2	15.2	17.7	1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Equity Inflows (US$ billion)					
Manufactures	1.6	3.7	4.8	5.1	4.8
Services	5.3	8.0	10.2	7.4	4.5
Construction, Real estate and mining	1.4	4.3	4.2	6.0	2.6
Others	0.9	3.3	3.4	4.0	3.0
Total Equity FDI	**9.3**	**19.4**	**22.7**	**22.5**	**14.9**

Source *of Table 1: RBI Bulletin on Foreign Direct Flows to India, Date of Publish: May 10, 2012*



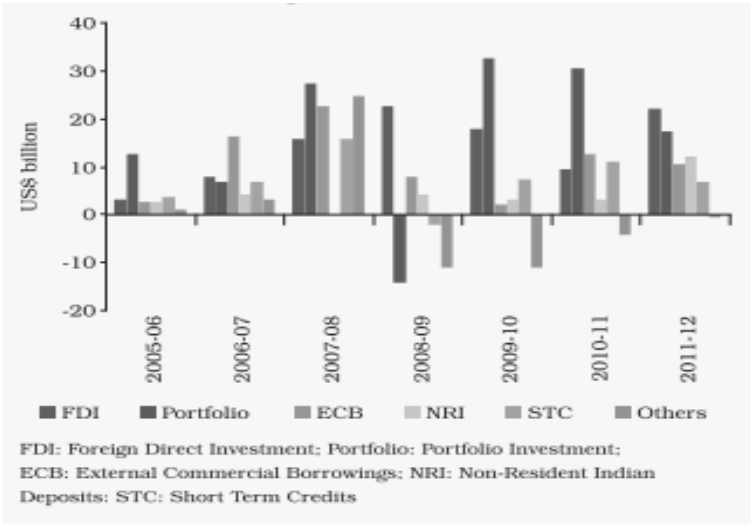
Source: *http://dipp.nic.in/English/Publications/FDI_Statistics/FDI_Statistics.aspx*



Source: *http://dipp.nic.in/English/Publications/FDI_Statistics/FDI_Statistics.aspx*

The Fig. 3 below shows the trends in major components of capital inflow in India across different years. It can be clearly observed that FPI has been the major source of capital flows almost across all years except 2008-09 which was the period of global depression. However, as a result of the different measures taken by the government to open doors for FDI, the flow of funds through Foreign Direct Investment has increased during 2011-12, where it holds the highest proportion compared to other sources.

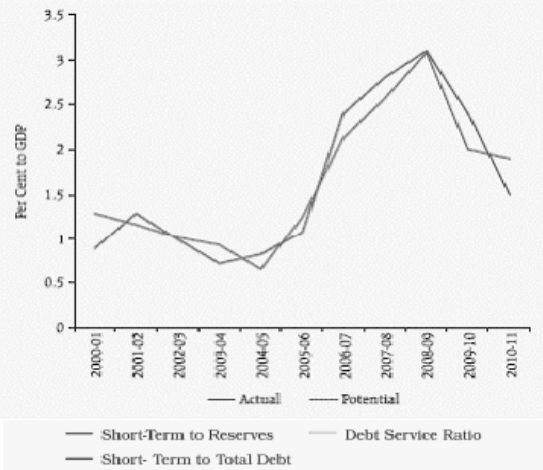
Fig 3: Trends in Major Components of Capital Flows (Net)



Source: *http://dipp.nic.in/English/Publications/FDI_Statistics/FDI_Statistics.aspx*

Let us now analyse the percentage of FDI in GDP so far, both actual and potential, and see its effect in the economy:

Fig 4: FDI Inflows- Actual and Potential



Source: [http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=13224]

The percentage of actual FDI flows to GDP which almost tracked the potential level till 2009-10, fell drastically (25 percent) during 2010-2011. Further, counter factual scenario attempted to segregate economic and non-economic factors seemed to suggest that this large divergence between actual and potential during 2010-11 was partly on account of rise in policy uncertainty.

Though FDI has failed in the development of some of the countries like Soviet Union, Korea, on one hand, it has been a wonderful concept in the growth of China on the other. To understand this, we have to first understand that an FDI is made by an investing country mainly to reap profits and take advantage of the cost differences between two different economies. Also the theory of multinational firms shows that a firm becomes a multinational if it has intangible asset advantage in technology, brand name and organization otherwise local firms can produce the product more efficiently than a foreign firm (Hymer, 1960). Further other factors like government policies, attitude, political and social institutions, management decisions all influence the success of an MNC in host country. The institutional environment in terms of the constitution, the legal system, property rights, contract laws, regulatory institutions, embedded norms and customs and consumer behavior determine transaction costs of business and this could be broadly similar across a group of countries and diverse across a group of other countries. That is why when Wal-Mart entered Canada and the U.K. it has been successful. However, it failed in South Korea and Germany and struggles in countries such as Japan and Russia. In case of Germany, Wal-Mart management at the top was not able to understand and deal with Germany's regulatory and institutional conditions and consumer preference for value rather than service and work culture of Germans. In case of South Korea, consumers prefer to buy small and fresh quantities and the Korean competitors attracted consumers away from Wal-Mart with marketing strategies based on nationalistic feelings. Apparently, developing countries need to have reached a certain level

of development in education, technology, infrastructure and health before being able to benefit from a foreign presence in their markets. Imperfect and underdeveloped financial markets may also prevent a country from reaping the full benefits of FDI. [OECD 2002]

FDI has been an integral part of the China's economic reform process and so it was very successful there. It has gradually opened up its economy for foreign businesses and has attracted large amount of direct foreign investment. Priority was given to FDI in the agriculture, energy, transportation, could take advantage of the rich natural resources and relatively low labour costs in the central and northwest regions. China's policies towards FDI have experienced roughly three stages: gradual and limited opening, active promoting through preferential treatment and promoting FDI in accordance with domestic industrial objectives. These changes in policy priorities inevitably affected the pattern of FDI inflows in China. Wal-Mart entered China in 1996 and now it operates more than 352 stores in 130 cities. The retail sector witnessed a rapid growth in China with rising investments in rural infrastructure and setting up of new supply chains. Most of these changes have been brought in China by these foreign players and the local companies too learned quickly to out compete with foreign rivals. The success of Chinese local retailers were enabled by .the government controlling the speed of gradual opening up process which gave Chinese retailers time to adapt. Thus, one of the major reasons for the success of FDI in China was the favourable attitude of the government and the positive attitude of the people to take on the challenges and come up with new innovations based on the competition.

Based on recent development, USA, which is one of the largest FDI source countries, has promised to invest in the less developed locations like North Eastern regions of India in tea, industry, tourism, telecom and IT sectors which would help in filling up the infrastructural gap of these incredibly rich in natural resources north eastern states and would thus also contribute to the balanced development of the country as well. But the question is would these faster development not lead to faster deployment of natural resources leading to resource crisis for the future generations to come?

Now the question is that, will FDI benefit each and every section of the society or it would be only good for some of the people so categorized as "sophisticated" who would be more than happy to use foreign products which they consider to be superior. In this respect, I have interviewed selected respondents on what they feel about FDI and their experiences so far on this. Someone asked me, "Do you know which section of people do you belong? "Sophisticated". But when we think of the crores of Indians who cannot even fulfill their basic necessities, foreign products do not make a difference for them. Do you think these global giants would be able to reach these poor farmers. I won't be surprised if I hear some powerful people forming a group and coming in between the farmers and these global giants and enjoying the price difference themselves as profit without making it actually reach the general public." On the other hand, another respondent expressed his views saying "If we look into our everyday life, we have already allowed FDI in our lives. Go to Spencers and you will find a lot of foreign brands already enjoying a very good turnover. Even I used to have Maggi noodles earlier, but once I tasted Koka noodles, I stopped there itself and don't have maggi anymore. It costs me around Rs 20, 5 rupees more than Maggi, but I really love the taste and I am really happy with it. Even the concept of frozen chicken nuggets have been

taken from Tyson in India. So FDI help us in many ways." Though I personally believe that fighting against a foreign brand is challenging, but if it can be taken positively, the consumers and the economy as a whole would be benefitted a lot. For example, Maggi has now come up with a lot of varieties, including the nutritive Atta Maggi with vegetable added, though at a higher price to reach upto the expectation of those section of people who are looking for a change. This would inturn lead to the overall development of the economy, consumers being the gainer.

Further the success of any change at macro economic level depends on the efficient role played by the government. The government should follow all fair practices and take regulatory measures from time to time which would help people take maximum advantage of FDI.

Conclusion :

FDI might be one of the major source of financing the economic development in India, but it must be kept in mind that it is not the only source of development, poverty eradication, unemployment removal, etc. Any technological and organizational changes might have some negative effect on few in the short run who will find themselves as losers, but will have more of positive effect in the long run where people would find themselves to be gainers. Further, as the presence of large retailers increases, government tax revenues will increase which can be used to compensate the losers. Innovations and quick learning of the superior technology would help the domestic firm standing in competition with these global giants. Government should ensure a fair policy of these foreign players while dealing with farmers to help them reap the benefits of FDI. Policy makers need to ensure transparency and consistency in policy making along with comprehensive long term development strategy.

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A Causal linkage between Economic Indicators and Stock Market Returns - Evidence from National Stock Exchange

Gholam Syedain Khan

Abstract :

This paper made an attempt to explore the causal relation between economic indicators and stock market returns. The study has taken Gross Domestic Product (GDP) and Inflation as economic indicators and NSE Nifty as the market proxy for the period of ten years using quarterly data from January 2003 to December 2012. Using the Augmented Dickey-Fuller and Phillip-Perron unit root test, the two variables GDP and Inflation are tested as non-stationary at the level but stationary in first difference although, stock return was found to be stationary at level. There is insignificant positive correlation found between GDP and stock returns whereas it is negative between Inflation and stock return. Granger Causality test highlighted bidirectional relationship between stock returns and GDP at 5% significant level. Although, the regression model does not fit properly which signify that the explanatory variables are not good enough to predict the movement of the stock returns.

Key Words: *Economic Indicators, Granger Causality Test, Stock Return, Unit Root Test, Multivariate Regression Model.*

Introduction :

Stock market indices replicate the potential of the corporate listed on them and epitomise the direction and health of the economy. If economy of a country is performing well and expected to grow at a healthy rate, the market is usually expected to reflect accordingly. Even the volatility in stock market is often attributed to various macroeconomic variables. India is the fastest growing economy in the world and exposed to global markets post liberalisation. It is one of the most attractive destinations for business and investment opportunities due to huge manpower base, sturdy macro-economic fundamentals and diversify natural resources. Conventionally, it is widely believed that there is no link between stock market returns and GDP growth. This pervasive view was supported by a study of Dimson, Marsh and Staunton (2005), whose cross-sectional analysis of stock returns in 53 countries (going back to 1900 for 17 countries) did not find any evidence of a steady positive relationship between GDP growth and equity returns. So far as inflation is concerned, India is still facing up the challenge to reduce it, as it is not only affecting the common people but also increase the cost of production. Inflation is viewed as deterring the Indian economy, the impact of which, felt in the capital market too. The present study is an attempt to investigate the impact of two economic indicators i.e. GDP and Inflation on the stock market returns and their causal relationship. The study is based on empirical analysis and past researches of others, of which, references are given, wherever, necessary. The study has used mostly time series data so it is quite important to use econometric tools to subject the time series data for stationarity check, so that any proper relationship and causality can be established among the variables.

Review of Literature :

Although, there are ample of empirical studies on the effect of macroeconomic variables on stock market indices and their relationship has been studied scrupulously all over the world. Majority of studies usually focused on industrially developed economies, although, the study of this nature in developing countries like India has not been studied in detail.

Ritter (2005) studied per capita GDP growth of 16 countries over the period of 1900- 2002 and found that there is a negative correlation of GDP growth and stock returns. He observed that economic growth occurs from high personal savings rates and increased labour forces participation, and from technological change that does not increase profits unless firms have lasting monopolies, a condition that rarely occurs.

Menike (2002) used monthly data from the period of 1991 to 2002 of Sri Lankan Stock Exchange market. Multivariate regression model was applied on eight macroeconomics variables for each individual stock. The null hypothesis indicates that inflation rate, exchange rate, interest rate and money supply have no effect on stock market prices. The stock prices have an opposite impact on T-bill, inflation and exchange rate in the CSE.

Reddy (2012) studies the impact of Real Gross Domestic Product (RGDP), Interest Rate and Inflation Rate on stock prices of quoted companies of India from 1997 - 2009. Stock prices were represented by Stock Market Value Index in the model. A regression analysis showed that the explanatory variables accounted for 95.6% of the variation in stock prices. While a reduction in interest and inflation rate resulted in increased stock prices, increased RGDP has a positive impact.

Chakravarty (2005) in her paper 'Stock Market and macroeconomic behavior in India' observes that index of industrial production and inflation Granger cause stock price but stock price does not cause either of the two so the causation is unidirectional.

Khalid (2012) investigates long-run effect of macroeconomic variables on the movement of Karachi Stock Exchange (KSE) return with the monthly data of inflation, exchange rate and Treasury bill from the period 2000-2010. He found that there is insignificant positive correlation between T-Bill and inflation and T-bill & X-Rate. In order to investigate the direction of flow of information Granger causality test is used. The result shows that most of the changes in inflation are explained by itself and other variables have no or very little effect on it. So inflation is found exogenous among these variables because 0.97 percent change in inflation in comes from itself.

Ray (2012) indicates that oil price and gold price have a significant negative effect on stock price in India, while balance of trade, interest rate, foreign exchange reserve, gross domestic product, industrial production index and money supply positively influence Indian stock price.

Arodoye (2012) attempts to investigate the impact of macroeconomic variables on the determination stock prices in Nigeria with the Econometric tool Vector Auto Regression Model concludes that there is a long-run relationship between stock prices, inflation rate and real gross domestic product. His study shows that the growth of gross domestic product, interest rate and inflation rate are still good variables to be emphasized on by the government as financial policy instruments in order to stabilize stock prices in Nigeria.

Objectives of the study :

This section delineates the objectives of the present paper. Though, a number of literature is available on the relationship between macroeconomic variables and stock return, there is, however, a dearth of study on the relationship amongst key economic indicators and stock return in India. The study is an attempt to shed light on the research gap. This paper endeavours to examine the impact of economic indicator such as GDP and Inflation on stock return in India for the period January 2003 to December 2012 using quarterly time series data. The outlines of the objective are as follows:

- To make a detail discussion on the causal relationship among GDP, inflation and stock return.
- To investigate the individual and combine impact of GDP and inflation on stock returns.

Research Methodology :

The study is carried out with the help of empirical data of the select variables Gross Domestic Product (GDP) growth rate, Inflation (Consumer Price Index) and National Stock Exchange (NSE) CNX Nifty and it will be descriptive in nature for the better understanding of the undertaken study.

Study period :

The study will be restricted to the last 10 years and quarterly data of all the three variables are used from the period 1st January 2003 to 31st December 2012.

Data Source :

Data regarding CPI Inflation, GDP and Stock Return is collected from the websites of Central Statistics Office (CSO), Organisation for Economic Co-operation and Development (OECD) and National Stock Exchange (NSE) India. Books are referred to support the formation of certain conceptual definitions and depth knowledge of the subject. Journals, Magazines and newspapers are used to accumulate the latest information about the variables under study in the research.

Variables :

The study has chosen two macroeconomic variables i.e. GDP growth rate and CPI Inflation as economic indicators to find out their individual and combine impact on stock returns along with their causal relationship. The reasons for selecting these two variables are quite reasonable as these two macroeconomic variables have highly influenced on economy of any country, even theoretical and empirical evidence of past reveal their relationship. This leads to undertaking the study of the causal relationship between these two economic indicators and stock returns in the Indian context. Moreover, the results of this study can be of enormous importance and provides practical implication to numerous parties. The study has taken Consumer price index (CPI) as a proxy for Inflation as it is consider as the real index for the common people and is used by many researchers (Ray, 2012), (Khalid, 2012). Moreover, the reasons for considering CPI inflation and GDP as economic indicators are discussed below.

Consumer Price Index (CPI) as an Economic Indicator :

The consumer price index, the most widely quoted figure on inflation, estimates the overall rate of price change for a fixed basket of goods and services bought by households. CPI prices the same items every month, this measure of inflation or deflation reflects the cost of maintaining the same purchases over time. CPI act as a major guide in formulation of fiscal and monetary policies, and also help in determining whether economic growth should be stimulated or restrained. It is also contrasted with unemployment to analyze the trade-off between inflation and unemployment. It is used in a variety of ways to adjust for cost escalation in commerce and government programs i.e. inflation adjustments to wages, pensions, and income maintenance payments for cost of living allowances, inflation adjustments in business contract etc.

GDP as an Economic Indicator :

The gross domestic product is an aggregate measure of total economic production of a country. It is an extremely comprehensive and detailed report which incorporates retail sales, personal consumption and wholesale inventories. GDP growth rate is considered as a vital and broadest indicator of economic output and growth that signify the health of the economy, even the advance release of GDP often cause vibes in the markets. It is by far the most followed, discussed and digested indicator which is useful for economists, analysts, investors and policy makers. The corporate profits and inventory data in the GDP report are a great resource for equity investors, as both categories show total growth during the period. Moreover, corporate profits data also displays pre-tax profits, operating cash flows and breakdowns for all major sectors of the economy. The biggest downside of this data is its lack of frequency which is quarterly and annual basis. Investors only get one update per quarter and revisions can be large enough to significantly change the percentage change in GDP. The study on relationship between inflation, economic output (GDP) and stock returns is surely an important substance for stock market investors. If overall economic output is declining or merely holding steady, most companies will not be able to increase their profits, which is the primary driver of stock performance. However, excess GDP growth is also unsafe, as it will most likely come with an increase in inflation, which erodes stock market gains by making the money and future corporate profits less valuable. Due to above theoretical importance, the study has selected these two variables as economic indicators.

The study has taken quarterly data of GDP growth rate and it is derived from GDP value at factor cost of one quarter and compared it with the same quarter of the previous year.

GDP growth rate = $\text{Ln}\,[(G_t / G_{t-1}) - 1]$

Where, Ln = Natural Log.

G_t = GDP value at quarter 't'.

G_{t-1} = GDP value at same quarter of the last year.

Stock returns are calculated as the logarithmic difference between the share price at day t and day t-1.

Return = $R_t = [(P_t / P_{t-1}) - 1]$.

Where R_t = Return for given period t,

P_t = stock price at closing time,

P_{t-1} = stock price at opening time.

As the data are quarterly, thus, stock returns are also taken as quarterly return, which is calculated from the monthly data taking P_t as closing price at the end of the quarter and P_{t-1} as closing price of beginning of the quarter.

Statistical and econometric tools used :

In order to analyse the linkages between these economic indicators and stock returns, the data need to be statistically analysed. This study restricts to the following methods.

Unit Root Test :

A number of econometric issues can influence the estimation of parameters when we deal with time series data, without which, regression result will be spurious. Hence, prior to testing and implementing the Granger causality test and regression analysis, econometric methodology requires examining the stationarity for each individual time series. A series is said to be stationary if the mean and variance are time-invariant (Ray, 2012). A non-stationary time series will have a time dependent mean. Therefore, when any random variable is said to be stationary simply implies that the mean (Xt) and the variance (Vt) of the variable remain constant over time for all t. The study has used widely acclaimed Augmented Dickey-Fuller (ADF) test and Phillip-Perron (PP) Test which is mostly used to test unit root.

Correlation Test :

The first step of the analysis in this study involves a simple correlation test to measure the strength and direction of the association between the variables under study.

Multivariate Regression Analysis :

In statistics, regression analysis is used to model the relationship between dependent variable and the independent variables or predictors, also called explanatory variables. It signifies the strength or weakness of relationship between the explanatory variables and dependent variable.

Granger Causality Test :

Granger Causality test are conducted to further analyse the significance and direction of causality among the variables. Historically, Granger (1969) and Sim (1972) were the ones who formalized the application of causality in economics (Sarbapriya, 2012). It is a method for determining whether one time series is significant in forecasting another. The standard Granger causality test seeks to determine whether past values of a variable helps to predict changes in another variable.

Econometric Package :

The study has used econometric package Eviews 7 and SPSS 20.

Stock Market and Economy :

The stock market gives a platform to public companies to trade their shares. It is analogous to financial intermediaries, which helps to transfer funds from surplus spenders with excess

current income over spending to deficit spending units with current income falling short of spending and perhaps with higher efficiency. As a result the stock market mobilizes and channels idle resources in the economy to most productive use leading to efficient allocation of savings. According to Galbraith (1955), the stock market is but a mirror, which provides an image of the underlying or fundamental economic situation. Post liberalisation in the early 90s, the growth in Indian economy is expeditious and transcends the geographical boundaries and further open up to global markets. Thus, the movement in stock market not only reflects the Indian economy situation but also the global scenario. The process of economic reforms initiated since 1991 has been providing an investor-friendly environment through a liberalized policy framework spanning the whole economy. Though the global financial crisis have affected the Indian equity and foreign exchange markets at present, the macroeconomic brunt of the meltdown is not much, due to the overall strength of the domestic demand and the largely domestic nature of its investment financing.

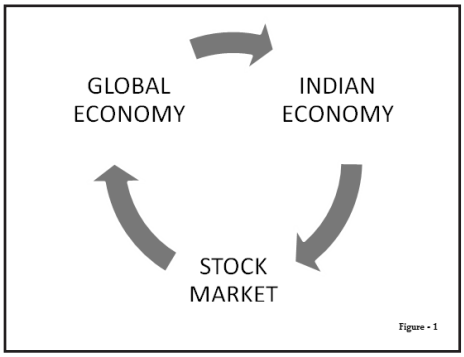


Figure - 1

Key Economic Indicators :

Among the various macroeconomic variables, few have theoretical importance and consider as the performance measures of the economy, such as Gross Domestic Product (GDP), Index of Industrial Production (IIP), Oil Price, Foreign Exchange Rate (REER), Money Supply (M3), Foreign Direct Investment (FDI), Wholesale Price Index (WPI), Balance of Trade (BoT) and Gold Price. The level of real economic activity is regarded as the crucial determinants of stock market returns. The traditional measure for real economic activity is the gross domestic product (GDP) or the gross national product (GNP). However, due to unavailability of the data for these variables on a monthly basis restricts many researchers to use IIP as an alternative to incorporate the real output. The rise in industrial production signals the economic growth (Maysami et al., 2004). Moreover, it may explain more return variation than GNP or GDP. Increase in industrial production leads to increase in the corporate earnings, enhancing the present value of the firm and hence, it leads to boost the investment in stock market which ultimately improves the stock prices. The opposite will cause a fall in the stock market, thus, maintaining a positive relationship with stock returns (Maysami et al.). Another variable that extensively used in the literature is inflation whose result is empirically mixed. Fama (1981), Chen et al. (1986) found negative correlation between inflation and stock returns which can be explained through the dividend discount model. Since, stock price can be viewed as the discounted value of expected dividend, an increase in inflation may enhance the nominal risk free rate and thus the discount rate leading to declining stock price. Oil price is another vital economic indicator which is essential for production and due to extensive import in India, it has an imperative role in Indian economy. Rise in oil prices leads to higher transportation, production and heating costs, results in increase in cost of production and will cause stock price to fall. Besides, India is an import

dominated country, thus, currency depreciation will have an adverse impact on stock market. Imported products become more expensive if Indian currency depreciates against the U.S. dollar resulting in increase in import and lowering cash flows, profits and stock price of the domestic companies. Therefore, a negative relationship is expected between foreign exchange rate and stock returns. In addition, Gold is a substitute investment avenue for Indian investors. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. Therefore, a negative relationship is expected between gold price and stock price.

Empirical Analysis :

Unit Root Test :

Augmented Dickey Fuller Unit Root Test & Phillip Perron Unit Root Test

Test for stationarity

Unit root test in this study is used to investigate whether stock returns, growth of gross domestic product(GDP) and CPI Inflation rate time series data are stationary or not. The model in which ADF test is applied is as follows:-

$$\Delta(Y_t) = \alpha + \beta t + \Delta(Y_{t-1}) + \delta_1 \Delta(Y_{t-1}) + \ldots\ldots\ldots + \delta_{p-1}\Delta(Y_{t-p+1}) + \epsilon_t \ldots\ldots (1)$$

Table - 1 : Unit Root Test

Unit Root Test	ADF Level	ADF First Difference	PP Level	PP First Difference
Stock Returns	-5.388169		-5.353464	
GDP	-3.687270	-5.888045	-3.733303	-5.960027
CPI Inflation	-2.465148	-7.940226	-2.503970	-7.929777
Critical Values				
1%	-4.211868	-4.219126	-4.211868	-4.219126
5%	-3.529758	-3.533083	-3.529758	-3.533083
10%	-3.196411	-3.198312	-3.196411	-3.198312

Here, α is a constant, β is the coefficient of the trend term (t) and p is the lag order of the autoregressive process. Y_t denotes the endogenous variables (GDP, CPI and Stock returns).

The following null hypothesis is tested:-

H_0 : absence of stationarity/presence of unit root against

H_1 : presence of stationarity/absence of unit root.

In order to test the hypothesis we use the Augmented Dickey Fuller (ADF) test and Phillip-Perron test, we compute a t-statistic. If our computed ADF test and PP test statistic less than its theoretical value at 1% level of significance then we accept the null hypothesis and claim that the series has unit root i.e. non-stationary at level and the process will continue until and unless the series turns out to be stationary. The results in the table shows that the variables GDP and inflation are not stationary at their levels except stock returns as it was already in first difference and become stationary at Level. Although, at first difference the series are

stationary, hence, we can apply any econometric models.

Table - 2	RETURNS	GDP	CPI
Mean	0.052565	7.987000	7.345000
Median	0.029208	8.885000	6.850000
Maximum	0.420447	11.30000	15.30000
Minimum	-0.245346	3.460000	2.700000
Std. Dev.	0.145212	2.068773	3.126639
Skewness	0.129250	-0.623076	0.553968
Kurtosis	2.862044	2.266696	2.654005
Jarque-Bera	0.143089	3.484386	2.245394
Probability	0.930955	0.175136	0.325401
Sum	2.102582	319.4800	293.8000
Sum Sq. Dev.	0.822376	166.9130	381.2590
Observations	40	40	40

Descriptive Statistics :

All the variables are asymmetrical. More specifically, skewness is positive for all series excluding GDP, indicating the flat tails on the right-hand side of the distribution comparably with the left-hand side. On the contrary, GDP has a negative skewness, which indicates the flat tail on the left-hand side of the distribution. On the whole, the distribution shows positive or negative skewness which indicates flatter tails than the normal distribution. All the variables show platykurtic distribution (kurtosis<3). As the value of Kurtosis in all the three variables is deviated from 3, thus, we can conclude that the distribution does not follow normal distribution.

Correlations Analysis :

The result of correlation shows that there is no significant positive correlation among these variables. There is insignificant positive correlation between GDP and Return. The correlation between inflation and GDP, though it is negatively correlated but still its value is very low.

Table - 3	LGDP	RETURNS	LCPI
LGDP	1.000000	0.115301	-0.114564
RETURN	0.115301	1.000000	-0.203412
LCPI	-0.114564	-0.203412	1.000000

Covariance Matrix

$Cov(Xi,Yi)= \Sigma(Xi-X0)(Yi-Y0)$

$Var(Xi)=\Sigma(Xi-X0)^2$

$Var(Yi)=\Sigma(Yi-Y0)^2$

Where, X0 = mean of X, Y0 = mean of Y.

Table - 4	LCPI	RETURNS	LGDP
LCPI	0.190148	-0.012718	-0.014865
RETURN	-0.012718	0.020559	0.004919
LGDP	-0.014865	0.004919	0.088538

Covariance is a measure of how changes in one variable are associated with changes in a second variable. Specifically, covariance measures the degree to which two variables are linearly associated. However, it is also often used informally as a general measure of how monotonically related two variables are. Here, we can see there is a negative covariance in between CPI with Return and GDP is there. Similarly there is a slight positive covariance between GDP and Return can be seen.

Regression Analysis :

The following hypothesis is tested:-

H_0: All the independent variables jointly cannot influence dependent variable.

H_1: Independent variables jointly influence the dependent variable.

When the p-value is equal to less than 5% (0.05), reject null hypothesis and accept alternative. R-squared and adjusted R-squared indicates the explanatory power of the models which is not fairly good in the above regression result. The model explains only 4% of the variation in the dependent variable. As the adjusted R-square as well as R-Square statistic is very low, indicating that the explanatory variables GDP and CPI are statistically insignificant to explain the variation in the dependent variable stock return. Hence, in order to improve the adjusted R-square, we should remove insignificant variables and incorporates statistically significant variables in the model. The absolute value of the t-statistic is less than 1 in case of LGDP and slightly greater than 1 in case of LCPI and the same result hold for the F-statistic also as their respective p-value is more than .05 thus, accepting Null hypothesis that all the independent variables jointly cannot influence the dependent variable.

Dependent Variable: RETURNS, Method: Least Squares Sample: 2003Q1 2012Q4, Included observations: 40.			**Table - 5**	
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.081574	0.198658	0.410626	0.6837
LGDP	0.044921	0.077729	0.577924	0.5668
LCPI	-0.063375	0.053040	-1.194853	0.2397
R-squared	0.049953	Mean dependent var		0.052565
Adjusted R-squared	-0.001401	S.D. dependent var		0.145212
S.E. of regression	0.145314	Akaike info criterion		-0.947804
Sum squared resid	0.781296	Schwarz criterion		-0.821138
Log likelihood	21.95607	F-statistic		0.972712
Durbin-Watson stat	1.623240	Prob (F-statistic)		0.387514

Durbin-Watson Statistic :

This statistic shows autocorrelation among residuals and its value ranges from 0 to 4. When the value is near 2, it indicates non-autocorrelation; Values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation. The Durbin-Watson statistic (D-W Statistic) in the above result being less than 2 (1.623240) suggests that there is no auto-correlation among residuals.

Granger Causality Test :

Granger causality analysis (GCA) is a method for investigating whether one time series can correctly forecast another (Granger, 1969). This method is based on multiple regression analysis.

Table - 6

Pairwise Granger Causality Tests			
Sample: 2003Q1 2012Q4, Lags: 1			
Null Hypothesis:	**Obs**	**F-Statistic**	**Probability**
LCPI does not Granger Cause LGDP	39	1.65580	0.20638
LGDP does not Granger Cause LCPI		0.04791	0.82798
RETURNS does not Granger Cause LGDP	39	5.08244	0.03035
LGDP does not Granger Cause RETURNS		4.41394	0.04271
RETURNS does not Granger Cause LCPI	39	0.31842	0.57606
LCPI does not Granger Cause RETURNS		0.71277	0.40410

The following hypothesis is tested:-

H_0: No Granger causality is there.

H_1: Granger Causality is there.

If $p < .01 \rightarrow$ reject H_0 at 1% significant level.

If $p < .05 \rightarrow$ reject H_0 at 5% significant level.

If $p < .10 \rightarrow$ reject H_0 at 10% significant level.

The above result of Pairwise Granger Causality test shows that there is no causality among stock return, GDP and inflation at 1% level of significance. Although, at 5% level of significance we reject null hypothesis and concludes that there exist bidirectional causality between stock return and GDP.

Conclusion and Findings :

Investors are concerned with the movement of the stock prices and it is often seen that news related to GDP and Inflation create sensations in the stock market. Stock price is influenced by a number of factors in the financial market as discussed before. Though the study is not exhaustive in the inclusion of all possible macroeconomic variables, it considers only two prominent economic indicators i.e. GDP and Inflation which are also unexamined in the context of National Stock Exchange in India. Based on empirical analysis, it is found that

stock market returns are not much affected by the past GDP growth rate and Inflation figure. The results of correlation are not supported by causality test. Even correlation between stock returns and GDP are too bleak, though positive, but there is no causality between them if we consider 1% significant level. Granger causality test of Inflation and Return shows a different story, while there is no such causality between these two variables but a negative correlation can be seen. The reason behind this may be that stock market is still in emerging stage in India and only a skimpy number of people invest in stock market due to their unawareness which makes it not so good representative of the Indian financial health. As Warren Buffet (1999) have pointed out, in a competitive economy technological change largely benefits consumers through a higher standard of living, rather than benefiting the owners of capital. Moreover, savings increases result in increase in investments, the increased amount of capital per worker will result in higher real wage rates, which is of no benefit to the owners of shares in existing corporations (Ritter, 2005). Economic growth leads to a higher standard of living for consumers, but it does not necessarily interpret into a higher present value of dividends per share for the owners of the existing stock. Therefore, whether future economic growth is high or low in a given country has little to do with future equity returns in that country. This article also argues that past equity returns are irrelevant for predicting future equity returns. Technological changes can also be the reasons for economic growth along with reinvesting earnings into existing firms or the infusion of cash into new firms. Historically, much of economic growth has come from the infusion of capital into new firms, which does not result in a higher growth rate of dividends per share for existing firms. So far, Inflation plays an important role in formulation of fiscal and monetary policy which impact economic growth. Although, there is negative relation found between inflation and stock returns but there is no such causal relation found between these variables. Stock markets are more speculative market and its return depends on future course of action rather than past economic activities. Thus, good economic forecast will definitely help investors to make equity market decisions more aptly. It is expected that if we include more statistically significant explanatory variables and remove insignificant one, then we can have a good regression model. We can conclude that GDP growth rate and Inflation are not that much responsible for causing the vibes in stock market and thus, the volatility in the market are due to some other external factors or other macroeconomic variables.

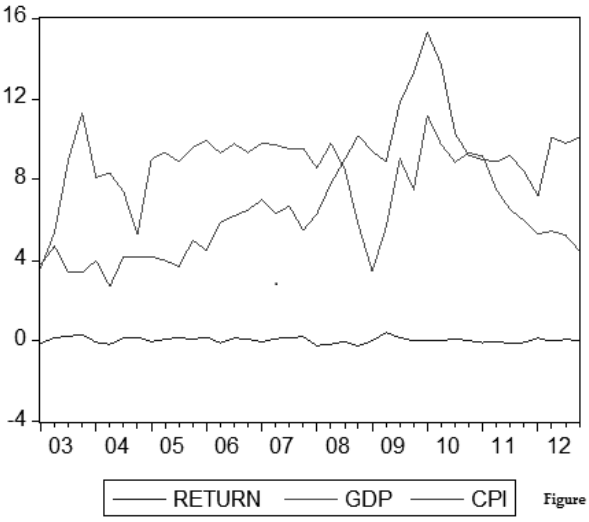


Figure - 2

Table – 7		Quarterly of data of the select variables and their exponential form					
		Stock Return	GDP growth rate	CPI inflation rate	Return	Log GDP	Log CPI
2003	**1Q**	-0.1054	3.65	3.8	-0.11	1.29	1.34
	2Q	0.1594	5.4	4.7	0.16	1.69	1.55
	3Q	0.2495	9.01	3.4	0.25	2.20	1.22
	4Q	0.3265	11.3	3.4	0.33	2.42	1.22
2004	**1Q**	-0.0574	8.12	4	-0.06	2.09	1.39
	2Q	-0.1503	8.33	2.7	-0.15	2.12	0.99
	3Q	0.1593	7.4	4.2	0.16	2.00	1.44
	4Q	0.1919	5.27	4.2	0.19	1.66	1.44
2005	**1Q**	-0.0216	9.01	4.2	-0.02	2.20	1.44
	2Q	0.0909	9.36	4	0.09	2.24	1.39
	3Q	0.1715	8.90	3.7	0.17	2.19	1.31
	4Q	0.0904	9.61	5	0.09	2.26	1.61
2006	**1Q**	0.1995	9.94	4.5	0.20	2.30	1.50
	2Q	-0.0806	9.31	5.9	-0.08	2.23	1.77
	3Q	0.1471	9.78	6.2	0.15	2.28	1.82
	4Q	0.1053	9.36	6.5	0.11	2.24	1.87
2007	**1Q**	-0.0365	9.82	7	-0.04	2.28	1.95
	2Q	0.1300	9.72	6.3	0.13	2.27	1.84
	3Q	0.1628	9.53	6.7	0.16	2.25	1.90
	4Q	0.2225	9.57	5.5	0.22	2.26	1.70
2008	**1Q**	-0.2287	8.57	6.3	-0.23	2.15	1.84
	2Q	-0.1466	9.80	7.8	-0.15	2.28	2.05
	3Q	-0.0295	8.52	9	-0.03	2.14	2.20
	4Q	-0.2453	5.77	10.2	-0.25	1.75	2.32
2009	**1Q**	0.0209	3.46	9.4	0.02	1.24	2.24
	2Q	0.4204	5.66	8.9	0.42	1.73	2.19
	3Q	0.1848	9.04	11.8	0.18	2.20	2.47
	4Q	0.0230	7.51	13.3	0.02	2.02	2.59
2010	**1Q**	0.0092	11.19	15.3	0.01	2.42	2.73
	2Q	0.0121	9.74	13.7	0.01	2.28	2.62
	3Q	0.1350	8.87	10.3	0.14	2.18	2.33
	4Q	0.0173	9.32	9.2	0.02	2.23	2.22
2011	**1Q**	-0.0736	9.17	9	-0.07	2.22	2.20
	2Q	-0.0199	7.49	8.9	-0.02	2.01	2.19
	3Q	-0.1247	6.51	9.2	-0.12	1.87	2.22
	4Q	-0.0645	5.97	8.4	-0.06	1.79	2.13
2012	**1Q**	0.1452	5.33	7.2	0.15	1.67	1.97
	2Q	-0.0031	5.45	10.1	0.00	1.70	2.31
	3Q	0.0804	5.25	9.8	0.08	1.66	2.28
	4Q	0.0354	4.47	10.1	0.04	1.50	2.31

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The Sustainability Agenda of Unilever: a Brief Review

Kaberi Bhattacharyya

Abstract :

Sustainability is and has been for some time now the buzzword for business strategists. This is quite reasonable - given the precarious condition of the natural environment of the earth. With business houses emerging as the major perpetrators to this annihilation, inducting sustainability agenda into their strategic management programme has become imperative, to say the least. This paper attempts a humble study of a leading FMCG major in the world, Unilever, in relation to its sustainability efforts vis-à-vis its corporate social responsibility, briefly highlighting the case as it stands in India, and infers that sustainability in practice results in cascading constructive outcomes.

Key Words : *Sustainability, Profitability, FMCG.*

Introduction :

As if it was not enough - the daunting, exhausting, bleeding, knuckle-baring business of earning profits in this fiercely competitive dog-eat-dog's-world. Now the process of earning that profit has come under severe scrutiny not only from the usual watchdogs of the tax authorities, quality checks etc. but also from the perspective of how the product (the tool for earning that profit), affects the quality of life on earth.

Yet, it couldn't be pushed back any longer. Scientists and environmentalists now for a considerable period of time have been crying themselves hoarse about how shoddy the condition of the natural environment has become, how over hundreds of years human civilization have wrought havoc with what it took millions of years for the earth to create! But the wake-up call seems to be the increasing frequency of the natural catastrophes - tsunamis, cyclones, typhoons, floods et al ravaging the earth. And all these have been irrevocably linked to the unbridled worldly progress of mankind, down the ages, without any care for nature.

It is another matter that there is no clinching evidence as yet that such a beautiful planet inside out, such as ours, exists anywhere across the spectrum of human knowledge. As countries vie with each other to trace the viability of life millions of light years away, it is ironic that such lush materialistic accomplishments are breeding tremendous aridity back home.

One of the key contributors to such severe degradation of the natural surroundings has been identified as the business sector. They in their zeal to profit and prosper, have ceaselessly dealt punishing blows to the environment in the composition of the products they have created, the manufacturing processes they have engaged in, the natural resources - both renewable and non-renewable - that they have plundered and so on. The consequences - profound and far-reaching - had been mild at the outset, prompting them to continue in their own selfish ways. But gradually the damage developed alarming proportions, which manifested in different dreadful forms, bringing on untold death and destruction every time. 'Environmental issues' were no more remote - they had become 'real' and affected everyone -

there was no escaping them. Simultaneously thanks to the active role of the media, awareness was on the rise about environmental damage, the blatant involvement of the business houses therein, the bearing of the brunt by the ordinary folks etc. Unsurprisingly a growing distrust against the age-old brands began to take root among large sections of consumers. The need to look up to trustworthy and upright businesses surfaced prominently in society. Big corporations who make it their business to be ultra-sensitive to consumer preferences felt an urgent need for redressal.

Corporate Social Responsibility :

A renewed focus on corporate social responsibility was thus the expected outcome. However as things stood, planting trees, building hospitals or maintaining pristine product quality as ordinarily signified by the term 'corporate social responsibility' would no longer suffice. As already mentioned, there was a need to restore the trust in the products that the consumers used - an affirmation that their manufacture/sourcing did not entail further damage to the natural environment. This entailed an unimpeachable allegiance to the basic tenets of corporate social responsibility which wholesomely means "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large."[1] It is the deliberate inclusion of public interest into corporate decision making, and the honouring of the triple bottom line[a]: People, Planet, Profit. Therefore sustainability which is "improving the quality of human life while living within the carrying capacity of supporting eco-system"[2] emerged as the operative concept.

