RESEARCH
BULLETIN

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

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The CMA professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.

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The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally.

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Foreword

Greetings!!!

It gives me an immense pleasure to present before you the Research Bulletin, Vol.43, No. II, July 2017 issue.

India's strong performance is in part thanks to reforms introduced since 2014. It is now easier to do business in India: administrative requirements have been simplified, bankruptcy laws have been modernized, FDI regulations have been eased, and the Indian states have been given more powers to reform. India has taken important steps to fight against illegal economic activity and promote tax compliance, like advent of GST and demonetization. Though demonetization has wreaked some short-term pain on the economy in its early days but the long-term effects will of course let in important gains.

Thus, reform momentum must be maintained so that India can benefit from more inclusive growth. Progress is needed on many fronts, including making labour laws more flexible, bank recapitalization, pricing of water and energy, easing stringent product market regulations and continuing to improve access to education, to mention just a few.

This volume consists of pragmatic articles on socio-economic issues – corporate risk, performance management, FDI, Financial Literacy, Financial Ratios, CSR, etc. alongwith various blazing issues like IBC 2016, NPA, GST, etc. I am sure the book will provide the requisite insight to the readers on the diverse issues it has covered and will prove to be highly beneficial to the readers by enriching their knowledge base.

I take this opportunity to express my gratitude for esteemed members of the Editorial Board, the eminent contributors and the entire research team of the Institute for their sincere effort to publish this volume in time.

CMA Sanjay Gupta
President &
Chairman - IT & Research Committee
The Institute of Cost Accountants of India

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Editor's Note

Warm Regards!!!

One of the key aspects for any economy to thrive is the presence of a vibrant domestic market. India, the second most populous nation on earth, coupled with its demographic dividend, makes it an essential market to be captured for companies with global aspirations. And if this market has to reach its fullest potential, it needs to be financially empowered—from the top of the pyramid to its very bottom. India at present is at an interesting juncture. The impact of the various initiatives—Digital India, Skill India, Startup India, financial inclusion, etc,—launched to build a resilient and resurgent Indian economy. Furthermore, the Indian economy has seen two positive developments in recent times - Goods and Services Tax (GST) and the introduction of the Insolvency and Bankruptcy Code - 2016, which will prove to be constructive for the Indian economy in the long run. The ease of doing business in India will no doubt improve with the implementation of these initiatives. With all these in place, India is slowly but surely stepping towards becoming an international commercial hub.

This issue highlights some above important issues like FDI, Financial Literacy, Financial Awareness, CSR, IBC 2016, NPA, GST, etc. I feel academicians and professionals would be immensely benefitted by going through this volume of Research Bulletin.

We are extremely happy to convey that our next issue of Research Bulletin, Vol.43, No. III would be published in October, 2017 on the theme *"Advanced Financial Management"*.

Further, it gives me an immense pleasure to inform you that our esteemed Research Bulletin has been enlisted in the UGC (University Grants Commission) approved journal list.

We look forward to constructive feedback from our readers on the articles and overall development of the Research Bulletin. Please mail us at: *research.bulletin@icmai.in*. I express my sincere thanks to all the contributors and reviewers of this important issue and expect our readers get plenty of academic inputs from the articles.

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Contents

AN EMPIRICAL STUDY TO MEASURE THE EFFICIENCY OF INDIAN PHARMACEUTICAL COMPANIES DURING RECESSION PERIOD UTILIZING DATA ENVELOPMENT ANALYSIS

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Arindam Banerjee

Abstract:

The present study has been undertaken to measure the efficiency of the Indian pharmaceutical companies during the period of recent recession. Data envelopment analysis has been utilized in the paper to measure the efficiency. Input oriented variable return to scale approach has been used in this study. Linear program has been formulated to compute the efficiency and super efficiency scores of the different pharmaceutical companies in Indian scenario. The companies have been ranked according to the scores obtained by them during the period of study. A further attempt has been made in the paper to identify the most important independent variable influencing the efficiency score of the pharmaceutical companies during the recession period.

Key Words:

Data Envelopment Analysis, Decision Making Units, Linear Program, Recession, Profitability

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1. Introduction

The Indian pharmaceutical companies occupy a very important position in the global pharmaceutical sector. It is the third largest in terms of volume and thirteenth largest in terms of value (Source: Equity Master). Indian generics occupy about twenty percent of the global exports in terms of volume. The Indian pharmaceutical sector is expected to grow at a rate of 15% per annum between 2015 and 2020. An important characteristic observed in the Indian pharmaceutical sector after recession was to go for more consolidation so as to tide over the wave of globalization and prevent being highly fragmented.

As per National bureau of economic research, recession hit the global arena in the second half of 2007.Recession always have a detrimental effect on any economy as it results in decrease in gross domestic product coupled with lower employment opportunities and industrial production.