Objective :

Here in this article, within the limits of time and space a humble attempt has been made to briefly explore the concepts of corporate social responsibility and sustainable innovation, interalia, in practice by one of the world's leading Fast Moving Consumer Good (FMCG)[b] major - Unilever.

Methodolgy :

This article is exploratory in nature. Information for this article has been gathered and analysed from the secondary sources. Annual Reports, Company newsletters, Unilever Sustainable Living Plan Progress Report 2012 have been prominently consulted along with other documented literature. Relevant websites have also been visited.

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a- The Triple Bottom Line is a phrase credited to John Elkington, author and founder of the consultancy firm SustainAbility. *He developed the term in 1994, and it became more widely known in 1998 with his popular book 'Cannibals with Forks: the Triple Bottom Line of 21st Century Business' Basically the term expresses a way to measure companies by more than their ability to be profitable. Instead it measures performance of a company by evaluating its social, environmental and economic success. It encourages companies to not just endeavour to make money but also to be concerned about what kind of position they hold in the world, and what kind of environment stewards they become. Another way of looking at the Triple Bottom Line is to see how a company affects people, planet and profit. Obviously, there is a need for companies to make money or they can't sustain their practices. Yet those companies*

*trying to achieve the kind of sustainability that Elkington and other business experts discuss can't be interested only in profit. Sometimes the desire for profit is to the detriment of the people of the world or to the environment in general. For a company to achieve triple bottom line, it must attempt to fulfill all three things at once.[*Source: *Bhadra, B., & Das, B (2009), The Triple Bottom Line - an Important Reporting Vehicle Towards Sustainability : ITC Ltd - A Study, Comsomath, Vol 12, No 2 p-44]*

b- FMCGs characterise frequently purchased and low-involvement items that seek to satisfy a fundamental need of the consumer.

About Unilever :

Unilever is a leading FMCG company of the world. Founded in 1930 it is one of the oldest multinationals and its products are currently available in more than 190 countries. It owns more than 400 brands and the Company claims that on any given day two billion people use Unilever products. In 2011, it emerged as the third largest FMCG company worldwide (measured in revenues), after Procter & Gamble and Nestlé.

Unilever's Sustainability Agenda: Why & How :

Apart from the very 'real' reasons concerning the environment as enumerated above, Unilever's profound business experience dictated that 'sustainability' will guide purchase decisions of the consumers across the globe in not-too-distant a future. Moreover its major competitors (like Proctor & Gamble, Nestlé) were also delving deep into environmental issues and it simply needed to keep abreast. Also, pursuing sustainability goals is prospective for precious cost-savings in the long run. It also often results in vibrant product and packaging innovations. Another very significant factor that cannot be overlooked is that Unilever generates more than half of its sales from the developing countries where deforestation, water scarcity and poor sanitation are rife. However since these countries constitute a major demand pool for Unilever, the Company's strategic roadmap which involves developing and adapting products to match domain-specific needs facilitates its rapid growth therein.

However it is pertinent to mention here that Unilever was never too far away from delivering on its social responsibilities or practicing sustainability. Among others, it had been making rapid progress in the reduction of its CO2 emissions and water usage in its units across the globe in the first decade of the new millennium. Also the Nutrition Enhancement Programme instituted by Unilever in 2006 for its food portfolio, involved a cross-category benchmark developed by Unilever Food & Health Research Institute, based on international dietary guidelines. Prior to the formal adoption of Unilever Sustainable Living Plan, Unilever was already seriously considering Brand Imprint, where the Company accounted for the resources it used, such as water, packaging, energy and raw materials, and the social and economic impacts of its brands in the countries where they are sold

But the most ambitious project so far to actualize its sustainability goals, was launched by Unilever, globally in 2010, through the Unilever Sustainable Living Plan (USLP) under the stewardship of it's the then newly-appointed CEO, Paul Polman.

About USLP :

The USLP seeks to double the size of the Company in addition to halving its overall environmental impact. The Plan set out over 50 social, economic and environmental targets and three big goals for Unilever to achieve, by 2020, globally.

The three big goals are stated as:

- ❖ Help more than a billion people take action to improve their health and wellbeing and bring safe drinking water to 500 million people.
- ❖ Halve the environmental impact of the making and use of Unilever products.
- ❖ Source 100% of agricultural raw materials sustainably and enhance the livelihoods of thousands of people in Unilever's supply chain. (It may be mentioned here that half of Unilever's raw material requirement is farm and forest based. The Company procures 2% of black tea, 3% of tomatoes for processing and around 3% of the palm oil produced in the world.[3])

The stated social, economic and environmental targets include:

- Zero workplace injuries. By 2020 the Total Recordable Frequency Rate (TRFR) for accidents in the factories and offices is sought to be reduced by 50%. For the purpose, the Company is working with Cranfield University in the UK and other partners to develop a holistic approach that tackles internal risks as well as collaborating with others to address external risks, such as local road safety blackspots.
- Halve the greenhouse gas impact of the products across the lifecycle, by 2020. By 2015, the Company aims to reach 200 million consumers and by 2020, 400 million consumers with products and tools that will help them to reduce their greenhouse gas emissions while washing and showering.
- By 2020, CO_2 emissions from energy at Unilever's are targeted to be at or below 2008 levels despite significantly higher volumes. This represents a reduction of around 40% per tonne of production.
- Halve the water associated with the consumer use of Unilever products by 2020 by reducing water usage in laundry, skin cleansing and hair washing, agriculture, manufacturing processes.
- Halve the waste associated with the disposal of Unilever products by 2020
- By 2020, Unilever seeks to reduce the weight of packaging used by it, by a third through use of lightweight materials, optimising structural and material design, developing concentrated versions of its products, eliminating unnecessary packaging thereby anticipating a saving of around €1.3 million, complemented by a material reduction of around 530 tonnes.
- By 2020, Unilever seeks to engage with at least 500,000 smallholder farmers and 75,000 small-scale distributors in its supply network, improving and enlarging their scope of livelihood.
- Lifebuoy which has been immensely successful in reducing diarrhoeal and respiratory diseases with its tailored handwashing programmes (seeking to induce

behavioural changes) in Asia has ambitious plans to scale up its school-outreach programmes in Africa.

- In 2009 Unilever collaborated with PDGI (the Indonesian Dental Association) to initiate the Brush Day and Night campaign. This oral health campaign, which encourages parents and children to adopt good brushing habits, seeks to induce behaviour change of 50 million people by 2020.
- Dove brand seeks to help 15 million young people to improve their self-esteem through educational programme by 2015.
- All dairy produce to be sourced sustainably by 2020.

Unilever's business strategy termed 'Compass' sets out clear path for the Company to achieve its USLP targets. As apparent from above, the most glorifying aspects of USLP lies in the fact that it seeks to drive benefits across the value-chain.

Progress & Delivery :

The above-mentioned goals assume grandiose proportions particularly when the scale, size and spread of Unilever are considered. Hence it would be interesting to trace the progress and delivery of the planned activities during the initial years when hitches and glitches are usually too many and impediments are commonplace that critically tests their do-ability.

Exploration of the USLP Progress Report 2012, in this context, points out to the following milestones:

Sourcing of agro raw materials	• 36% of agricultural raw materials were sourced sustainably • All the palm oil sourced by Unilever was covered by GreenPalm certificates • The Company has forged productive partnerships for specific brands including Rainforest Alliance on tea for Lipton, with Barry Callebaut on cocoa for Magnum and with vegetable farmers through Knorr's Sustainability Partnership Fund.
Help people take action to improve their health and wellbeing	• Reached out to 224 million people through health and hygiene initiatives. (119 million people with Lifebuoy; 45 million with safe drinking water from Pureit; 49 million with our toothpaste brands; and 11 million through Dove Self-Esteem programmes.) • In 2012 18% of the food portfolio by volume met the highest nutritional standards, based on globally recognized dietary guidelines. • The Brush Day and Night campaign in collaboration with PDGI (the Indonesian Dental Association) reached 49 million people since 2010 of whom 4.7 million were reached in 2012. • Piloting of a sanitation programme between the Domestos toilet cleaner brand and partners UNICEF and the World Toilet Organization.

Energy Sourcing	• All US operations of Unilever had moved to purchasing their energy from certified, renewable sources
Employee Welfare	• Lamplighter employee programme aims to improve the nutrition, fitness and mental resilience of employees. Lamplighter has reached over 50,000 employees in more than 50 countries. In 2012 it was rolled out to 12 countries.
Women Empowerment	• Special focus on women empowerment, due to the multiplier effect that women have in developing societies. This is vindicated through the Shakti Entrepreneurship programmes of Hindustan Unilever in India. Unilever also endorsed UN Women Empowerment Principles.
Green House Gases (GHGs)	• Greenhouse gas impact per consumer use has been reduced by around 6% since 2010.
Cost Reduction	• Since 2008, Unilever's manufacturing eco-efficiency programme has used number of cost-effective investments to reduce the energy, water and waste environmental footprint. Thus, over €300 million of cumulative supply chain costs have been avoided.
Economy in Water Usage	• Since 2008 the equivalent of around 1.5 litres of water for every person on the planet has been saved. • The water impact per consumer use has remained broadly unchanged since 2010.
Cutting the use of PVC	• 99% of PVC removed from entire portfolio by end 2012.
Recycle, Reuse	• 88% of office waste was reused, recycled or recovered by end 2012.
Less Use of Paper	• 24% reduction in paper consumption per head in Unilever's top 21 countries by end 2012. • 14% of the incoming invoices were processed electronically in 2012, up from 10% in 2011.
Sustainability-led innovations	• Great-tasting low fat margarines developed with up to 80% less saturated fat than butter (and less environmental impact) and more concentrated detergents. Low foam detergent Surf Excel Quick Wash requiring 50% less water for rinsing is noteworthy.
Zero non-hazardous waste	• Great-tasting low fat margarines developed with up to 80% More than half of the 252 manufacturing sites worldwide have achieved zero non-hazardous waste to landfill.
Better tomatoes from drip irrigation and by cutting down the use of fertilizers, pesticides	• Chinese tomato farmers have significantly reduced fertilizer use while increasing yields. • Pest infestation has being tracked using traps and smartphones, leading to lower pesticide use and better

	quality crops for Mediterranean tomato farmers. ● Drip irrigation system adopted for tomato cultivation in Brazil, which reduces water use by up to 20%, produces up to 30% higher yields and reduces the amount of fungicide needed by around 30%.*1
Cage-free eggs	● In Western Europe, Unilever brands of Hellmann's, Amora and Calvé have been using 100% cage-free eggs since 2009. By the end of 2011, 99% of all eggs used in Ben & Jerry's ice cream mix worldwide were cage-free. One-third of the mayonnaise portfolio in North America used cage-free eggs by end 2012*2
Sustainable dairy	● 31% of dairy produce sustainably sourced by end 2012.*3

**1-http://www.unilever.com/mediacentre/pressreleases/2013/UnileverSustainableLivingPlanhelpingtodrivegrowth.aspx retrieved on 10th October, 2013*

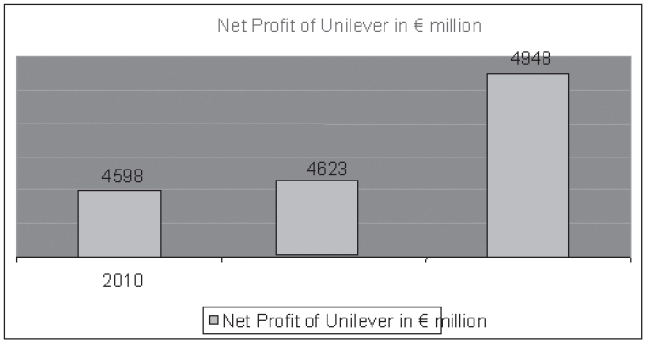
**2 -http://www.unilever.com/sustainable-living/sustainablesourcing/eggs-dairy/ retrieved on retrieved on 10th October, 2013*

**3 -http://www.unilever.com/sustainable-living/sustainablesourcing/eggs-dairy/ retrieved on retrieved on 10th October, 2013*

Financial Parameters :

Setting the sustainability wheels in motion has also meant great economics for Unilever all around. The costs have been more than offset by increased productivity, paving the way for consistent long term savings. The Company was doing great before it had embarked on USLP in 2010. It is doing even better after that.

Chart I : Showing Net Profit of Unilever in € million from 2010 to 2012

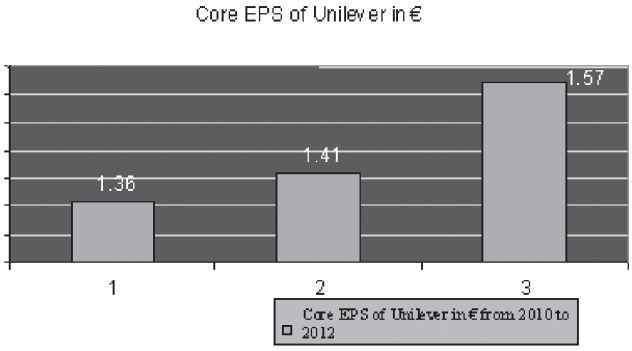


Source: Unilever Annual Report and Accounts, 2012

It is seen from Chart I that as Unilever was firmly poised in its planned path of sustainability there was progressive increase in its net profit from € 4598 million in 2010 to € 4623 million in 2011 and to further € 4948 million in 2012.

Similarly as shown in Chart II, there was noteworthy rise in its core EPS during the same period.

Chart II : Showing Core EPS of Unilever in € from 2010 to 2012



Source: Unilever Annual Report and Accounts, 2012

It is seen in Chart II that from € 1.36 in 2010, Core EPS of Unilever steadily climbed upto €1.41 in 2011 and further to € 1.57 in 2012.

Paul Polman, CEO of Unilever, marked it as the virtuous circle of growth. He said, "Sustainability is contributing to our virtuous circle of growth. The more our products meet social needs and help people live sustainably, the more popular our brands become and the more we grow. And the more efficient we are at managing resources such as energy and raw materials, the more we lower our costs and reduce the risks to our business and the more we are able to invest in sustainable innovation and brands."[4]

Unilever's Virtuous Circle of Growth



Source: Unilever Annual Report and Accounts, 2012

All these have nearly doubled the stock price of Unilever during the said period. It is pertinent to mention here the remark made by Bennett Freeman, Senior Vice-President, Sustainability Research and Policy at Calvert Investments Ltd, "Investors are increasingly rewarding companies that address sustainability challenges across their global supply chains."[5] Polman asserts, "Why would you invest in a company which is out of sync with the needs of society, that does not take its social compliance in its supply chain seriously, that does not think about the costs of externalities, or of its negative impacts on society?"[6]

Unilever's virtuous circle of growth has also won it deserving accolades. 'Behind the Brands Sustainability Report' published by Oxfam in February 2013 has placed Unilever just behind Nestlé in driving sustainability agenda. The Oxfam survey was conducted among leading food and beverages majors like Nestlé, Danone, Coca Cola, Pepsico, Kelloggs, Unilever and others on the basis of treatment of workers, women, farmers, land and water, overall transparency.

The Buzz at Hindustan Unilever :

As has already been mentioned that, USLP was launched globally in 2010. Hence it would be interesting to observe the progress of USLP in India. Hindustan Unilever Limited (HUL) is the Indian arm of Unilever. It is also India's largest FMCG company with a heritage of over eight decades in the country. It claims to touch the lives of two out of three Indians every day with its products and in 2012-13 reported a net revenue of Rs.25,810 crores[7].

HUL asserts that the "USLP guides all our actions. We are actively contributing to the global delivery of targets under the Plan"[8]

The USLP Progress Report (India), 2012, published by HUL listed out noteworthy achievements. Some of them are being mentioned below:

Sourcing of agro raw materials	• By end-2012, 69% of agricultural raw materials were sustainably sourced.[*1] • By end-2012, 100% of palm oil volumes of India were covered by 'Green Palm' certificates. • A total of 77 tea estates in Assam, West Bengal and Tamil Nadu have been certified 'Sustainable Estates' by the Rainforest Alliance by the end of 2012. In 2012, more than 15% of the tea sourced from India for Unilever's brands was from sustainable sources. • In 2012, over 60% of tomatoes used in Kissan Ketchup in India were from sustainable sources.[*2]
Help people take action to improve their health and wellbeing	• Over 17 million people reached through Lifebuoy Handwashing programmes in 2012, taking the total to 47 million people reached since 2010. (Under 'Roti Reminder' activation at the Kumbh mela in Allahabad in Uttar Pradesh nearly 2.5 million rotis were stamped and served with Lifebuoy Handwashing reminders) • The food portfolio in India is virtually free from trans fats originating from partially hydrogenated vegetable oil.

	• More than 60% of children's ice cream portfolio in India contains 110 kilocalories or fewer per portion. • All food labels of HUL carry information on energy, protein, sugars, fat and also on saturated fat, fibre and sodium, where relevant. • By the end of 2012, 66% of the Foods portfolio (by volume) was compliant with the 5 g per day salt target.[*3]
Reduction of Workplace Injuries and Accidents	• 62.5% reduction in the Total Recordable Frequency Rate of workplace accidents and injuries in HUL offices and factories over 2008 level. • All employees and their families are involved in home safety and road safety initiatives.
Employee Welfare	• Approximately 15,000 employees have been covered by the Lamplighter employee programme in India.
Women Empowerment	• Number of Shakti entrepreneurs scaled up to 48,000 in 15 states across India
Cut in CO_2 emissions, waste, electricity and water use	Launch of Project Neutral, leading to reduction of • CO_2 emissions per tonne of production in India 22%, • Water use by 29% • Waste by 77% compared to 2008*. (*per tonne of production in 2012 over 2008 baseline) • Out of 38 HUL factories, 30 became zero-discharge sites by 2012 • New lighting systems with CFL bulbs installed to reduce power consumption by 50%.
Reduction in Employee travel	• In 2012, over 2,000 meetings were held utilising the telepresence facility, dramatically cutting business trips to and from India. • 30 video conferencing facilities present in key locations across India
Water Conservation	• The Hindustan Unilever Foundation has created water storage and conservation potential to the extent of 25 billion litres as of March 2013.
Cutting the use of PVC and Paper	• In 2012, a number of projects were implemented across categories, resulting in a potential annualised reduction of more than 1,500 tonnes of plastic and over 700 tonnes of paper.
Recycle, Reuse	• HUL and Bharti Retail implemented a joint programme named 'Go-Recycle' where consumers were encouraged to bring empty plastic bottles and pouches of any brand from select FMCG categories and they were given discount coupons for future purchases in return. In 2012, HUL and

	Bharti Retail 'Go-Recycle' programme engaged over100,000 shoppers over a six-month period. ● Refills in several products such as Lifebuoy, Vim Liquid & Kissan Ketchup progressively introduced in the market. ● Study of long-term techno-commercial feasibility of different technology options of turning sachets, pouches, and other flexible plastic waste into fuel oil at a viable cost.
Sustainability-led innovations	● More than 30,000 climate-friendly freezers with Hydrocarbon technology deployed in India till date. ● Kissan creamy spread provides more than 15% of the essential omega-6 fats and has less than 33% saturated fat, which is about eight times less saturated fat than other leading table spreads. ● Launch of Magic water saver in May 2012 that help save up to three buckets of water per wash. ● Comfort 1 Rinse fabric conditioner helps consumers save two buckets of water per wash. ● Low foam detergent Surf Excel Quick Wash requiring 50% less water for rinsing is very popular in India.
Zero non-hazardous waste	● HUL factories with 100% zero non-hazardous waste to landfill increased to 31.
Better Livelihoods	● Promotion of better livelihoods by helping smallholder farmers, supporting small scale distributors, Shakti programme, Kwality Walls Vending programmes

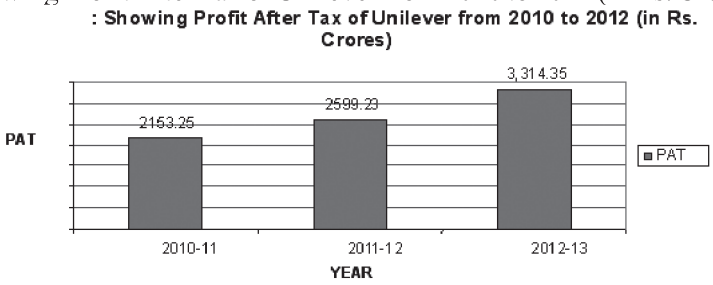
***1 - HUL Annual Report, 2012-13**

***2 - HUL Annual Report, 2012-13**

***3 - HUL Annual Report, 2012-13**

All these initiatives were implemented in India during 2010 to 2012, when the country was reeling under mounting commodity and food inflation and the GDP growth was moderate. Moreover HUL was under immense competitive pressure. Yet as is borne out from Chart III pertaining to Profit After Tax (PAT) of the Company during the said period, its sustainability agenda was helping it to reap rich dividends.

Chart III: Showing Profit After Tax of Unilever from 2010 to 2012 (in Rs. Crores)



Source: HUL Annual Report, 2012-13

It is observed from the above Chart that after adoption of USLP, HUL's PAT has increased from Rs, 2153.25 Crores in 2010-11 to Rs, 2599.23 Crores in 2011-12 to Rs. 3314.35 in 2012-13. Such marketing success has therefore reaffirmed HUL's conviction in 'Doing Well By Doing Good' - it has also undoubtedly vindicated the wisdom of its sustainability agenda.

Conclusive Remarks:

Putting it euphemistically in the merciless world of modern marketing warfare, achieving consumer patronage is overwhelming. Maintaining it is even more thorny. Unilever has been doing this pretty well and for pretty long. It has entailed plenty of sacrifices, false steps, huge costs, headaches, heartaches and heartburns. But the sustainability agenda has created an overall win-win situation for both Unilever as well as its stakeholders, across the globe. Having modulated its brands (the primary tool to reach out to the consumers) on the very essence of USLP it has sought to make sustainable living commonplace; and in the process, settled itself firmly in the driver's seat to achieve the most daring of financial goals.

In India, HUL has also vibrantly embraced the sustainability gameplan. Dynamically meeting and exceeding its benchmarks, HUL has steadfastly remained the preferred choice of its consumers amidst swelling competition - making productive contributions to the steep global targets.

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Determinants of Total Factor Productivity Growth of Agricultural Output

Madhumita Sengupta

Abstract :

It is a fact that total factor productivity (i.e. technical change) in agriculture is both a necessary and sufficient condition for the development of agriculture, question therefore arises what determine technical change in agriculture. The answer to this question will be helpful in making a distinction between agricultural strategy and policy instruments to achieve it and in identifying policy priorities for technical change.

Key Words: *Total Factor Productivity Growth, Technical Change, Price and Non Price Factor, Crop Diversification Index, Gini Coefficient, Agricultural Diversification, Malmquist Productivity Index.*

Introduction :

Technical Change is influenced by non-price factor like government investment in agricultural research, education, extension and infrastructure like rural roads, regulated markets etc. [Jha and Evenson (1973); Rosegrant and Evenson (1994); Kumar and Rosegrant (1994)]. According to Dholakia and Dholakia (1993), the main determinants of total factor productivity growth has been found to be the use of modern inputs like fertilizer, HYV seeds and irrigation.

Desai and Nambodiri (1997) considered both the price and non-price factors while explaining TFPG for the period 1966-67 to 1989-90 using Tornqvist Theil Index to understand the process of change in total factor productivity. Among the non-price factor, technical change is mostly influenced by government expenditure on R & D, followed by rural literacy, land distribution through existing ceilings, rural roads, marketing and banking infrastructure and balanced use of fertilizers combined with efficiently managed irrigation. The price factor as represented by barter terms of trade, a composite index of PR (prices received by the farmer for the sale of their products) to that of PP (prices paid by the farmer to purchase farm inputs and consumer goods) are inversely related to total factor productivity growth. However, the effect is not statistically significant.

However, none of these studies applied non-parametric approach to the measurement of TFPG, as considered in the present Chapter. Therefore, we may end up with a different factors explaining TFPG by using a different approaches to the measurement of TFPG.

In this present Research Paper, we have considered the following factors to explain the determination of Total Factor Productivity Growth (TFPG): (i) Physical Infrastructure, (ii) Crop Diversification Index, (iii) Degree of Openness, (iv) Availability of Agricultural Credit, (v) Rural Literacy Rate, (vi) Consumption of Fertilizer, (vii) Private Irrigation Facilities, (viii) Amount of Rainfall, (ix) Total Area under Irrigation and (x) Inequality of Land Holding as measured by the Gini-Ratio.

The Major Variables in Explaining Total Factor Productivity Growth :

Total factor productivity in agriculture is most likely to be influenced by the application of modern agricultural inputs like increased use of irrigation facilities, fertilizer use etc. These

modern inputs improve the marginal productivity of the traditional factors - land, labour and capital. In addition to it for agriculture total productivity growth may be influenced by the weather related variables like rainfall. The above arguments explain the inclusion of the following explanatory variables for the determination of total factor productivity growth:

- **Consumption of Fertilizer:** The Consumption of Fertilizer represents total consumption of fertilizer divided by total area under agricultural operation and is denoted by **CFA**.
- **Area under Irrigation:** This variable represents the ratio of total area under irrigation to total area under agricultural operation and is denoted by **IRA**. We have decomposed total irrigation facilities into two parts:
  a) **Private Irrigation Facilities:** This variable represents different sources of irrigation facilities used other than Government Sources as a proportion of total irrigation facilities used, and is denoted by **PRI**.
  b) **Government Irrigation Facilities:** This variable represents different sources of irrigation facilities under Government Canals and is denoted as by **GI**.
- **Amount of Rainfall:** Since technical change is measured as residual growth in productivity, any fluctuation in production would also be reflected in changes in productivity. Since production in agriculture depends largely on rainfall, the average annual rainfall could also determine fluctuation in TFPG.

The variable rainfall, as denoted by RF, is measured by average amount of rainfall, per unit of total area under agricultural operation.

The role of the non-price factors in explaining the movement of total factor productivity growth arises from the shift in the structural change in agriculture. These shifts could be from (a) antiquated to modern scientific knowledge based farming (b) isolated to those integrated with the rest of the world and from (c) oppressive to egalitarian land tenure system [Dantawala 1967, 1970]. Three broad policy instruments that would facilitate these shifts are (i) government expenditure on R and D, form inputs and credit (ii) institutional infrastructure for access to product, inputs and credit markets and (iii) land reforms respectively.

In this Paper, the **first set of factors** is approximated by **(i) amount of government expenditure on agricultural education and research, (ii) rural literacy rate and (iii) availability of agricultural credit.**

- **Amount of Government expenditure on agricultural education and research:** It is undisputed that R&D is a corner stone for growth in total factor productivity, government expenditure for R&D in agriculture is also unquestionable because it is a public goods in which case market fails and or works imperfectly. Thus, the amount of government expenditure on agricultural education and research is considered as an explanatory variable. The amount of Government expenditure on agricultural education and research is also normalized by dividing it total area under agricultural operation and is denoted as **EDUR. It is expected that TFPG and EDUR are positively related.**
- **Rural literacy rate:** The literacy would enable farmer to improve efficiency of farming because it enable them to be more scientific in the application of various new inputs.

This variable is denoted as **RLR** and is a measure of human capital. It is expected that there exists a positive association between TFP and RLR.

- **Availability of agricultural credit:** In the agricultural sector, most of the farmer are facing credit constraint and hence the release of this constraint will help the farmer to purchase different inputs needed for production process and hence will imply a positive movement of total factor productivity growth. The availability of agricultural credit is measured by the amount of loan sanctioned by different rural banks and agricultural cooperative banks. We have normalized the variable by dividing it by total area under agricultural operation and denote it as **LOANA. It is expected that there exists a positive relationship between TFP and LOANA.**
- **Physical infrastructure:** Another variable explaining the variation of TFP is the physical infrastructure. It provide more access to the market for the produced output, provide more information and greater access to technicalnology. This will likely have positive effect of total factor productivity growth. **Physical infrastructure is defined to include three key infrastructure facilities:**
  a) Transport facilities (consisting of both road and rail route per square km. area)
  b) Telephone main line per thousand of population
  c) Per capita consumption of electricity.

Per capita consumption of electricity will indicate degree of modernization including the more use of modern inputs like electric pump-sets, tractors, etc.

Physical infrastructural index is constructed by employing the well-known multi-variate techniques of factor analysis from which follows the principal component analysis. (Fruchter 1967). In **PCA Approach,** the first principal component is the linear combination of weighted facilities that explains the maximum variance across the observations at a point of time. Here, the sole objective of the weighing mechanism is to explain the maximum variance for all individual indicators taken together across the states at a particular point of time. Before multiplying the respective weights derived from 'factor loading', the raw infrastructure facilities have been converted into unit-free values dividing by state wise (i.e. column wise) standard deviation to neutralize the heterogeneity due to the varied units. Therefore, the **infrastructure index** is a linear combination of the unit-free values of the individual facilities such that:

$$\mathbf{I_{ij} = \Sigma W_{kj} X_{kij}} \qquad \text{(I)}$$

Where Index I_{ij} = infrastructure development index of the i-th state in j-th time

W_{kj} = weight of the k-th facility in j-th time

X_{kij} = unit-free value of the k-th facility for the i-th state in the j-th time point

It is expected that there exists a positive relationship between TFP and I_{ij}.

- **Crop Diversification Index:** Diversification of agricultural production basket gives more access to the products, help the farmer to be more competitive, help to reduce the degree of instability of agricultural production. Since total factor productivity growth represent the amount of increase in output not accounted by increase in all the inputs,

reduction in the degree of instability will also be reflected in the variation of TFP.

Thus, it is expected that there exists a positive relationship between the degree of diversification and total factor productivity growth.

Diversification can be measured by to what extent the commodity concentration is reduced. Commodity concentration for state j can be measured by Gini-Hirschman coefficient, Gj defined as follows:

$$G_j = (\Sigma S_{it^2})^{1/2} \qquad \text{(II)}$$

Where sit is the share of crop i in total production of state j

And k= no. of commodity that we are producing.

The value of Gj will be reduced as we diversify and increase the number of commodities in total production basket. In that case, share of previously important commodities will gradually diminish and the effect of such diminution will likely to be magnified as we square the term. We first square the term sit to place greater weights on the more important commodities.

The highest possible values Gj can take is unity, which will occur when the commodity will produce a single commodity, whereas the lowest possible values of Gj = $1/(k)^{1/2}$, which will occur in the most even case when share of each commodity will be equal. Therefore,

$$1/(k)^{1/2} < Gj < 1 \qquad \text{(III)}$$

Our measure of Crop Diversification Index (CDI) for the State is given by the formula:

$$CDI = 1/\sqrt{\Sigma S_{it^2}} \qquad \text{(IV)}$$

It is expected that there exists a positive relationship between CDI and TFP.

- **Gini Coefficient of distribution of own land holding :** The inverse relationship between productivity and farm size in Indian agriculture is widely accepted. This is due to the smaller farmers labour endowment over which they have better command in making farming more careful husbandry-oriented. It is also be cause larger farmers have diseconomies in managing larger labour force. Moreover, scale economics in general are insignificant in agriculture. It is expected that the growth in TFP is inversely related to inequality in land ownership distribution. While this may be its labour management related effects, it is likely that this inequality may enable larger farmers to have greater access to knowledge as an input and thereby TFP may be directly related to it. (Apriori therefore, influence of Gini ratio of distribution of land holding can either be negative or positive or zero.) While this may hold at the aggregate level, it is important to note that these two effects (i.e. labour management related efficiency and scale related efficiency) could be different for small farmer compared to large farmer. In case of small farmer the labour management efficiency could be positive, through the scale effect could be negative as their access to new knowledge and ability to take risk could be lower. But exactly opposite may hold in case of large farmer.

  Gini Coefficient is defined as a ratio of the areas on the Lorenz Curve diagram.

If the area between the line of perfect equality and Lorenz Curve is A, and the area under the Lorenz curve is B, then the Gini Coefficient is A/ (A+B).

Since A + B = 0.5, then the Gini Coefficient (G) = 2A = 1 - 2B. (V)

If the Lorenz curve is represented by the function Y = L(X), the value of B can be found with integration and:

$$G = 1 - 2\int_0^1 L(X)\,dx \quad \ldots (VI)$$

Sometimes, the entire Lorenz curve is not known, and only values at certain intervals are given. In that case, Gini Coefficient can be approximated by using various techniques for interpolating the missing values of the Lorenz curve. If (X_k, Y_k) are the known points on the Lorenz curve, with the Xk indexed with increasing order $(X_{k-1} < X_k)$ so that:

- X_k is the cumulated proportion of the population variable, for k = 0,……., n with $X_0 = 0$ and $X_n = 1$.
- Y_k in the cumulated proportion of the income variable for k = 0,……., n with $Y_0 = 0$ and $Y_n = 1$.

If the Lorenz curve is approximated on each interval as a line between consecutive points, then the area B can be approximated with trapezoids and

$$GINI = 1 - \sum (X_k - X_{k-1})(Y_k + Y_{k-1}) \quad \ldots (VII)$$

is the resulting approximation for G.

In our present problem, we intend to construct the Gini Coefficient for agricultural land holdings. We have the data on numbers of farmers and the area of land holding for the following intervals i.e., for the following groups of farmers: marginal (below 1 hectare), small (1-2 hectares), semi-medium (2-4 hectares), medium (4-10 hectares) and large (10 hectares and above).

We will take number of farmers for each interval as X- value and the area of holdings as Y-value and calculate the Gini Coefficient using the relation (VII).

- **Index of Openness:** Since 1991, India is pursuing different polices of liberalization for different sectors of the economy including agricultural sector. Further, in 1993, the Uruguay Round of General Agreement on Tariffs and Trade (GATT) extended global free trade to formerly sacrosanct agricultural sector. The World Trade Organization (WTO) started functioning on 1st January 1995, as an international organization, but the General Agreement remained under WTO's umbrella.

It is well understood that trade liberalization provide many benefits such as increase in market size, knowledge of demand characteristics in foreign markets, information about new technologies, process and products and cost reductions and quality improvements. Also the gains from trade can arise because of (a) movements of existing production possibility frontiers (due to technical efficiency) (b) movement along the existing frolics because of new trading opportunities and (c) upward shift of the frontiers (due to learning, application of improved technologies and adoption of better farming practices). The upward shift of the frontiers measures the magnitude of total factor productivity growth.

Therefore, in order to measure the impact of trade liberalization policies on TFPG we have constructed an index specifying the degree of openness and then used as an explanatory variable while explaining the variation of TFPG.

The index specifying the degree of openness can be constructed as follows:

Let the country export K number of agricultural goods and net export of each commodities be X_1, X_2 ……..X_K. Let X be the net export of the country. Then $S_1 = X_1/X$, $S_2 = X_2/X$, …….. $S_K = X_K/X$, be the share of each commodities in total export basket.

Also consider there are j = 1, 2 ….. n number of states in the country.

Suppose W_{ij}, I = 1, 2 ….. K, j = 1, 2 …. N is the value share of crop I in total agricultural production of state j. Then the index of openers for the state j can be constructed as follows:

$$\mathbf{DOOP = WijS_1 + W_2jS_2 + ……. + W_{kj}S_j.} \qquad \textbf{(VIII)}$$

This constructed index can be used as explanatory variables while explaining the behaviour of total factor productivity growth as measured by MPI.

From the above discussion, it follows that following specification can be used to explain the determinate of total factor productivity growth, i.e. as measured by MPI:

$$\mathbf{MPI = } f \mathbf{\ (CFA, PRI, GI, RF, EDUR, RLR, I, CDI, GINI, DOOP)} \quad \textbf{… (IX)}$$

We will also try to measure the determinant of growth of MPI.

Results of Estimation

We have used simple OLS technique to estimate the relation (X). The estimated results are presented in Table 1.

Table 1 (time period 1971-72 to 2000-01)

Regression results showing the significant explanatory variables for explaining the variation in the level of total factor productivity growth (MPI)

Dependent Variable	Constant	Explanatory Variables			R2	DW
		PRI	CFA	GINI		
MPI	0.91161 (18.521)[a]	0.12328 (1.9569)[c]	0.48915E-03 (2.3548)[b]	-0.377101E-01 (-1.6334)[d]	0.3057	2.035

- **Figures in the parenthesis gives the estimated't' value:**
- **'a' significant at 1% level of significance**
- **'b' significant at 5% level of significance**
- **'c' significant at 10% level of significance**
- **'d' significant at 10% level of significance, one tail test.**

The values of $\bar{R}^2$ are satisfactory. The estimated't' values are statistically significant.

The results indicate the as expected level of total factor productivity growth in Indian agriculture is positively influenced by the use of modern input fertilizer. The results are significant at 5% level of significance.

There also exists a positive and significant role of private irrigation in explaining total factor productivity growth. The results are significant at 10% level of significance. Thus, our analysis indicates sources of private irrigation are more important than the sources of

government irrigation in explaining factor productivity growth in India agriculture.

The role of private irrigation facilities can also be further supported from the following points of view. It is supported in Indian literature, that there was a decline in the agricultural sector's capital formation in GDP from 2.2 percent in the late 1990s to 1.9% in 2000-01 (Source: Economic Survey). This declining share was mainly due to stagnation or fall in public investment in irrigation, particularly since the mid 1990s. Taking this point into account, government of India in the India budget has stressed the need for setting up of micro-irrigation to strengthen the capital formation in Indian agriculture. Privatization and commoditification of water are also the major elements of GATS negotiation in the upcoming WTO Ministerial Meeting.

Further, the total factor productivity growth in Indian agriculture is negatively influenced by the inequality of the distribution of land holdings. The results are statistically significant at 10% level of significance, one tail test.

The other two variables which are significant in explaining the level of total factor productively growth are rural literacy rate and the degree of openness. The effect of these two variables are positive, however, is not statistically significant. The estimated't' values for this regression is less than one. Thus, we have not reported these results.

In the next step, we have tried to determine the factors explaining the determinant of the growth rate of MPI.

The estimated results for the regression explaining the variation of the growth rate of MPI is better than the regression results explaining the variation of the level of MPI. These results are represented in the following Table 2.

Table 2 (time period 1971-72 to 2000-01)

Regression results explaining the variation of growth rate of MPI

Dependent Variable	Constant	log GINI	Explanatory Variables			log DOOP	log EDUR
			Log CFA	log PRI	log RLR		
Log MPI	-0.15443 (1.6770)[d]	-0.028759 (1.7399)[d]	0.020336 (2.0976)[c]	0.07481 (1.6701)[d]	0.012438 (0.69852)[e]	0.0010963 (0.089779)[e]	0.0041896 (0.90306)[e]
Log MPI	-	0.022334 (1.8812)[c]	0.020450 (2.2855)[b]	0.085709 (2.336)[b]	0.011758 (1.0666)[e]	-	-

2nd Regression	1st Regression
$R^2 = 0.6008$	$R^2 = 0.6342$
$\bar{R}2 = 0.4557$	$\bar{R}2 = 0.3903$
DW = 2.3050	DW = 2.5270

- **Figures in the parenthesis give the estimated 't' value:**
- **'a' significant at 1% level of significance**

- **'b' significant at 5% level of significance**
- **'c' significant at 10% level of significance**
- **'d' significant at 10% level of significance, one tail test.**
- **'e' not significant**

The estimated results of the Table 2 suggest that apart from the variable that explain the level of MPI, extra variable that explains variation in the rate of growth of MPI is the expenditure on agricultural education and research by the government. Although the effect of this variable is positive, the effect is not statistically significant. Here also as in the case of regression explaining the variation in the level of MPI the variable degree of openness and the variable rural literacy rate have positive influence on the variation in the growth rate of MPI. However, the effect of these variables is not statistically significant. However, we have kept the variable rural literacy rate as a factor explaining the determinant of the growth rate in MPI as its estimated't' value exceeds unity.

Our analysis, therefore, reveals that degree of openness has positive influence on both the level as well as the rate of growth of MPI. Thus, linearization policies undertaken by Government of India after 1991 have a favourable effect on total factor productivity growth of India agriculture.

The Conclusion and Policy Suggestion :

The present Paper attempts to identify the determinants of the variation in the level of total factor productivity growth in the Indian agricultural sector as measured by the non-parametric approach, i.e. by Malmquist Productivity Index (MPI) for 17 major states of India over the time period 1971-72 to 2000-01. We have also explained the variation in the level as well as growth rate of MPI.

In order to explain total factor productivity growth we have taken the following variables:

- ✓ **Consumption of Fertilizers = CFA**
- ✓ **Area under Irrigation = IRA**
- ✓ **Amount of Rainfall = RF**
- ✓ **Amount of Government expenditure on agricultural education and research = EDUR**
- ✓ **Rural Literacy Rate = RLR**
- ✓ **Availability of Agricultural Credit = LOANA**
- ✓ **Physical Infrastructure = I**
- ✓ **Private Irrigation Facilities = PRI**
- ✓ **Government Irrigation Facilities = GI**
- ✓ **Crop diversification Index = CDI**
- ✓ **Gini Coefficient = GINI**
- ✓ **Degree of Openness = DOOP**

All the data are directly available and collected from different secondary sources except the four variables: Physical Infrastructure, Crop Diversification Index, the Gini Coefficient and the Degree of Openness. These three variables are obtained by constructing some indices as explained in this Chapter.