In this research paper, the period of our study includes the period of recession. The recession period has been taken from 2007-08 to 2009-10.We have utilized data envelopment analysis as a non-parametric method to measure the efficiency and super efficiency scores of the pharmaceutical companies in India during the period of recession. The sample pharmaceutical companies have been taken for the study from BSE 500, a major index of Bombay Stock Exchange.

2. Literature Review

Efficiency is defined as the ratio between the output and input. Optimum efficiency can be achieved by either maximizing the output (keeping the input constant) or minimizing the inputs (keeping the output constant).The former is known as Output oriented approach while the latter is known as Input oriented approach. Efficiency can easily be calculated if there is one output and one input. But the problem arises if there are more than one outputs or inputs. Data envelopment analysis provides solution to this problem. It is an operation research technique developed by Charnes, Cooper and Rhodes (1978) to measure the efficiency of the Decision making units (DMUs) if there are multiple inputs or outputs. In this paper, two output and four inputs are taken into consideration. Inputs are also known as independent variables and output is known as dependent variable. The details regarding the variables are given in the next section. The Indian pharmaceutical companies are taken as decision making units (DMUs) for this paper.

In the case of multiple inputs and outputs, Charnes et al. (1978) have defined efficiency as ratio between the weighted sum of outputs and weighted sum of inputs. Weights are being assigned on the basis of suitable programming. They basically assumed constant return to scale. Later on Charles, Banker and Cooper (1984) in their paper established the variable return to scale which encompassed both the increasing and decreasing return to scale. Hence to achieve optimum efficiency, data envelopment analysis can resort to input or output oriented approach which can be explained by either constant return to scale or variable return to scale. In this paper input oriented variable return to scale approach has been utilized. Some other literature referred by us while conducting the study has been mentioned in brief below. Memon and Tahir (2011) in their research paper have tried to

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investigate into the efficiency level of the companies related to manufacturing sector in Pakistan. Four inputs related to cost and two output related to profitability have been taken into consideration for the study. It is observed from the study that majority of the companies underperformed under both constant return to scale and variable return of scale.

Bhattacharyya, Lovell and Sahay (1997) in their paper have investigated into the efficiency of the Indian banks through data envelopment analysis. It was revealed from the study that the public sector banks were the best performer in terms of efficiency scores followed by foreign banks and private sector banks respectively.

Feroz, Kim and Raab (2003) in their paper have demonstrated the advantages of using data envelopment analysis over financial ratio analysis to compute the overall efficiency of an entity. The paper provides insights into the disadvantages of using financial ratio as technique to compute the managerial efficiency of a company and emphasizes how DEA can offset the disadvantages of ratio analysis by providing reliable information which can be extremely beneficial for the analyst.

Karimzadeh (2012) have tried to measure the efficiency of the Indian commercial banks utilizing data envelopment analysis. A total of eight banks were taken into consideration for the study comprising of public as well as private sector banks. Efficiency scores were computed for these banks. It was revealed from the analysis that public sector banks were more efficient than the private sector banks among the sample banks taken for the study.

Nandkumar and Singh (2014) in their paper have computed the efficiency scores of 5 public sector banks and 5 private sector banks through data envelopment Analysis. The study revealed that the efficiency of the banks have increased in general due to induction of financial reforms in banking sector. The paper highlights that the private sector banks are better performer than public sector banks. The main reason for lower efficiency of the banks may be attributed, to a marked extent, due to increase in non-performing assets in the banking sector.

Tehrani, Mehragan and Golkani (2012) in their study have utilized data envelopment analysis to explore the relevant model needed to evaluate the financial performance of the 36 private entities in Iranian Scenario. The study revealed that 75 percent of entities were inefficient while the remaining were efficient. The paper also analyzed the weaknesses of different firms.

Tandon and Malhotra (2014) in their article have investigated into the efficiency of the banks in Indian scenario for the period of 2010-12 comprising of public as well as private sector banks including foreign owned banks. The analysis revealed that only 16 percent of the total forty eight banks were efficiently performing. The study also revealed that there was not much significant difference between the technical efficiency of public and private sector banks but there was an ample scope of improvement for foreign banks.

Gayval and Bajaj (2015) in their paper employ the efficient frontier methods of data envelopment analysis and stochastic frontier analysis to estimate efficiency of Indian commercial banks. The results of the

study suggest a moderate consistency between parametric and nonparametric frontier methods in efficiency scores rankings. The study further helps in the identification of best and worst performing banks as well as the correlation between frontier efficiency and accounting based performance measures.

Shukla (2016) in his paper have analyzed the performance of the forty six scheduled commercial banks which included both private and public sector banks in India on the basis of established four financial parameters namely size, growth, profitability, and soundness. The study revealed that public and private sector banks were not very much different in terms of size and growth parameters but significant differences were observed in terms of profitability and soundness of business.