The significant factors explaining the variation of the level of MPI turns out to be private irrigation in agriculture: the source of irrigation other than government canals, consumption of fertilizer and inequality in the distribution of land holding as measured by Gini Coefficients (GINI). The coefficients of private irrigation facilities and of consumption of fertilizer are positive and significant at 10% and 5% respectively. On the other hand, the coefficients of GINI, the inequality in the distribution of land holding is negative and is significant at 10% level of significance. The other two variables that explain the level of total factor productivity growth is rural literacy rate and the degree of openness. The effect of these two variables is positive but not statistically significant.

The estimated results for the regression explaining the variation of growth rate of MPI is better than the regression result explaining the variation of the level of MPI. Apart from the above variables that explain the variation in the rate of growth of MPI, the other variable, which has the expected sign, is the expenditure on agricultural education and research by the government. Although, the effect of this variable is positive the effect is not statistically significant. Further, we have kept rural literacy rate among the set of explanatory variables as the estimated coefficients of't' ratio exceeds unity.

Thus, our study highlights the role of non price factor in explaining the variation of both the level as well as rate of growth of MPI. The crucial factor turns out to be inequality in the distribution of land holding, source of private irrigation, balanced use of fertilizer, rural literacy rate and degree of openness. The other non-price factor that is important for the variation of the growth rate of MPI is the government investment in education and research.

Our study also highlights the role of irrigation facilities other than government sources in explaining the variation of total factor productivity growth of Indian agriculture. Thus, more utilization of private resource in the field of irrigation can increase the total productivity growth in Indian agriculture.

Our analysis, in turn, advocates some policies that need to be undertaken by the government to foster the increase in total factor productivity growth. For example, since total factor productivity growth has a negative relation with in equality in the distribution of land holding, the appropriate measure of land reforms by the government will reduce the inequality in the distribution of land holding which in turn will increase total factor productivity growth. Further, the increase in government investment in agricultural education and research can increase the rate of growth of MPI. In addition, appropriate policies of the government to increase the rural literacy rate can have significant positive effect on the growth in MPI.

Finally, our analysis also justifies the different policies undertaken by India under liberalization programme, as there exists positive relationship between degree openness and total factor productivity growth. Thus, in order to boost up the total factor productivity growth in the agricultural sector, the liberalization policies are to be continued.

A recent study on "TOTAL FACTOR PRODUCTIVITY IN INDIAN AGRICULTURE: SOME CONCEPTUAL AND METHODOLOGICAL ISSUES by Dilip Saikia, CDS, March 2009, also states that the productivity growth in agriculture is both a necessary and sufficient condition for the development of the sector as well as the economy. The term "productivity", however, is often misused in the literature: it is used as synonyms to "labour productivity" in case of manufacturing sector, while used as synonyms to "yield productivity" in the case of Agriculture. But, the consideration of yield alone as a measure of productivity provides misleading indication of the degree of productivity improvement in agriculture (Coelli, 1996). There are two concepts of productivity: partial productivity and total factor productivity. Partial productivity measures the contribution of one factor (say labour or capital) to output growth keeping the other factors constant. As such we have the concepts of labour productivity, capital productivity, which estimate the efficiency of resource use. But, partial productivity does not truly reflect whether it (productivity growth) is because of more use of inputs or improvement in the efficiency of their use or technology improvement.

Another Study on Agricultural Growth in India: Examining the Post-Green Revolution Transition by Nicholas E. Rada, Economic Research Service, USDA, August 2013 says the following. India has enjoyed rapid economic growth over the past forty years, GDP per capita (PPP$) accelerating from less than 1% in the 1970s to over 5.8% in the 2000s. As incomes have risen, consumer demand has shifted from staple grains toward higher valued foods, such as horticultural and livestock products. Indian farmers appear to be meeting these new growth opportunities. But as production shifts, questions are being raised about agriculture's ability to meet the basic food needs of India's 1.24 billion citizens. Central to these questions has been the waning impact of cereal grain technologies typified by the Green Revolution. The purpose is to examine the productivity growth implications of farmers' decisions to diversify production and to assess new sources of growth in Indian agriculture. In doing so, we construct new production and productivity accounts and evaluate total factor productivity (TFP) growth, from 1980 to 2008, at the national, regional, and state levels. Results suggest renewed growth in aggregate TFP growth despite a slowdown in cereal grain yield growth. TFP growth appears to have shifted to the Indian South and West, led by growth in horticultural and livestock products.

The present recent study "Decomposition of Technical Change and Productivity Growth in Indian Agriculture Using Non-Parametric Malmquist Index by Parminder SINGH, Amarjeet SINGH, Eurasian Journal of Business and Economics 2012, 5 (9), 187-202. endeavors to analyze the rate of total factor productivity growth and technical progress of Indian Agriculture between the period 1971 to 2004, using a Data Envelopment Analysis. It has been observed that that the productivity growth of Indian agriculture is negative, thus confirms that the entire output growth is contributed by input growth. The decomposition of productivity growth into efficiency change and technical progress reveals that the efficiency change is positively contributing towards the growth of productivity whereas, the negative growth of technology restrict the potential productivity growth in Indian agriculture. Further, it has also been observed that efficiency change is insignificant whereas, the technical change is of Hicks non-neutral type in Indian agriculture.

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Evaluating technical efficiency in the branch network of a public sector bank in India using DEA approach

Manas Kr. Baidya

Abstract :

Indian banking is now in a position of survival of the fittest. In this competetive regime, efficiency analysis of each bank is necessary. A bank's efficiency can not be properly assessed without evaluating the efficiency of its branches. This paper presents efficiency evaluation of the branches of the United Bank of India (UBI), one of the 14 major banks nationalized in 1969. Data Envelopment Analysis (DEA) teachnique is utilized to estimate the relative technical efficiency scores of the selected branches from the cross sectional data of the financial year 2010-11. The results show that only 22% branches are fully technical and scale efficient with an average efficiency score of 69%. This mean score suggests that the branches of UBI could have saved on an average 31% of the input resources presently used to produce the current level of services. Inefficiency in branches' activities is mainly caused by operating at inappropriate scale rather than inefficient operation of the branches themselves. The present study also observes that larger and urbanized branches have higher efficiency level and the majority branches have the scope of increasing profitability through efficiency improvement.

Key Words : *Data Envelopment Analysis (DEA), Relative Technical Efficiency, Efficient, Inefficient, Overall Technical Efficiency , Pure Technical Efficiency, Scale Efficiency.*

Intoduction :

The Indian banking industry has witnessed radial changes after the introduction of financial sector reform in 1991. Indian banking is now in a position of survival of the fittest. In this competetive regime efficiency analysis of each bank is necessary. A bank's efficiency can not be properly assessed without evaluating the efficiency of its branches. The present paper, therefore, considers the branch efficiency evaluation of United Bank of India (UBI), a public setor bank and one of the 14 major banks nationalized in 1969. UBI, a Government of India Company, has been playing a pivotal role in economic development and growth of the country since its nationalization by providing affordable financial servies partcularly in rural and semi urban areas. UBI is serving the nation through its 1597 branches (as on 31.03.2011) of which 1020 branches are in the Eastern India. UBI has sponsored four Regional Rural Banks (RRBs), one each in West Bengal, Assam, Manipur and Tripura. These four RRBs have more than 1038 branches. The bank is also convener of the State Level Banker's Committee (SLBC)for the states of West Bengal and Tripura. Out of 1020 branches in Eastern India, 713 branches are located in West Bengal. This bank plays as lead bank in 10 disticts in West Bengal located mostly in the rural areas. Therefore,in order to evaluate the efficiency in the branch network of United Bank of India , the present papers considers UBI branch network consisting of 27 branches (as on 31.03.11) operating at Malda district in the state of West Bengal, where this bank plays as lead bank and has been providing banking services to a large section of population. The most popular and appropriate methodology

Data Envelopment Analysis (DEA) is utlized for estimating branch wise efficiency from the cross sectional data of the financial year 2010-11. This efficiency evaluation will help the branches of a bank on what to manage and how to accomplish the changes which ultimately help the bank management to improve bank's efficiency in resource utilization as a whole and to play efficient role in providing banking services.

Therefore, the research questions are

- Are branches of UBI utlizing their resources efficienctly?
- Are the branches Scale Efficient?
- Are the branch size and the branch location important factors for variation in branches' efficiency ?
- Is there any relation between profitability and efficiency of branches?

The non-parametric technique partculaly DEA has been extensively used to evaluate the efficiency of banking sector both at bank and bank branch level in the US and other developed countries (see the review of Berger and Humphrey, 1997). Some bank branh efficiency studies using DEA in global context are Sherrman and Gold (1985), Pastor et al (2006), Zijan (2009) and Drake and Howcroft (1994). Eken and Kale (2011) has conducted a comprehensive litreture review on worldwide bank branch efficiecy studies. But in Indian context, there is hardly any studies on bank branch efficiency using DEA methodology of a major bank like UBI. There exists some bank level efficiency studies in India which utlize this non-prametric approach. Baidya, M K (2012) reviews the detals of bank level efficiency studies in Indian context. Some important studies in this line in Indian context are Das (1997, 2000), Saha and Ravishankar (2000), Sathye (2003), Ram Mohan and Ray (2004), Debasis (2006), Kumar and Gulati (2008). However, these studies agree that there is an increasing trend of efficiency level across all the bank groups over post reform period of time. There is still room for improvement in resource utilization by the Indian banks. Off-balance sheet expousore and reduction in intermediation cost using technology are the most significant factors for efficiency discrimination among the Indian banks. But, the preset study for the first time provides the guideines towards how to improve efficiency of a particular bank through DEA based performance evaluation of its branches operating at a partcular area. The preset study, therefore, differes from other studyies in at least four ways (i) it considers bank branch efficiency (ii) it selects the branches of a partcular district only giving more emphasis on the homogenioty condition in selecting organizational units under evaluation in DEA methodology. (iii) input output variables (iv) the time period (2010-11). Therefore, the present study will be able to throw further light on the existing banking literature in India.

The remainder of the paper is organized in following ways. Section 2 compares performances of major Indian banks. Section 3 'Research Methodology' presents methodology and data used in this study. Selection of inputs and outputs are also discussed in this Section. Section 4 presents and analysis the findings. The final section concludes the findings of the study and recommends for efficiency improvement of branches of UBI.

Performance Comparission of Major Indian Banks :

This section compares the performance of some major public sector banks operating in Malda district. In this district, UBI is facing competetion mainly from State Bank of India

with its 30 branches followed by Allahabad Bank with its 12 branches, UCO bank 6 branches, Bank of India 4 branches. UBI is not far behind the performance parameters (Table 2.1) as evidenced from average result. Rather, this bank is better in two aspects: off balance sheet activities and the capacity of banks to withstand the unexpected losses arising out of operations in 2011. It is also indicating that the bank UBI has improved in all the paremeters from 2010 to 2011. But the bank should pay attention for improvement in the areas of spread management and loan giving activities.

Table 2.1: Some Select Performance Indicators of Major Banks Operating at Malda

	State Bank of India		UCO Bank		Alla-habad Bank		Bank of India		United Bank of India		Average	
Indicators	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
SPREAD	3.82	4.12	3.72	4.11	4.13	4.28	4.57	5.06	3.52	3.99	3.95	4.31
NII/ TF	3.82	4.1	2.26	2.75	3.7	3.63	3.05	3.11	2.64	2.93	3.09	3.30
NOII/TF	0.1	0.09	0.32	0.31	0.21	0.25	0.22	0.2	0.29	0.29	0.23	0.23
NP/TF	0.91	0.65	0.82	0.6	1.11	1.05	0.7	0.8	0.47	0.63	0.80	0.75
CRAR	13.39	11.98	13.21	13.71	13.62	12.96	12.94	12.17	12.8	13.05	13.19	12.77
CDR	75.96	79.9	67.96	67.83	68.27	69.44	74.24	72.18	63.34	65.63	69.95	71.00

Note: *Spread = interest spread, NII/ TF = Net Interest Income / Total Fund, NOII/TF = Non-interest Income / Total Fund, NP/TF =Net Profit / Total Fund, CRAR= Capital Adequacy Ratio, CDR = Credit Deposit Ratio. Average is based on five banks mentioned in the table.*

Source : *http://www.moneycontrol.com/financials ,viewed on 06/06/12*

Research Methodology :

DEA is a non-parametric performance assessment methodology originally designed by Charnes et al. (1978) to measure the efficiencies of organizational units called decision making units (DMUs) under evaluation from the identical input output data set. This technique aims to measure how efficiently a DMU uses the resources available to generate a set of outputs.That is, DEA measures technical efficiency, the most common efficiency refers to ability to avoid waste by producing as much output as input usage allows or by using as little input as output allows. The DEA approach applies linear programming techniques to constructs an efficient production frontier based on best practices over the data set. Each DMU's efficiency is then measured relative to this frontier. DEA ,therefore, measures the relative efficiencies of the DMUs under evaluation.

Box No. 3.1 - DEA in summery

- DEA constructs an efficient frontier by yielding a piecewise linear production surface i.e., identifying best practice DMU(s) from the identical inputs and outputs data set available from the DMUs under evaluation.
- Frontier defines multiple inputs and multiple outputs productivity
- Frontier defines the (observed) efficient trade-off among inputs and outputs within a set of DMUs.
- Relative distance to the frontier defines efficiency.
- DMUs on the frontier are efficient and DMUs off the frontier are inefficient.
- Nearest point on frontier defines an efficient hypothetical DMU of the inefficient DMUs.
- Differences in inputs and outputs between DMU and hypothetical DMU define efficiency "gaps" (improvement potential)

Source : Author's compilation

DEA Models :

There are variety types of DEA models developed in the DEA literature since1978. There are two approaches: radial and non radial. Differences exist in the characterization of input or output items. In DEA literature, two models namely CCR model (named after Charnes, Cooper and Rhodes, 1978) and BCC model (named after Banker, Charnes and Cooper, 1984) are called basic DEA models. These models which are radial measure of efficiency are of two types: input oriented and output oriented. Input oriented technical efficiency aims at reducing input amounts as much as possible while keeping at least the present output levels and output oriented technical maximizes the output level while using at least the present input levels.

CCR and BCC Models :

The study has utilized two most popular and widely used basic DEA models: input oriented CCR model and input oriented BCC models to estimate the branch wise relative technical efficiency. CCR model measures the efficiency called overall technical efficiency (OTE) and BCC model measures efficiency called pure technical efficiency (PTE). OTE and PTE allow to measure scale efficiency (SE). SE = OTE/ PTE. So, using these CCR and BCC models the study has estimated three types of efficiencies: OTE, PTE and SE for individual branches.

Overall Technical Efficiency (OTE) or CCR efficiency under constant returns-to-scale (CRS) assumption represents the efficiency which measures inefficiency due to wrong mix of input output configuration i.e., operational inefficiency as well as scale inefficiency. That is why, this efficiency is also called overall technical efficiency (OTE) or (global) technical efficiency or technical and scale efficiency.

Pure Technical Efficiency (PTE) or BCC efficiency under variable returns-to-scale (VRS) measures efficiency without considering scale of operation. This efficiency is also rightly named as pure technical efficiency (PTE) or (local) technical efficiency which provides

inefficiency resulting from managerial underperformance. It is significant to note that PTE is greater than or equal to OTE since VRS frontier is piecewise boundary and closer to observed inefficient points. If a bank is BCC efficient but not CCR efficient then it is locally efficient but not globally efficient due to scale inefficiency. It is important to note that if a DMU is fully efficient under both CCR and BCC score the DMU is said to be operating in the most productive scale size i.e., scale efficiency is 100%.

Scale Efficiency (SE) - Another type of efficiency which measures whether a DMU has the right size of operation is known as scale efficiency (SE). This is the relationship between a firm's per unit production cost and production volume. Thus, scale efficiency (SE) based on CCR and BCC score is defined by SE = CCR score / BCC score, SE is not greater than one.

Figure: 3.1

CCR and BCC Frontier

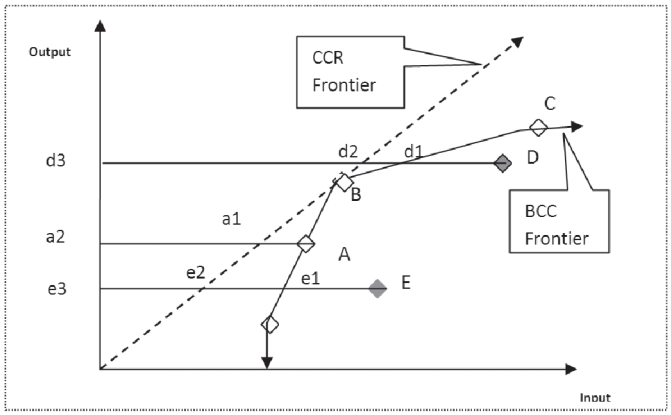


Figure 3.1 illustrates the CCR and BCC models in a simple single-input along with the derivation of concept of OTE, PTE and SE. The CCR model assumes CRS so that all observed production combinations can be scaled up or down proportionally. The CRS frontier is derived simply by the ray through the origin passing through point B. The BCC model, on the other hand, allows for VRS and is graphically represented by the piecewise linear convex frontier. The areas to the right of the two frontiers represent production possibility set. CCR and BCC models define different production possibility sets and efficiency results. As an example, the input-oriented efficiency of unit 'E' in Figure 3.1 is given by e3e2/e3e as yielded by the CCR model and e3e1/e3e by the BCC model. The shape of the VRS frontier is piecewise boundary and closer to observed inefficient points which results in BCC efficiency score higher or equal to corresponding CCR score. The rational for this is that CCR efficiency incorporates scale efficiency while BCC do not.

DMUs 'A', 'B' and 'C' are BCC efficient, only 'B' is CCR and BCC efficient. DMUs 'D' and 'E' are both CCR and BCC inefficient and their input oriented projection individualizes reference points 'd1' and 'e1' on VRS frontier , 'd2' and 'e2' on CRS frontier. The difference between 'd1' and 'd2', 'e1' and 'e2' are due to control for scale. The ratio of e3e2 / e3e1 and d3d2/ d3d1 represents the scale efficiency of DMUs 'E' and 'D'. Here it is to be pointed out

that the DMUs 'D' and 'E' are characterized by opposite scale properties. DMU 'E' is radially projected on a increasing returns-to-scale (IRS) facet of the VRS frontier, while DMU 'D' is radially projected on a VRS surface where decreasing returns-to-scale (DRS) holds. It is important to note that if a DMU is fully efficient under both CCR and BCC score, the DMU is said to be operating in the most productive scale size i.e. scale efficiency is 100% i.e. region where CRS prevails.

However three types of DEA efficiency measures of DMUs 'E', 'A' and 'B' are presented below-

Table: 3.1 : Different Efficiency Measures

Efficiency Type	DMU-'E' (CCR and BCC inefficient)	DMU-'A' (CCR inefficient but BCC efficient)	DMU-'B' (CCR and BCC efficient)
OTE	$e_3e_2/e_3e<1$	$a_2a_1/a_2a<1$	$b_1b/b_1b=1$
PTE	$e_3e_1/e_3e<1$	$a_2a/a_2a=1$	$b_1b/b_1b=1$
SE	$e_3e_2/e_3e_1<1$	$a_2a_1/a_2a<1$	$b_1b/b_1b=1$

Mathematical Formulation CCR and BCC Models :

The first mathematical linear programming based formulation of the frontier analysis was developed by Charnes et al. (1978) after 20 years of frontier analysis technique described by Farrel in 1957.The authors also coined the name Data Envelopment Analysis.

CCR Model :

Assuming that there are n DMUs to be evaluated [DMUj (j = 1, 2… n)]. Each DMU consumes m different inputs of identical nature for all DMUs [x_{ij} (i = 1,2, …..,m)] to produces 's' different outputs of identical nature for all DMUS [y_{rj} (r = 1,2, …….,s)]. xij and yrj are assumed to be positive ie $x_{ij} \geq 0$ and $y_{rj} \geq 0$ and further assumption is that each DMU has at least one positive input and one positive output value. Given the data, the efficiency of DMUk can be measured by the following programming

$$\underset{(\theta, \lambda_j s_i^-, s_r^+)}{\text{Min}}\ \theta_k - \varepsilon \left(\sum_{I=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+ \right)$$

Subject to

$$\sum_{j=1}^{n} x_{ij}\lambda_j + s_i^- = \theta_k x i_k \qquad i = 1,2,\ldots..,m.$$

$$\sum_{j=1}^{n} y_{rj}\lambda_j - s_r^+ = y_{rk} \qquad r = 1,2,\ldots..,s$$

$$\lambda_j \geq 0 \qquad j = 1,2,\ldots..,n$$

$s_i^-, s_r^+ \geq 0$ for all i and r.

Where,

x_{ij} = Amount of input of 'i' utilized by the 'j'th DMU

y_{rj} = Amount of output of 'r' produced by the 'j'th DMU

x_{ik} = Amount of input of 'i' utilized by DMUk

y_{rk} = Amount of output of 'r' produced by DMUk

θ_k = efficiency score of DMU 'k' being evaluated

λs represent the dual variables which identify benchmarks for inefficient units.

Slack variables : s_i^- (input slacks), s_r^+ (output slacks)

Here, $\varepsilon > 0$ is non-Archimedean element defined to be smaller than any real number and to be accommodated without having to specify the value of ?.

Above mathematical formulation is the input oriented CCR model (envelopment form or dual form) used in this study to estimate OTE. Note that primal DEA programe and dual DEA programe are relative. The DEA programe involving weights of inputs and outputs are calle Multiplier or Primal DEA programe, whereas, involving weights of DMUs are called Envelopment or Dual DEA programme. The above DEA programe i.e. input oriented envelopment programe is the dual of the output maximizing multiplier program. In the dual form, number of constraints is restricted to the number of inputs outputs, whereas, number of constraints of the primal depends on the number of DMUs evaluated.

The above mathematical program yields an efficiency score (θ) of a particular DMUk only. To get the efficiency score of other DMUs, it is required to repeat this process for each DMU i.e., 'n' optimization one for each DMUj. DMUs for which $\theta < 1$ are inefficient, while DMUs for which $\theta = 1$ are on frontier line and efficient. Some frontier points or boundary points may be 'weekly efficient' because of presence of non zero slacks in inputs and/or outputs.

CCR efficient - a DMU is CCR efficient if the optimal solution of the above two-phase procedure satisfies both (i) $\theta = 1$ and (ii) all slacks are zero. So, DMUs which satisfy both the conditions are also called CCR efficient or strongly efficient or Pareto-Koopmans efficient.

CCR inefficient - a DMU is said to be CCR inefficient -

Case I: if and only if both (i) $\theta < 1$ and (ii) $s_i^- \neq 0, s_r^+ \neq 0$ for some i and r. or all slacks are non zero.

Case II: if and only if both (I) $\theta = 1$ and (ii) $s_i^- \neq 0, s_r^+ \neq 0$ for some i and r. This case is also termed as weakly efficient in DEA.

So there are two sources of inefficiencies: purely technical inefficiency represented by the radial measure (1- efficiency score obtained) and mix inefficiency represented by the input and output slack values.

BCC Model :

The BCC (ratio) model is one of the most important extensions of CCR model. It measures

technical efficiency rather pure technical efficiency. BCC model differs slightly yet remarkable from CCR model with an additional constraint

$$\sum_{j=1}^{n} \lambda_j = 1$$

in the above CCR envelopment model. This constraint is called convexity constraint in mathematics literature. It imposes of assessing the efficiency under VRS.

A DMU is BCC efficient if the optimal solution of the above two-phase procedure satisfies both (i) $\theta = 1$ and (ii) all slacks are zero. Otherwise, DMU is BCC inefficient.

Selection of Strategic Variables :

The most challenging task to the researchers for estimating efficiency of banks or bank branches through DEA methodology is to select the appropriate and relevant inputs and outputs. The choice of inputs and outputs largely affects the derived efficiency level. There is no consensus on what constitutes inputs and outputs of branches. However, in the context of banking efficiency measurement, there are mainly two approaches to deal with this problem: Production Approach and Intermediation Approach. The main difference between these two approaches is the use of deposit as input or output. Berger and Humphrey (1997) pointed out that neither of these two approaches is perfect because they can not fully capture the dual roles of banks as intermediaries of financial services as well as service providers. Therefore none is universally accepted approach. They suggested that intermediation approach is best suited for analyzing bank level efficiency, where production approach for branch level efficiency. Therefore, the present study adopts the production approch for selecting input and output variables for estimating branch level efficiency. Camanho and Dyson 1999: 911-13 listed out input output variable used in the published application of DEA in bank branches.The choice of input and output variables in this study is mainly guided by operational pattern, objectives of the bank branch in the post reform period and the availability of data of the bank branches.

Box No 3.2

Input Variables	Output Variables
1. Number of Officer Staff	1. Deposit
2. Nunmber of Clerical Staff	2. Advance
3. Non-labour Operating Expenses	3.Non-interest Income

The variable *'Number of Officer Staff'* 'Number of Clerical Staff' are selected in this study as a proxy of labour like previous researches, but they ignored non labour operating expenses which the branches are incurring heavily for technology upgradation. So, the study selects 'Non-labour Operating Expenses' as one of the inputs, which excludes labour cost but includes rent, printing charges, depreciation on branches properties, insurance etc.

The output variable 'Deposit' and 'Advance' include all types of deposit and advance. These variables represent the performance of the traditional activities of banking. 'Non-interest Income' accounts for income from off-balance sheet activities such as commission,

brokerage and so on. The inclusion of this variable enables the capturing of recent changes in banking services. Most of the studies in India use it as an output. All inputs and outputs are measured in terms of amount in rupees except number of officer and clerical staff.

Sampling and Data :

Yeh Quey-Jen (1996) states that it is important to take into account the homogeneity condition during the choice of DMUs to make the DEA result more realistic. Giving more emphasis on the criteria of homogeneity condition, the present study considers the UBI branch network consisting of 27 branches operating at Malda district in the state of West Bengal. Selected 27 sample branches with their codes used have been provided in Table 4.2

All the data are annual and secondary in nature. Branch level data from the annual accounts (Balance Sheet and P&L Account) of the branches are obtained from the Regional office of UBI, Malda. And bank level data from the Annual Reports of the individual bank, collected from the 'Statistical Tables relating to Banks in India' and 'Report on Trend and Progress of banks in India' available on the official website of RBI (http://rbi.org.in.).

Findings and Analysis :

In this section, we examine the content of efficiency scores obtained by utilizing DEA -CCR and BCC models. DEA scores are derived by using DEA software 'DEA-Solver Learning Version 3' designed by Cooper, W W et al., 2007. Present study can demand more robust and reliable results as it considers three criterions: (i) it selects appropriate number of inputs and outputs allowing acepted efficiency discriminatory powers among DMUs (bank branches); (ii) there exists high degree of correlation between selected input and output variables and (iii) it considers sample branches for evaluation taking into account of more homogeneity condition.

From the descriptive statistics of OTE scores presented in Table 4.1 calculated from Table 4.2, only about 22% branches of UBI as evidenced from the evalution of 27 sample branches are found to be fully technical and scale efficient ie CCR efficient. Moreover, mean score 69% implies that branches of UBI could have saved on an average 31% of the present input consumption in order to produce the present level of services. The results also indicate that there is significant efficiency variation among the branches with regards to OTE as evidenced from the range of efficiency scores between 29.2% and 100% and SD 22.7%. Branches having OTE equal to 1 in Table 4.2 are CCR efficient. They together constructs efficient frontier i.e. providing best practices among the sample branches. Efficiencies of other 21 branches which are inefficient (i.e. OTE < 1) are measured relative to this frontier.

Table 4.1. Descriptive Statistics of Efficiency scores

	OTE	PTE	SE
No. of Branches evaluated	27	27	27
Average score	0.690	0.961	0.718
SD	0.227	0.073	0.228
Maximum	1	1	1
Minimum	0.292	0.753	0.293
No. of Efficient Branches	6	16	6

PTE (BCC scores) indicates 37% branches in addition to 22% CCR fully efficient ones are fully technical efficient but not scale efficient with a mean score 96.1%. Theoretically OTE ≤ PTE, but the PTE of branches of UBI are much more than OTE both in terms of average score and number of fully efficient branches during the study period. Asymmetry with regard to PTE is as expected but to a great extent is low in comparison to OTE (PTE ranging between 75.3% and 100% with SD only 7.3%).

Scale efficiency (SE) as measured by OTE/PTE indicates that the only 22% branches are fully scale efficient and there exists a significant variation among the branches with regards to scale efficiency.

The relation among these three efficiency measures (OTE = PTE × SE) popularly known as decomposition of efficiency depicts that overall inefficiency of the branches of UBI are mainly caused by operating at an inappropriate scale rather than inefficient management operation of the branches themselves. Scale inefficiency, therefore, appears to affect the overall inefficiency of the branches. The issue of scale inefficiencies is explored by considering returns-to-scale (RTS) properties of the branches. The present study has followed the BCC model to determine the nature of returns-t- scale of the branches. Scale inefficiency is found to be fully due to IRS. 78% branches ie all the CCR inefficient branches are found to be operating at IRS and remaining 22% are operating at most productive scale size (MPSS). It is to be pointed out that no branch operates at DRS operation. So, in general, all the inefficient UBI branches should go for scaling up their activities in order to improve their efficiency.

Table 4.2. Efficiency Scores of the Branches

No.	DMUs (Branches)	DMUs Code	OTE Scores	PTE scores	SE scores
1	Malda	B-1	1	1	1
2	Netaji Market	B-2	1	1	1
3	UGB	B-3	0.749	1	0.749
4	Nauda Jadupur	B-4	0.646	0.8803	0.734
5	Jalalpur(WB)	B-5	0.404	0.7525	0.537
6	Kaliachak	B-6	1	1	1
7	Sahabanchak	B-7	0.789	1	0.789
8	Alinagar	B-8	0.524	1	0.524
9	Khejuria	B-9	1	1	1
10	Niamatpur	B-10	0.419	1	0.419
11	Milki	B-11	0.861	1	0.861
12	Mathurapur	B-12	0.642	1	0.642
13	Ratua	B-13	0.629	0.9143	0.688
14	Chanchal	B-14	0.73	0.8033	0.909
15	Debipur	B-15	0.309	1	0.309
16	Chandrapara	B-16	0.482	1	0.482

17	Jalalpur(H)	B-17	0.576	1	0.576
18	Gouria	B-18	0.6	1	0.6
19	Old Malda	B-19	0.956	1	0.956
20	Gazole	B-20	1	1	1
21	Muchia	B-21	0.539	0.7902	0.682
22	Habibpur	B-22	0.832	0.9402	0.885
23	Pakuahat	B-23	1	1	1
24	Samsi	B-24	0.623	0.8714	0.715
25	Bhutni	B-25	0.662	1	0.662
26	Kumarganj(M)	B-26	0.293	1	0.293
27	Babupur	B-27	0.37	1	0.37

Input Output Targets for the Branch Network of the UBI :

Table 4.3 shows the input output target or input output improvement plan for the branch network as per CCR efficiency scores.

Input output improvement plan is projected on the basis of average scores of 21 CCR inefficient branches. Inefficient branches can become fully CCR efficient through the three phases of input output improvement plan. Average OTE of 21 inefficient branches is 60.16%. therefore, overall technical inefficiency is 100% - 60.16% = 39.84%. Actuall input output data are computed as the aggregate value of 21 inefficient branches. (see Annexture I)

Table 4.3. Input Output Target for the Branch network as a whole

		Actual	Change			Target
			Radial	Slack	Total	
Inputs	No of Officer Staff	48	19.1 (39.84%)	3.6 (7.58%)	- 22.8 (- 47.42%)	25.2
	No of Clerical Staff	59	23.5 (39.84%)	1.5 (2.52%)	- 25 (- 42.35%)	34.0
	Operating Expenses excluding labour cost	177.84	70.9 (39.84%)	6.2 (3.46%)	- 77.0 (-43.3%)	100.8
Outputs	Deposit	32454	0.0	2556.3 (78.78%)	2556.3 (78.78%)	58021.3
	Advance	10972	0.0	717.6 (6.54%)	717.6 (6.54%)	11689.6
	Non-interest Income	153.58	0.0	10.4 (6.76%)	10.4 (6.76%)	164.0

Note- *Input projection in Total Column is presented with a negative sign and output projection with positive sign as because of inputs to be reduced and output to be enhanced for efficiency improvement philosophy.*

Phase I- Branch network as a whole has to reduce its all inputs level by 39.84% on an average. This proportional reduction of each input by 39.84% removes the purely technical inefficiency of the branch network of UBI. By the removal of this inefficiency, it will be become weakly efficient [fulfil the 'Farrell' or 'week' efficiency (Cooper W. W. et al., 2007)].

Phase II - It has to reduce in addition to 39.84% in all inputs, input-I by 7.58%, input II by 2.25% and input-III by 3.46%. This further reduction of these inputs in respect of presence of non-zero slacks removes mix inefficiency.

Phase III- It has to enhance Output I, II and III by 78.78%, 6.54% and 10.4% respectively. It removes mix inefficiency associated with outputs by the presence of non-zero slack values.

As we follow input oriented DEA model, there are two sources of inefficiencies associated with inputs: purely technical inefficiency represented by the radial measure (1- efficiency score obtained) and mix inefficiency represented by excess input also termed as non-zero input slack. Whereas there exixts only mix inefficieny in outputs represented by output shortfall also termed as output slack. Mix inefficiency arises from the wrong proportion in which inputs are utilized or ouputs are produced. However, Phase-II & III are known as slack adjustments in DEA. These slack adjustments after radial adjustment in Phase-I makes the UBI branch network strongly efficient [fulfil the 'Pareto- Koopmans' or 'strong' efficiency, (Cooper et al., 2007)].

Overall, input used least efficiently by the branch network of UBI is 'No. of Officer Staff' as the protencial reduction to this input is the highest, which could be reduced on an average by 47.42% whereas, least produced output is 'Deposit' which could be enhanced by on an average 78.78% of the present production level using the present input resources. Bank management should consider this input output target while planing a new branch. Thus, the branches which are using more officer staff for providing their services with lower deposit mobilization effort are relatively more inefficient.

Technical Efficiency: Branch Size and Branch Location :

Branch Size and Branch location are considered to be the important factors for efficiency difference of the branches of a bank. Branch size reflects resource utlization level of a branch for scale economices. Efficiency variation also depends on the business potencial of branches' location which depends on cometetion level and socio-economic conditions within the catchment area.

'Number of employees' (officers+ clerks) variable used in DEA model is considered as the appropriate measure of branch size (Camanho and Dyson,1999 : 907). Each of the size group considers approximately 9 branches. Figure 4.1 clearly shows that larger branches have higher efficiency with regard to OTE and SE. We also utlize F-statistic obtained from ANOVA (using SPSS) which only tells us whether there is significant diffrences in the mean values of the three groups.

'F' value of one way ANNOVA (Table 4.4) indicates that there exists a significant diffrencees in the efficiency level in three branch groups by size with respet to OTE and SE but it is not so significant in case of PTE. It is observed that all the branches within the samll size group are fully efficient by PTE ie efficient by the management operation whereas medium size branches are least efficient in PTE and large size branches are almost equally efficient in

scale and managemnt operation. Figure 4.1 also clearly shows that the overall inefficiency of small size branches is fully caused by the scale inefficiency ie disadvantageous condition under which they are operating. But in case of meduim size branches, operational inefficiency is contributed by both operating at an inappropriate scale and management inefficiency. But, scale inefficiency is more resposible than management inefficiency. Branches of large size category could raise their score towards 100% with a relatively small amount of improvement in their operating results. Branches of this category can reach the efficient frontier by making radial reduction on an average 6% (1- 0.94) of the input resources they currently use.

Figure 4.1. Technical Efficiency and Branch Size

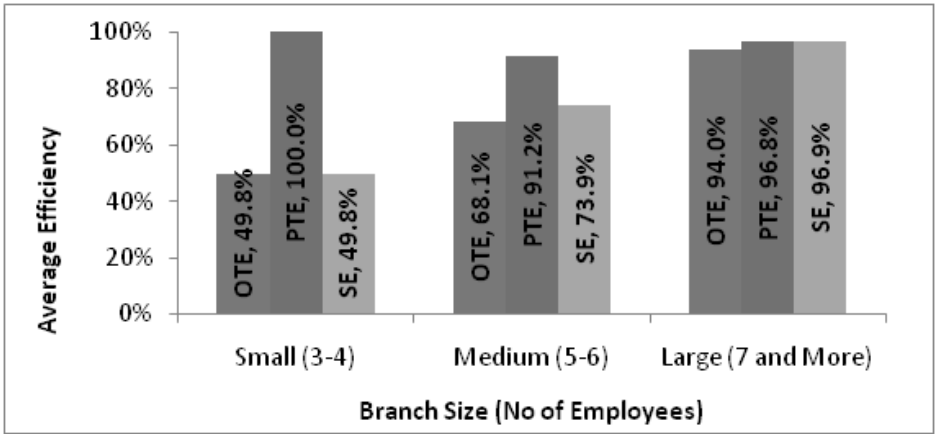


Table 4.4 Descriptives and ANOVA for Efficieny of branches grouped by size

Descriptives				
	Category	**N**	**Mean**	**Std. Deviation**
OTE	Small	10	0.498	0.152
	Medium	9	0.681	0.177
	Large	8	0.940	0.103
	Total	27	0.690	0.232
PTE	Small	10	1.000	0.000
	Medium	9	0.912	0.096
	Large	8	0.968	0.070
	Total	27	0.961	0.075
SE	Small	10	0.498	0.152
	Medium	9	0.739	0.133
	Large	8	0.969	0.047
	Total	27	0.718	0.228

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
OTE	Between Groups	0.867	2	0.433	19.50	000
	Within Groups	0.533	24	0.022		
	Total	1.400	26			
PTE	Between Groups	0.037	2	0.019	4.12	0.028
	Within Groups	0.108	24	0.004		
	Total	0.145	26			
SE	Between Groups	0.989	2	0.494	32.46	000
	Within Groups	0.366	24	0.015		
	Total	1.355	26			

Note- Branches with 3 to 4 employees are cosidered as Small Size, medium 5 to 6 and large 7 and more.

N = Number of Branches within a group

From the Figure 4.2, it is clear that location of branch also largely affects on the efficiency level of branches. Urbanized branches have higher efficiency. 'F' value in one-way ANNOVA (Table 4.5) idicates that there exists a significant diffrences in efficiency level in the three groups of branches by location with regard to OTE and SE. It is also observed that degree of location effect is almost nil on the management performances of the branches. Rural village level branches are least efficient in all the three efficiency parameters.

Figure 4.2. Technical Efficiency and Branch Location

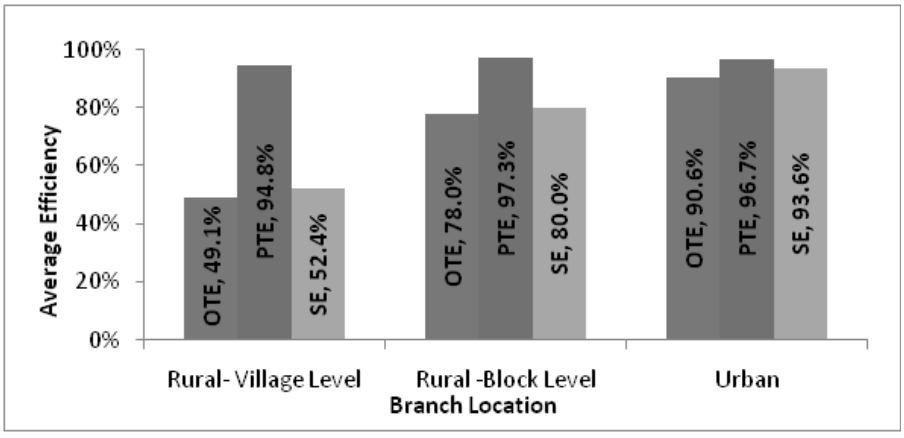


Table 4.5. Descriptives and ANOVA for Efficieny of branches grouped by Location

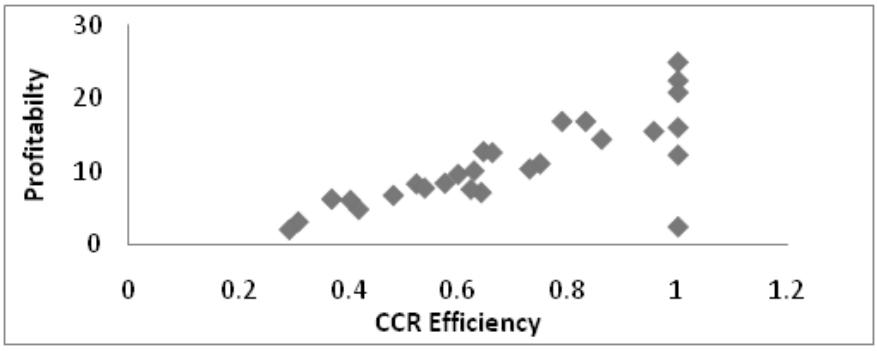
Descriptives				
Efficiency	**Category**	**N**	**Mean**	**Std. Deviation**
OTE	Rural-Village Level	11	0.491	0.131
	Rural-Block Level	10	0.780	0.198
	Urban	6	0.906	0.130
	Total	27	0.690	0.232
PTE	Rural-Village Level	11	0.948	0.095
	Rural-Block Level	10	0.973	0.047
	Urban	6	0.967	0.080
	Total	27	0.961	0.075
SE	Rural-Village Level	11	0.524	0.149
	Rural-Block Level	10	0.800	0.189
	Urban	6	0.936	0.098
	Total	27	0.718	0.228

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
OTE	Between Groups	0.794	2	0.397	15.71	000
	Within Groups	0.606	24	0.025		
	Total	1.400	26			
PTE	Between Groups	0.004	2	0.002	0.30	.741
	Within Groups	0.142	24	0.006		
	Total	0.145	26			
SE	Between Groups	0.763	2	0.382	15.50	000
	Within Groups	0.591	24	0.025		
	Total	1.355	26			

Efficiency and Profitability :

In the branch efficiency study, it is a pertinent issue to explore the relation between efficiency and profitability of the branches. Here, profitability of branches is measured using the Total Income Per Employee (See Appendix- I). Figure: 4.3 shows that distribution of branches with respect to efficiency and profitability parameter is highly skewed to the right upper side and suggests that there is a positive and significant relation between efficiency and profitability. Pearson's corelation (75.3%) and Spearman's rank corelation (77%) between efficiency and profitability are significant at 0.01 level(2-tailed) of significance. This implies that branches with higher technical efficiency have higher profitability.