Qamruzzaman and Jianguo (2016) in their paper have identified the financial efficiency level of financial institutions mainly emphasizing on the different banks in Bangladesh from the period of 2011 to 2015. The study revealed that at firm level about 62% banks performing efficiently under constant returns to scale and 75% banks under variable returns to scale in both input and output orientation.

The past work of Banker, Charnes, Cooper (1984) and Anderson and Peterson (1993) have been referred while formulating the linear program to compute the efficiency and super efficiency scores of the pharmaceutical companies.

3. Research Methodology

3.1 Linear Programming for data envelopment Analysis

Data envelopment analysis has been used in this paper to compute the efficiency and super efficiency scores of the different commercial banks. Lingo 13.0 and SPSS 20.0 software has utilized for analysis purpose.

Linear program developed to compute the efficiency and super efficiency scores are as follows:

a) To compute the efficiency score [reference: Banker, Charnes, Cooper (1984)] Min Theta (**Objective Function**)

Subject to the following constraints:

$$\sum_{j=1}^{n} w_j x_i^j \leq \theta x_i^t; i = 1,2,3 \ldots m$$

$$\sum_{j=1}^{n} w_j y_r^j \geq y_r^t; r = 1,2,3 \ldots s$$

$$\sum_{j=1}^{n} w_j = 1;$$

$$w_j \geq 0 \, (j = 1,2,3, \ldots, n);$$

In the above, w_j = weight of jth decision making unit

x_i^j = i^{th} input for j^{th} decision making unit

y_r^j = r^{th} output for j^{th} decision making unit

x_i^t = i^{th} input for t^{th} decision making unit
y_r^t = r^{th} output for t^{th} decision making unit
Theta = use to calculate the efficiency; m= inputs; s= outputs

b) To compute the super efficiency score [Reference: Anderson and Peterson (1993)]

Min θ (**Objective Function**)

Subject to the following constraints:

$$\sum_{j=1}^{n} w_j x_i^j \leq \theta x_i^t; i = 1,2,3 \ldots m$$

$$\sum_{j=1}^{n} w_j y_r^j \geq y_r^t; r = 1,2,3 \ldots s \qquad \sum_{j=1}^{n} w_j = 1;$$

$W_j >= 0$ (j=1, 2, 3, 4.......n), where j is **not equal** to t

Sample linear programming for computing efficiency and super efficiency score is given in Annexure II and III.

3.2 Criteria for appropriate selection of number of Decision Making Units (DMUs)

In this paper the different pharmaceutical companies are taken as separate Decision making units (DMUs).There is a restriction regarding the minimum number of DMUs that should be taken for optimum result. Thumb rule provided by different researchers constitutes the major basis while deciding upon the number of DMUs to be taken.

According to the thumb rule, the minimum number of DMUs to be taken should be the equal or more than one of the followings:

2(number of outputs *number of inputs) [reference: Golany and Roll (1989)] **or**

3(number of outputs +number of inputs) [reference: Bowlin (1998)]

In this paper, we have taken 2 output and 4 inputs.

Hence number of DMUs >= {2(2*4) or 3(2+4)} = {16 or 18}

Thus the minimum number of DMUs is 18. Hence 18 DMUs (pharmaceutical companies) are taken for our study. The list of the pharmaceutical companies taken into consideration for the present study is given in Annexure I.

3.3 Sources of Data

Secondary data of the selected pharmaceutical companies listed in BSE 500 Index are taken into consideration for the study. CMIE Prowess Database software has been utilized to derive the list of pharmaceutical companies. A total of 18 pharmaceutical companies are taken into consideration for the study. The data were collected for the recession period of 2007-08 to 2009-10.

3.4 Variables taken for the Study

I) Output: Dependent Variable

Profitability as an output has been taken into consideration for the present research paper. Profitability has been measured in this paper as

i) Ratio between average EBIT and average Total assets (Return on Assets)

ii) Ratio between average Net profit and average Net Sales (Net Profit Margin Ratio)

Hence, two outputs are taken for the present research study in terms of profitability.

II) Inputs (Independent Variables)

Four (4) variables are taken as inputs for the study. These variables do have an impact on the profitability of the organizations and are related to capital structure decisions. These variables are extracted after a thorough survey of past literatures. They are described briefly below:

i) Total Debt to Total Assets

Total Debt includes borrowings plus current liabilities and provision. The variable basically determines the proportion of debt component in the capital structure of the banks.

Total Debt to Total Assets = Average Total Debt/Average Total Assets

ii) Variability in EBIT

It is measured as the coefficient of variation of earnings before interest and tax (EBIT) in this paper. A high variability in EBIT can be detrimental to the financial performance of the banks.