Figure 4.3. Efficiency Profitability Relation



Conclusions and Recommendations :

From the emperical evidence and analysis presented in this paper, it is clear that there exists significant efficiency variations among the branches of UBI. It has still the opportunity to save on an average 31% of the present usage in input resources to produce the current level of services. Overall efficiency of the branches is mainly affected by the disadvantageous condition under which they are operating rather than manegerial underperformances of the branches themselves. Scale inefficiency is due to operating at increasing-returns-to scale region. The study has also found that the most under-utilized input is 'officer staff' while most under-produced output is 'deposit'. Thus, the branches which are using more officer staff for providing their services with lower deposit mobilization are relatively more inefficient. Branch size and branch location are found to be influential factors for efficiency variation among the branches. This variation is mainly because of scale inefficiency and not management inefficiency. But the degree of branch size and branch location effect is found to be almost nil on the branch management efficiency. However, larger and urbanized branches have relatively higher efficiency. It is observed from the the relation of efficiency and profitability that branches with higher efficiency level have higher profitability. Most of the branches,therefore, have the scope of increasing profitability through efficiency improvement.

The study recommends that bank management should concentrate more on the scale economy of the branches particularly in the rural area. It should increase the scale economy of branches by scaling up their activities. It may go for the scheme of merger of smaller branches. For opening a new branch, it should consider the input output target of the branch network.The study suggests that branches should utilize their labour partcularly officer staff effectively and should also go for a scheme for deposit mobilization. The present study also suggests that the bank management should give more emphasis on the branches' overall technical efficiency level for leading their greater profitability.

The present study limits to only 27 branches of a particular district. But, we sincerely hope that this study will be helpful for further researches to evaluate the efficiency of branches of any major commercial bank in India, using frontier approach and in turn will contribute to the development of Indian banks. The future research could extend our works by considering data for a longer period, more branches in the sample and other DEA models.

Appendix-1: Input and Output Data

		Inputs			Outputs				
Branches	Code	(I) Number of Officer Staff	(II) Number of Clerical Staff	(III) Non-labour Operating Expenses	(I) Deposit	(II) Advance Advance	(III) Non-interest Income	Total Income per Employee (Rs in Lakh)	Location Group*
Malda	B-1	9	16	62.83	23809	4238	136.73	22.53	3
Netaji Market	B-2	6	9	22.47	16702	2860	41.4	25.05	3
UGB	B-3	1	2	6.33	321	392	7.13	11.12	3
Nauda Jadupur	B-4	2	3	8.45	1386	600	10.33	12.8	1
Jalalpur(WB)	B-5	2	3	8.79	1183	327	7.31	6.12	1
Kaliachak	B-6	4	6	22.86	3420	2257	20.14	2.47	2
Sahabanchak	B-7	2	3	7.88	2980	766	9.47	16.93	2
Alinagar	B-8	2	2	5.29	552	355	3.75	8.37	1
Khejuria	B-9	3	5	10.24	2939	977	22.12	12.32	3
Niamatpur	B-10	2	2	4.82	1100	148	4.09	4.86	2
Milki	B-11	2	3	7	1462	636	12.24	14.48	2
Mathurapur	B-12	3	3	11.17	3574	378	8.2	7.18	2
Ratua	B-13	2	4	7.75	1824	519	9.8	10.15	2
Chanchal	B-14	4	5	12.44	3400	1169	14.66	10.41	3
Debipur	B-15	2	2	6.03	822	99	3.95	3.16	1
Chandrapara	B-16	2	2	6.14	293	354	2.14	6.79	1
Jalalpur(H)	B-17	2	2	6.05	317	403	4.45	8.47	1
Gouria	B-18	2	2	7.97	675	402	6.32	9.66	1
Old Malda	B-19	3	4	11.16	4110	1291	12.05	15.57	3
Gazole	B-20	4	4	10.41	2905	1364	13.04	16.09	2
Muchia	B-21	3	3	8.96	1344	555	6.6	7.8	1
Habibpur	B-22	3	5	10.98	3473	1165	11.97	16.93	2
Pakuahat	B-23	3	3	10.23	1757	1158	8.33	20.91	2
Samsi	B-24	3	3	7.69	1309	467	9.88	7.61	2
Bhutni	B-25	2	2	12.87	1254	485	3.64	12.66	1
Kumarganj(M)	B-26	2	2	13.66	730	192	3	2.08	1
Babupur	B-27	2	2	6.41	345	269	2.6	6.27	1

Note -All the inputs and outputs variables are measured by monetary terms of rupees in lakh except 'No. of Officer Staff' and 'No. of Clerical Staff' which are in terms of physical numbers.

* 1 indicates Rural-Village level branches, 2 = Rural-Block Level branches and 3 = Urban Branches

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Performance Evaluation and Management - A Small and Medium Scale Industries Perspective

Manjunath KR

Abstract :

SMEs being one of the important segments of economy are expected to play an integral part of development creating avenues for sustainability. Either due to the scale of operations or lack of access to resources most of the time SMEs remain in isolation from growth, and few such other issues also act as factors detrimental for emerge as success Enterprises. One of such key issues concerning internally is adoption of Scientific and Rational Performance Appraisal Techniques that is receptive by their employees and value driving for their operations. With help of some of empirical evidences this study explores the challenges and issues concerning adoption of mutually acceptable performance evaluation tool and develops model for providing holistic development of employees and the organization; by accounting for the Strategic Contributions made by the employees in their Value Creations Function.

Key Words: *Performance Management, Scientific and Rational Appraisal, Functional Value, Quality Compliance*

Introduction :

Small and Medium-Sized Enterprises (SMEs) in the current context of economic development are expected to play impetus/key role in generating opportunities for economic empowerment of larger sections of the economy and create avenues for sustainable growth. Further in light of globalization of the economy they are exposed to the risk of managing their operations to the international standards as they need to compete with both domestic as well as international competitors in the market place. Most of the times hence the SMEs, are found to be operating in a fiercely competitive environment; as such, it is important to optimize business practices which requires them to carry highly motivated and value driving human resources who become the very essence of growth for the organization. This demands that the organization will have to adopt such performance measurement (PM) tools that can help them to identify weaknesses, clarify objectives and strategies, and improve management processes such that they would tailor their opportunities to optimize the returns for the efforts deployed by them in the competitive market setup. This demands development of PM tools keeping in light the key issues that are concerning them in adopting effective and efficient PM practices for accounting their intellectual assets on their financial panorama.

Selected Research findings highlighting the need and the issues faced by SMEs in adopting PMS are presented below :

Patrizia Garengo, Giovanni Bernardi, (2007)[1] , with an objective to investigate both the path taken by companies in order to survive in a competitive environment and the factors that have favoured or limited their development, the study identifies that a lack of organizational capabilities is one of the main factors limiting development in SMEs, and observed that most

of the SMEs follow similar paths and performance measurement systems (PMS) that play a key role as a potential driver of managerial development in SMEs and the important role played by organizational capability for favouring the competitiveness and survival of SMEs. The study concluded that in SMEs managerial developments usually come later, following changes in strategy. Firms could prevent managerial crisis by implementing managerial systems.

Dong Chen (2011)[2] in his study observed how Human resource plays a key role in economic life of the organization, which in turn determines the competitive advantage of one enterprise over another. Performance management, as the core of modern human resource management, is more incentive and guiding than eliminating or promoting employees. With the help of such discussion conclude that the effects of performance management in enterprise operations, and administration of performance management of SME, needs and advancement to incorporate various variables that creates platforms for appraising the contributions of human resources to overall development of such SMEs.

Zhang Weimei and Tang Feng (2012)[3], in their study observed how a large number of small and medium enterprises have not had a perfect performance management system and there also exist a variety of problems in the process of performance management, such as, unprofessional evaluators, unscientific performance indicators, and shortage of performance feedback mechanism; and suggested for any SMEs to enhance performance management level, will have to pay attention to the performance management, train performance management personnel, establish scientific performance indicators and established bi-directional performance feedback mechanism that can most of the time create opportunities for identify the key contributions to the organization and at the same time also provide for creating self driven and highly motivated workforce.

Donglin Wu (2009)[4] in his doctoral work identified that an effective Performance Management (PM) system for ICT (Information and Communication Technology) SMEs should help the companies to formulate right strategies that can help them in managing uncertainty in their external environment which most the times deter their development; and suggest that they should carry a special emphasis on PM process which is aligned to the SMEs' daily processes such as planning, budgeting and reporting processes. Such a PM system should involve a flexible PM framework that can be adapted dynamically to suit the changes in the PM process; helping the SMEs to identify customer needs, manage and measure customer satisfaction; which in turn facilitate in creating long term sustainable competitive market conditions even when operating in hostile and fragmented market conditions.

Guna Ciemleja, and Natalja Lace (2011)5 in their study identify that the problems within an enterprise arise from improper activities, incompetence or even negligence and opine that Performance measurement system can significantly influence and support SMEs' organizational development with the help of which Effectiveness and efficiency would be manifested in all business processes of an enterprise. The study suggest that Performance evaluation should be based on the criteria associated with the field of activities of a particular enterprise and particular manufacturing technology and such system should be comprised of measures, related not only to operations, but also to organization and management of the enterprise.

Patrizia Garengoa and Milind Kumar Sharmab (2012)[6] in their study make a comparative evaluation of PM in Italian and Indian SMEs and observe that there is presence of a strong relationship between performance measurement systems (PMSs) and corporate governance structures in European firms; taking into account the growing economic relevance of developing countries, investigate the role of corporate governance structure as a PMS contingency factor in Italian and Indian SMEs. The study further while in Italian SMEs, the changes in the corporate governance structure promoted the implementation of an advanced PMS, Indian SMEs, environmental changes pushed the development of the PMS without affecting any modification in the corporate governance structure; moreover, after the adoption of an advanced (or almost advanced) performance management system, relevant environmental changes or the positive impacts of the PMS use, were enough to promote further development of the system in both Italian and Indian SMEs, without any change in the corporate governance structure.

Though these studies identified the need for PMs for SMEs they have not identified the key issues that concern them in adopting a scientific and rational appraisal system and the issues which are forcing them to have their own independent system rather than adopting following standard appraisal measures which never converge into the organizations established objectives. This paper hence makes an attempt in this regard.

Sources of Data and Sample Size :

The required and relevant data are collected from primary sources by administering the questionnaire and schedule to the organizations (Small and Medium Enterprises) with different demographic characteristics. The questionnaire was designed to study the awareness and attitude towards adoption of various performance evaluation measures that provide for optimal value realization from the rich resources that the organizations carry with them with an objective to provide optimal value to their operations and create sustainable competitive strengths or positions in the market place which in turn provide for sustainable long term profitability to the efforts initiated by their human capital. For the purpose of the present study, 50 respondent organizations' were selected using purposive sampling technique.

Objective of the study:

The study was conducted with the following objectives.

- To evaluate the felt need for the organizations to adopt effective performance evaluation measures for appraising their employees.
- To study the efficiency of the appraisal tools adopted by the organizations in motivating their staff and keeping them self driven towards the objectives.
- To appraise the need felt for the organization to appraise their employees contribution to value creation function and creating competitive strategic assets for the organizations.

Statistical Tools used for Data Analysis :

The responses obtained from the respondents are tabulated using SPSS and are processed using Excel. To analyse the data and to interpret the analysis, Simple Percentage, Correlation Coefficients, T test and few other descriptive statistics is used. With these details about the objectives and methodology, an analysis is made in the following paragraphs to evaluate the

efficiency of performance evaluation measures and its contribution in optimizing the performance and profitability of the organizations.

Demographic Profile of the respondents :

Some of the important aspects relating to the demographics of the investor-respondents are tabulated and presented below (Table - 1).

Table: 1: Demographics of the Sample Surveyed

Age	**Frequency**	**Scale of Operations**	**Frequency**
		Small	36
		Medium	14
20-25yrs	11	Total	50
26-35yrs	4	Gender	Frequency
36-45yrs	14	Male	50
46 & above	21	Female	0
Total	50	Total	50
Education	**Frequency**	**Nature of Ownership Pattern**	**Frequency**
		Private Limited	16
SSLC	5	Sole Proprietorship	18
PUC/ITI	6	Partnership Firm	15
Degree/Diploma	26	Others	1
Post Graduation	13	Total	50
Total	50		

Source: Primary Data

The Small and Medium Enterprises selected for the study are involved in a number of business activities, with an objective of understanding the nature of activities in which the respondents organizations were involved, they were requested to respond as to what is the nature of activities they were involved and the responses obtained is summarized and presented in Table 2 below followed by a brief analysis.

Table - 2:- Nature of activities performed by respondent Organization

Nature of activities	**Total number of Respondent**
Processing	7
Manufacturing	32
Assembling	4
Services	12
Total	50

Source:- Primary data

From the above table it can be observed that the respondent organization involved in diverse business activities were selected to evaluate how the nature of activities that they are

involved would determine their funding requirements and how they source such requirements. Here it can observed that large number of respondents i.e. 32 out of 50 were found to involve in manufacturing activities, 12 organizations from Services, 7 from Processing, and 4 organizations from Assembly were selected for the study, and can be seen that fair representation from diverse organizations was provided for the study. The volume of revenues generated by the respondent group is obtained and presented in Table - 3 below followed by a brief analysis.

Table 3:- Average Turnover generated by the Respondent Organizations

Average Annual Turnover	Total number of Respondent
Below 10 Lakhs	8
10 Lakhs to 25 Lakhs	8
25 Lakhs to 50 Lakhs	7
50 Lakhs to 1 Crore	10
1 Crore to 5 Crore	14
5 Crore & Above	3
Total	50

Source:- Primary data

From table 3 it can be observed that majority of the respondents selected for the study were medium scale enterprises with an average annual turnover of Rs. 50 Lakhs and above i.e. 27 respondents (54%) and an equal representation of respondents were chosen with an average annual turnover of below Rs.10 Lakhs, between Rs.10 to 25 Lakhs and between Rs.25 to 50 Lakhs i.e. 8 respondents each (16%), this was to analyze, if the scale of their operations has any bearing on the nature of performance appraisal techniques adopted by them in the organization, and in this background the respondents were asked to specify as to what are the key determinants of need for adopting performance evaluation measures for their organization, and their responses are summarized and presented in table - 4 followed by a brief evaluation.

Table 4 - Key Determinants of adopting Performance Evaluation Measures

Determinants	Total number of Respondent
Operational Efficiency realized by the Organization	04
Create Competitive environment for the operations	18
Provide for Synergic Growth of the Organization	22
Carry Self Motivated and Objective Driven Man power	6
Total	50

Source:- Primary data

From the above table it becomes obvious that only a small section of organizations i.e. 4 organizations find performance evaluation measures as medium for realizing operational efficiency (4 i.e. 9.30%) and few respondents organization contrarily consider performance evaluation measure as tool for creating self motivated and objective driven manpower who

most of the time act as key value drivers in the value creation function of the organization (6 or 12.00%). This initiative most of the times act as a strategic requirement to earning credibility among their employees as most of the times the employee instead of socializing into any new initiatives taken would rather resist with an anticipation of discomfort in adopting the changes which makes it mandatory for them carry self driven and objective oriented manpower. Further. most of the respondent undertakings greatly appreciate transparency in the appraisal system, which were the medium enterprises i.e. 18 organization feel that for them to meet the dynamic industry demands and fostering to the inconsistent market demands it becomes very essential to account for strategic contributions made by them in creating strategic competitive assets than provide avenues for long term sustainable competitive and profitable positions in the market even when the market carry fragmented market structure, and a large section of respondents i.e. i.e. 22 organization adopt appraisal tools though as a legal requirements but also feel that if any organization intends to provide for synergic opportunities for their growth it becomes inevitable for them to create human resources as strategic intellectual assets accounting for their contributions though not significant even when marginal as each such individual contributions when is integrated together provide for holistic development of the enterprise. Though the organization intends to account for the employee contributions and provide for their appraisal for growth vertically or horizontally there such objective are deterred due to some of the challenges they encounter. With an objective of making an evaluating such challenges they face the respondents were asked to respond to such factors that act as detrimental factors for adopting a sound appraisal system and the same is summarized and presented in table - 5 below followed by a brief analysis.

Table - 5: Challenges in front of the respondent organization for Evaluating and Appraising Performance

Particulars	Small	Medium
01. Scale of Operation	36	14
02. Products offered converging into Market Demand	36	14
03. Coping with Competitive Pressure	34	14
04. Lack of integration between employee expectation and organization objectives	36	14
05. Failure in compliance with the dynamic market demands - cost and quality mismatch	33	10
06. Barrier for informational access and access to required liquidity for diversification of operations	30	8
07. Conservative and Complacent Attitude of Management towards the Set Goals	36	12
08. Decisions made in Isolation with Market Extended Opportunities and Lack of Compliance of Capacity with the Expected Market Quality Standards	36	14

Note: Multiple Responses Allowed

Source: Primary Data

From the above table the following becomes very obvious;

01. Most of the factors appraised in the above table receive 100% acceptance from both the sample groups indicating the intensity of the issues that influence selection of appraisal techniques by the organization. Most of the time the organization though intends to adopt effective appraisal to provide for holistic consideration of the net value delivered by its resources it would be forced to adapt to such tools which is within the economic feasibility for adoption. As any appraisal involves cost and the organization will have to think to what extent such cost would be absorbed by the organization and what should be transferred to their customers keeping in mind how they would respond to such initiatives.
02. The Financial soundness of any Organizations depends its Scale of Operation/level of Capacity they utilize which in turn determined based on its capabilities to match the customer expectation; as most of the times Decisions made in Isolation with Market Extended Opportunities and Lack of Compliance of Capacity with the Expected Market Quality Standards would lead to underutilization of the opportunities. Hence establishing such standards as a yardstick to evaluate the employees' contribution in accordance to the quality specifications or standards set is a herculean task. Dynamic nature of the market would never provide for individual standards and hence the organization will have to incorporate continuous changes to their evaluation parameters too expecting their employees to socialize into the dynamic environment as and when demanded for and the ability to cope with the same will have to be necessarily rewarded.
03. Products offered by the organization hence will have to be capable of converging into Market expected Demand. When the employees are in a position to create such opportunities for creating value to organization operations they would demand for accounting their efforts and reward them in commensuration to the value the operations realize from their efforts. Whereas, this most of the times expose to the risk of lack of integration between employees expectation and organization objectives (that aims at providing long term sustainable strategic positions in the market place) which demands plough back of organization profits to their strategic initiatives rather than transferring the benefits to their stakeholders.

In this background the respondents organization were asked to respond to key variables that becomes a part of their appraisal so as to create rational basis for appraising and accounting for the efforts of their employees, and summarized and presented in table - 6 below followed by a brief analysis of the same.

Table - 6: Key Variables considered for Appraising the Employees Performance

Variables	Small Enterprises		Medium Enterprises	
	Response	Ranking	Response	Ranking
01. Compliance with internal Quality Standards	32	2	14	1.5
02. Contribution to enhancement in functional performance	23	4	10	5.5
03. Key values delivered to strategic initiatives taken	33	1	12	3.5
04. Shared responsibilities among the fellow workers to account for performance as single unit	12	7	8	8
05. Undertaking responsibilities more than the stated without specifications by the superiors	10	8	12	3.5
06. Recognizing oneself as a part of accomplishments reported rather than showcasing individual identify	14	6	9	7
07. Post purchase satisfaction of the customers and the default rate reported by them	21	5	14	1.5
08. Cordial relationship expressed among the staff and behavior expressed with key clients of the organization	28	3	10	5.5
Correlation (r)		0.40		

Note: Multiple responses allowed

Correlation expressed is between the ranking by Small and Medium Enterprises = 0.40

Source: Primary Data

From the above table the following becomes evidential

01. It is very much obvious from the above table that there is no synonymous opinion among the Small Scale and Medium Scale enterprises in qualifying the factors becomes the basis for appraising their employees, where Small Scale enterprises see the key contributions made by their employees as the key driver for employee appraisal the medium scale enterprises assign it to International Quality Compliance and Post purchase behavior of the customer as the determinants for appraising their employees which is ranked 2nd and 5th respectively by the small scale enterprises. Which most of the time symbolizes that for their nature of operations Cordial relationship among the staff and their ability to comply there by with the established standards becomes secondary importance.

02. Further, responding to the organizations demands becomes very important for the medium scale enterprises as they operate more on a large scale and in dynamic markets which is of last priority to the small scale enterprises who most of the time operate their consortium of organizations and for them maintaining relationship among small group of people is not at all a challenge which is rated as 8th by the small scale enterprises.
03. From perspective of both the organization they accept that the employees shared responsibilities and ability to take up challenging task and enhancing the functional performance become key drivers for appraising their employee performance as most of the times these initiatives by the employees will help them to creates strategic competitive assets in the market place thereby help them in creating long term sustainable market positions.

With an objective to further prove these arguments and test the following hypothesis "t" statistic is used;

H_0 = there correlation between the factors determining the employee appraisal among the small scale and medium scale enterprises is insignificant

H_1 = there correlation between the factors determining the employee appraisal among the small scale and medium scale enterprises is significant

Test Statistic: $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$ tested at 5% level of significance $t_{0.05}$ = (n - 1) d.f

$t_{0.05}$ = (8 - 1) d.f, 7 d.f = 2.365

Derived Value of "t"

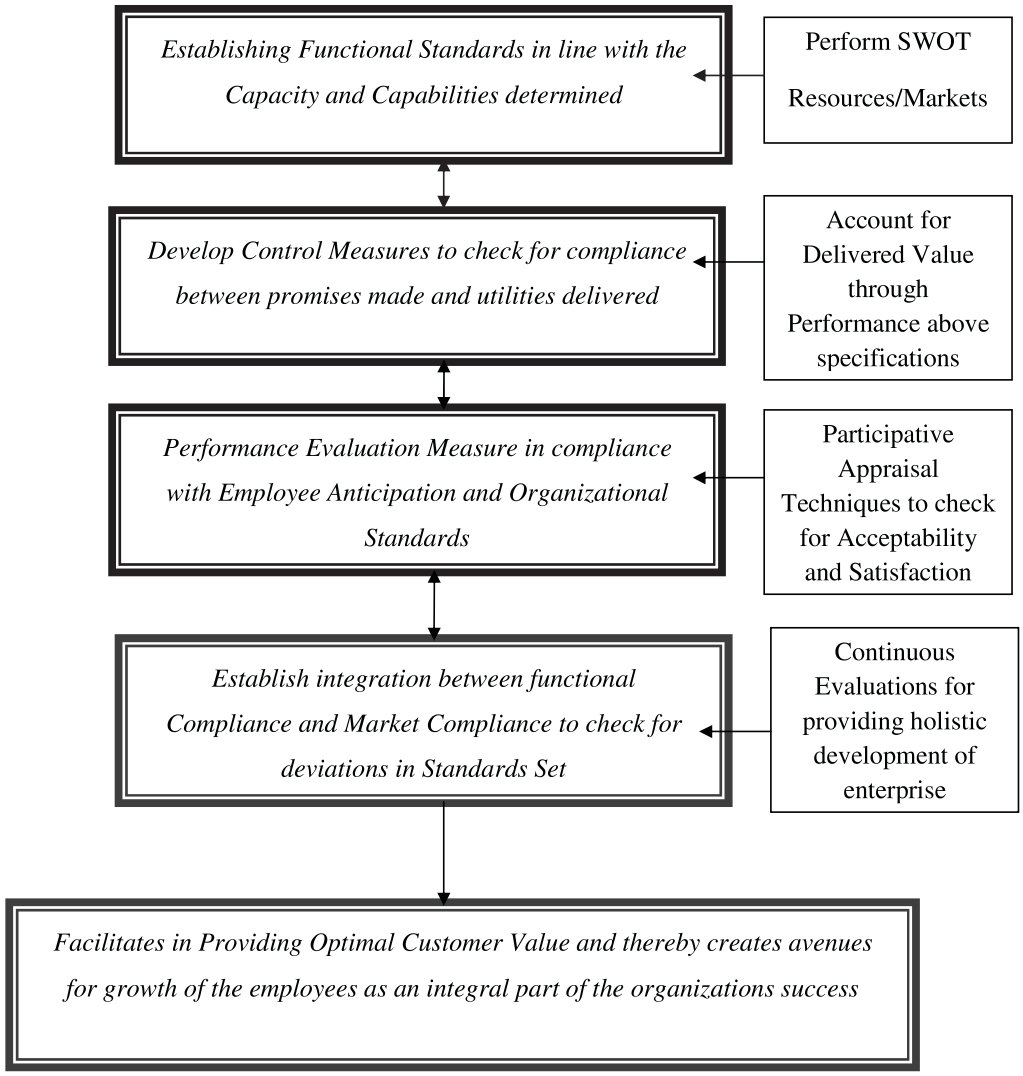
Between the ranking by Small Scale and Medium Enterprises	$t = \frac{0.40\ \sqrt{8-2}}{\sqrt{1-(0.40)^2}}$	1.166 $t_{0.05}$ = 2.365

From the above calculations, the following inferences can be drawn.

01. The derived value of 't' is 1.166 which is much lower than the standard value at 5% level of significance of 2.365. Hence, the null hypothesis stands accepted.
02. It can be observed that with positive correlation of 0.400, a positive correlation exists between the ranking by Small Scale and Medium Enterprises.
03. Hence, it is concluded that the correlation existing between these variables is insignificant.

With the help of the above observations and the review of the research contributions the following model is proposed for appraising the employee's performance by the Small and Medium Enterprises.

Model for Rational and Scientific Appraisal and Employee Contributions in Creating Long Terms Sustainable Competitive Assets



Conclusion :

A close observation and critical evaluation of the above responses and earlier literature works show that, nevertheless performance evaluation is an integral part of requirements of any organization developing a scientific an rational techniques becomes very crucial as most of the times there is always a divergence of thoughts between the employees and the organizations as what is given is not what is always expected by the organizations. In this background for any organization to have to long term sustainable strategic competitive market position it becomes very essential for them to have intellectual assets (satisfied human resources) who are the actual value drivers for their operations. Further, it becomes indispensable as observed by a number of studies that every organization weather small, medium or large has to define their competitive asset structure that can ensure them with realizing favourable positions in the market and in the long run realize optimal profits, requiring them to enhance the equity and credibility among their employees which can be done only through providing accountability to their contributions to organizations success and an attitude which would say we cannot define the word S_CCESS without U.

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Uses of Information and Communication Technologies

Nand Kishore Sharma

Abstract :

This research paper is a finding of a research work of the impact of information and communication technologies (ICT) for teaching and research in accounting departments of self-financing Universities and Colleges of Rajasthan state. Information and communication technologies have radically transformed teaching and research activities globally. The internet has provided universally access to information. The paper is the case study of different accounting departments of self-financing Universities and Colleges of Rajasthan state. The research paper recommends that even after such a wide use of ICT for the optimum utilization of information technologies by the students, research scholars and teachers of different accounting departments of self-financing Universities and Colleges of Rajasthan state.

Key Words : *ICT, Search Engine, Frequency Test.*

Introduction :

Evidence is available from Sukracharya's Sukra Niti that the development of accounting as systematic subject began in India during the ancient period. In present time also Majni Bahikhata system of accounting which is more scientific than double accounting system is also introduced in India. Accounting, being a practice- born subject is still in peach of a sound philosophical box. Although it cannot be classified as a pure science like physics, however, at has maturity to claim the status of Social Science. In modern time accounting has deep roots in tax and corporate legislation's and practices are significantly accepted by legal aspects.

Objectives :

The objectives of the present research study were:

1. To find out the level of use and purpose of using various ICT products and services.
2. To know the frequency of use of ICT's and time spent on it.
3. To find out the level of experience of users regarding the use of ICT's.
4. To determine the impact of ICT of the research work.

Methodology :

Data Sources:

The sources of data for the present research study were mainly Primary Data and the Secondary Data as per the availability of the Literature and other information about the use and purpose of using various ICT products and service in accounting education and research.

Sample Frame:

For the purpose of the present research study the Teachers, research scholars and students of self-financing universities and colleges of Rajasthan state were selected. In order to perform the study a mixed random sample was drawn from the teachers, research scholars and students of accounting departments' of universi-ties and colleges of Rajasthan state were

taken. A small sample was drawn from the total numbers of the teachers, research scholars and students of accounting departments' of universities and colleges of Rajasthan state were taken. A convenience sample of 50 teachers, research scholars and students was selected for the purpose of the present study.

Research Tools:

A survey was undertaken through a questionnaire. The questionnaire was e-mailed to collect the information from the sample. The well structured questionnaire comprised of the following questions:

i) use of ICT products and services,
ii) purpose for which these ICT products and services were used,
iii) frequency of the use of the computer and Internet,
iv) the level of expertise of the users in using ICT,
v) the preferred search engines, and
vi) the impact of ICT on the users research work.

Limitations of the Study :

1. Major part of this research study is based on the primary data i.e. questionnaire, open ended answers were mostly ignored by respondents due to tier of Management.
2. All the questionnaires are filled by respondents of selected self financing colleges and universities of Rajasthan state so the answers differ from each other.
3. To formulate and calculate hypothesis took more time but it was necessary in order to get accurate result.
4. Due to limited time period, the sample size of only 50 was taken.
5. Present study is limited to selected universities and colleges only, so the findings of this research may not be applicable to every Government University or college of our country.
6. It was found during the filling up of questionnaire that some of respondents were hesitating to give correct answer of the question.
7. This study is limited to the teachers, students and research scholars of accounting departments of our universities and colleges and hence the findings may not be applicable to the other departments i.e. history, management, economics, sociology, chemistry, botany etc.

Conceptual Study:

Accounting education has largely contributed to an increase in developing knowledge, providing an enabling environment for innovation and in building human capital required for a potential future knowledge economy. Global reforms in education and challenging Information and communication technologies (ICT) demands have made a remarkable shift in the structure of the ICT enabling environment and the utilization of ICT technologies have become the key driver of the digital network in an era of technology-driven education. More education institutes and communities now have access to ICT resources to join the global economy with knowledge workers who have 21st century skills and are inspired by life-long

learning. ICT's have great potential for knowledge dissemination, effective learning and the development of more efficient education services. Much effort has been made towards the advancement of education and multi-literacy.

Information and communication technology (ICT) enabled students, research scholars and teachers of accounting of self-financing universities and colleges of Rajasthan state in many ways. The availability of online information resources has changed the way of working in accounting departments of self-financing universities and colleges of Rajasthan state. ICT is the integration of computer and communication technology used to process, store and disseminate information. It has changed the traditional practices of professors of accounting for teaching and research as the end users. Now users can have access to a variety of information and scholarly journals online. It also helps the users to access, mange, integrate, evaluate, create, and communicate information more easily than ever. Significant developments in ICT have forever changed the way information is gathered, processed and disseminated. While processing, storage and retrieval facilities are provided by the computers, telecommunication provides the facilities for the transfer or communication of data or information. The ICT has nowadays become an import technology in universities and colleges of our country as it plays a very important role in meeting information needs of the users and institutions as a whole. It was observed that Accounting department of University of Rajasthan, Jaipur is one of the first in Asia to recognize the importance of information and communication technologies. This department conducted following activities to improve ICT system:

1. Conducted many seminars and conferences.
2. Members of department attended State, National & International conferences in India and abroad.
3. There is a curriculum committee in the department which regularly revises and updates P G and UG curriculum.
4. Many Ph. D., research scholars are working under the faculty members of the department to improve ICT tools and techniques.
5. Many teachers of government and private colleges have taken advantages of research scholarship and research fellowship sponsored by UGC, university and department.
6. Many teachers of the department are registered for the D. Litt., degree and their work is in progress.
7. The department is playing a lead role getting research paper on ICT published in national and international journals.
8. The department has organized many refresher courses on ICT for benefit of universities and colleges teachers.
9. The department has one compulsory paper on ICT at UG and PG level.
10. The members of department have written many text and reference books on ICT which are used in India and abroad.

Plan for improvement of Information and Communication Technologies in accounting education:

ICTs are being used increasingly in accounting departments of our country for "e-learning "applications. At the same time there is some skepticism towards ICT's in accounting education because the impact on students of self-financing universities and colleges of Rajasthan state achievement and the cost of effectiveness of what are often expensive applications are unclear. What is certain is that the mere presence of computers and other new technologies in the classroom is not sufficient; ICT interventions need to be designed and implemented strategically in order to be effective and live up to their full potential. ICTs in accounting education can be useful for increasing access to information as well as motivation in the classroom and efficiency throughout the accounting education system in self-financing universities and colleges of Rajasthan state.

While introducing ICTs in accounting education and research one should be primarily concerned with the kind of accounting education one is trying to deliver. In particular, one should start by clarifying education goals and curriculum objectives and not being by asking what and how much technology should be introduced in accounting education and research.

It is not always possible to when a technology-based solution to the accounting education and research one has to identify is the right solution. To understand what the right solution to one's accounting education problem is, firstly one should know the needs and the resources available at present or can be mobilized in the future. It is important to note that different type of technologies offer different advantages-as well as challenges- depending on how these technologies are deployed.

Training to teachers, research scholars and students is the means not the end. Training to teachers, research scholars and students does not always make a difference in terms of changed practice in the classrooms. Teachers need time and an enabling environment to develop the technological pedagogical content knowledge. By this the teacher's knowledge of how to represent concepts using technologies; strategies to teach content using technologies in a constructive way; knowing how to use technolo-gies can be used to build on existing knowledge; and how to use technologies to develop new ways of knowing and learning or to strengthen existing ones can be enhanced.

The sustainability of innovations in respect of ICT and accounting education, and of course, other educational innovations, depends on establishing a critical mass of innovators that reinforce and enrich each others' changed practice within self-financing universities and colleges of Rajasthan state and across universities and colleges. The key to success are for the educational systems to:

Firstly know whether the pockets of experimentation, innovation and creativity are in teachers, research scholars and students of self-financing universities and colleges of Rajasthan state.

Secondly, to know how to build on the existing strengths of teachers, research scholars and students of accounting departmens of self-financing universities and colleges of Rajasthan state.

Thirdly, to know how to use technology to create, animate and sustain teachers, research

scholars and students of accounting in self-financing universities and colleges of Rajasthan state.

Fourthly, any innovation regarding ICT and accounting education will only succeed if there is sufficient financial resource to meet the total cost of the technology introduced, particularly the maintenance of machinery, replacement parts, availability of technical support and the updating of software.

Fifthly, there are also issues regarding the extent to which the community is involved and acceptance of ICT by the end users, namely the teachers, research scholars and students of accounting in self-financing universities and colleges of Rajasthan state.

Planning for ICT should be part of and not separate from general education and university or college planning. The biggest mistake is to think of ICT and its use as an 'add on', an extra aspect of the curriculum. The teachers, research scholar and students involved in planning for ICT must be fully integrated into broader education and university or college reform efforts.

Actual Use of ICT Products in present research:

In present research I have divided respondents in to use of ICT for teaching purpose and use of ICT for research purpose and this use of ICT for teaching purpose and use of ICT for research purpose is also sub divided into use by male and female as is clear from following table:

Table 1. Use of ICT Products (Total No. of Respondents (n=50)

ICT Products	For Teaching Purpose				For Research Purpose			
	Men (n=32)	%	Women (n=18)		Men (n=32)		Women (n=18)	
Computer	30	93.75	16	88.89	31	96.88	16	88.89
Laptop	10	31.25	8	44.44	12	37.50	11	61.11
Internet	25	78.13	16	88.89	27	84.38	16	88.89
MS-Word	21	65.63	14	77.78	23	71.88	14	77.78
MS-power Point	9	28.13	5	27.78	20	62.50	10	55.56
MS- Excel	9	28.13	5	27.78	25	78.13	12	66.67
Printer	12	37.50	6	33.33	13	40.63	9	50.00
Scanner	16	50.00	11	61.11	24	75.00	11	61.11
DVD/CD/ Pen Drive	26	81.27	13	72.22	30	93.75	14	77.78

The above table show that in my study use of ICT is sub divided into nine parts i.e. Computer, Laptop, Internet, MS Word, MS-power point, MS Excel, Printer, Scanner, and DVD/CD/Pen Drive. The use of computer for teaching purpose by male is 93.75% while by female is 88.89%. The use of computer for research purpose by male is 96.88% while by female is 88.89 %. The use of laptop for teaching purpose by male is 31.25% while by female is

44.44%. The use of laptop for research purpose by male is 37.50% while female is 61.11 %. The use of internet for teaching purpose by male is 78.13% while by female is 88.89%. The use of internet for research purpose by male is 84.38% while by female is 88.89%.

The table 1 shows that in present research use of MS Word for teaching purpose by male is 65.63% while by female is 77.78 % during my research period. The use of MS Word for research purpose by male is 71.88 % while female is 77.78 % during my study period. The use of MS power point for teaching purpose by male is 28.13 % while by female is 27.78 % in present study. The use of MS power point for research purpose by male is 62.50% while by female is 55.56 % in present research. The use of MS Excel for teaching purpose by male is 28.13 % while by female is 27.78 % in this study. The use of MS Excel for research purpose by male is 78.13 % by female is 66.67 % in this study.

In present research the use of printer for teaching purpose by male is 37.5% while female 33.33% in my research. The use of printer for research by male is 40.63% while by female is 50.00% in present study. The use of scanner for the teaching by male is 50% while in case of female it is 61.11 %. The use of scanner for research by male is 75% while in case of female it is 61.11% in this research project. The use of DVD/CD/ pen Drive for teaching by male is 81.27% while in case of women is 72.22%. The use of DVD/CD/ pen Drive for research by men is 93.75% while in case of women it is 77.78%.

Purpose of Using ICT Products and Services :

User was asked to indicate the purpose for which they used various ICT products and services. Table 2 shows that majority of user's uses ICT product such as E-mail and documents exchange, electronic journals, for career development, for online databases for their research the statistical methods were used for data analysis as per the convenience.

It is clear from the table 2 that purpose of using ICT products and services is divided into two parts as is done in table 1 i.e. for teaching and for research. It is also sub divided into use by male and use by female. Table 2 shows that e-mail and documents exchange is uses for teaching purpose by men are 93.75 % while it is 94.44% in case of women. The e-mail and documents exchange is uses for research purpose by men are 87.50 % while it is 94.44% in case of women. The electronic journals are using for teaching purpose by men in case of 87.50 percent while in case of women it is 94.44%. The electronic journals are using for research by men in case of 93.75% and 88.89 % in case of women.

Table 2. Purpose of using ICT products and services (Total No. of Respondents (n=50)

ICT Products	For Teaching Purpose				For Research Purpose			
	Men (n=32)	%	Women (n=18)	%	Men (n=32)	%	Women (n=18)	%
E-mail and documents exchange	30	93.75	17	94.44	28	87.50	17	94.44
Electronic Journals	28	87.50	17	94.44	30	93.75	16	88.89
Electronic books	14	43.75	10	55.56	13	40.63	7	38.89
Locate & collect data using Internet	30	93.75	17	94.44	29	90.63	16	88.89
Online databases	25	78.13	14	77.78	26	81.25	15	83.33
For career Development	24	75.00	14	77.78	26	81.25	14	77.78
Preparing presentations & documentation	20	62.50	13	72.22	16	50.00	12	66.67
Preparing manuscripts, Proposals, and papers	28	87.50	16	88.89	25	78.13	16	88.89
To update Knowledge	30	93.75	18	100.00	29	90.63	17	94.44
Discussion Forums	19	59.38	12	66.67	17	53.13	12	66.67
Blogging	28	87.50	8	44.44	28	87.50	7	38.89
Casual Internet Surfing	32	100.00	18	100.00	31	96.88	17	94.44

Electronic books are used by men in case of teaching purpose is 43.75 % while this percent is 55.56 in case of women. Electronic books are used for research purpose by men is 40.63 % while this percent is 38.89 in case of women. Locate & collect date using internet is done for teaching purpose by men in case of 93.75 % cases while in case of women it is 94.44 % in present study. For research purpose locates and collect data through internet is done by men in case of 90.63 % while this percent is only 88.89 in case of women in my research study.

Online data bases technique is followed for teaching purpose by men in case of 78.13 % while this percent is only 77.78 in case of women in this research. For research purpose this technique is used by men in case of 81.25 % while this percent is 77.78 in case of women. ICT products and services are used for career devel-opment for teaching by men only in case of 75.00 % while this percentage

is 77.78 in case of women. For research purposes career development as ICT product and service is used by men in case of 81.25 percent in my study, while it is only 77.78 % in case of women.

ICT products and services are used for preparing presentations and documentations for teaching in case of men only in case of 62.5 % but this percent are 72.22 in case of women. For research purpose in case of men the percentage is 50 only, while it is as high as 66.67 in cases of women. For preparing manuscripts, proposals and papers for teaching purposes men are using ICT products and services in case of 87.5 % while this percent is as high as 88.89 in case of women in this research study. For research purposes manuscripts, proposals and papers are prepared through ICT by men in case of 78.13 % while this percent is as high as 88.89 in cases of women.

For updating knowledge to teach in classroom ICT products and services are used by men in case of 93.75% while women are using 100 % in my present study. For research purpose this technique is used by men in case of 90.63 % while in case of women the percentage is 94.44 in my study. ICT products and services are used for discussion forums for teaching in case of men only 59.38% while it is 66.67% in case of women in present research work. For research purpose this technique is used by 53.13 % men and 66.67 % women in my present study.

ICT products and services are used for blogging purpose by 87.50 % men and only by 44.44% women in my research work. For research purpose this technique is followed by 87.50 % men and 38.89% women. Casual internet surfing technique is adopted for teaching by 100 % men and 100% women in my research study. Casual internet surfing technique is adopted for research by 96.88 % men and 94.44 % women in my present research.

Frequency of Use of Computer and the Internet :

To find out the frequency of the use of internet the time gap was divided into five categories, viz., daily, two to three times, weekly, monthly, and occasionally. Table-3 shows that 41.63% male and 38.89% female users used internet daily; 18.75% and 16.17% male and female for two to three times in a week; and 25.0% males and 27.78% females weekly for their teaching purpose. 43.75% male and 44.44% female users used internet daily; 18.75% and 33.33% male and female for two to three times in a week; and 21.88% male and 5.56% female weekly for their research purpose. In present research only a few users used it monthly and occasionally.

Table 3 Frequency of use of computer and Internet (Percentage)

	For Teaching Purpose		For Research Purpose	
Frequency	**Male**	**Female**	**Male**	**Female**
Daily	41.63	38.89	43.75	44.44
2-3 times in a week	18.75	16.67	18.75	33.33
Weekly	25.00	27.78	21.88	5.56
Monthly	9.38	11.11	9.38	11.11
Occasionally	5.25	5.56	6.25	5.56

Expertise in Using ICT's :

My questionnaire asked the users to indicate their overall expertise in handling various types of ICT's Table 4 shows that only 19.75% male users and 22.22% female users indicated that they are very expert in using ICT's while 28.13% male and 22.22% female indicated that they are expert users of ICT. 37.50% male and 33.33% female users indicated that they are

average users of ICT's The reasons for less expertise in using ICTs are that a majority of the users do not have a formal knowledge or have no formal computer training.

Table 4. Expertise in Using ICT's

Level of Expertise	Percentage	
	Male	Female
Very Expert	19.75	22.22
Expert	28.13	22.22
Average User	37.50	33.33
Poor	9.38	11.11
Very Poor	5.25	11.11

Preferred Search Engines :

Regarding the use of search engines respondents were asked to indicate multiple answers according to their use. Table 5 shows that 100% users both male as well as female use Google. Besides Google, 37.50% male users also use MSN, 31.25 Yahoo! 9.38% Alta Vista, and 6.25% Opera. In the case of female users no major differences were found as 22.22% use MSN, 44.44% Yahoo! 11.11 % Alta Vista, and 11.11% Opera. There is not much difference in the using of search engine for teaching and research purpose in my research.

Table- 5 Frequency of use of computer and Internet (Percentage)

Search Engines Preference	For Teaching Purpose				For Research Purpose			
	Male (n=32)	%	Female (n=18)	%	Male (n=32)	%	Female (n=18)	%
Google	32	100.00	18	100.00	32	100.00	18	100.00
MSN	12	37.50	3	16.67	9	28.13	4	22.22
Yahoo!	10	31.25	5	27.78	12	37.50	8	44.44
Alta Vista	3	9.38	2	11.11	3	9.38	2	11.11
Opera	2	6.25	2	11.11	2	6.25	2	11.11

Impact of ICTs on Research Work

The ICT has proved to be a great asset to many of the users. Table 6 show the impact of ICT's on research works and academic efficiency of the users. In my present research majority of male as well as female users were of the view that ICT's have enhanced the access to current information improved professional compe-tence, access to wider range of information and quick access of information.

The users feel that the emergence of ICT has a great impact on every walk of research & teaching in accounting in selected of self-financing universities and colleges of Rajasthan state and has improved the quality of both.

Table 6 Impact of ICT on research work (Percentage)

Impact of ICT	For Teaching Purpose		For Research Purpose	
	Male	Female	Male	Female
Expedite research Process	96.88	94.44	96.88	94.44
Improve professional competence	81.25	83.33	84.38	88.89
Access to current information	93.75	83.33	93.75	83.33
Access to wider range of information	68.75	88.89	75.00	83.33
Fast access of information	90.63	77.78	90.63	83.33

Finding and Conclusion :

Respondents from selected self-financing universities and colleges of Rajasthan state were asked to express their level of use of various ICT products for their research work. Present research study shows that the users that used computer are 96.88% male & 88.89% female for their research work and 93.75% male & 88.89% female for teaching purpose. A majority of male (84.38%) and female users (88.89%) used Internet for research work. As far as various software applications are concerned, it was found that while 71.88% male users used MS Word, 62.50 % used MS Power Point and 78.13% MS Excel. In comparison 77.78% female users used word, 55.56% used MS Power Point and 66.67% MS excel for research work. It was found that the majority of the male and female users use various ICT products for the research work rather than teaching purpose, purpose rather that teaching purpose but for teaching purpose majority of ICT products used are electronic books, locate, to collect data using Internet, for preparing presentations, documents, preparing manuscripts, proposals, and papers, to update knowledge and for casual internet surfing.

1. 84.38 % mail respondents and 88.89% female users use computer for their research work in present study.
2. 93.75% male respondents and 100% female users use ICTs for updating the knowledge and 100% male and female respondents use it for casual internet surfing in present research.
3. 43.75 % men respondents and 44.44% women users use computer and Internet daily for their research work.
4. 37.5 % men respondents and 33.33% women users are having average level of expertise in using ICTs due to lack of formal knowledge of computer and training programmes.
5. All the respondents (men & Women) prefer Google as their search engine to search for the desired in-formation.
6. 96.88 % men respondents and 94.44% women have an impact of ICT on the research process.

The present research study on uses of information and communication technologies (ICT) for teaching and research in accounting departments of self-financing universities & colleges of Rajasthan state investigated that respondents used a variety of ICT products and services for their research work as it is helpful in finding information quickly and also helps the users to access, manage, integrate, evaluate, create, and communicate information easily. The study identified that users are not getting proper training/ guidance and assistance, which is very necessary for the effective use of ICT products and services.

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The Age of Cost Competitiveness

Sekhar Ranjan Guha

Abstract :

World economies are fast getting integrated with each other through the forces of globalization. Consequently, due to entry of many world-class business entities into the country, competition between business enterprises has intensified in the market, customers have become aware of many choices, importance of comparative advantage and brand value has diminished. In order to survive in the new complex situation, companies are focusing on improving competitiveness, which in turn is basically cost competitiveness. This require a comprehensive approach to costs, pricing, cash , and capital - covering both the company and its supply chain.

Competitive situation keep changing at quick frequency ; accordingly, there should be flexibility in the organization to more quickly learn, change, and adapt to the new environment. The cost and management accountant, by dint of his professional expertise and knowledge about the dynamics of the market and new innovative and technological breakthroughs taking place in the world, can assist the company to formulate an effective and comprehensive business strategy for the company for its survival and growth.

Key Words : *Cost competitiveness, Profitability, Process Chain, Delivery Reliability.*

Introduction :

In the present era, highly significant changes have taken place in the global and national business environments. A few of such changes are mentioned below:

a. Due to vastly improved communication and transportation systems, companies of all sizes are being seriously affected by the opportunities offered by global competition. Many multinational companies, having highly advanced technology, sophisticated business techniques, and goods and services of higher quality but of lesser cost of production have created an intensely competitive environment in the country.

b. The lowering of entry barriers and consequent coming in of the multinationals, rapid advances of communications technology, the advent of satellite television and the internet, and increase in literacy rates, have increased customer awareness. Higher levels of such awareness tend to create demand for higher quality and manifold functionality of products and services. Availability of manifold options in the market diminishes brand loyalty. Customers now increasingly desire maximization of price-performance ratio and their preferences continue to shift towards products and services of higher value content and greater reliability.

In order to survive in this dynamic and hyper - competitive business environment, producers of goods and providers of services have to offer maximum value to the customers at prices lesser than its competitors and still have to maintain both quality and profitability. Now a company has to match, or, exceed 'global benchmarks' of cost, quality, and service. It has to strive to be globally competitive so that its cost, quality, and productivity help it to overcome the fierce competition offered by world - class producers, no matter where they are

located.

Cost Competitiveness:

In the changed scenario, narrated above, a company must have cost competitiveness. There is ever growing need to strengthen cost competitiveness of its products/services. To be cost competitive, the company's product or service should be cheap compared to similar products or services of other companies. A progressive company's growth agenda to achieve and improve cost competitiveness needs to include :

- Sustainable cost reduction
- Strategic pricing policy
- Raising, optimizing, conserving, and investing capital
- Effective management of cash flow

Sustainable cost reductions:

The key to success in a competitive environment and in these challenging times is the cautious balance of cost, quality, and functionality - the cost being the critical element.

Reducing cost is now a continuous focus of management around the world. Cost reduction and optimization needs to become a routine and essential component of business operations, cost reduction should be integrated with the business strategy. A clear understanding of a company's cost structure can immensely help in the quest for sustainable competitive advantage. For this purpose, the approach to cost reduction should focus on :

a. Reducing complexity : value- destroying complexity should be identified and value-adding simplicity should be enhanced.
b. Tracking costs : dependable data collection process should be installed to obtain an accurate and comprehensive picture of costs, value, and returns.
c. Instilling confidence : reason for cost reduction action should be explained, clarity on the anticipated result should be provided, and the organisation should be led with firm belief to sustain confidence in the company culture as to how costs saved would help to invest in future business growth. All operational areas should be covered.

Process Change:

Companies may need to introduce changes to their processes to achieve strategic cost reductions. Processes are the ways things are done, so changing processes means changing the ways things are done. Three methods are adopted to change the ways things are done :

Process improvement : means continuous increases in the efficiency of the current process. For example, Alpargatas, the largest textiles and sports shoes manufacturer in Argentina, focused on improving the heel quality of its sports shoes by 'cutting, stitching, and back-part moulding processes', leading to savings of $225,000 per year.

Process innovation (Business process reengineering) : means performing a process in a strikingly new way to achieve dramatic improvements in time, quality, and efficiency. For example, IBM Credit radically redesigned its credit approval process and reduced time for preparing a quote from seven days to one day. Process creation : means installing a completely new process to fulfill customer and financial objectives. For example, Chemical

Bank, USA, 'identified three new internal processes : understanding customer segments, developing new products, and cross-selling the product line' . Management considered these new processes were very critical to improve customer and profit mix of the company.

Progressive companies benchmark focus on individual processes and select as the quality standard those enterprises who have established the highest quality results for a particular process, not necessarily in the same industry. For example, studying the First National Bank of Chicago's electronic data transfer system, Motorola adopted the Bank's techniques and saved 8000 hours auditing its books during a period when the company's sales increased by 50% High performing companies also benchmark results to identify enterprises which are 'best in the class' . By knowing the fundamentals of success of such enterprises in achieving the highest quality in particular processes, the companies can reengineer to adapt the best practices in their operations. Continuous improvement processes are the driving forces behind efficient management of costs.

New Technology :

World-class manufacturers now extensively utilize new technology, such as, Advanced Manufacturing Technology (AMT), Computer-aided Design and Manufacture, Flexible Manufacturing Systems , etc. A company's competitiveness now depends on the extent of its use and command over the new technology in production and other areas.

It employs advanced production management systems, like, Materials Requirements Planning, and Just- in- Time Systems. Using AMT, companies now can produce high quality-products and services at low cost which provides high value to the customers. Automation of the production has reduced inventory level, floor area and processing time and has led to improvement in productivity and quality.

Electronic data interchange has considerably reduced lead times and errors, has improved customer service, and economized administrative costs. Internet trading allows buyers and sellers to come in close contact and to carry out transactions from different locations and varying situations. The sharing of information among the participants in the parties in a business transaction reduces costs and improves customer relations, this strengthens competitive position.

New high-technology machines and equipments has provided substantial opportunities :

a. to reduce defective production, and
b. to attain a higher level of satisfaction of customer needs and expectations.

Lean Management :

Lean is about customer focus. The core idea behind 'lean management' is maximizing 'customer value' by minimizing waste. In other words, lean means creating more value with fewer resources. Value is determined by customer, producers maintain and develop processes to provide this value. Proper leadership, support, training and guidance drive people to consistently improve the processes that add value to the customers.

Lean manufacturing strategies are designed to systematically and ruthlessly cutting non-value added activities, cycle time, and inventory. Its essential ingredients are elimination of defects and set-up time. It ensures continuous flow, manufacturing in small batches

facilitated by cellular layout (planning the plant into several cells so that in each cell all machines needed to produce a batch of identical products are arranged in close proximity) and flexible manufacturing systems. 'In turn, these eliminate a vast array of activities that generate indirect costs, such as production control, direct labour analysis and control, inventory control, inspection, rework, and materials handling'. Some examples of non-value-adding work are : moving materials, components, equipments, and people that are not required for processing; waiting for next production step; over-processing , may be due to faulty production of goods not ordered by customer or not as per customer specification, waste of human skill, etc.

Continuous Improvement in Costs and Processes :

In a dynamic environment, it is almost impossible to remain the best in the market for long, because, the competitors relentlessly endeavour to improve their cycle time, quality, cost, and customer satisfaction to continuously keep getting better. Continuous improvement aims to do better than before and to do better than the rivals. For this, a company has to find out ways to enhance overall efficiency by reducing waste from every stage of its operations, improving quality, and reducing costs. Costs are driven by time, so companies strive to reduce the costs and improve processes to shorten the journey from innovation to market. Inadequate understanding of customer needs, intricate designs, frequent design changes, and , too many defects, setups, in- process movements, and inventory - all lead to longer cycle times and higher operating costs. Companies persistently applying themselves to continuous improvement succeed to produce and deliver superior products/services at cheaper rates. Analysis of causes of variances of budgeted costs provide opportunities for continuous improvement.

The Gillette Company, USA, ' uses continuous improvement efforts to achieve small, incremental gains. For example, Gillette operates presses in its metal-stamping operations at between 800 and 1200 strokes a minute. This process rate is twice the speed of 10 years ago despite tighter specification.' The concepts of Just- in Time and Total Quality Management begin with the premises of zero defects, zero inefficiency, and zero downtime. These two techniques help companies to practice continuous improvement.

'Managing Upstream'

Instead of solving problems after they arise, preventing them is cost-effective. Prevention or early detection of defectives lead to smoother production flow and better employee morale. Designing products/services and processes need to conform to manufacturability and also customer requirements. Percentage of unique parts should be minimized. Cost and management accountants should be included in the design and value engineering team as they can contribute to the attainment of defect-free manufacturability and desired target costs.

Outsourcing and Offshoring

To survive in the present day intensely competitive business environment, a company's decisions to outsource/offshore some of its activities are essentially driven by factors related to costs of production, distribution, and productivity.

Many firms hire external providers to perform certain functions which were previously done internally. To reduce fixed costs, some companies outsource their accounting, taxation, and

legal needs to outside firms, instead of performing such functions within the companies. Non-core skills and functions are often outsourced. Such companies decide to outsource when they find that they would earn extra profits if the payments to be made to outside providers are less than the costs that would be incurred internally. For example, Dial Corporation, USA, hired Andersen Consulting to provide 'mainframe computer operations, systems software maintenance, and telecommunications support of Dial's operating locations'. Andersen's fees were computed to save Dial 10% of the out-of-pocket costs that the company would incur to provide the services internally, based on anticipated processing volumes. Dial's management expected to save several million dollars from outsourcing. This arrangement with Andersen converted the cost structure from primarily fixed to variable. Some MNCs outsource business function/s to other country/countries . For example, highly reputed company, Texas Instruments (TI), set up an engineering facility at Bangalore, where talented and productive young professionals were available at low wage rates. TI installed modern technical facilities to operate efficiently and cost effectively. 'Now, the company's engineers in Dallas and in Miho, Japan, design parts of a memory chip and forward their work in computers and satellites to engineers at Bangalore for completion. The chip is then fabricated in Texas and returned to Bangalore for debugging'. In this manner, MNCs save most precious resources like money and time and reap the benefit of quality enhancement. To respond to a prospective customer's enquiry, TI's design group in Dallas worked on the enquired subject, and, at the end of the day, transferred their work electronically to designers in Tokyo. The latter group worked on the design and, at the daybreak, transferred the design to the design group at Nice, France. By the next day, the Dallas group completed the design, and submitted the quotation, and a preliminary picture of the device to the enquiring customer.

Mckinsey Global Institute (2003) 'looked at savings incurred by off-shoring customer services to India, and the overall economic benefits enjoyed by the US from such investments. ….. they predict a reduced cost base of between 45% and 55% . If the process design of the company is re-engineered at the same time, they envision additional savings bringing the cost base down to 30%-35%'. Outsourcing helps a company particularly to reduce fixed costs, to focus on core activities, to enhance efficiency, and adapt more quickly to changes in the market, which is so volatile now a days. By offshoring a company can relocate its comparatively inefficient processes to external providers with cheaper and probably more effective production capabilities. It can then focus on the areas where it has comparative advantage and expand output, or engage in new business lines.

Value Chain :

In the present day economic environment, customer preferences tend to shift toward higher value content products of best quality and of most reasonable price. So the company has to gain 'competitive advantage' that creates a better 'customer value'.

Customer value can be enhanced by three strategies : a. Cost leadership : a firm provides the same or better value to customers at a lower cost than offered by competitors. Wal-Mart's low cost and highly integrated value chain have given it a sustainable competitive advantage. It (i) maintains very close relationship with suppliers who provide their products to Wal-Mart on account of regular and high volume of transactions, (ii) has a highly efficient logistics

system, and (iii) has developed a sophisticated satellite-driven inventory tracking system. Differentiation : a firm tries to be 'unique' in its industry in some features that are widely liked by customers. c. Focus : a firm focuses on a segment or a group of segments in the industry and devises its strategy to serve only to them. The most advantageous mix of these three general strategic approaches is known as 'strategic positioning'.

Competitive advantage is linked to costs. Successful pursuit of a sound strategic position is founded on understanding of the 'industrial value chain', which is the linked set of value-creating activities from primary raw materials to the disposal of the finished product by end-use customers. In-depth analysis of the activities of the value chain is crucially important to successful implementation of cost leadership and differentiation strategies. Intricate linkages and interrelationships exist among activities both within and outside the firm. There are two types of linkages : Internal linkages relate to relationships among activities within a firm's segment of the value chain. External linkages relate to its value chain activities which are performed with its suppliers and customers.

Internal value chain activities refer to designing, development, production, marketing, distribution, and servicing. Relationships between activities are analysed and used to reduce costs and increase value. For example, product design affects the cost of production. Knowledge of cost drivers of activities helps to understand and to utilize linkages.

Exploiting external linkages means managing these linkages to the benefit of both the firm and outside parties. Suppliers are thoughtfully selected considering total costs associated with quality, reliability, and delayed delivery, not just purchase price.

Where customer servicing costs are significant, such costs need to be assigned to customers using activity-based costing. Such assignment helps the firm to classify customers as profitable or unprofitable. Steps then can be taken to strengthen the strategic position of the firm. Satisfaction of profitable customers can be increased by further improving services, lowering prices, giving new service at lower cost. To unprofitable customers, more efficient services (thereby reducing service costs) can be delivered, and, prices can be increased to reflect the cost of resources consumed.

A firm can get an idea of the costs and performances in the competitors' value chain by comparing its own costs and performances with those of the competitors. Such analysis may reveal valuable information which may be used by the company to reduce costs.

Strategic use of Cost :

As mentioned above, cost leadership strategy can be used by a company for successfully competing in the marketplace, even to beat out the existing other firms. In 1967 Southwest Airlines, USA, began its low-cost short distance air service between Houston, Dallas-Fort Worth and San Antonio, Texas. By flying only on short distance routes, Southwest needed only one type of aircraft. This saved training costs for flying and maintenance, and lower level of inventory of replacement parts was needed. Also, short distance required no in-flight meals. Being positioned in the minds of its customers as a provider of low-cost air journey, it could save services that customers generally expected from large airlines (e.g. it did not take reservations, thereby economizing staff cost and computer services). Wherever possible, it used secondary airports to avoid high landing fees charged by the major airports.

Use of Information Technology to Reduce Costs :

Companies use information technology to 'integrate their planning, scheduling, synchronization, and tracking of the entire chain of their production process. The use of ERP has helped companies to cut costs as well as increase revenues by getting the right products into the hands of their customers in the most timely and efficient way' .The Earthgrains Company, USA, owner of several bakeries and dough plants in USA and Europe use SAP to control their disbursements from one central location, giving the company better management of working capital and to streamline their procurement cycle, economizing millions of dollars per year (ibid, 2005). Companies now control their information costs by taking assistance of software companies and consultants offering services/products, like, 'knowledge sharing or management, document management, and on-line collaborative tools'. Many firms require their employees to use software to file travel/expense reports electronically; this has reduced the cost of processing expense reports.

Relocation to Low-Wage Countries or Regions :

Producers of goods and services seek to relocate some or more of their operations to countries or regions where wages are lower to reduce cost of production. For example, several Japanese countries have relocated to many countries of Southeast Asia. Several American and European software development companies have set up their units in India where average wage rate of a software professional is considerably lower in comparison to wage-rates of similar professionals in USA and Europe.

Optimising Working Capital :

Currency fluctuations caused due to macro-economic volatility, central banking policies around interest rates and money supply, tightening of bank lending, risk aversion on the part of financiers and credit-rating agencies : due to these and other factors, companies are facing difficulties from increased cost of capital. Consequently, importance of managing cash and working capital has increased even more.

Cash is like the oxygen that enables a company to carry out its operations smoothly, and also to survive and prosper. The company will need a very clear knowledge about how much working capital is blocked and where it is being utilized. An improved working capital position can release unnecessarily blocked cash, decrease costs of funding, enhance flexibility, and, contribute to higher margins.

Companies can optimize cash across the value chain by adopting the following measures:

- motivating personnel to focus on cash ;
- entering into agreements with customers and suppliers :
- keeping information about financial health of both the customers and suppliers :
- submitting bills to the customers quickly after sale, giving responsibility of collection of the dues to a specific person and within a specific date ;
- examining the risks and benefits of optimizing cash.

Efforts need to be made to reduce operational and transactional costs, so that cash savings can be made, and from lowering the levels of inventory obsolescence and bad debts. Bad debts can be minimized by judging, before credit sale, a customer's financial position,

soundness of his business, past payment records, and quick and effective follow up until the debt is realized.

Identifying key drivers of working capital consumption is very important. A highly reputed, large, and multi-unit electric fan manufacturer in India used to prepare a statement showing full details of each and every item of current assets at month-end.

Then responsible persons from accounts, stores, distribution, sales, and production used to sit together to examine the justification of blocking of money in any item. When it was detected that in some items some money was unnecessarily blocked, then an action programme was prepared to recover such amount, responsibility in this regard was given to specific persons for taking needed action within specific date.

The cost of holding stock includes storage and administration costs and losses due to theft, obsolescence, perishing of goods, etc. Systems need to be in place to avoid the situation of too little or too much stock.

Companies are resorting to diverse routes in respect of procurement :

a. To pass on the cost pressure, many companies are seeking better commercial conditions, discounts, etc .from their suppliers.
b. Some companies are establishing partnerships with suppliers on performance improvement goals.
c. Several organizations are following a cooperative and sustainable business model by entering into joint ventures with other businesses or competitors, and sharing services, for economies of scale.

Manufacturing Cycle Efficiency :

Due to shortening of product life cycles and many firms adopting lean production systems, firms now want quicker supply of materials from their suppliers. In this situation, manufacturing cycle time has become crucially important. Manufacturing cycle time (MCT) is composed of :

a. processing time : time spent actually working on the order at each stage of manufacturing ;
b. wait time : time spent by an order between the different stages of the production process ; and
c. move time : time spent by an order between the various stages ;
d. inspection time : time spent to ensure that the output is of specified quality.

MCT can be expressed in terms of manufacturing cycle efficiency (MCE).

MCT stands for the proportion of time during which value is being added during the manufacturing process. The MCE is the ratio between 'processing time' and the sum total of 'processing' + 'wait' + 'move' + 'inspection times'. Major portion of cycle time consists of waiting for materials to arrive, a set up operation to be performed, correction of quality defects caused by earlier production errors, etc. 'The net effect of this waiting is to increase substantially both the complexity of production scheduling and the level of WIP'. Many companies have markedly reduced MCT by cutting down non-value- added activities. Ford

Motor Company's North Penn factory reduced its average MCT from 7.8 days to 17 hours through the elimination of non-value-added activities. Manufacturing cycle time can be reduced by working more closely with the suppliers. Suppliers may be involved in the product designing process to ensure that bought-in components are designed in conformity with the requirements of production process under contemplation. Manufacturing process may have to be redesigned, new machineries and equipments may have to be purchased.

Increase in manufacturing cycle efficiency enhances cost competitiveness of a company in many areas :

a. Reduction in production process time lowers work-in-process level. This leads to :less stock financing costs; lower risk of damage or obsolescence; and lesser space for storage.
b. The company's ability to respond to customers' rush orders or to sudden changes in the market is enhanced.
c. The company can capture higher margin orders or can achieve higher sales volume due to increase in production flexibility.
d. The company can increase production throughput without additional plant capacity due to shortened cycle time. Consequently, overtime decreases. The company can pursue new business without increasing fixed manufacturing costs.
e. Reduction in cycle time is substantially dependent on elimination/reduction of non-value-added functions, like, rework and inspection functions. Focus is directed to quality improvement. Quality improvement saves post-sale support costs.

Creation of Customer Value :

A few marked features of the present-day business environment have been mentioned. above. With entry-barriers being effectively dismantled by new entrants intermittently, competitive advantage, enjoyed previously by an enterprise in a closed economy, has become almost a myth in many instances. Brand loyalty can no longer be relied upon for long, because, in an open market more and more brands of new products/services can be offered by producers coming from foreign countries. Yet, many business enterprises are continuing to flourish. Researches in highly developed economies have shown that delivery of high customer value, relative to the competitors, is one of the key reasons of their consistently successful performance, in spite of fierce competition in the market. Such companies grow faster and have high profit margins.

'Customer value' stands for the difference between realization i.e., what the customer receives, and, sacrifice, i.e., what the customer gives up. Realisation includes :product features, its quality, reliability of delivery, delivery response time, image, and reputation.

Sacrifice refers to product price, time needed to learn to use the product, operating costs, maintenance costs, disposal cost, etc. Price factors would include sales prices, promotional financing, etc. Price might include life cycle costs that the customer would bear, like, repair, maintenance, and operating costs.

Reducing price and decreasing post-purchase price decreases customer sacrifice and hence, enhance customer value. Improving realization can be achieved by : further improving (a)

product features, (b) product quality, (c) delivery reliability, (d) product image and reputation.

In this intensely competitive business environment, customers will most likely compare the 'perceived value' of offerings of other competitors. The ultimate 'winner' in the battle for the customer's money bag is the company that delivers the 'best value' from the customer's viewpoint.

Good value greatly contributes to :

- enhanced customer loyalty and retention,
- greater market share,
- more favourable attitudes among customers, and
- reduced operating costs.

Cost savings : Companies that deliver high value generally have lower cost structures than their rivals as they normally focuses on realigning their own value creating processes. Such organizations pay substantial attention to what customers say, they obtain very detailed and actionable data/information directly from them, and use the same for continuous process improvement. As a result of more efficient processes, companies succeed to deliver better value to their customers.

Further cost savings are made from a more stable customer base, because, when old customers leave the company, it has to get new customers, which is a costly process.

More advertisement, sales, and marketing expenditures are incurred to acquire customers. Also, more customer service activities are needed for new customers.

'A firm's success in a global, quality-based competitive environment will reflect consumers' perceptions of the value-to-price relationship for the firm's products and services. Customers perceive a product or service to have high value relative to that item's price if it meets most of their needs at the lowest possible price. When that relationship occurs, the product or service is likely to be a market success' The continuously changing and highly competitive business environment necessitates that companies should be more proactive, innovative, and customer-oriented than ever before.

Pricing :

The consideration of cost competitiveness begins in the market with pricing of the product. In the unsteady market, many companies will be in dilemma about raising their product prices. Increased prices improve margins, but such increase may adverse effects on sales volumes. Over the long run, a company's prices must exceed all costs and should not normally exceed the competitors' prices. In the present business environment, pricing is under pressure : there is focus on value for money products, or, low-cost segments. Apart from this, competition has intensified due to entry of foreign producers on account of globalization. In this situation, a company aims to set a price which corresponds to the customer's perception of value in the product; at the same time, it should cover all costs and provide profit in the process. Pricing has, thus, become a tactical weapon in the battle in the market for garnering market share.

In a market where there is continuous influx of global competitors, with their high quality and sophisticated products, progressive companies seek a deeper understanding of where true value is created for the product's ultimate consumer. This is because now generally price or performance alone are not the determining factors, the consumer will always like to maximize the price-performance ratio. Additional value can be created by introducing improvements in the value chain. More than the advantage in the entire value chain, advantage in each section of the same is what actually matters.

Companies need to adapt quickly to customer preferences and market demands. Comprehensive knowledge of the customers and the market is the starting point for deciding the pricing strategy. In this backdrop, now 'Customer Relationship Management' (CRM) has assumed great importance. CRM maximizes the 'lifetime value of the customer to the organisation' . 'This requires companies to learn about the customer from every interaction with her and will help organizations develop new channel models to service customers'.

Highly successful companies greatly value the understanding of competitors' costs and pricing. From this they can know about sustainable threat from a competitor, they can also develop effective tools to match costs to prices of the competitors.

Cost of Capital :

Economising the cost of capital is of paramount importance to a business entity, it is also a significant opportunity for all business enterprises to achieve and sustain a competitive cost advantage. The costs of capital can considerably impact on a company's profitability. 'The benefits of optimized capital structures include lower costs and greater flexibility : the dangers of overleveraging and limiting flexibility, or forgoing cheap sources of capital in an attempt to reduce risk. The challenge is to understand options : capital markets, sources of alternative funding, and associated tax and regulatory issues - in order to minimize the cost of capital, and to deliver the maximum value to stakeholders.

While many companies use their own funds to finance their current growth projects, the economic crisis all around the world has reduced funds normally available for research, and for long-term and development investments. The lenders of capital remain cautious and the cost and availability of capitals pose problems for most organizations. Capital markets attach considerable importance to credit rating and cost of lending is directly linked to the inherent risks.

Financial experts and researchers suggest that a healthy long-term relationship should be developed with the investors, for this companies need to improve the standard of its corporate governance. According to their views, access to capital on economical terms is a valuable advantage, and for this corporate governance should be improved.

A trend towards securitization of assets and their cash-flows is discernible. Companies with higher credit-rating can now raise funds at cheaper rates as the evaluation is on the assets instead of on the company.

Cost Competitiveness in International Business Setting :

International business is being carried on for centuries. However, due to economic, commercial, technological, and many ether reasons, the expansion of international business

during the last few decades has indeed been phenomenal. Some companies are seekers of raw materials, some are market seekers, while others may be cost savers. Oil and mining companies are examples of the first group. Companies belonging to the second category go overseas to produce and /or sell in foreign markets. Cost minimisers seek out and invest in lower-cost production sites overseas (e.g. India, China, Taiwan, Philippines, etc.) to remain cost competitive both at home and abroad. If a company's competitors gain access to cheaper sources of production in some foreign countries, the company has to follow the same path to remain competitive in the domestic market. For companies where cost is a critical factor, it needs to keep adequate information about cheaper-cost production sites or production technologies and facilities in other places in the world.

In highly competitive markets, companies will virtually be constrained to sell products at prices only a little above marginal costs of production. Companies having high fixed costs, relative to variable costs, have to achieve high sales volume to remain profitable ; in this situation the company may be motivated to gain foothold in overseas markets. Likewise, companies in capital - intensive industries, having big production economies of scale, may have to go to foreign markets to distribute their overhead over a larger volume of sale. Swedish manufacturer of telecommunication equipments , L.M. Ericsson, is constrained to think of foreign customers' needs and preferences while designing its products, because its own domestic market is too small to fully absorb huge R& D expenditures , and also to avail of full benefits of economies of scale. Many companies relocate to countries where tax rates are low. India is attracting foreign enterprises by giving tax incentives and many other benefits through SEZ. When a company relocate to countries, where tax rate is advantageous for the company, they may find other opportunities to gain efficiencies across the entire value-chain, such as, distribution, or, centralized procurement locations.

A company can gain competitive advantage in global markets by :

a. locating value-chain activities among different countries so that costs are reduced :
b. transferring competitively significant competencies and capabilities from its domestic markets to foreign markets ; and
c. drawing on a global competitor's advantage, to increase its resource strengths.

Local companies in developing countries can compete against foreign competitors by :

a. taking advantage of cheap labour, and competitively important skills of local workmen;
b. using knowledge of local consumers' needs and preferences to produce customized products/services;
c. utilizing economies of scale to meet competition offered by foreign companies, and
d. shifting company expertise and competence to foreign markets and taking steps to compete on international level themselves.

Cost Competitiveness and Cost and Management Accountant :

In the present day globalised economic regime and in a world of accelerated change and options, discontinuity and displacement, the crucial importance of cost competitiveness can hardly be overemphasized. Now cost competitiveness of a business entity is absolutely

essential for its success and also for its survival in the new customer-driven and hypercompetitive market. A world-class business enterprise is now building flexibility into all spheres of its business, because, competitive situations keep changing, and the enterprise must be at all times be on its toes. 'Speed will become a major determinant of organizational success. Product life cycles will shorten, and the first -mover advantage will become even more important. With speed comes the requirement for the agility to change, adapt, and learn more quickly. Speed means changing from a mindset of accuracy to one of innovation.

Now a Cost and Management Accountant is described as a 'change agent'. He has to be a 'knowledge professional', who knows the sources of vital information, data, and facts and can gather the same effectively. With the help of these, he can acquire deep insight into all relevant aspects of an organization. With his professional expertise, he can locate sources of weaknesses and wastages, and also sources of strengths and advantages of his organization. With an analytical bent of mind, he can understand the significance and implications of all relevant developments taking place around him : in the economic, technological, commercial, and other areas. He keeps latest information regarding any changes taking place in the market and also about actions and activities of the competitors. He can submit all his findings and his well- thought out suggestions to the Management team for consideration. The company's other professionals can also submit their viewpoints. After deliberations, if it is observed that there are opportunities to further improve organizational efficiency and productivity and also to introduce changes in any segment, then effective actions are speedily taken in this regard. Such a step can be an effective way to improve cost effectiveness.

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Financial problems faced by Private Unaided Educational Institutions with special reference to Bank Finance

Shirish S Raibagkar

Abstract:

This is the fact that a large number of students is deprived of higher education for dearth of financial support and quality of education providers. Through this study, it has been tried to throw a light upon the financial problems and suggestions has been provided. Role of the banks and of the Government also have been discussed for sorting out those problems.

Key Words: *Financial Problems, Private Unaided Educational Institutions, Cash Flow.*

Introduction :

A report on Higher Education in India published by Ernst and Young and FICCI1 states that the Indian Education System continues to be bogged down by challenges of inadequate access, poor quality and inequity. These problems are particularly visible in case of private un-aided educational institutions. Government is seeking an active participation of this sector in meeting the educational requirements of the nation. But the growth of these institutions particularly in semi-urban and rural areas is sluggish and the number of such institutions closing down is on the rise. An obvious reason that is quoted is that there is a huge demand supply gap, because of which, such institutions fail to get student admissions. But such a situation cannot be a regular feature in a country like India that has got one of the highest proportions of young population. In fact, the reality is that there is still a large chunk of students that is deprived of higher education for want of availability of affordable and quality education providers. Hence, it is felt that one needs to understand the roadblocks that are hampering the growth. Analysis of the broader problem reveals that for almost all the apparent problems like lack of infrastructure, lack of competent faculty, poor quality standards etc, there is invariably a financial angle. Since they are largely dependent on fees, often at the end of the academic year they are not able to pay salaries on time.

Problem Illustration :

A small practical example with reference to a good number of such private un-aided institutions from Maharashtra is presented to illustrate the subject matter. On one hand we have the Private Un-aided Educational Institutions (PUEI) and on the other we have Private Banks like ICICI, HDFC, Axis, Yes Bank and a number of them. PUEI need money. Private Banks are willing to finance. But then what prevents the deal? A legal problem.

The problem in the illustration explained -

- Good number of the PUEIs are operating on lands that are granted by the Government
- The transfer, mortgage etc of these lands are governed by the Maharashtra Land Revenue Code (MLRC), 19662
- Section 36(4) of the Maharashtra Land Revenue Code, 1966 states that the owners of Government granted land can mortgage the land but only to a select group of nationalized banks and cooperative banks

- In other words, such land cannot be mortgaged to Private Banks
- Therefore, Private Banks like ICICI, HDFC etc cannot give major loans to these Institutions

Is there any logic in allowing select nationalized and cooperative banks to finance but preventing private banks from financing?

The answer is no. If one studies the MLRC and its amendments it is discovered that the act was framed way back in 1966 and has very few amendments till date. It still continues to operate in the framework of old financial environment when the Private Banks were not much on the scene. Today the situation has dramatically changed. There is actually nothing of substance that should prevent private banks accepting these lands as security particularly when the cooperative banks are allowed to accept these lands as security.

Thus, a small amendment in the MLRC can pave the way for a host of Private Sector banks to finance the PUEIs with Government granted lands. Significant benefits can accrue to both the PUEIs and the Banks that are tabulated below in Table 1 -

Table 1 - Benefits to PUEI and Private Banks

Benefits to PUEI	Benefits to Private Banks
Access to one more source of finance	Opening of a major customer segment
Private Banks are more efficient and aggressive when it comes to financing, which is in the interest of PUEI	Big CASA opportunity as accounts of students and staff can be opened with the private banks
Processes and procedures of Private Banks are relatively simpler	Additional earnings through services like ATM etc
PUEIs can avail good add-on services like ATM facilities, online banking etc from private banks	Opens up avenues for retail banking in terms of educational loans, personal loans etc.

Analysis of apparent problems with reference to finance :

Table 2 presents summary of analysis of the various problems faced by these institutions and the financial dimension of the problems -

Table 2 -Problems faced by PUEIs and financial angle to those problems

Srl No.	Apparent Problem	Financial Angle to the Problem
1	Poor Infrastructure	Lack of long-term funds or inadequate funds
2	Lack of Competent Faculty	Inability to pay more or inability to pay on time or working capital problems
3	Poor Quality Standards	Poor pay- Mediocre faculty, poor infrastructure, poor placements, poor inputs
4	Competition	Lowering of fees, giving additional time for payment of fees leading to working capital problems

Gist of Financial Problems faced by Private Un-aided Educational Institutions :

The financial requirements of these institutions are of 2 types, namely, long-term and short-term. Table 3a and 3b presents the common long-term and short-term sources of finances along with problems faced -

Table 3a - Long-Term Sources and Problems Faced

Source of Finance	Problem(s)
Trust Corpus	Very high requirements due to increased costs
Donations	Unable to attract donors
Bank Loans	Cynical attitude of bankers, regulatory issues, Problems with security
Grants	Being Private Unaided, grants received are few, No accreditation
Depreciation	Inadequate allowance by Shikshan Shulka Samiti
Development Fees	Inadequately allowed @ just 7% of Tuition Fees
Operating Surplus	Due to high operating costs, hardly any revenue surplus available

Table 3 b - Short-Term Sources of Finance and Problems Faced

Source of Finance	Problem(s)
Tuition Fees	Stricter norms of fee fixation leading to lower fees per student
Bank Loans	Cynical attitude of bankers, Regulatory issues, Security problems
Deposit from students	Might be able to get only for hostelites, that are few in numbers
Credit from suppliers	Suppliers insist for advance payments, Reputation in market suffers
Deferred expenses	Good staff leaves, reputation in market suffers

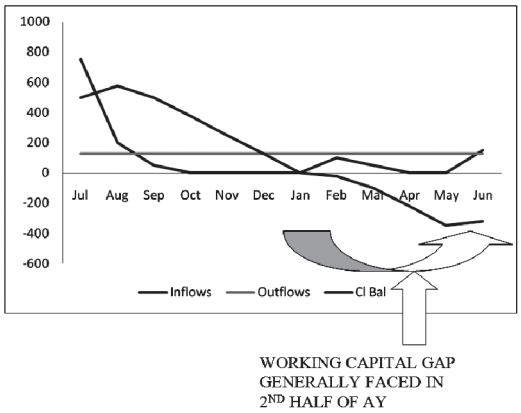
Features of private un-aided educational institutions from semi-urban and rural areas

To gain a better understanding of the issue one needs to understand the following typical characteristics of PUEI from semi-urban and rural areas -

- Mostly run as public charitable trusts registered under the respective states Public Trust Acts
- Land ownership generally of Class-II occupant type, that is, lands granted by the Government
- Large intake of students with rural background
- Operate in a highly regulated environment. They are governed by Universities at the State level and agencies like the AICTE at the Centre. Further they are subject to regulations framed by Fee Fixation Committees, Admission Regulation Committees. All this is apart from the basic statutory enactments like the Trust Acts, Cooperative Societies Acts etc.
- Being private un-aided colleges, fees are fixed by the State Fee Fixation Committees
- More than 25% of the fees are to be received from the Government by way of scholarship in case of students belonging to various categories

- Due to limited finances, these institutions are often laggards when it comes to things like implementation of new pay scales
- Delays from the Government in payment of scholarships often creates a working capital gap and timely payment of salaries becomes a problem

Typical annual cash flow pattern and working capital gap



Cash Inflows are concentrated at the start of the academic year at the time of new admissions. Outflows like salaries, electricity, telephone, water etc are generally fixed costs that are required to be paid every month. As the institutions start approaching 2nd half of the academic year (January to June), there resources dry up and the cash flows move into the deficit zone. This situation is particularly experienced, when the scholarships to be received from the Government for category students get delayed and a working capital gap is created. Several institutions including those of repute are unable to pay their salaries for month's together3. The article from Indian Express dated 27.03.2013 names a few Institutes from Pune like Singhad and MIT that are of repute and even they have failed to pay salaries for months together. The point is with reference to the TIMING of the cash flows, particularly with reference to the delay in scholarships from the Government. Fees from open category students are collected in advance, but for the category student's full fees are paid by the Government and this stream of cash flows creates the problem. It would be also worth noting that the category students constitute a significant proportion of the total students - estimated to be around 35%. On perusal of fee fixation guidelines of Maharashtra, Gujarat and some other states, it can be seen that the issue of cash flows doesn't come under the ambit of the fee fixation committees. In fact, the guidelines categorically prohibit any kind of interest being considered as a cost while calculating the fees.

Current banking arrangements and related issues :

- Sources restricted to a few nationalized banks and/or cooperative banks. This naturally puts a restriction on the bargaining power of the PUEIs.
- Small co-operative banks face limitations including those of group exposure due to low capital base.

- Recent RBI guidelines makes it compulsory for borrowings in excess of Rs.5 crores to be rated by credit rating agencies. Poor ratings, creates difficulties for the PUEIs.
- PUEIs have to largely depend on services of consultants for submission of high volume of information including things like CMA data etc.
- Since most of the PUEIs are registered as Charitable Trusts, they have to get permission from the Charity Commissioner before the loan which at times is a highly time consuming and tedious process.

Key summarized observations :

- Whatever bank financing is right now available is far from adequate despite education being a priority sector and Government is seeking an active participation from PUEIs.
- Lot of hardship is faced by the PUEIs while availing loans. These problems are experienced both during the pre-sanction as well as post-sanction phase of the loans. During the pre-sanction phase there are problems in submission of vast amount of data to the banks, particularly in the typical formats of the banks (one such format is the CMA format.) Most of these formats are designed for Corporate entities. It is difficult for both the PUEIs and the bankers to deal with the data requirements. Checks and balances cannot be compromised. Yet the kind of inefficiencies that exist at present, it is felt that there is a good scope for business process engineering to speed up the process. And it is also felt that with computerization, the process would be only strengthened as it will help in doing away with manipulations that are at times possible with fake papers. IT enabled operations would actually leave more time for the Government to carry out a more thorough scrutiny of the proposals.
- There are some areas like working capital where hardly any banking presence is seen. While banks are comfortable with financing working capital for Corporate entities, they are not very open to the idea of working capital finance to PUEIs.

Suggestions :

- Government should establish a specialized Education Finance Institution on the lines of specialized Housing Finance Institutions. Education in a county like India is a strategic area. Given the current demographic profile of our country where the young population is a major share, education definitely deserves a special attention in terms of finances. This institution has a market comprising of thousands of PUEIs and millions of students studying in these PUEIs who would like to opt for educational loans. Of course, to ensure adequate safety, reasonable collateral security / guarantee can be taken.
- The present banking arrangements are not really able to cater to the typical requirement's of educational institutions. One can understand this with the help of a small example. When one fills the CMA format for the data submission to the bank, the educational institutions are confused as to what is to be filled against "Cost of Goods Sold", that is, typically applicable for business organizations in general. Banks should establish special cells to deal exclusively with education finance.
- Private Banks should be allowed to play an active role in financing PUEIs. They are fast, techno-savvy and cheaper. There entry would increase the competition and

nationalized and cooperative banks would perform more efficiently.

- Government should rationalize tedious procedures like obtaining permission from Charity Commissioner etc. There should be on-line mechanisms to deal with the permissions. Moreover, there should be provisions that should grant deemed permissions beyond specific time after the date of application.
- Banks should appreciate the working capital requirements of PUEIs and should actively finance these. The working capital requirements of PUEIs are very typical requirements and these can be easily financed by way of standard facilities like cash credit. Outstanding fees of the educational institutions are very much the same like receivables of any other business and these can be hypothecated as securities. Further it is very much possible to link the cash credit limit with the drawing power based on the submission of monthly fee outstanding position.
- Specialized services like Factoring can also play an active role in not only just financing the receivables but managing the entire fee receivables management portfolio. One advantage with this arrangement can be that the educational institutions can concentrate on academics rather than an administrative task of collecting fees.

Conclusion :

There is a big scope for active bank finance in private education. Time has come for the banks to give up their cynical attitude towards the private educational institutions. A big market both in terms of institutional and retail customers exists. A positive mindset with the support of Government can really lend a much needed helping hand by the PUEIs. The ultimate beneficiaries will be millions of young students who are still struggling to find affordable and quality education.

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Corporate Governance and Dysfunctional Board Dynamics

Sujit Kr. Roy

Abstract :

Although there is a lot of furore over corporate governance failure in some large companies around the world, Adam Smith found it rather endemic in the system characterised by diffused ownership and consequent separation of ownership from management. Amidst a myriad of theories explaining the nature of the problem, and a plethora of codes as correctives, this paper posits the view that codes are not substitutes for integrity that is rather on the wane.

Key Words : *Corporate Governance, Stakeholder, Board Dynamics.*

Introduction :

There is no gainsaying that corruption has eaten into the vitals of all our systems and business enterprises, except for a few honourable exceptions, are not different. Large corporations, which are the vehicles of wealth creation, have been shaken by scams of unprecedented proportion, bringing into the fore the question of governance of these institutions. But governance crisis of this form of business is not new; it is rather closely intertwined with the system. About two and a half century ago when company form of business organisation was just emerging, Adam Smith predicted that joint-stock companies would not survive the rigours of competitive economy, because waste and inefficiency, which is inherent in the system, would bring down the system. Adam Smith (1723-90) lived through the tumultuous days of the famous Bubble Act (1720-1825), which was the fallout of financial scandal of epic proportion perpetrated by the directors of the English South Sea Company. He therefore took an extremely dim view of such joint-stock companies: "The directors of such joint-stock companies, however, being the managers rather of other people's money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, and more or less, in the management of the affairs of such a company" (Smith, 1776/1937: 700).

Adam Smith was proved wrong, at least in one respect. With the intensifying force of globalization as more and more of human activities are coming within corporate set-up, the influence of large corporations on our lives are on the rise, not on the wane. Today, it is said that, of the top 100 economic entities in the world 51 are corporations and 49 are countries. The sales revenue of General Motor is ahead of the GDP of Denmark and that of Wal-Mart is just a notch behind the combined GDP of Pakistan, Bangladesh and Philippines. Such an outcome is not surprising; Adolf Berle and Gardiner Means (1932), while tracing the history of the ascendency of large corporations in the United States had clearly foreseen such a possibility: "The rise of the modern corporation has brought a concentration of economic

power which can compete on equal terms with the modern state...."(p. 313; 2009 Edition).

But, as it was also noted by Berle and Means, the Smithsonian apprehension reasserted itself with almost clairvoyant precisions. It was not just a stewardship problem – the problem of the stewards becoming the potentates – but a far more serious issue of extravagance and financial profligacy Adam Smith was also worried about. Thus, when Enron, one of the largest companies in the USA, declared insolvency, it exposed the underbelly of the botched-up corporate governance system in the United States. Enron became a poster of not only negligence and profusion but also of greed and deception of those who are supposed to be the reliable guardians of public interest. Enron was engulfed by executive greed; the auditors were found to be in collusion with the management and the independent directors were all found to be ineffectual and carefree to what was happening inside the company for several years.

Since the implosion that killed Enron, hundreds of books and articles have been written explaining the cause of failure of governance in Enron. But what was there that we did not know before? Enron had all the usual recipes for disaster: lust, greed, reckless adventure and, moreover, an attitude of top management not to care for law.

This paper posits the view that, throughout the corporate history failure of governance and outbreak of major scandals have invited a spate of prophylactic laws, but recurrence of the disease could not be avoided. The Bubble Act, which may be termed as the first attempt to regulate governance problems in the joint-stock companies by prohibiting formation of companies otherwise than by the Royal Charter, was hardly an effective means to contain proliferation of undesirable association of persons. On the contrary, this illegal association of persons, loosely called a company, had mushroomed notwithstanding the operation of the Bubble Act.

In the context of governance crisis of our economic institutions, it is pointed out that the disastrous failures of corporate governance in Enron, Worldcom, Adelphia, Tyco and Satyam took place not because of the lack or insufficiency of governance codes. Indeed, we have had enough of them in the past two or three decades. The fact is that in our fetish for law-making we forget that codes of governance are not substitutes for integrity, which is rather on the wane.

The Whys and Wherefores of Corporate Governance :

Although most historians would trace the earliest evidence corporate governance problems to the Bubble Act, the emergence of the word "governance" into the English language has been traced by the most authoritative dictionary of the language, the *Oxford English Dictionary* (OED), to 1380. Geoffrey Chaucer, author of *The Canterbury Tales,* used this term in 1391. However, the phenomenon called "corporate governance" is of recent origin. In 1978, *The New York Times* had reportedly used it as a "fancy term for the various influences that determines what corporations does and does not do, or should or should not do" (cited in Clegg and Bailey, 2008: p. 298). But the idea of corporate governance as distinct from management is probably the contribution of Bob Tricker, who claims to have used it *first* in his paper, "Perspective on Corporate Governance: Intellectual Influences in the Exercise of Corporate Governance" in 1983 (cited in Tricker, 2009: p. 3). Nomenclature

apart, corporate governance problem, as we understand it today, had its origin with diffusion of ownership in the corporate organisations since inception of the history of this form of organisation. The Dutch East India Company — a case in point, which was established in 1602 with a little more than 1,000 investors, presented the earliest evidence of what constituted key corporate governance problems (Frentrop, 2003: p.46).

Diffusion of ownership as a source of corporate governance problem has, however, been subjected to a more penetrating and systematic exposition by Berle and Means (1932). In exploring a legalistic and economic perspective of the corporate form of organisation, Berle and Means pointed out that corporate structure had an inherent problem of divergence of interests. They observed that, the functioning of modern company law "has destroyed the unity that we commonly call property". According to them, shorn of the unison, in the company form of organisation the atom of property is split into three elements: ownership, which resides in the shareholders; control, which is delegated to hired management, and the board, which is charged with controlling management in the interest of the shareholders. But as they pointed out, owners, being divested of control over their property, had no effective control over management who, if left unchecked, might use shareholders' assets to advance their (managers') own interest (Maryn, 2006).

As the shareholders in modern large corporate organization are widely dispersed, individually owning a small percentage of shares, and also without any collective front or concern, Berle and Means pointed out that the shareholders in effect remained uninformed about management's activities and therefore unable to exert any useful control over the management. As a corollary, the shareholders had no other means but to rely on the board of directors as their representatives to monitor and control management. Berle and Means emphasized the fiduciary duties of the board whose role was to protect the financial interests of the shareholders.

Plethora of Theories :

Being far more complex than those when Berle and Means had scripted their influential work nearly hundred years ago, the present day modern corporations have given rise to the fundamental question as to the distribution of rights and responsibilities among different participants in the corporation (OECD, 1999). Corporate governance is not just an area that is concerned with shareholder passivity and the managerial ascendancy, as Alfred Chandler (1977) observed in his famous work, 'The Visible Hand', but it overarches every aspect of the functioning of modern corporations. As Sir Adrian Cadbury (cited in Clarke, 2004) put it, "Corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals and, corporations and society". Thus the area of corporate governance is now far wider than what Sir Adrian had observed while defining the term about two decades ago: "Corporate governance is a system by which companies are directed and controlled" (Cadbury, 1992). It is no wonder that diversified views on corporate governance have given rise to a plethora of theories of the following kind.

- **Agency Theory:** Agency theory views the firm as a nexus of contract covering the way inputs are joined to create outputs and the way receipts from outputs are shared among input providers. This theory accords the shareholders a pre-eminent position in the firm not because that they are so recognised in law, but because of the fact that they are the residual risk takers. As the theory is premised upon the self-interested utility-maximizing behaviour of the actors , a potential ground for conflict may arise inasmuch as the principal (shareholders) may find it difficult to contain the agent from maximizing the agent's (managers) own utility. In the corporate governance literature a number of remedy has been suggested to get rid of such managerial mischief. They include alignment of the interests of agents with that of the owners through compensation and equity ownership; increased independence of the board as a means to monitoring the recalcitrant managers; and an active market discipline like merger and acquisitions to punish poor performance by the managers.
- **Managerial Hegemony**: This theory brings into light the worst fear of the agency theorist to posit the view that it is the all-powerful CEO who runs the show in the boardroom. This view implies a 'passive board with little input into corporate decision-making, and little influence over the chief executive, therefore, with little capacity to represent the interest of the shareholders'(Setline, 1974).
- **Stewardship Theory:** Donaldson and Davis (1991)**,** two principal apostles behind the stewardship theory, rejected the idea of self-serving model of human motivation, one of the major planks of the agency theory. As postulated under this theory, mangers are not mere opportunistic agents but good stewards who will act in the best interests of the owners. Therefore, an optimum governance structure should follow to achieve the enterprise goals in an atmosphere of mutual trust and goodwill. As this theory posits a relaxed view of corporate governance, it favours the idea of a board with a majority of specialist executive directors rather than a majority of non-executive independent directors (Clarke, 2004).
- **Resource Dependency Theory:** The main proposition of the theory is that coping effectively with external environmental uncertainty is essential to the survival of the organization. Under the resource dependency theory the directors play strategic roles by bringing resources in the firm (information, skills, etc.).
- **Stakeholder Theory:** Stakeholder theory widens the focus of the corporate governance theory, where corporations are not regarded as just bundle of assets belonging to the shareholders, but an institutional arrangement for governing the relationships between all of the parties that contribute assets to the firm (Clarke, 2004).This theory encompasses the interests of not only the shareholders, but also of the long-term creditors, employees, customers and all those associated with the enterprise.
- **Maximizing Shareholder Value**: A major proponent of the theory, the Organisation for Economic Cooperation and Development (OECD, 1999), emphasized that corporations are run, first and foremost, in the interest of shareholders. That the shareholders are the central focus of corporate governance has also been highlighted by N.R. Narayana Murthy: "Corporate governance is about owners and the managers operating as the trustees on behalf of every shareholder – large or small." However, the

shareholder value theory has recently come under attack from several quarters. As a result, there is some movement away from maximizing shareholder value as the primary focus and motivation for a corporation's existence towards accepting some of the attributes of the broad based stakeholder theory. Evidently, in a change of stance, Narayana Murthy has recently stated, "Corporate governance, to me, is about maximising shareholder value legally, ethically and on sustainable basis, while ensuring fairness to every stakeholder – the company's customers, employees, investors, vendor-partners, the government of the land and the community" (Cited in Bhandari *et* al. 2009, p. 78).

Plethora of Codes :

Corporate governance codes are now-a-days a *sine qua non* of listing agreements in the major stock exchanges around the world. But, admittedly, these codes have no straightforward history either in the United States or the UK, from where they have spread around the world. While the codification of company laws in the UK has a history spanning at least two centuries (the first Companies Act in England was promulgated in 1844), attempt to regulate public financial reporting is traced to the early 20th century only. In the 1930s, following the stock market fiasco in the USA, a committee of the New York Stock Exchange required that the auditors of the listed companies would have to report that financial statements were prepared in accordance with "accepted principles of accounting". The phrase "GAAP", a much fancied talisman for the accountants around the world and earliest instance of regulation of accounting, was coined by the Committee on Accounting Procedure in 1938. The Securities Exchange Commission (SEC) of the United States, a regulatory body purported to oversee corporate functioning and security transactions, was formed four years earlier and initiated an extensive corporate governance regime in the United States. The major milestones in this regards are, for example, the Cohen Commission Report (AICPA, 1978) on auditors' responsibilities which was a path breaking analysis on nearly every issue facing the independent auditors ; the Treadway Commission Report on Fraudulent Financial Reporting (AICPA, 1987), which in its insightful report suggested that fraud in any form were difficult to deter, but fraudulent financial reporting could be reduced, perhaps substantially, if each party for whom these recommendations took the steps the commission had recommend. In 1992, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) issued its 'Internal Control – Integrated Framework', which was widely accepted as authority on the subject, and also was the lodestar of international standards in this matter. In 1999, the report of the Blue Ribbon Committee was published and was adopted by the New York Stock Exchange and the National Association of Securities Dealers with the requirement that all audit committee members must have "financial literacy" and that at least one member must have "financial expertise".

Concurrently with the COSO report, on the other side of the Atlantic, the Cadbury Report on "The Financial Aspects of Corporate Governance" marked a watershed in the history of governance codes and paved way for successive codes in the UK and the world over. These codes delved not only on various aspects of the governance issues, but one was an improvement over the immediately preceding one.

The remit of the Cadbury Commission was specifically to examine (a) the responsibilities of executive and non- executive directors for reviewing and reporting on performance to shareholders and other financially interested parties; and the frequency, clarity and form in which information should be provided; (b) the case for audit committees of the board — including their composition and role; (c) the principal responsibilities of auditors and the extent and value of the audit: (d) the links between shareholders, boards, and auditors. The recommendations of the committee included wider use of independent directors; audit committee with majority of independent directors; and remuneration committee of the board to monitor executive pay. Successive codes on corporate governance in the UK attempted to improve on the basics worked upon by the Cadbury Commission:

- The Greenbury Report (1995) recommended for all independent directors in the remuneration committee.
- The Hampel Report (1998), while underscoring the need for broad principle-based governance rules, had shown its predilection for unitary board, as opposed to the two-tiered board found in the continental Europe.
- The Combined Code (1998), which was drawn on the Cadbury Report, Greenbury Report and the Hampel report, dealt with board composition, director remuneration and audit practices in the listed companies in the London Stock Exchanges.
- The Trunbull Report (1999), in line with the COSO Report in the USA, dealt with the internal control aspects of companies.
- The Higgs Report, which was published a decade after (2003) the famous Cadbury Report, had shown its preference for widespread use of independent directors: at least half of board members, all of the audit and remuneration committees and majority of the nomination committee to be comprised of the independents.
- The Smith Report (2003) sought to revamp the audit committee and required that at least one of the members of the committee should have significant financial experience, while the Tyson Report, published in the same year, recommended for introduction of director training programme. Till date, the UK have had a few other reports dealing with various aspects of corporate governance, the last one (Revised Combined Code) being in 2006.

While the codes in the UK had significantly shaped corporate governance practice around the world, after the Enron disaster the world woke up to a new reality. The Sarbanes Oxley Act (2002), a draconian law which is aimed, at least in part, at the accountancy profession, put an end to the exalted position it enjoyed in terms of self-regulation. It also questioned the faithfulness of the corporate managers that they could not be trusted, therefore, would require much closer oversight by multiple actors like the board of directors, the auditors, and external equity analysts. These "financial overseers" or “gatekeepers”, in turn, must also be closely watched by the government or other official agencies. The Sarbanes-Oxley Act is equipped with several shrapnel:

- It now makes accounting profession accountable to the Public Accounting Oversight Board, which will not only oversee the quality of audit, but also enjoy power to investigate and initiate stern disciplinary action against the auditors, should the need arise.

- The Act has recognised the edge of the principle-based accounting over the American rule-book approach.
- To ensure greater auditor independence, the auditors are debarred from accepting non-audit assignments from their clients.
- Audit partner rotation every 5 years has been recommended.
- The Act provides for an all independent audit committee with at least one member possessing financial expertise , which will be responsible for the appointment, compensation, and oversight of the work of any registered public accounting firm employed by the company.
- Enhanced financial disclosures are required.

Corporate Governance Code in India - A Familiar Refrain :

When the world was in the throes of the financial meltdown, which was nothing but another act of irresponsibility and corporate governance failure in the American financial institutions, India was rocked by a scam of mammoth proportion. We had our share of corporate governance crisis in 2009, notwithstanding an elaborate arrangement for corporate governance mechanism. The irony is that the Satyam fiasco had coincided with the release of the 'Corporate Governance Voluntary Guidelines' by the Ministry of Company Affairs with much fanfare and cascaded upon several such recommendations since 1998 when corporate governance initiatives in India began.

India, being aligned to Anglo-Saxon culture in the matter of corporate legislation, had drawn liberally on the British and American codes, the first of which was under the auspices of the CII in 1998. The CII report, entitled, “Desirable Corporate Governance: A Code”, had its major focus on the composition and qualifications for the directors. Like the Hampel Report, CII rejected the idea of German-type two-tiered board. The board composition required 30 percent independent directors (50 percent where the chairman and the managing director is the same person). No one is to be a director in more than 10 companies. Audit Committees should consist of at least three members, all drawn from a company's non-executive directors, who should have adequate knowledge of finance, accounts and basic elements of company law.

The next important milestone in the corporate governance initiative in India was the report of the Kumar Mangalam Birla Committee, a SEBI appointed Committee, which provided the basis of the revised Clause 49 of the listing agreements in India. The Birla Committee laid its focus on the areas covering the board of directors, audit committee, remuneration committee, board procedure, management analysis & disclosure, information to shareholders, and report on corporate governance in the annual report. In 2002 the Ministry of Company Affairs appointed a high-powered committee under the chairmanship of Naresh Chandra, former Indian ambassador to the USA, to look into the auditor-company relationship and regulate the role of the auditors. The N. R. Narayayna Murthy Committee, which was appointed by the SEBI in 2003 to improve corporate governance standards in India, came up with a set of mandatory and non-mandatory recommendations. The focus of the mandatory recommendations was on the responsibilities of audit committees, improving the quality of financial disclosures, including related party disclosures, board's adoption of

formal code of conduct, training of Board members and evaluation of non-executive directors' performance by a peer group comprising the entire Board of Directors, while training of Board members and evaluation of non-executive directors' performance by a peer group comprising the entire Board of Directors constituted the non-mandatory part of the report. The recommendations of this committee have been incorporated in the SEBI's clause 49 of the listing agreement.

Corporate governance is an evolving art and is in a state of flux – always providing scope to learn from mistakes and experiences gathered in the past. In India the Satyam episode, which attracted wider attention from the international investors, put a question mark on corporate governance standard. The correctives, mostly in line with the provisions of the Sarbanes-Oxley Act, have been incorporated in the new Companies Act, 2013, which has wended its way into the statute book after a long, tortuous journey. It first appeared as the Companies Bill, 2009 and then, after substantial revision, it was placed again as the Companies Bill, 2011, before its final passage as the Companies Act 2013 after the presidential assent on 29th August 2013. The highlights of the new Companies Act are:

- Formation of National Financial Reporting Authority, in line with the Sarbanes-Oxley Act with more or less similar functions and powers (Section 132).
- Financial statements and board's reports shall be approved by the board before they are signed by the chairman or two other directors. (Section 134).
- In line with the Sarbanes-Oxley Act, along with compulsory rotation (Section 139), auditors are prohibited to offer certain services (Section 144).
- A steep penalty, ranging from Rs. 25,000 to Rs. 5 lakh, for recalcitrant auditors, including refund of fees received from the company (Section 147).
- Big corporate entities are to set up Corporate Social Responsibility Committee of the Board consisting of three or more directors, out of which at least one director shall be an independent director (Section 135).
- With their duties specifically spelled out in the Act, the directors' duties to become more onerous (Section 166).
- At least one director shall be resident in India [Section 149 (3)].
- Meaning imparted to the definition of independent director is changed and the codes for independent directors are spelled out (Section 149 (7); Schedule IV).
- Directorship in public limited companies is restricted to 10 for each director (Section 165).
- The Audit Committee shall consist of a minimum of three directors with independent directors forming a majority (Section 177).

Maladies of Dysfunctional Board Dynamics :

Although there has been a plethora of corporate governance codes around the world, most of them are replication of the Anglo-Saxon model, which is implanted in the board structure and auditor-company relationship. The model in its original tenor is based on the idea that the directors — whether executive or independent, and the auditors are the agents of the absentee owners and as gatekeepers they will protect the interest of the shareholders. To cut a long

story short, the recurrence of corporate scams almost in every decade, one dwarfing the previous one, is a pointer towards the inadequacy of the model. Following the Enron debacle, a report of the U.S. Senate Permanent Subcommittee on Investigations revealed the gatekeepers had utterly failed in what was thought of as a basic function under the corporate governance model: fiduciary duty based on integrity.

The report reveals that "the Enron Board of Directors failed to safeguard Enron shareholders and contributed to the collapse of the seventh largest public company in the United States, by allowing Enron to engage in high risk accounting, inappropriate conflict of interest transactions, extensive undisclosed off-the-books activities, and excessive executive compensation. The Board witnessed numerous indications of questionable practices by Enron management over several years, but chose to ignore them to the detriment of Enron shareholders, employees and business associates". Under the corporate governance model the independence of the directors has been highly eulogised, but the irony is that in the case of Enron, and without much exception in other cases, "the independence of the Enron Board of Directors was compromised by financial ties between the company and certain Board members. The Board also failed to ensure the independence of the company's auditor, allowing Andersen to provide internal audit and consulting services while serving as Enron's outside auditor", the Senate Subcommittee observed.

The Satyam saga is no different from the Enron stories: While the independent directors of the company were mere rubber stamps, the auditors' failure would appear glaring even to those with abecedarian knowledge about the profession. B. Ramalinga Raju, the Satyam CEO and Chairman, had siphoned off Rs. 5,040 crores from the company but Mr. Raju had produced forged documents to convince the auditor that the fund was kept in the fixed deposit of BNP Paribas, HDFC, Citibank, and HSBC. There was accrued interest of Rs. 376 crores, which was non-existent, and Rs. 1,230 crores of understated liability and Rs. 490 crores of inflated debtors, which the Satyam auditor had failed to detect. There are enough evidence to suggest that the auditors were not in the dark about what was happening in the company, but what is more surprising is the fact that when the real estate acquisition (a key part of the fraudulent design in the Satyam case) by an IT company was being discussed in the board, it was cleared without a single voice of dissent from the company's independent directors.

The similarities of audit failure or Board apathy between Enron and Satyam are not surprising. Even when corporate governance did not become a catchword, Mace (1971) had examined the myth and reality of director independence and the integrity with which they performed. The study conducted by Mace revealed that in most cases, the board being largely made up of peers, the president and his subordinate management did not expect them to ask penetrating, discerning and challenging questions in the board meeting. Company laws around the world provide for appointment of directors by the shareholders, but the fact is that a group and individual loyalty is developed between the president and the outside directors so that the directors are reluctant to measure the executive performance against specific standards. Directors base their appraisals largely on data and reports provided by the president himself. Mace had written it some fifty years ago, and we observe it from the numerous cases of governance failure even today, "Directors described in the literature

represent the stockholders. Yet typically they are actually selected by the president and not by the stockholders. Accordingly the directors are on the board because the president wants them there. Implicitly, and frequently, the directors in point of fact represent the president" (Mace, 1971).

Conclusion :

The new Companies Act, 2013 has, in line with the Sarbanes-Oxley Act, made a number of changes to guard against the known diseases. The new code for independent directors, now enacted as Schedule IV to the Companies Act 2013, and also a host of similar provisions, appears to contain enough warnings for the apathetic independent directors. We hope it begets the desired results. However, to take a lesson from the corporate history, the Holy Grail has not been found yet. As Murphy's Law has it, every solution breeds new problem. There is indeed unending competition between the lawmakers and the lawbreakers. The recently published Global Fraud Report (2013-14) is a pointer to the fact that corporate frauds are rising, rather than waning.

As globalization continues to make further inroad into our everyday life, more and more of human activities are expected to be covered by the corporate form of organisation and good, equitable governance of this form of business will remain a key driver of wealth creation process. However, amidst a spate of governance code and successive failures, it begs answer to a few fundamental questions: are our assumptions about the current Anglo-Saxon model of corporate governance adequate and appropriate, given that we live in an unethical time dominated by a cheating culture? Are codes substitutes for integrity? Do we look for a new paradigm? The answer is urgent before we go further on barking up the wrong tree.

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Impact of Introducing Derivatives Trading on Volatilities of Sectoral Stock Indices in India

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Abstract:

The paper analyses different properties of sectoral stock index volatilities in India using daily closing price data of five sectoral indices in NSE, namely, CNX Bank, CNX Finance, CNX IT, CNX FMCG and CNX Pharma Index and the impact of derivatives' introduction on their return volatilities in an EGARCH (1, 1) framework. India amended its patent law on March 22, 2005, thereby abolishing its "process" patents law introduced "product" patents for pharmaceuticals, food and chemicals. Hence in the paper the volatility of stock index return in Indian pharmaceuticals industry has been specially examined to see whether there is any change in it in the post product patent period. The results of the study show that introduction of derivative trading has mixed impact on sectoral stock index volatilities. We also observe significant increase in return volatility of CNX Pharma index after the introduction of product patent system in the pharmaceutical sector due to amendment of patent law in 2005 supporting the hypothesis of positive relation between higher uncertainty regarding industry's average future profits related to increased R&D intensity in the post product patent period and increased return volatility.

Key Words: *Asymmetry; Persistence; Process Patent; Product Patent; Sectoral Stock Indices; Volatility; Volatility Clustering.*

Introduction:

While making any decision on any financial asset, presently importance is given not only to estimate its return volatility but also to examine the properties of return volatility. Volatility of an asset means the magnitude of fluctuations in its price / return. It measures variability or dispersion about a value of central tendency, i.e., it is a measure of deviation of the current price/return of an asset from the average of its past prices/returns. Volatility is calculated for all kinds of stochastic financial variables, such as stock returns, interest rates, the market value of a portfolio, etc. Financial econometricians for a long time have taken interest in predicting volatility in financial markets using different econometric models starting with the study of Bollerslev et al. (1994) who have initially showed that volatilities in asset returns are highly predictable. It is true that unlike prices, volatilities are not directly observable in the market and it can only be estimated using suitable model(s).

In the post-reforms period the relative importance of different industrial sectors in the Indian economy has changed abruptly. Along with the traditional sectors (finance, infrastructure, consumer goods etc.) some new sectors (information technology and communication etc.) have emerged. Sector-based indices or sectoral indices are created so as to provide a single value for the aggregative performance of a number of companies representing a group of related industries or a sector of the economy. New financial instruments in the form of financial derivatives have also been introduced on sectoral indices so as to curb their

excessive return volatilities. The basic purpose of these instruments is to provide commitments to prices for future dates giving protection against their future adverse movements, to reduce the extent of financial risks and help in channelizing more funds towards most efficient and contributing industrial sectors of the economy. In this study, an attempt has been made to measure volatility of five important sector based indices (as noted below), examine different properties of their volatilities and also assess inter alia the impact of introducing derivatives instruments on their return volatilities.

Although BSE is the oldest stock exchange in India (also in Asia) existing for more than 100 years, study is conducted only on NSE as it is the largest stock exchange in India in terms of turnover and number of trades not only in equity part but also in derivative segment. The five sectoral stock indices in NSE whose volatilities are studied here are CNX Bank, CNX Finance, CNX IT, CNX FMCG and CNX Pharma Index. Among these five indices we classify CNX Bank, CNX Finance and CNX IT as service sector related stock indices and CNX FMCG and CNX Pharma Index as consumption sector related stock Indices. We know that in India now service sector contributes 55.2 % of gross domestic product (GDP), growing annually by 10%, contributing to about 25% of total employment and accounting for over one-third of total exports, and recording very fast (27.4%) export growth [Source: website: http://indiabudget.nic.in]. Observing the importance of the service sector in Indian economy we have examined in this paper the nature of return volatilities of three sectoral stock indices representing this sector. It is to be noted that CNX Bank Index comprises 12 most liquid and large capitalised Indian banking stocks which are traded on the National Stock Exchange. The CNX Finance Index comprises 15 such stocks representing banks, financial institutions, housing finance and other financial services companies which are listed on the National Stock Exchange (NSE) and thus reflect the behaviour and performance of the Indian financial market. CNX IT index, on the other, comprises those companies which have more than 50% of their turnover from IT related activities, like IT Infrastructure, IT Education and Software Training, Telecommunication Services and Networking Infrastructure, Software Development, Hardware Manufacturers' Vending, Support and Maintenance.

In the paper we have also discussed the nature of volatilities of two important consumption sector related stock indices in NSE, namely, CNX FMCG and CNX Pharma. FMCG stands for fast moving consumer goods, i.e., the daily items that are needed in our everyday life. India has a very strong base for producing FMCG goods. The FMCG industry is the fourth largest industry in the country. In the last decade the FMCG sector grew at an average of 11% per year and in the last five years, annual growth accelerated to 17%. According to market research firm Nielsen the market for FMCG is estimated to grow to US$ 100 billion by the year 2025 [The Indian FMCG Industry, Dinodia Capital Advisors, September 2012]. The CNX FMCG Index comprises 15 companies that manufacture FMCG products in India, whose stocks are listed on the National Stock Exchange.

India Index Services and Products Ltd. (IISL) developed CNX Pharma Index to capture the performance of the companies in the pharmaceutical sector. India's pharmaceutical industry is one of the fastest growing sectors in the country. It is also one of the key sectors where Indian companies have created a global brand for themselves. In terms of volume, the

pharmaceutical industry in India is the world's third-largest one and it stands 14th in terms of value (The Economic Times, 8th June 2010). Indian pharmaceutical industry exports its products to large number of countries, including highly regulated markets of Europe, Japan, USA and Australia. To meet its TRIPs (Agreement on Trade-Related Aspects of Intellectual Property Rights) obligations, India amended its patent law on March 22, 2005, thereby abolishing its "process" patents law it introduced "product" patents for pharmaceuticals, food and chemicals. Existence of only process patents was the key reason behind the domestic industry's huge success as a worldwide exporter of high quality low cost generic drugs. Indian Pharmaceutical companies then could have no longer simply copied medicines with foreign patents by using alternative manufacturing processes and offer them on the domestic market. As a consequence of this major change in India's drug patent legislation, the country's pharmaceutical industry has been undergoing a process of re-orientation. Its new focus has been then increasingly on self-developed drugs and contract research and/or production for western drug companies. In the post patent amendment period, India's leading pharmaceutical companies, therefore, have been spending a considerable amount of their revenues on research and development (R&D) though compared with the large international players the volume of research at Indian pharmaceutical companies, especially basic research, is still very small. The manufacturing companies now have started exploring new business opportunities, including contract research (drug discovery and clinical trials), co-marketing alliances and contract manufacturing and multinational companies who have re-entered the market after the enforcement of the new product patent system, have been utilizing domestic industry's skills and infrastructures to boost their research and manufacturing activities in this country. It is to be noted that investment in R&D is expensive and its outcome is very uncertain. Pharmaceutical companies due to their higher R&D intensity in the regime of new product patent system have become more prone to uncertainty and risk, namely idiosyncratic risk, i.e., the degree to which firm and industry specific returns are more volatile than aggregate market returns. In this paper we, therefore, want to examine different properties of stock index volatilities of CNX Pharma index in NSE and whether volatility of stock index return in Indian pharmaceuticals industry has truly increased in the post product patent period.

It should be mentioned that no derivatives instrument has so far been introduced on these two consumption sector related indices. We know that derivatives were first introduced in Indian stock market in the form of stock index futures in 12-06-2000. Therefore, for examining the effect of derivative trading in Indian stock market on volatility of CNX FMCG index we have used 12-06-2000 as the cutoff date. Using CNX Pharma index we have examined the impact of amendment of Patent Act on its return volatility using 23-03-2005 (date of amendment of patent law is 22-03-2005) as the cutoff date.

Brief literature survey:

Following the pioneering work of Mandelbrot (1963) and Fama (1965) various studies have documented the different features of stock market volatility. It has been empirically found that the volatilities in financial markets are not constant, i.e., they are 'time varying' and also exhibit positive serial correlation or 'volatility clustering' (i.e., changes in volatilities are nonrandom). It has also been observed that volatility of returns is persistent in nature

(Bollerslev, Chou and Kroner, 1992) as it is characterized by long memory process. For capturing volatility clusters in financial time series, the autoregressive conditional heteroskedastic (ARCH) models (Engle, 1982) and generalized ARCH (GARCH) models (Bollerslev, 1986) have been widely used. One interesting feature of the asset prices is that 'bad' news or negative shocks seemed to affect volatility more than 'good' news or positive shocks. Strong negative correlation between current stock return and future volatility is very common. The tendency for volatility to decline in a rising market and increase in a falling market is called asymmetry or often leverage effect. Black (1976) first documented that, changes in volatility were found to be negatively correlated with changes in the stock prices, i.e., volatility was higher in a falling market than in a rising market. Later Christie (1982) also supported this asymmetry or leverage effect. Three famous GARCH formulations describing this asymmetry were Exponential GARCH (EGARCH) model (Nelson, 1991), Threshold GARCH (TGARCH) model (Golsten et al., 1993) and Power GARCH (PGARCH) model (Ding et al., 1993).

There have been a few studies conducted on modeling stock return volatilities in India. Pandey (2002) showed that extreme value estimators could be safely used in general for estimating volatility of liquid assets except certain estimators in some estimation period. Comparing the estimation and forecasting ability of various estimators and models on the basis of four different criteria related to bias and efficiency, Pandey (2005) later showed that extreme value estimators performed better than conditional volatility models. Karmakar (2005) used conditional volatility models to estimate volatility in Indian stock market both at macro and micro level and observed that GARCH (1, 1) model provided reasonably good forecast. In their attempt to model daily volatility in the stock index return of NSE India, Banerjee and Sarkar (2006) showed that asymmetric GARCH model was superior to Historical Average or EWMA model in predicting volatility.

In the relevant literature there are mainly two types of theory explaining the impact of derivative trading on the underlying stock market volatility. Some argue that introduction of derivative trading increases the spot market volatility and thereby destabilizes the underlying market, while there are others who argue that the introduction of derivatives reduces the spot market volatility and thereby stabilizes the market.

Comparing daily return volatilities during the pre futures and post futures period between S&P 500 and non S&P 500 group of stocks Harris (1989) argued that increase in post futures volatility in cash market may not be due to index futures by themselves but due to other index- related phenomena, such as the growth in foreign ownership of equities and the growth in index funds. Using both parametric and nonparametric tests Kamara et. al. (1992) examined whether there were any changes in volatility of S&P 500 index due to futures trading introduction for the period 1976 to 1987. Along with F-tests the authors used Kolmogorov-Smirnov two-sample test and Wilcoxon Rank sum test to examine whether dispersion was significantly higher in the post-futures period. They noticed higher daily return volatility in the post-futures period though monthly return volatility was found to be unchanged. Antoniou and Holmes (1995) examined the impact of trading in the FTSE-100 stock index futures on the volatility of the underlying spot market in U.K. utilizing GARCH family of econometric techniques. They observed that spot market was more volatile in the

post futures period which, according to them, was the result of increase in the rate of information flow to the spot market and not due to speculators having adverse destabilizing effects. Benilde and Armada (2001) in their paper used daily closing price data of Portuguese Stock Index PSI-20 for the period December 1992 to December 1998 applying a GARCH model to measure the impact of futures trading on spot market volatility. The authors found increased Portuguese stock market volatility due to introduction of PSI-20 index futures, though they argued not to generalize their derived result as their study had the limitations of not controlling for other influences on the volatility. Investigating the impact of Universal Stock Futures introduction on the underlying market dynamics, Chau, Holmes and Paudyal (2008) found lesser impact and persistence of news and greater asymmetry in the post-futures period, though from the control stock result they opined that those changes were not due to futures introduction.

Chatrath et. al. (1995) evidenced a stabilizing effect of trading of S&P 100 stock index options on the underlying stock index. Galloway and Miller (1997) examined the effect of introduction of futures contract on the Midcap 400 stocks and observed declining impact on the volatility of the underlying spot market. Thenmozhi (2002) found that in India volatility of Nifty in the post futures period had been in the declining trend which, according to the author, might be due to increased cash market liquidity resulting from faster dissemination of information, shifting of speculators from cash to futures market for lower transaction cost, high leverage, low margins, standardized contracts and trading conditions prevalent in the futures market. Shenbagarman (2003) showed that futures and options trading in India had not led to any significant change in the volatility of the underlying stock index though she observed changes in the nature of volatility during the post futures period. Raju and Karande (2003) found reduced volatility in the cash market after introduction of stock index futures in India. Vipul (2006) found reduced volatility of the underlying stocks in the post derivative period which according to the author was because of the reduction in persistence of volatility of previous day. Ray and Panda (2011) investigated the impact of derivatives introduction on the underlying stock volatility and observed changes in structure of volatility and longer persistence of volatility in some of their sample stocks in post derivative period.

Research Gap:

From the review of existing literature it seems to us that there is scope of conducting research on examining different properties of sectoral stock index volatilities in India and the impact of derivatives introduction on their return volatilities, which have not been exclusively undertaken by any earlier study. The impact of derivatives trading on the volatility of sectoral stock indices using control variables has not also been comprehensively studied in the country with wider time coverage. Further there is hardly any study conducted on assessing impact of amendment of patent act in India on the volatility of index return of pharmaceutical sector. These gaps have been taken into consideration while framing the structure of the present study. Also the results of the study may be useful for fund managers adopting suitable strategies and can guide market regulators to adopt appropriate regulatory policies.

Objectives of the Study:

Our main objective is to seek the answers of the following questions related to stock market volatility in India during the study period spanning from 01-04-1996 to 31-03-2012 using

daily frequency data:

1. Is there any evidence of volatility clustering in daily return of the sectoral stock indices under consideration?
2. Is the volatility of daily return of the sectoral stock indices persistent in nature?
3. Is there any evidence of the presence of asymmetry or leverage effect in the return volatility of sectoral stock indices in India during the study period?
4. Is introduction of derivatives trading on all the relevant sectoral stock indices successful in reducing their return volatility?
5. What is the impact of amendment of patent act on the return volatility of pharmaceutical sector index in India?

Plan of the Study:

The remaining portion of the study is organized as follows: Section VI outlines the data used in the study. Section VII details the econometric and statistical techniques to be applied in testing the hypotheses. Section VIII enumerates the analysis of the data and findings of the study and finally Section IX concludes the study and presents directions for future research.

Study Period and Database:

To examine different properties of return volatility and the impact of derivative instruments' introduction on the return volatility of different sectoral stock indices (also the impact of changed patent act on return volatility of pharmaceutical sector) we have collected their daily closing price data from the website http://nseindia.com for the period spanning from 01-04-1996 (or from that date from which data is available for some indices) to 31-03-2012. The rationality behind the choice of end point of this study period is to relate it to as current financial year as possible. As regard to its beginning point the selection is made on the basis of criterion of making the impact assessment fruitful by spreading the time period more or less equally around the event dates (introduction of derivatives and change of patent law) avoiding distortion of the uniqueness property of the time series.

As Nifty is used as control variable for sectoral stock indices, we have collected its daily closing price data also from the same website http://nseindia.com. We have also collected information regarding date of derivative instrument's introduction on each of the stock index from the circular archive of NSE India. For those indices which have no derivative instrument till our study period, we have examined the effect of derivative introduction in the Indian stock market on their return volatility. The base value of the CNX IT index was revised from 1000 to 100 with effect from May 28, 2004 and accordingly we have adjusted its price data series by multiplying each data by 10 from that particular date.

Methodology:

We have set the following hypotheses for accomplishing the objectives of the study.

(I) There is evidence of volatility clustering in daily return of all the sectoral stock indices.

(ii) The daily return volatilities of all the sectoral stock indices are persistent in nature.

(iii) There is no evidence of the presence of asymmetry or leverage effect in the return volatility of sectoral stock indices in India during the study period.

(iv) The introduction of derivatives trading on all the relevant sectoral stock indices is successful in reducing their return volatilities.

(v) The amendment of patent law towards the product patent system in the pharmaceutical sector increases stock return volatility of CNX Pharma index.

If the above hypotheses are found to be true, we may conclude that introduction of derivatives trading have a stabilizing effect on the return volatilities of all the sectoral stock indices. Also Indian pharmaceutical sector is facing higher return volatility due to higher uncertainty regarding industry's average future profits related to increased R&D intensity in the post product patent period.

To examine the nature of volatility and also the impact of derivative introduction (amendment of patent law for CNX Pharma index) on spot market volatility of different sectoral stock indices we have adopted the following procedure:

Volatility has been estimated on return (R_t) which is defined as: $R_t = \log_e (P_t / P_{t-1})$

Where, R_t is continuous daily return at time t, and P_{t-1} and P_t represent daily closing prices of an asset at two successive days t-1 and t respectively.

Stationarity of all the return series has been checked using the widely used ADF test (1979) statistic. We have graphically plotted the daily return series over time so that volatility clustering can be checked. We have calculated the coefficient of Skewness and kurtosis to understand whether the return series is skewed or leptokurtic. To test the null hypothesis of normality, Jarque-Bera statistic (JB) has been applied. In the past studies findings of heteroscedasticity in stock returns are well documented. If the error variance is not constant i.e. heteroscedastic, then OLS estimation is inefficient. Moreover the tendency in financial data for volatility clustering can be well captured in a GARCH type model. But to be sure about whether GARCH type model is appropriate for the data or not, we have performed ARCH LM test (Engle 1982). This is a Lagrange Multiplier test for presence of ARCH effect in the residuals. Again presence of asymmetry or leverage effect along with other properties in the return volatility can only be captured in an asymmetric GARCH model. Among the various asymmetric GARCH models, namely, EGARCH, TGARCH and PGARCH models, we have modeled the time varying conditional variance in our study as EGARCH (1, 1) process for capturing the presence of any asymmetry or leverage effect in return volatility of the sectoral stock indices. It is to be noted in this connection that the most widely used popular model of capturing asymmetry in return volatility is the EGARCH model having relative advantages over other alternatives. In the standard GARCH model one problem is that it requires the assurance of all of the estimated coefficients to be positive. The advantage of the EGARCH specification of Nelson (1991) is that without complex parameter restrictions it ensures nonnegetivity of conditional variance at all times but having asymmetrical responses of asset returns to both, positive and negative innovations in return generating process. We use Akaike Information Criterion (AIC) to determine the order of EGARCH model. AIC = (-2l/n + 2k/n), where k = the number of estimated parameters, n = number of observations, l = the value of the log likelihood function using k estimated

parameters [EViews 3.1 help system]. AIC suggests us to choose EGARCH (1, 1) as this lag length minimizes the information criterion.

Following Nelson (1991) EGARCH (1, 1) model can be represented as:

$R_t = a_0 + a_1 R_{t-1} + \varepsilon_t; \qquad \varepsilon_t / \Psi_{t-1} \sim N(0, ht).$ (1)

$$\log(h_t) = \alpha_0 + \beta_1\left[|\varepsilon_{t-1}|/\sqrt{h_{t-1}}\right] + \lambda_1\left(\varepsilon_{t-1}/\sqrt{h_{t-1}}\right) + \delta_1 \log(h_{t-1}) \quad (2)$$

Where, the first equation is the conditional mean equation and the second equation is the conditional variance equation. Rt and R_{t-1} are daily return and lagged daily return of the particular index whose volatility is being measured in the study. The residual [ε_t] in the mean equation is assumed to be distributed N (0, h_t). In this EGARCH (1, 1) specification, the persistence of volatility in stock return is measured byδ_1. If δ_1 is found to be significantly large the volatility is persistent in nature, i.e., a shock at time t will persist for many future periods implying a long memory. The EGARCH model allows for capturing leverage effects. Given the value of h_{t-1}, a unit increase in ε_{t-1}will induce a change in the log of the conditional variance by ($\beta_1 + \lambda_1$), while a unit decrease in ε_{t-1} will induce a change in the log of the conditional variance by ($\beta_1 - \lambda_1$) allowing for leverage effect.

Using S&P CNX Nifty as a control variable for isolating the market wide factors the augmented mean equation for these indices becomes:

$R_t = a_0 + a_1 R_{t-1} + a_2 R_{Nif,t-1} + \varepsilon_t; \quad \varepsilon_t / \Psi_{t-1} \sim N(0, h_t).$ (3)

To address the issue of how the initial introduction of derivative instruments have impact on cash market volatility, we introduce a dummy variable D_f into the conditional variance equation which takes on a value of zero before the derivatives were introduced and a value of one after that. Equation (2) thus becomes:

$$\log(h_t) = \alpha_0 + \beta_1\left[|\varepsilon_{t-1}|/\sqrt{h_{t-1}}\right] + \lambda_1\left(\varepsilon_{t-1}/\sqrt{h_{t-1}}\right) + \delta_1 \log(h_{t-1}) + \gamma_1 D_f \quad (4)$$

where D_f is a dummy variable taking a value of zero prior to the introduction of derivatives and a value of one in the post derivatives introduction period. For CNX Pharma index, D_f is the dummy for patent act amendment towards product patent, taking a value of zero prior to the product patent system and a value of one in the post product patent system period.

To estimate EGARCH (1, 1) model maximum likelihood method is employed which can find the most likely values of the parameters given the actual data with T observations. After specifying mean and variance equation as mentioned above the log-likelihood function (LLF) is specified to maximize under the normality assumption for the disturbances as:

$$\ln L = -T/2 \ln(2\pi) - 0.5 \sum_{t=1}^{T} \ln h_t - 0.5 \sum_{t=1}^{T} \varepsilon_t^2 / h_t \quad (5)$$

With the help of EViews software the above LLF has been maximized to generate the estimated parameter values along with constructing their respective standard errors [Brooks (2008), Pp. 394-399 and Enders (2008), Pp. 138-140].

Data analysis and Findings:

We have performed certain diagnostic checking to be confirmed about the presence of 'ARCH effects' in return series of all the sectoral stock indices before we fit any GARCH type model. We first plot the daily return series in Figure-1 to Figure-5. The visual inspection of the plots of all the daily return series as shown in Figure-1 to Figure-5 reveal that returns continuously fluctuate around a mean value that is close to zero. The movements are in both positive and negative territory and large fluctuations tend to cluster together separated by periods of relatively low fluctuations showing volatility clustering.

Figure: - 1

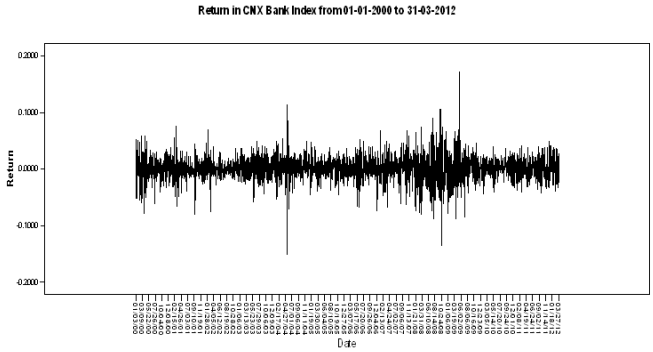


Figure: - 2

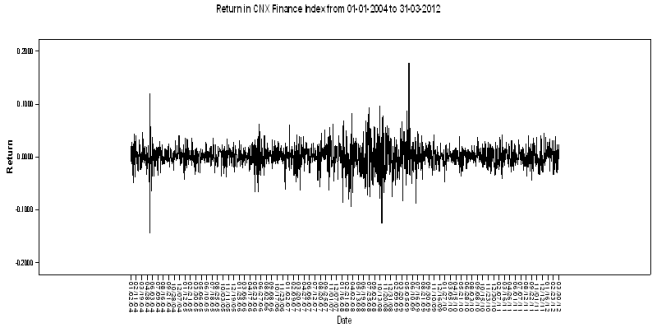


Figure: - 3

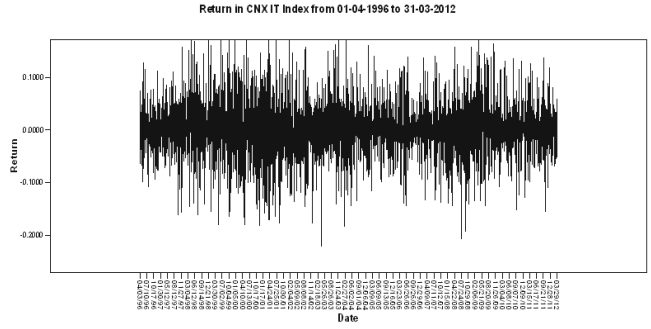


Figure: - 4

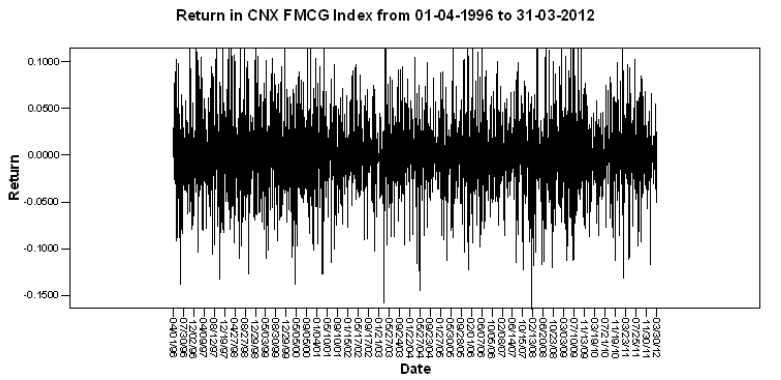
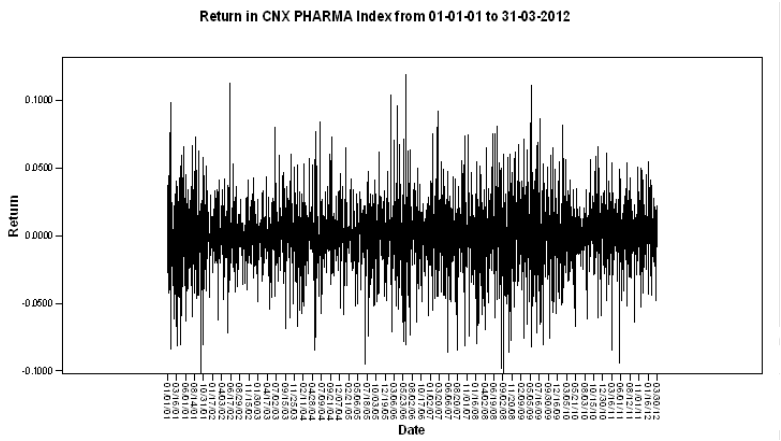


Figure: - 5



To test the stationarity of daily return series of the 5 sectoral stock indices the Augmented Dickey Fuller (ADF) unit root test is performed, the results of which are presented in Table-1. From Table-1 we find that all the estimated values of ADF test statistic are statistically significant at 1% level which implies that all the return series are stationary. The descriptive statistics on returns of all the indices are also summarized in Table-1. The coefficient of skewness for all the return series is observed to be different from zero which indicates that return distributions are not symmetric. The coefficients of Kurtosis for all the index return series are fairly high suggesting that the underlying data are leptokurtic or heavily tailed and sharply peaked about the mean compared to normal distribution. These observed coefficients of skewness and kurtosis indicate that the distribution of daily return series of each of the selected indices is non-normal. The Jarque-Bera normality test also supports this feature of non-normality of return distributions, as we find from Table-1 that the estimated values of Jarque-Bera statistic of all the return series are statistically significant at 1% level.

Table- 1: Results of ADF Test and Descriptive Statistics of Return Series of Selected Sectoral Stock Indices.

Sector Index	ADF Test Statistic†	Coefficient of Skewness	Coefficient of Kurtosis	Jarque-Bera Test Statistic §
CNX Bank	-26.08954	-0.179421	7.956924	3147.174
CNX Finance	-21.92213	-0.091003	8.752196	2834.596
CNX IT	-27.09618	-0.304995	8.038211	4256.123
CNX FMCG	-28.99529	0.000226	6.460151	1991.949
CNX Pharma	-22.92018	-0.377995	8.559534	3681.841

† ADF Test Statistic is estimated by fitting the equation of the form:

$$\Delta y_t = \varphi + \delta\, y_{t-1} + \sum_{j=1}^{4} \theta_j\, \Delta y_{t-j} + \mu_t$$

§ Jarque Bera Test Statistic $(JB) = \frac{N-k}{6}\ [s^2 + \frac{1}{4}\ (K-3)^2]$ where N= number of observations,
S= coefficient of skewness, K= coefficient of kurtosis, k= number of estimated coefficients used to create the series and JB follows the Chi-square distribution with 2 d. f.

Source: *Authors' own calculation.*

Estimated values of mean and standard deviation of index returns are presented in Table-2. The mean return on the CNX Bank index is 0.074%, on the CNX Finance index 0.069% and on the CNX IT index 0.011% per day. The standard deviation of CNX Bank index is 2.11%, of CNX Finance index 2.18% and that of CNX IT index 2.57% per day. Therefore, among these three service sector related sectoral stock indices CNX IT index has the lowest mean return and highest standard deviation. Further the mean return of CNX FMCG index is 0.06% with standard deviation of 1.55% per day and that of CNX Pharma index is 0.05% with standard deviation of 1.32% per day.

We divide the sample period into pre and post derivative periods to observe the changes in mean and standard deviations of the return series which are also presented in Table-2. From Table-2 we observe that both mean returns of all the sector indices have declined in the post derivative period compared to the pre derivative period. Further standard deviations in daily CNX Bank and CNX Finance index returns have increased in the post-derivative period but standard deviations in daily CNX IT and CNX FMCG index returns have decreased in the post-derivative period. The mean return of CNX Pharma index has declined but standard deviation has increased in the post product patent period in comparison to those in the pre product patent period.

Table- 2: Means and Standard Deviations of Daily Return of Selected Sectoral Stock Indices.

Period	NOB	Mean	Standard Deviation
CNX Bank	3059	0.000743	0.021119
Pre- derivative CNX Bank	1369	0.000936	0.019170
Post-derivative CNX Bank	1690	0.000618	0.022609
CNX Finance	2055	0.000689	0.021785
Pre- derivative CNX Finance	365	0.000701	0.019912
Post- derivative CNX Finance	1690	0.000690	0.022169
CNX IT	3967	0.001059	0.025720
Pre- derivative CNX IT	1832	0.001565	0.031533
Post- derivative CNX IT	2135	0.000629	0.019380
CNX FMCG	3993	0.000624	0.015487
Pre- derivative CNX FMCG	1044	0.000984	0.019017
Post-derivative CNX FMCG	2949	0.000496	0.014028
CNX Pharma	2807	0.000587	0.013248
Pre-Product Patent CNX Pharma	1060	0.000641	0.012893
Post- Product Patent CNX Pharma	1747	0.000554	0.013463

Derivative contracts on Bank Nifty were introduced on 13-06-2005.
Derivative contracts on CNX IT were introduced on 29-08-2003.
Derivatives were introduced in Indian Stock market on 12-06-2000
Amendment of Patent Act towards Product Patents on 22-03-2005

Source: *Authors' own calculation.*

ARCH LM test (Engle, 1982) is applied to test for presence of 'ARCH' effect in the residuals of the estimated model, the results of which are presented in Table-3. From Table-3 we find that both the F-statistic and the ARCH-LM statistic are statistically significant at 1% level for all the sectoral stock indices thereby rejecting the null hypothesis of no heteroskedasticity. The results of ARCH-LM tests confirm the presence of ARCH effect in all the return series which is also consistent with the graphical presentation of the return series showing volatility clustering.

Table - 3: Result of ARCH Test on Return Series of Selected Sectoral Stock Indices.

Sector Index	F-Statistic	Prob. F	ARCH LM Statistic (c)	Prob. Chi-square
CNX Bank	250.8963	0.000000	232.0010	0.000000
CNX Finance	142.9879	0.000000	133.7951	0.000000
CNX IT	329.9060	0.000000	304.7008	0.000000
CNX FMCG	417.2355	0.000000	377.9160	0.000000
CNX Pharma	573.5453	0.000000	476.4617	0.000000

Source : *Authors' own calculation.*

(c) ARCH LM Statistic (at lag-1) is the Lagrange Multiplier test statistic for examining the presence of ARCH effect in the residuals of the estimated model. If the value of ARCH LM

Statistic is greater than the critical value from the Chi-square distribution, the null hypothesis of no heteroskedasticity is rejected.

The results of the fitted EGARCH (1, 1) model (represented in Equation-4) to daily return series of all the sectoral stock indices are presented in Table-4. From the table we see that all the coefficients of mean and variance equations are significant either at 1% or 5% or 10% level except lag Nifty return for CNX Bank and coefficient of derivative dummy γ_1 for CNX Finance which two are found to be insignificant. Significant values of F-statistic for all the indices imply that there are heteroscedasticity in all return variances. The parameter δ_1 is found to be significantly large for all, implying that return volatilities are persistent in nature. λ_1 is found to be negative and β_1 is found to be positive. While examining any existence of leverage effect in returns volatility of the sectoral stock indices, it is observed that both $(\beta_1+\lambda_1)$ and $(\beta_1-\lambda_1)$ are positive and also $(\beta_1-\lambda_1)$ is greater than $(\beta_1+\lambda_1)$ in all the cases, i.e., given the value of h_{t-1}, a unit decrease in ε_{t-1} is inducing a change in the log of conditional variance greater than the change in case of a unit increase in ε_{t-1}. This implies that 'bad news' or negative shocks induce greater volatility in returns than 'good news' or positive shocks proving the existence of asymmetry or leverage effect in return volatility of each of the sectoral stock indices, thus rejecting the hypothesis of no leverage effect. From the results of the estimated EGARCH (1, 1) model for all the sectoral stock indices we can see that the coefficient of the derivative dummy γ_1 is significantly different from zero (significant at 10% level) and positive in case of CNX Bank index, positive but not significant for CNX Finance index but significantly different from zero (significant at 1% level) and negative in case of CNX IT index. These estimated results imply that derivatives' introduction has mixed impact on service sector related stock indices. Among the service sector related indices, financial derivatives introduction has been successful in stabilizing only CNX IT index return volatility but failed to stabilize CNX Bank and CNX Finance return volatility. Among the consumption sector related indices the coefficient of the derivative dummy γ_1 is found to be significantly different from zero (significant at 1% level) and negative in case of CNX FMCG index implying that derivative introduction in the Indian capital market has been successful in stabilizing CNX FMCG return volatility. On the other hand the, coefficient of the product patent dummy $\gamma_1$for CNX Pharma index is found to be significantly different from zero (significant at 10% level) and positive, thus supporting the hypothesis of positive relation between higher uncertainty regarding industry's average future profits due to increased R&D intensity in the post product patent period and increased return volatility of pharmaceutical industry.

Table – 4: Maximum Likelihood Estimates of EGARCH (1, 1) Model of Return Series of Selected Sector Indices

Sector Index	Parameters of Mean Equation†			Parameters of Variance Equation††					GARH Statistic
	a_0	a_1	a_2	α_0	β_1	λ_1	δ_1	γ_1	$R^{2\#}$
CNX Bank	0.000716** [2.390074] (0.0168)	0.093971* [3.695617] (0.0002)	0.052647 [1.631724] (0.1027)	-0.394311* [-11.00500] (0.0000)	0.199504* [14.43690] (0.0000)	-0.052348* [-6.729507] (0.0000)	0.970097* [255.2523] (0.0000)	0.007088*** [1.742722] (0.0814)	0.015043* {6.654503} (0.000000)
CNX Finance	0.000883** [2.443740] (0.0145)	0.226028* [5.415806] (0.0000)	-0.120256** [-2.230711] (0.0257)	-0.404577* [-9.083344] (0.0000)	0.193683* [10.97956] (0.0000)	-0.079904* [-8.525063] (0.0000)	0.968969* [232.4155] (0.0000)	0.009342 [1.515145] (0.1297)	0.020173* {6.017652} (0.000001)
CNX IT	0.000882* [3.137202] (0.0017)	0.132813* [6.194546] (0.0000)	-0.089546* [-3.832205] (0.0001)	-0.626794* [-12.51808] (0.0000)	0.267178* [18.61387] (0.0000)	-0.051849* [-6.323390] (0.0000)	0.939842* [160.4675] (0.0000)	-0.066553* [-9.331962] (0.0000)	0.016877* {9.706668} (0.000000)
CNX FMCG	0.000515* [2.607685] (0.0091)	0.040919** [2.111543] (0.0347)	0.028215*** [1.863754] (0.0624)	-0.693419* [-12.49077] (0.0000)	0.238663* [17.60515] (0.0000)	-0.079405* [-8.259291] (0.0000)	0.935724* [143.6774] (0.0000)	-0.049489* [-6.970056] (0.0000)	0.000360 {0.205276} (0.984393)
CNX Pharma	0.000660* [3.146870] (0.0017)	0.074236* [2.829794] (0.0047)	0.063625* [3.576598] (0.0003)	-1.196964* [-8.480407] (0.0000)	0.329213* [15.11273] (0.0000)	-0.033340* [-2.950864] (0.0032)	0.894243* [61.29260] (0.0000)	0.017422*** [1.735163] (0.0827)	0.008551* {3.448519} (0.001113)

Notes : †Mean Equation: $R_t = a_0 + a_1 R_{t-1} + a_2 R_{Nif,t-1} + \varepsilon_t$; $\varepsilon_t / \Psi_{t-1} \sim N(0, h_t)$;

†† Variance Equation: $\log(h_t) = \alpha_0 + \beta_1\left[|\varepsilon_{t-1}|/\sqrt{h_{t-1}}\right] + \lambda_1\left(\varepsilon_{t-1}/\sqrt{h_{t-1}}\right) + \delta_1 \log(h_{t-1}) + \gamma_1 D_f$

where D_f represents dummy variables which takes the value zero for the pre-derivative period and one for the post-derivative period;
coefficient of GARCH model determination; Terms within square brackets represent Z statistic, terms within braces represent F values and terms within parentheses denote probability;
(*), (**) and (***) indicate significance of the parameter at 1%, 5% and 10% significance level.

Conclusions:

In this paper different properties of sectoral stock index return volatilities in India and the impact of derivatives introduction on them have been examined using daily closing price data in an EGARCH (1, 1) framework. Our estimation period spans from 01-04-1996 (or from which date data is available for some indices) to 31-03-2012. The study confirms the presence of volatility clustering and the persistent nature of the return volatility of all the five sectoral stock index return series. The study further shows evidence of asymmetry or leverage effect in volatility of each sectoral stock index return series. Further the results of the study suggest that introduction of derivative trading has mixed impact on return volatilities of service sector related indices. Derivatives introduction is successful in stabilizing volatility of CNX IT index return but fails to stabilize volatility of CNX Bank and CNX Finance index return in the Indian stock market. Among the consumption sector related indices we find stabilizing impact of derivatives introduction on CNX FMCG index return volatility. For CNX Pharma index we have examined the impact of amendment of patent Act towards product patents on its return volatility and the result shows significant increase in stock return volatility in the post product patent introduction period. The findings of the study will be useful to practitioners and academicians in the field of finance to know the changing risk scenario of the Indian stock market.

However, the authors are aware of the limitation of the study that it has not considered high frequency intraday data for the volatility analysis. The conclusions are based on the analysis of results on NSE only and therefore may be criticized. Moreover, scope of further research is there on examining the impact of different company specific, industry specific and market specific information on stock market volatility in India.

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Cost Structure Strategies : An empirical study in the Software industries in India

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Abstract :

Cost structure issues in recent years gained momentum in the context of attaining competitive advantage of the firms competing globally. The present study attempts to investigate the nature of cost components and its impact on Reported Net Profit of the firms during the financial meltdown regime to formulate appropriate strategy for avoiding their financial distress. The software companies, victim of current recession, are considered for study covering 8 years from 2004-05 to 2011-12. Research outcome shows that overseas demand slowdown coupled with immunity in reducing the cost components led to aggravating financial woes of the software companies over the years and urged upon crafting of blue ocean strategy.

Key Words: *Competitive Advantage, Financial Meltdown, Cost Components.*

Introduction :

Cost structure in relation to a firm simply implies the nature and quantum of cost distributed in the process of production of goods or services. It encompasses both direct and indirect cost including the financial costs. More specifically, it takes into account the cost incurred in respect of development of an idea of the product or service, the acquisition of raw materials, labour and capital, along with the creation of production facilities. The firms are concerned with the cost structure analysis for numerous counts mainly to achieve the cost leadership within its peer group. Cost base evaluation establishes fundamental competitiveness which enables the firm for adopting intelligent market pricing strategies.

Cost structure varies from industry to industry depending on nature, size and financial structure. Henderson aptly viewed that (Carl,M. S., W. Stern, 2006) sustainability of the companies in the hypercompetitive milieu over time depends on achieving and maintaining differentiation. As a result, it became firms' ultimate goal to craft cost leadership strategies (Porter). Cost leadership is one business strategy (i.e. comparatively lowest operation cost in the industry) that a firm must adopt mainly to make competition irrelevant (Steve Job). The firm takes advantage of cost leadership by creating new market pace with innovative product and services.

Statement of the problem :

The company across the industries attempted to formulate appropriate financial strategies in the context of reducing the overall cost. Since July 2008,despite several attempts to bail out the crisis of the century, silverlining is still awaited. Sharp increases in asset prices coupled with demand slowdown and a speedy expansion of credit often coincide to rapid accumulation of debts. As corporations and households get overextended and face difficulties in meeting their debt obligations, they reduce investment and consumption,

which in turn led to a decrease in economic activity. The cascading affect of demand slowdown particularly in the USA and Euro Zone has impacted external demands from all export oriented economy across the globe (Kose, 2009). The IT industry faced a severe heat of the financial crisis in the context of demand slowdown. This has warranted the organizations to adapt to downsizing, layoff and restructuring policies as a short term measures to remain competitive in the environment.

Under this backdrop an attempt has been made to assess how the firms in the IT sectors are pursuing the cost structure strategies to remain competitive in the financial crisis regime.

Objectives of the study:

The following objectives are framed for the study:

- To investigate the nature and component of firms' operational and financial cost over the years.
- To analyse the impact of cost components on the firm's bottom line.
- To evolve cost control mechanism for the companies to remain competitive in the market.

Literature review:

Some relevant literatures were reviewed to identify the research gap if any in the context of cost structure strategies of the firms in the recent years particularly during the financial crisis period. The genesis of corporate competitive strategies is mostly attributed to Michael E. Porter's contribution towards the industry attractiveness and relevant generic competitive business strategies (Porter,M.E. 1980). Dess and Davis (Dess, 1984) and Hambrick (D, Hambrick. 1983) in their studies in respect of different industry supported Porter's contentions. Amit (Amit,R. 1986) and Hall & Howell (Hall,G.H. 1985) argued that sources of cost economies are relevant in the context of learning effects, economies of scale,and economies of scope.

The Boston Consultancy Group (BCG, 1972) observed that significance of cost leadership as an independent strategy is based on the presumption that the experience curve declines continually with accumulated output over time. In the similar vain , Charles W.L.Hill (1988) found that a firm needs to follow its sustainable competitive advantage on a simultaneous and continuous pursuit to attain both cost leadership and differentiation. Beiting Cheng, Ioannis Ioannou, and George Serafeim (2011) in a paper investigated the role of better CSR for ensuring better finance and found that firms with better CSR performance face significantly lower capital constraints. Hall (1980) ovserved that the most sucessful firms could not simultaneously pursued both a differentiation and a low-cost strategy. In a diagonally opposite study, White (1986) observed that those firms sucessfully combind both low cost and differentiation had achieved highest return on investment. Tyagi (2001) established a relationship between industry-average performance and strategic diversity among a broad cross-section of firms. It was observed from the Industry-average performance measured in terms of Tobin's q and accounting profitability, that, the size, operating margin, asset composition, asset utilization, and focus are the basic structural factors that are directly associated with the performance of the firms .

To restrain recessionary impacts on the industry and the firm in particular Pearce (2002)

viewed that the firms need to adopt to different strategies like; retrenchment, tightening credit, maintaining budgets, maintaining prices, increasing liquidity, reducing debt, deferring capital expenditures, and pursuing selective growth. Mooney (1991) in his study observed that during recession companies are tempted to reduce advertising expenditures. Reduction in such expenses is immediately reflected in an increase in the bottom line of the company. However, other entrepreneurs have found that recessions are good times to maintain advertising budgets. McKinsey's study reported that companies that truly transform their approach to overhead costs aligning their costs with their strategies and maintaining a strong commitment to the effort can be the winner of the game (Nimocks, 2005).

From the aforesaid literature we found that no study has so far been undertaken considering the variables impacting firm's growth sustainability as well as profitability covering global financial meltdown period. Besides, studies relating to cost strategies of the firm especially in the context of financial crisis regime as well as in the IT sector, worst sufferer in the recent times, is at the nascent stage.

Hypothesis:

It has been seen that the firms were pushed into a hypercompetitive environment in the context of liquidity crisis in the external economies, sluggish demand in abroad affecting export potentiality, high interest rate, and above all low investors' confidence both in home and abroad. The firms are struggling hard to evolve strategies to leverage its operation in view of maintaining bottom-line and market share. Therefore following hypothesis is generated for the study:

- The firms across the industries have adapted to the changing economic situation in the context of evolving competitive cost structure strategy to ensure its growth trajectory over the years.

Research Methodology:

Empirical research was conducted to attain the aforesaid objectives. We consider top 10 IT firms in the category of Computer Software (Large) as classified in the Capitaline Corporate database. To analyse the cost structure of the firms under study we have considered variables, such as; Employee cost (EC), Selling & Administration Expenses(SAE), Advertisement Expenses (ADV), R & D expenses (RDE), Expenses in earning of foreign exchange (Forex) , Interest cost (INTE), and Reported Net Profit (RNP) during the period covering eight years ending on March31, 2012. These variables were selected based on review of literature. To measure the significance of the variables descriptive statistics was used and correlation coefficient measure was applied to examine the degree of association between the variables.

Besides following multivariate model was used to assess the efficacy of the independent variables in explaining the impact on dependent variable Reported Net Profit (RNP)

$$Y_{it} = \beta_0 + \beta_1 EC + \beta_2 SAE + \beta_3 ADV + \beta_4 RDE + \beta_5 Forex + \beta_6 INTE + \mu_{it}$$

Here; μ_{it} = Error term. β_0 is the unsystematic predictable constant component or the estimated constant i = Selected Computer Software (Large) companies.

Results and discussion:

We have calculated the CAGR for each of the variables during the period from March31, 2005 to March 31 2012 in three different time lags (TL) namely; TL_1 covers total period (2005-12), TL_2 indicates pre-recession period (2005-08), and TL_3 represents Post Recession (bail-out period 2009-12)

Reported net profit (RNP) of the firm is generally impacted by direct cost and indirect cost. In order to assess the impact of each of the costs we considered direct cost which includes, material cost, Employee (Labour) cost, and direct over head, and indirect cost which consists of Employee cost (salary), Interest paid, R&D, other expenditure .

We assumed that during the regime of demand slowdown the firms had adopted competitive cost strategy to remain competitive in the market. We further assume that with attaining cost leadership the firms over the years could access to the international market and earn considerable foreign exchange and increase Reported Net Profit as well as ROCE (return on capital employed).

It was seen from the Annexure table (I, II, III) that CAGR of PAT of the software firms (large) under study grew at 33.07 % during 2005-2008 and declined to 29.46 % during 2009-12 revealing the fact that software industry was largely affected by demand slowdown in the export region. This is also reflected by the Standard deviation which is found to be highest (6997.58) in post recession period. As a result low turnover impacted the Total Income, PAT, capital Employed and Net worth during the post financial crisis regime.

The return on investment (ROI) under the value maximization principle should necessarily be at least higher than the rate at which the company borrows as well as average cost of capital (WACC). The analysis exhibited that the ROCE grew at 16.90% (CAGR) during pre recession period but moved to negative zone (-26.82%) during the post recession period. The reason of such decline may be attributed to demand slowdown inter-alia high interest burden. The spurt in borrowing cost of all most all companies in the pre recession period has significantly eroded shareholders' earnings afterwards as the company had not reduced the debt obligations. In this respect it may be mentioned that the growth of Debt -Equity ratio (DER) was found to be negative in the post recession period (CAGR -19.68%) in comparison to CAGR 16.74% in pre recession period.

Indian Software Industry as a whole generally relies on overseas demand particularly from the Europe and North America region. The total Sales turnover of the industry has declined considerably resulting in lowering in Forex earnings i.e. from 36.16% in pre-recession to 5.5% in post-recession period. On the other hand, employees cost has also reduced from 41.12 % to 8.16% but not at the same pace of growth of sales (CAGR) during the period under review.

It was found from the Annexure table I; that in all the time lags (TL) MphasiS has turned to be the Industry leader in respect growth of RNP (48.04 %), ROCE (14.58%) and debt repayment capacity. The Total Expenditure grew at (CAGR) 43.41% during entire period due to increase in the employee cost, selling & distribution overhead and interest burden. The other companies under study witnessed positive growth in RNP such as; Tech Mahindra (30.60%), TCS (29.15%) and HCL Tech (28.93%). PAT of Tech Mahindra grew at 30.60%

against its Total expenditure at 27.61% in which Interest cost shares significant part. It was almost debt free company during pre recession period while in FY 2010 it paid interest ₹160 cr. TCS witnessed highest amount of operating income amongst its peer to the tune of ₹ 38,105.4 cr as on March 31,2012 and PAT grew at 29.15% against its growth of total Expenditure at 24.11% . The growth of ROCE however, had plummeted as employee cost and selling & distribution expenditure comparatively surged during post recession era. The Satyam computer did not fare well in the pre-recession period due to obvious reason of confiscation of company's accounts. However the operating income picked up only after the management is being controlled by Govt. and also after the merger with Tech Mahindra.

It has been observed that most of the companies have enhanced their manpower by recruiting more people which basically led to increase in employee cost. Further, other costs like - Selling & distribution overhead, Interest cost etc had also increased in the context of hike in interest rate, inflation etc. Polaries Financial was the worst performer during the pre recession period as total expenditure grew at 13.43% involving huge employee cost over the years and finally resulted in a loss (PAT, -0.50%).

The Annexure table -III covering period 2009 to 2012 exhibited that most of the firms are found to be the worst performer even in their entire lifetime. Polaries Financial was exceptional as its RNP grew from negative to positive zone in this time lag. An insightful analysis of cost structure revealed that the total expenditure has considerably dwindled due to significant reduction in the employee cost about 4% over the previous time lag. The PAT grew at 19.24% may be due to their improvement in the volume of business in domestic and overseas market. Similarly, Mphasis (from 63.86 % to 43.52 %) and TCS (from 35.03 % to 32.71 %) have generated more earning during this period. Mphasi S managed to perform well in Indian business segment. Its domestic Sales revenue jumped from ₹ 288.5 cr in FY 2011 to ₹ 556 cr FY 2012. The Revenue Expenditure declined from 47.20% in pre recession period to 11.26 % in post post-recession period. The MphasiS's overseas business especially in USA & EMEA region was badly affected by recession. Its sales revenue in USA, EMEA & APAC region was ₹ 2454.05 cr, ₹ 750.9 cr & ₹ 447.63 cr in March31, 2010 and reduced to ₹2216.66 cr, ₹ 557.89 cr & ₹ 217 cr as on March 31, 2012 respectively. Industry leader TCS was also not free from the recessional impact. Forex earning was plummeted from 30.87% in pre-recession period to 22.28% in post-recession period following the drop in sales in America and Euro Zone from ₹ 12718 Cr. & ₹ 6487.6 cr in March 31, 2009 to ₹ 22415 cr. & ₹ 9386 cr in March 2012 respectively. The total expenditure had significantly declined (from31.89% to 15.97%), particularly in the Employee cost (from 71.50% to 17.45%), Selling and Administration Exp (from 37.78% to 12.51%) except interest cost. TCS is the only company did not follow in reduction of R&D cost which grew from ₹ 42.31 cr in March 31 2009 to ₹127.16 cr. in March31, 2012.

Thus, the software firms exclusively depending on overseas market were undoubtedly affected by the recession despite their reduction in total expenditure. However, interest cost was found to be most deterrent of firm's profitability.

Now to find interrelationship among the variables as identified earlier we have calculated correlation matrix for each of the sample firms.

Table A: Pearson Correlation of HCL Technologies (n = 8)

	Reported Net Profit	Rev. exp in foreign earning	Employee cost	S & D Exp	Advt Exp	R& D cost	Interest cost
Reported Net Profit	1.000						
Rev. exp in foreign earning	.393	1.000					
Employee Cost	.918**	.227	1.000				
S & D Exp	.813**	.292	.920**	1.000			
Advt Exp	.547	.703*	.629*	.789**	1.000		
R& D cost	-.194	.760	-.278	-.103	.493	1.000	
Interest cost	.711**	-.091	.855*	.877**	.469	-.485	1.000
Source : Self calculation							

It is seen that cost components like employee cost, Selling and Distribution Expenses and interest cost have significant influence on the reported net profit (RNP). Interestingly, R&D cost is negatively related to RNP in case of HCL Technologies. The reason of such negative relationship may be attributed to firm's inability to leverage the benefit of R&D expenditure because of demand slowdown in developed countries; America and Euro Zone in particular. Similarly we have calculated the correlation of coefficient among the aforesaid variables in all other sample companies. However the findings do not differ from the above.

Now, to assess the impact of each of the above cost components on the reported net profit (RNP) we have conducted multiple regression analysis.

The results are summarized in the table hereunder:

Table B: Regression Results, RNP dependent variable (2005 to 2012).

Cos	β Value (Standardized Coefficients)						R^2	F value (Sig.)
	Rev. Exp In foreign earning	Emplo-yee Cost	S&D Exp.	Advertise ment Exp.	R&D Cost	Interest cost		
Software Industry Large	.023	.106	.407	NA	NA	.515	.997	249.917** (.000)
HCL Techno-logies	.610	.809	.729	-1.050	.164	.008	.974	6.292(.296)
Igate Computer	-.694	.717	.853	-.035	NA	-.354	.912	2.060(.483)

Infosys	.569	-.120	.563	-.113	.070	.085	.999	239.049* (.049)
MphasiS	1.926	.485	-1.216	.208	-.154	-.032	.986	23.669* (.041)
Oracle Fin. Services	2.339	-3.788	1.256	-.712	NA	1.039	.993	54.001* (.018)
Polaris Financial	.032	.883	.312	-.130	NA	-.314	.861	2.485(.311)
Mahindra-Satyam Computer	-2.343	4.059	-1.265	-.434	.107	-1.608	.994	27.505(.145)
TCS	.699	-1.579	1.064	NA	.797	.061	.992	51.204* (.019)
Tech Mahindra	-.700	1.354	.272	-.490	NA	-.155	.614	0.637(.704)
Wipro	-.242	.653	-.348	1.383	NA	-.622	.997	140.605** (.007)
Source : self calculation								

The Coefficient of Determination (R^2) , in Infosys (0.999), Wipro & Software Industry Large (0.997), Mahindra- Satyam Computer (0.994), Oracle Fin.Serv. (0.993), TCS (.992), MphasiS (.986) is found to be significantly large indicating the fact that regression is well fitted which is confirmed by the statistically significant F values. Generally, if the significance value of the F statistic is small (smaller than say 0.05) then the independent variables do a good job explaining the variation in the dependent variable. From the above table it has been found that the independent variables considered in the model have explained more than 90% variation in the Reported Net Profit (RNP) of sample companies except Polaris Financial and Tech Mahindra. In other words, the independent variables; revenue expenses in Forex earning, Employee Cost, Selling & Administration Exp., Advertisement Exp., R&D Exp., and Interest cost are perfectly explaining the variations in the Reported Net Profit of the firm. However, in case of the other sample companies where regression is not significant, it indicates the fact that management should devise strategy to leverage their potentiality in leveraging benefits of these expenditures.

The β value of Employee cost was found to be highest (4.059) in case of Mahindra Satyam Computer followed by Tech Mahindra (1.354) and Polaries Financial (0.883). It indicates that employee cost has significant impact on the RNP of the companies. In other words, the knowledge based companies could only flourish with talent pool in their employee portfolio and thus, such cost needs to be incurred for acquiring and retaining key employees. On the contrary, the negative β value (-3.788) for employee cost in case of Oracle Financial Service indicates the fact that the company's talent pool is not contributing towards its growth of RNP.

Selling & Admin Expenses in case of Oracle Financial Service (β=1.256), TCS (β=1.064) and Polaris Financial (β=0.853) have positive impact on dependent variable, RNP. While, Mahindra -Satyam Computer (β=-1.256), MphasiS (β=-1.216) and Wipro (β=0-.348) needs urgent steps to control such expenditure. Similarly, Advertisement Expenses have negative impact on profitability in most of the companies like HCL Technologies (β=-1.050), Oracle Financial Services (β=-0.712) etc except Wipro (β= 1.383) and MphasiS (β= 0.208). Interestingly, none of companies have leveraged the benefit of R&D expenditure as the β value is either negative or less than 1.0. On the other hand, all companies were experiencing the high burden of interest cost over the period under review.

Conclusion:

From the aforesaid analysis it may be inferred that financial recession made significant dent in the bottom line of the software firms. The study exhibited a strong correlation particularly between Reported Net Profit and Interest cost and selling & Distribution expenses. Moreover, the firms particularly in the context of demand slowdown and low investors confidence failed to leverage benefit from R&D expenditure and their existing talent pool. The profitability of the firm, however, would gain momentum with the pace of growth of turnover as variables like; employees cost, R&D expenditure and S& D cost except interest cost (cost of borrowing) would bring synergy in the firms (high R2 followed by significant F value). The soundness in the bottom line of the firms therefore hinges on crafting of firm specific strategy like; recruiting and retaining key personnel, restructuring the debt obligations, and strengthening the R&D wings. Besides, developing strategic alliance, widening market access, augmenting further talent pool and so on as a part of crafting of *blue ocean strategy* would definitely lead the software giants to regain their leadership status in the market.

However, analysis pertaining to intra as well as inter firm and industry taking the basket of cost components in a large canvas would give significant result for evolving comprehensive and competitive cost structure strategy.

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Annexure **Table I[6]: CAGR of financial performance as the sample companies during March 2005 to March 2012.**

Companies / Parameters		*Software Industry Large*	*HCL Tech*	*iGate Computer*	*Infosys*	*MphasiS*	*Oracle Fin.Serv.*	*Polaris Financial*	*Mahindra-Satyam Computer*	*TCS*	*Tech Mahindra*	*Wipro*
Rev.exp in foreign earning	CAGR	19.25	11.05	29.64	25.18	24.43	17.09	14.39	9.24	21.84	25.51	25.24
	SD	12488.28	197.20	152.68	3582.11	340.40	191.06	217.09	1029.4	2797.32	634.42	3703.70
	CV	40.80	26.32	62.26	49.07	65.24	34.20	54.76	32.11	39.48	43.92	52.61
Employee Cost	CAGR	16.77	34.70	21.43	25.38	70.23	17.97	15.40	8.93	39.23	30.37	23.66
	SD	16674.66	1113.70	301.10	4150.04	564.68	299.39	248.77	1184.27	5411.84	679.10	3457.86
	CV	42.82	55.33	41.42	47.71	80.87	34.58	32.83	31.82	53.62	53.84	43.85
S & D Exp	CAGR	13.43	22.74	6.65	16.97	37.66	9.30	4.75	4.94	21.91	12.63	21.87
	SD	2287.01	259.88	38.30	442.49	136.58	46.58	19.93	267.22	547.54	164.50	574.66
	CV	29.57	39.69	18.83	31.75	63.11	17.57	18.03	35.09	39.40	34.53	37.97
Advertisement Exp.	CAGR	NA	34.36	-1.59	9.01	NA	-30.44	-0.90	-20.54	NA	0.21	23.13
	SD	NA	8.21	1.43	12.76	.0035	2.40	3.14	2.44	NA	1.62	84.85
	CV	NA	46.51	30.14	18.60	282.84	102.51	65.36	66.44	NA	52.10	46.55
R&D Cost	CAGR	NA	NA	NA	16.99	NA	NA	NA	-100	NA	NA	NA
	SD	NA	7.38	NA	8.99	0.27	NA	NA	1.19	41.98	64.72	NA
	CV	NA	165.79	NA	88.88	190.56	NA	NA	117.49	76.50	131.68	NA
Interest Cost	CAGR	61.93	50.28	-3.37	10.41	58.18	NA	11.80	46.86	6.72	NA	95.40
	SD	289.66	44.11	2.05	0.52	*3.02*	.11	-9.89	12.99	*6.12*	64.72	198.71
	CV	89.95	93.23	35.66	37.63	114.17	138.68	48.19	102.06	*65.14*	*137.68*	*135.75*
Total Expenditure	CAGR	21.80	28.22	17.58	24.64	43.41	27.61	14.58	10.47	24.11	27.61	24.93
	SD	31164.89	1639.96	1033.86	5569.17	997.07	331.73	310.17	4211.10	6841.91	1333.73	6795.71
	CV	44.98	45.88	*34.75*	*46.46*	68.69	*57.47*	*32.78*	*69.48*	*46.09*	*47.01*	*45.67*
Reported Net Profit	CAGR	21.66	28.93	17.04	23.77	48.04	27.61	19.74	6.98	29.15	30.60	17.73
	SD	7988.75	475.78	170.70	2182.35	385.38	331.73	64.125	3186.99	2914.97	336.88	1314.79
	CV	44.38	47.26	*41.57*	*44.63*	*91.78*	*57.47*	*62.84*	*-1414.69*	*55.95*	*75.51*	*39.21*
Debt Equity Ratio	CAGR	60.80	22.96	NA	NA	NA	NA	NA	NA	-100.00	NA	40.85
	SD	0.78	0.09	NA	NA	0.018	NA	.017	0.13	0.052	0.22	*320.33*
	CV	94.33	*97.10*	NA	NA	*123.44*	NA	*282.84*	207.41	*231.24*	122.51	*236.62*
ROCE	CAGR	-5.92	14.00	4.12	-2.81	14.58	-0.33	9.96	-1.66	-8.44	-9.81	-7.93
	SD	143.88	8.50	3.13	4.75	14.89	2.45	7.122	15.43	21.60	27.33	*17.53*
	CV	31.01	*32.73*	*17.28*	*10.97*	*56.02*	*11.49*	*43.09*	*83.17*	*35.53*	*39.65*	*-266.53*

Annexure Table II *: CAGR of financial performance as the sample companies during March2005 to March 2008. (Pre-recession period)

Companies / Parameters		*Software Industry Large*	*HCL Tech*	*IGate Computer*	*Infosys*	*MphasiS*	*Oracle Fin.Serv.*	*Polaris Financial*	*Mahindra-Satyam Computer*	*TCS*	*Tech Mahindra*	*Wipro*
Rev.exp in foreign earning	CAGR	33.42	34.98	32.88	32.80	47.20	25.93	14.13	36.93	28.04	62.23	26.93
	SD	7489.51	267.27	75.04	1742.82	141.55	122.85	63.78	1272.42	1573.77	740.65	1148.34
	CV	37.05	34.05	52.59	38.74	54.64	29.84	18.79	43.65	31.10	68.23	29.45
Employee Cost	CAGR	41.12	52.28	23.65	34.85	162.66	30.81	17.26	36.18	71.50	51.31	35
	SD	10425.64	529.63	152.78	2062.43	295.8	216.09	124.63	1323.03	3223.75	393.42	1899.74
	CV	41.39	43.91	28.90	38.34	100.85	34.49	21.99	39.35	54.44	54.74	37.14
S & D Exp	CAGR	33.44	44.60	18.10	23.62	93.29	17.82	0.79	33.88	33.78	38.99	31.56
	SD	2165.45	201.59	39.89	299.44	97.21	51.79	7.11	272.29	342.56	222.82	340.28
	CV	35.52	42.30	21.61	27.53	82.61	21.90	6.51	37.55	34.87	53.70	32.24
Advertisement Exp.	CAGR	NA	120.73	14.20	13.10	NA	-16.08	1.60	3.92	NA	-9.78	26.43
	SD	NA	11.37	1.55	14.3	.005	1.97	1.37	1.94	NA	1.73	33.61
	CV	NA	74.15	35.29	22.39	200	46.39	22.50	37.59	NA	60.39	30.83
R&D Cost	CAGR	NA	NA	NA	71	NA	NA	NA	-19.36	30.16	NA	NA
	SD	NA	8.62	NA	5.66	NA	NA	NA	0.76	16.30	NA	NA
	CV	NA	96.79	NA	113.14	NA	NA	NA	37.22	68.56	NA	NA
Interest Cost	CAGR	78.95	30.27	16.67	0	89.25	NA	0.35	98.45	-30.98	NA	175.76
	SD	59.44	5.50	*1.97*	0	*2.25*	NA	0.125	*3.09*	*3.35*	*5.04*	55.78
	CV	72.69	43.65	29.98	0	*124.92*	NA	19.69	*72.67*	61.60	*119.29*	*168.12*
Total Expenditure	CAGR	38.98	48.87	23.70	32.91	89.92	27.05	13.43	34.81	31.89	58.36	37.14
	SD	17797.68	1070.41	242.27	1187.00	559.81	306.10	126.36	1624.30	3306.27	1190.85	3661.69
	CV	*41.85*	*48.95*	*30.06*	*37.74*	*79.62*	*30.44*	*17.82*	*38.06*	*34.80*	*63.30*	*38.99*
Reported Net Profit	CAGR	33.07	33.34	26.09	32.91	63.86	27.63	-0.50	31.75	35.03	66.09	27.02
	SD	4650.76	320.71	108.78	1187.00	75.44	98.75	27.33	403.21	1173.28	125.85	728.18
	CV	*36.97*	*45.01*	*36.97*	*37.74*	*63.04*	*32.81*	*54.93*	*31.60*	*36.62*	*73.80*	*30.92*
Debt Equity Ratio	CAGR	16.74	-37.0	NA	NA	NA	NA	NA	NA	-100.00	NA	111.79
	SD	0.13	0.01	NA	NA	NA	NA	NA	NA	0.07	0.03	0.08
	CV	*76.19*	*70.71*	NA	NA	NA	NA	NA	NA	*156.61*	*132.66*	*144.65*
ROCE	CAGR	16.90	22.20	4.06	-7.52	32.35	-11.18	-2.31	-0.34	-21.90	35.73	-11.32
	SD	124.43	11.04	1.82	4.57	6.19	3.20	5.41	0.90	25.59	26.11	5.99
	CV	25.96	*45.52*	*11.29*	9.89	*34.51*	*15.39*	*49.30*	2.98	*35.21*	*44.34*	*15.93*

Annexure Table III *: CAGR of financial performance as the sample companies during 2009March to March 2012. (Post-recession period)

Companies / Parameters		*Software Industry Large*	*HCL Tech*	*IGate Computer*	*Infosys*	*MphasiS*	*Oracle Fin.Serv.*	*Polaris Financial*	*Mahindra-Satyam Computer*	*TCS*	*Tech Mahindra*	*Wipro*
Rev.exp in foreign earning	CAGR	7.13	7.97	29.48	18.37	11.26	3.71	NA	-9.83	15.76	*10.25*	15.70
	SD	4465.51	126.13	111.48	2444.13	257.58	112.14	311.80	792.25	2203.96	217.62	2089.14
	CV	10.89	17.67	29.19	24.20	32.84	15.90	68.76	22.65	24.20	12.07	20.51
Employee Cost	CAGR	8.16	26.90	25.13	15.82	49.25	5.87	13.25	-13.83	17.43	16.61	12.77
	SD	3949.81	936.87	231.04	2328.23	468.30	98.77	177.87	1084.97	3400.24	368.80	1954.27
	CV	11.29	33.23	23.30	20.97	42.45	8.94	18.75	26.58	23.84	20.44	18.34
S & D Exp	CAGR	-0.52	16.41	-6.80	11.59	13.45	2.20	20.92	-20.79	12.51	4.02	11.12
	SD	601.11	179.78	19.00	340.84	89.83	14.16	29.53	298.22	373.10	58.60	307.75
	CV	6.41	21.58	8.32	20.04	28.50	4.82	24.41	37.37	20.76	10.90	15.61
Advertisement Exp.	CAGR	NA	13.74	-14.82	7.62	NA	-27.77	NA	-44.27	NA	21.82	22.61
	SD	NA	3.69	1.39	11.39	NA	0.19	4.11	2.04	NA	1.73	60.34
	CV	NA	18.48	26.37	15.71	NA	41.81	116.11	98.80	NA	51.28	24.23
R&D Cost	CAGR	NA	NA	NA	-45.95	NA	NA	NA	NA	44.31	NA	NA
	SD	NA	NA	NA	9.32	0.34	NA	NA	NA	35.63	NA	NA
	CV	NA	NA	NA	61.13	120.48	NA	NA	NA	41.43	NA	NA
Interest Cost	CAGR	25.77	51.29	-34.07	0	31.98	NA	48.19	-34.02	30.14	244.82	45.46
	SD	195.77	36.01	*1.92*	0.5	*3.79*	0.11	0.67	13.89	*5.86*	66.08	*234.20*
	CV	34.82	43.90	41.25	28.37	*108.55*	67.47	85.58	65.30	*43.92*	70.24	*90.22*
Total Expenditure	CAGR	-0.78	21.45	19.14	15.37	30.89	0.22	13.76	-31.34	15.97	12.60	12.95
	SD	6857.53	1364.76	238.48	3525.20	715.84	85.13	241.96	5492.01	4713.81	589.03	3750.31
	CV	*6.61*	*28.72*	*17.82*	*21.47*	*32.53*	*5.50*	*20.44*	*69.92*	*23.35*	*15.58*	*18.41*
Reported Net Profit	CAGR	29.46	25.05	-4.04	13.33	43.52	16.12	19.24	-153.32	32.71	-22.42	16.36
	SD	6997.58	441.31	80.17	1259.91	317.08	208.71	39.41	4180.31	2778.73	215.57	923.00
	CV	*29.88*	*33.93*	*14.16*	*18.99*	*44.03*	*24.85*	*25.53*	*-241.24*	*38.51*	*29.87*	*21.19*
Debt Equity Ratio	CAGR	-19.68	28.56	NA		58.74	NA	NA	-53.58	NA	124.62	-15.91
	SD	0.53	0.06	NA		0.01	NA	.025	0.17	NA	0.22	0.07
	CV	*55.62*	*59.17*	NA		*47.14*	NA	*300*	*135.75*	NA	*65.37*	*25.88*
ROCE	CAGR	-26.82	-1.45	-4.66	0.06	-13.36	-0.12	5.55	NA	12.18	-40.27	0.53
	SD	179.45	6.23	2.33	2.96	10.32	1.73	2.62	13.27	7.64	24.57	2.67
	CV	*39.99*	*22.49*	*11.19*	*7.34*	*24.81*	*7.91*	*11.88*	*200*	*15.62*	*75.08*	*10.97*

* Source : Capitaline Neo, Capital Market Publishers India Pvt. Ltd, Mumbai.

Corporate Growth in Developing Nations through free Trade driven Globalization

T D Obuile

B N Swami

Abstract :

The main objective of this research is to investigate how free trade driven globalization helps or disrupts the corporate bodies in the developing countries. The initial assumption made was that free trade driven globalization is an outright destruction of the corporate bodies of the developing countries which are in developing phase. This hypothesis then lead to embarking of this research to find out whether the corporate bodies of developing countries are benefitted or not; to locate the impact of free trade driven globalization in Southern African Development Community (SADC) and finally pin pointing the effect of free trade driven globalization on Botswana.

Key Words : *Free Trade Driven Globalisation, Corporate Bodies, Free Trade Barriers*

Introduction :

Botswana, a democratic country in Southern Africa is used as a representative of developing countries. A pilot study was taken up using published secondary data to identify the validity of the current subject for further research. After getting encouraging results, self-administered questionnaires were sent to randomly selected corporations which have been overseeing the free international trade and connected regulations. The results from the analysis of primary data cemented that free trade driven globalization is the key to boosting the economy and overall wellbeing of developing countries. It is identified that in this context free trade driven globalization is the answer for corporate growth and thereby for economic growth. The results are generally applicable to all nations and especially for developing nations.

Background information :

The neo-classical economists thought that technology could create solutions that were capable of overcoming of the scarcity of natural resources and thereby there will be a shift from agriculture to industrial activity. Contrary to this view it is noticed that globe is shifting from 'agriculture and industrial production to services' and thereby world has decided to bring down the boundaries and restriction between them in the name of globalization, to work together and promote oneness and cooperation to achieve a mutual goal of seeing each country prosperous in its economic development. Globalization by definition "involves economic integration, the reproduction, relations, and discourses of power. It is a global process, a concept, a revolution, an establishment of the global market free from sociopolitical control" (Al-Rhodan 2006, p.3). Thus globalization is "the process of change towards a global economic integration and a world economy characterized by the liberalization of trade, globalization of capital markets and rapid diffusion of advanced technologies consumption patterns" (John 2004, p.7).

Globalization is increasing the integration of national markets and interdependence of

countries worldwide for a wide range of goods, services and commodities. (United Nations Organization 2008) This spirit of globalization prompted the business of trade to blossom as now tariffs and other barriers to trade were liberalized. This gave rise to free trade amongst countries in an attempt to gain from the free movement of capital, services, infrastructure and even human capital between countries. The hope was to assist developing countries develop at an accelerating rate so as to be able to catch up with the already developed countries. Development entails the technological innovations in transport and communications, access to infrastructure and services that would improve the wellbeing of the country, improved education systems, stable politics that would sustain a growing economy and as well as a self-aware society that is enabled to nurture itself with the given opportunities.

There has been emergence of allies that are propelled by the mandate of being involved in free trade agreements together. A free trade agreement is a preferential arrangement amongst countries in which tariff rates among them are reduced to zero, although different members of the arrangement can and may set external tariff for non- members at different rates (Krueger 1997). Free trade agreements have then sprung to existence and hence policies and regulations have been set up to guard a smooth operation of these.

Problem statement :

Hither to, it is viewed that the developed nations corner the developing nations' corporate bodies through finance, trade, human resources with the ploy of globalization of free trade. The idea of trading between countries is to get involved in an exchange that sees both parties content at the end of the transaction. However regulations give the upper hand to the developed countries like that of the 1999 trade agreement between European Union (EU) and South Africa (SA) and thereby Botswana, Lesotho, Namibia and Swaziland (BLNS) are effectively locked into reciprocal trade liberalization with EU. It is pointed out that there is no economic adjustment but the political acceptance of free trade (Staak & Van 2006). Does the employment of free tariff barriers not expose local corporate sector to tough competition? Based on the above preamble, a few doubts arise in the minds of the scholars such as: Does it benefit the developing countries as much as it does developed countries? Or will the corporate bodies in developing nations end up being forced to confine themselves within their borders so as to grow them, as did the Germans during the World War II which benefited them tremendously as they are now the technological moguls of the world!

Objectives :

The main objectives of this research are:

- To know the contribution of free trade in the development of Botswana corporate sector as a developing country.
- To establish if the globalized free trade offer corporate sustainable growth and the growth of the economy in Southern African Development Community (SADC).
- To find out whether Botswana corporate sector has had sustainable development (in all its forms) ever since the establishment of free trade driven globalization.

Hypothesis :

Despite the good intensions of the free trade driven globalization, super powers may impose restrictions on developing countries' corporate sector which may hinder their development.

Scope of the study :

This research is focused on Botswana during the era 2008-2012 in which it got involved in agreements of free trade. Some information is gathered on other SADC countries (Member states include Botswana, South Africa, Lesotho, Zimbabwe, Swaziland, Namibia, Angola, Mauritius, Mozambique, Zambia, Tanzania and Malawi).

Literature review :

Free trade driven globalization is defined as a process that enables the increasing cross-border interdependence and integration of production and markets for goods, services and capital. This process leads to a widening of the extent and form of international transactions and to a deepening of the interdependence between the actions of economic actors located in one country and those located in others. Free trade ideology leads to nations' exports of a country producing best (Adam Smith 1776), the cost of production will be less (Ricordo 1817) and there exists mutual benefit if the best country produces and supplies to the disadvantaged country (Robbins, 1998). Free international trade requires structural adjustment of the programs of the corporate bodies which leads to development policies in Africa (Manong'a, 2009). This free trade ideology leads to countries getting into agreements with the ideal trade partner and hence setting up free trade agreements between corporate bodies across the border. A free trade agreement is a preferential among countries in which tariff rates among them are reduced to zero, although different members of the agreement can and may set external tariff for non-members (Krueger 1997). Free Trade Agreements (FTA) are designed to liberalize trade between economies as countries seek to open up opportunities for the productive commercial partnership (Tsholo 2006). FTA eliminates not only trade barriers but also leads to trade creation, employment generation and replacing lower cost sources of supply from third world countries (ONCD 2000).

A global agreement between countries that are developing and those that have developed already, like the EU-SA in conjunction with Botswana, Lesotho, Namibia and Swaziland (BLNS) exploit developing countries in a sense that even though the EU_SA and Trade and Development Cooperation Agreement 1999 (TDCA 1999) effectively grant EU free access to the markets of the BLNS countries they don't grant the BLNS countries reciprocal access to the markets of the EU. (Tsholo, 2006).

Literature supports the fact that superpowers do exploit corporate sector of developing countries in the name of trade and globalization (Amuwo 2002 & Edwards 2001). Another reality that needs to be taken into account is geographical economies (Eric 2012), the comparative advantage and competitiveness paradigm in international trade, natural resource endowment by developing countries to developed countries via cheap sales that also indicate unfairness portrayed by superpowers. Some strategies employed by the developed countries is that, they would establish their multinational corporate bodies within developing countries under the claim of bringing employment, but the truth of the matter is that they would come with their own people to hold executive positions while reserving the inferior labor intense positions for the local people. Thus we see the major shareholders within that company still being the foreign population hence the wealth going back to their country. This claim is supported by who claims that, "Multinational corporations cheat

developing countries from so much money that could have helped improve the lives of many citizens by investing it in the healthcare and education system" (http://youcanteatmoney.hubpages.com/hub/Multinational-corporations-are-more-harmful-than-beneficial-to-developing-countries viewed on 20 July 2013)

Some studies argue that with trade liberalization influenced in the democratization of developing countries as regulations forced them to be a peaceful country in order to rip the benefits of free trade. The wave of democratization preceded that of trade liberalization. For instance, in 1982 Bolivia began a democratic transition. Shortly after this, in 1985, the new government launched an economic reform program called the "New Economic Policy," which eliminated all quantitative restrictions (QRs) and lowered tariffs (Milner & Kubota 2005).

Further it is seen by globalization that "the overall picture is of non-resource revenues having been essentially stagnant" (Michael & Mario 2010, p. 553) but it is identified in contrast that trade globalization is associated with a reduction in inequality whereas financial globalization-and foreign direct investment in particular-with an increase in inequality (Florence, Subir & Chris 2013).

The literature review identified three main issues regarding globalization such as fully favorable, positive & negative and fully negative aspects. For instance Radha 2002, Yotam 2012, Peter 2011, Daniel et al. 2011 have seen the positive effects of globalization whereas Wallace 2008, Marian & Alicja 2012, Islam, Mahmudhul & Wahid, 2011, Parisa, Lim & Abdul 2013 could see the positive and negative effects of globalization. Outright the scholars such as Stephen, 2013 & Gal, 2012 could see the fully negative aspects of globalization.

Methodology :

Sampling scheme :

A pilot study was taken up to look into the viability and the validity of the topic for further research. For this purpose, the secondary data from the published documents was analyzed and the findings from such analysis were the basis for further counter check with the outcome of the primary data result analysis. For primary data, the sample population consists of formal organizations which have been put in place to manage the trade matters of Botswana with the regions it is bound with. It includes such corporate bodies that are directly and prone to feel the immediate effect of any changes in the trade agreements of Botswana with other countries.

Period covered :

This research looked at the years between 2008 and 2012. This period takes into account where SADC member states signed a free trade agreement and other regional developments as per the SADC protocol on finance and investment (Murangi, 2006). It also covers the Southern African Customs Union (SACU) whose member states include five (5) countries namely South Africa, Botswana, Lesotho, Swaziland and Namibia when negotiations for a reciprocal trade agreement with the EU, ongoing WTO negotiations and plans to conclude an FTA between SACU and the United States of America (Stern 2005).

Procedure of collecting data :

Data for this research was collected using both secondary and primary data. Secondary data was sourced from the annual reports of Bank of Botswana (central bank of Botswana), statistical bulletins published by Central Statistics Office and other published trade agreements, regulations and restrictions.

The primary data was collected through conducting interviews and self-administered questionnaires. Questionnaires were self-administered at Botswana Investment and Trade Center (BITC), Ministry of Trade and Industry and Botswana Exporters and Manufacturers Association (BEMA), large corporate bodies that deal mostly with trading imports and exports to ensure proper and precise collection of relevant data.

Processing :

The collected data was then analyzed using SPSS, to help translate the data into understandable information.

2.5 Sources of information :

To complete this research, the scholars conducted interviews at organizations in Botswana like Botswana Investment and Trade Centre (BITC) which deal with trade issues in Botswana with other countries. The Ministry of Trade and Industry was also used to source information regarding the impact of free trade driven globalization on corporate growth of the developing countries. Botswana Exporters and Manufacturers Association (BEMA) were useful in narrating a more precise and direct impact of free trade on local corporate bodies.

Analysis Of Data, Discussion And Findings :

Analysis of Data :

Pilot study :

As stated the data from the published documents is taken in particular with the changes in GDP & per capita, employment sector and international trade after 2008, the important period for Botswana when most of the international trade agreements were established and operated. The base year 2007 is taken as a bench mark for a comparative study of the changes in GDP, Per capita and employment in 2008 and after.

Table1: Gross Domestic Product by type of Economic Activity (Current prices) (P Million)

Economic Activity	2007	2008	2009	2010	2011	2012
Agriculture	1505	1887	2071	2717	2636	2963
Mining	19568	19790	10063	22868	25841	21503
Manufacturing	4207	4279	4662	5548	6074	6441
Water & Electricity	752	654	317	394	187	-493
Construction	3544	3727	4495	5056	6247	7471
Trade	5318	6419	7101	8031	9255	9378
Hotels & restaurants	2926	3628	4062	5033	6111	7414
Transport & Tele	2697	3304	3993	4471	5109	6230

Banks & Services	7653	9317	9695	11610	13481	15852
Personal services	3256	3847	4593	5243	5881	6842
Government	8887	10900	12316	13380	14464	16566
Total GDP	60312	67752	63369	84371	95286	100167
Source : Bank of Botswana, Annual Report 2012, p.s-8 (Statistical part C)						

The above data is converted into percentage changes taking 2007 as basis. The same is reproduced here in Table 2:

Table 2: Showing the percentage of changes in Economic Activity compared to base year 2007

Economic Activity	2007	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %
Agriculture	1505	100	125.38	137.61	180.53	175.15	196.88
Mining	19568	100	101.13	51.43	116.86	132.06	109.89
Manufg	4207	100	101.71	110.82	131.88	144.39	153.11
Water & Ele	752	100	86.97	42.15	52.39	24.87	-65.56
Construction	3544	100	105.16	126.83	142.66	176.27	210.81
Trade	5318	100	120.71	133.53	151.02	174.03	176.34
Hotels	2926	100	123.99	138.82	172.01	208.85	253.38
Transt & Tele	2697	100	122.51	148.05	165.78	189.43	230.99
Banks & Serv	7653	100	121.74	126.68	151.71	176.15	207.13
Personal serv	3256	100	118.15	141.06	161.03	180.62	210.14
Government	8887	100	122.65	138.58	150.56	162.75	186.41
Total GDP	60312	100	112.33	105.07	139.89	157.99	166.08

(**Source:** Compiled from Table 1)

Compared to the base year 2007, the year 2012 projected the total gross domestic product is increased by 66.08%. The service sector such as hotels increased by 153.38%, followed by other service sectors such as transport and telecommunication 130.99%, personal services 110.13%, banks and other services by 107.13, government services 86.41%, and trade by 76.34%. Other sectors, other than services sectors such as construction 110.81%, Agriculture 96.88%, manufacturing 53.11%, mining 9.89% and water and electricity has shown a negative growth. The comparative result of the economic activities over the period of globalization has lead to the growth in service sector compared non-service sector. Growth of agriculture sector is comparatively low. In other words, the scholars feel that there is an impact of globalization by shifting the economic activities towards services provision.

Table 3: Total Merchandise Trade 2007-2012 (P Million)

	2007	2008	2009	2010	2011	2012
Imports	24.998	35.723	33.780	38.651	49.957	61.883
Exports	31.713	32.723	24.139	31.822	40.022	45.567
Balance of trade	6.714	-3.001	-9.641	-6.829	-9.935	-16.316

Source: Botswana International Merchandise Trade Statistics- April 2013, p.4

Table 3 highlights the effects of globalization and trade liberalization from exports to imports.

The total exports during the base year were P31.71m where as during the year 2012 exports are P45.57m an increase of 43.7% where as the imports are increased from P24.998m to P61.883 showing an overall increase of imports by 147.55%. Though Table 3 highlights that imports are domination than exports and thereby there is a tendency of increasing the adverse balance of trade. In the short run we may feel that there is no impact on the economic growth but for long run decision making, the scholars are of opinion one should see the overall impact of both exports and imports. Both show growth and hence, we conclude that there is an impact of free trade on developing nations.

Table 4: Number of paid employees by Economic Activity

Economic Activity	2007	2008	2009	2010	2011	2012
Agriculture	5500	5700	6200	6500	6488	NA
Mining	11500	11600	10700	11600	11668	NA
Manufacturing	35600	36700	35800	36500	36549	NA
Water & Electricity	2800	2800	3100	3900	4000	NA
Construction	21800	22000	22700	23200	23298	NA
Trade	44400	45500	47000	47300	64465	NA
Hotels	15000	15700	16800	17100	18624	NA
Transport & Tele	12600	12400	12600	12800	12887	NA
Banks & Services	7300	7500	8200	8500	8800	NA
Other services	32600	33400	35100	35700	36300	NA
Government	11700	122600	159800	175800	203812	NA
Total Employed	306000	315800	357900	378800	426891	NA

(**Source :** Botswana Central Statistics Office, Labor Statistics 2010, Bank of Botswana Annual Report 2012)

By the time this research is finalized, employment statistics for 2012 are not available; hence, 2011 is taken for comparative study. Compared to the base year 2007, the total employment of various sectors of 306 000 employees, year 2011 shown the employment figure as 426891 showing employment is increased by 44.7%. The employment sector also reiterated an increase in service sector compared to other production sector.

Overall the pilot study revealed that there is a shift of economic activities from agriculture and industrial production to services that too during the period of trade liberalization and globalization. Hence, it is worth to have a further study to test the stated hypothesis:

"Despite the good intensions of the free trade driven globalization, super powers may impose restrictions on developing countries' corporate sector which may hinder their sustainable development".

The scholars prepared a simple questionnaire (Appendix C) to secure the answers from the selected corporate bodies in Botswana to identify whether, globalization and free trade has boosted the economy of the country or not.

This part of the research will analyze the responses of the corporate bodies concerning free trade driven trade and its impact on the development of developing countries.

Table 5: Impact of Free Trade and Globalization on Botswana

Sl Variable tested	Favorable		Negative		Doubtful	
	No.	%	No.	%	No	%
(a) Impact of free trade in Botswana	18	90	1	5	1	5
(b) Growth comparative to USA	8	40	10	50	2	10
(c) Free trade on SADC	13	65	3	15	4	20
(d) Free trade on local business growth	14	70	3	15	3	15
(e) Free trade as exploitation	9	45	5	25	6	30
(f) Total responses on impact of free trade	62	310	22	110	16	80
(g) Average responses on impact of free trade	12.4	62.0%	4.4	22.0%	3.2	16.0%

The responses received from the corporate bodies regarding the query whether introduction of free trade in Botswana has benefited Botswana are analyzed and presented in Table 5 (a) above.

Majority of the respondents 18 (90%) stated that there is a significant positive influence, followed by moderate degree and no change one each (5%).

To infer, whether the trade liberalization has boosted the growth level in Botswana compared to USA, the responses received are quantified and presented in Table 5 (b).

Half the respondents 10 (50%) indicated that Botswana's growth rate is less than the USA growth rate and 8 (40%) said it's faster while the remaining 2 (10%) said Botswana is growing at the same rate as the USA.

To judge whether the liberalized trade barriers are working against the SADC countries or not, the responses received are presented in Table 5 (c).

Of the 20 respondents, 13 (65%) said that the liberalized free trade barriers are not working

against the SADC countries, in other words there is a positive impact, 4 (20%) are not sure whereas 3 (15%) said they are working against them.

To examine whether the free trade driven globalization has lead the local markets beneficial or not, the responses are codified and presented in Table 5 (d).

The above analysis reflects that 14 (70%) believe that the free trade driven globalization is a fuel for local businesses to grow while 3 (15%) on negative side and the rest 3 (15%) undecided.

To identify, whether the corporate bodies are exposed to risk of exploitation after post globalization and the responses received from the professionals in the corporate bodies are tabulated in Table 5 (e).

Nine (45%) indicated that in their professional opinion that Botswana is not exploited while in pursuit of liberating trade barriers, while 5 (25%) said there is a possibility of exploitation, 6 (30%) are doubtful.

Out of the total hundred responses received, 62 (62%) responses confirmed that free trade driven globalization is beneficial to Botswana, the developing nation whereas 22 (22%) responses are not favorable and the rest 16 (16%) are doubtful.

Discussion :

Our hypothesis assumed that the free trade driven globalization does not benefit developing countries. According to the data analysis, we could see the contrary. Free trade brings with it benefits to developing country like Botswana. Free trade agreements have benefited Botswana in that they created negotiated solutions to trade related problems (Table 5(e)) and have created negotiated markets for Botswana corporate bodies. They have basically created opportunities for Botswana firms to export to other countries. It is through free trade agreements that it is possible certain commodities that are needed by Botswana to be imported. These agreements also provided information on what is possible for Botswana corporate bodies in terms of trade as well as providing information and knowledge about how to take advantage of these created markets and opportunities.

The research revealed (Table 5c) that the liberalized trade barriers are not working against the SADC countries' development but an association with these super powers actually injects opportunities in the areas of finance, social and technology improvement. The United States of America had engaged in a co-operative trade agreement, the African Growth and Opportunity Act (AGOA) which is an initiative to assist African developing countries. This finding as shown in Table 5 (d) highlighted that local Botswana business market is benefited through the association with the USA. Further Table 5 (e) confirmed that the corporate bodies are not exposed to exploitation and not stripped off of the financial sovereignty due to globalization.

The hypothesis is nullified because corporate bodies of developed countries are not in a mission to sabotage the much desired development of corporate bodies of developing countries. It is identified that the free trade driven globalization is the only tool that will propel the growth of the corporate sector of developing countries in the area of infrastructure and communication development and finally to economic growth of the

developing nations.

Conclusions And Recommendations :

4.1 Conclusion :

The most fundamental argument for corporate growth is through international trade which enables the company to expand the quality of goods and services it secures; reprocess them to suit the local community consumption. Through imports, a country can acquire goods and services that it either cannot produce at home or can produce at home only at a cost that is greater than the cost of obtaining them indirectly by exchanging them for exports it produces. In other words, through trade, a country can obtain goods and services with greater efficiency by specializing in those activities in which the country has a comparative advantage. Every endeavor concerning change has its advantages and its disadvantages.

The downside of free trade goes with the industrialized countries practicing unfair trade practices that are detrimental to the African developing countries. Table 5 (c), the 15% indicated that liberalized trade barriers could see the developed countries treating the developing countries as dumping sites for low quality goods such as motor vehicles therefore condemned the practice of free trade driven globalization. Such behavior can perpetuate the poverty and unmet economic and social problems of the developing countries. This feeling is also reflected by the 25% of respondents (Table 5 (e)) who indicated that Botswana is heading to a point of being stripped off of financial sovereignty in the process of globalization.

The advantages however do outweigh the disadvantages. On the whole Table 5 pinpointed that the corporate sector in Botswana has been experiencing a significant benefit from free trade. Unlike in Peru (Nusta, 2013) where the benefits of free international trade could not reach the Peruvian socio-economic minority, where as in Botswana the new technologies are accessible with which better infrastructure was built for the betterment. Reduced costs of exporting goods and services of Botswana attracted foreign direct investment to Botswana which consequently and without fail will further develop Botswana corporate sector.

4.2 Recommendations :

- Botswana corporate sector should be more active in the trade with developed countries and ensure that it increases exports and reduces imports to reap more from free trade.
- Even though free trade brings in foreign direct investment, Botswana should be more careful as to which corporate bodies invest in Botswana to avoid cases of fly by night corporate bodies coming to destroy Botswana economy.
- Local corporate bodies should take advantage of liberalized trade to explore the outside market and exposure.

The above findings and the suggestions are not only applicable to developing nation such as Botswana but also to developed nation like India. To further strengthen the scholars opinion, it is not out of the way to quote IMF view that Global Trade Liberalization has benefitted "the poorest escape from extreme poverty while also benefiting the industrial countries themselves" (IMF, 2001).

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