Variability in EBIT = (Standard Deviation of EBIT/ Average EBIT)

iii) Dividend Payout Ratio

The profit earned by the firm can either be distributed as dividend to the shareholders or retained in the business for future growth and expansion. The proportion of the profit to be distributed as dividend or retained in the business will depend on the dividend policy of the firm.

Where, Dividend payout ratio = Average Dividend/Average Profit after Tax

iv) Size of the Firm:

Size of the firm has been measured in this research paper by:

Logarithm of total sales.

4. Empirical Analysis

As discussed earlier, efficiency is measured as the ratio of the outputs and inputs. We have taken into consideration two (2) output (dependent variable) and four (4) inputs (Independent variables) for our study during the period of recession. It is very necessary that the correlation among the independent variables needs to be checked before we proceed with the data envelopment analysis.

The correlation among the independent variables should be minimum. If the correlation among the independent variables is very high then multi-collinearity problem may exist among the independent variables which may yield incorrect result. The multicollinearity problem is investigated through Correlation Matrix and Variance Inflation Factor (VIF).

4.1 Correlation Matrix

Multicollinearity problem is investigated through Correlation Matrix. The correlation matrix is derived through SPSS 20.0 for the four independent variables i.e. size of the firm (log sales), total debt to total assets, Dividend Payout ratio and variability in EBIT. It is observed from Table 1 that none of the independent variables are having high correlation.

The result of the correlation matrix is given in Table 1.

Table 1: Correlation Matrix

		Log Sales	Total Debt to Total Assets	Dividend Payout Ratio	Variability in EBIT
Correlation	Log Sales	1.000	-.035	-.069	.420
	Total Debt to Total Assets	-.035	1.000	.033	-.023
	Dividend Payout Ratio	-.069	.033	1.000	-.267
	Variability in EBIT	.420	-.023	-.267	1.000

Source: Computed by Author

4.2 Variance Inflation Factor (VIF)

The multicollinearity problem is also investigated through Variance Inflation Factor (VIF) through SPSS 20.0. It is observed from Table 2 that VIF < 2 when it is checked by taking return on assets as dependent variables. The result of Table 2 is given:

Table 2: Variance Inflation Factor (with Return on Assets as Dependent Variable)

Model		Collinearity Statistics	
		Tolerance	VIF
1	Log Sales	.821	1.218
	Total Debt to Total Assets	.998	1.002
	Dividend Payout Ratio	.926	1.080
	Variability in EBIT	.767	1.304

a. Dependent Variable: Return on Assets
Source: Computed by Author

VIF (Variance Inflation factor) of the independent variables are also checked taking net profit margin as dependent variable. It is observed from Table 3 that none of the independent variables are having VIF > 2.The result of Table 3 is given:

Table 3: Variance Inflation Factor (with Net Profit Margin as Dependent Variable)

Model		Collinearity Statistics	
		Tolerance	VIF
1	Log Sales	.821	1.218
	Total Debt to Total Assets	.998	1.002
	Dividend Payout Ratio	.926	1.080
	Variability in EBIT	.767	1.304

a. Dependent Variable: Net profit Margin
Source: Computed by Author

Hence, we can safely assume that multicollinearity problem does not exist among the independent variables and can proceed with the data envelopment Analysis.

4.3 Ranking of the Indian Pharmaceutical Companies

Data envelopment analysis has been utilized to rank the Indian pharmaceutical companies as per their efficiency and super efficiency scores. DEA is basically a non-parametric approach of linear programming. The methodology of computation of the efficiency and super efficiency scores have been provided in Section 3.1. For those companies whose efficiency scores are 1 (100%), the super efficiency score are taken into consideration for providing them with ranks. Sample linear program of Ajanta Pharma is provided in Annexure II (for efficiency score) and Annexure III (for super efficiency score) during the recession period.

The ranking of the Pharmaceutical Companies has been made during the recession period. It has been reflected in Table 4. We observe from the table that Glaxosmithkline Pharmaceuticals with super efficiency score of 2.22988 has been ranked number one company followed by Glenmark Pharmaceuticals Ltd. The result of Table 4 is given:

Table 4: Ranking of the Indian Pharmaceutical Companies (as per their efficiency and super efficiency scores)

	Name of the Company		Efficiency	Super efficiency	Ranking
1	Ajanta Pharma Ltd.	DMU1	1	1.01834	7
2	Apollo Hospitals Enterprise Ltd.	DMU2	0.8471307		13
3	Astrazeneca Pharma India Ltd.	DMU3	1	1.00843	8
4	Aurobindo Pharma Ltd.	DMU4	0.869571		12
5	Cadila Healthcare Ltd.	DMU5	0.8258287		16
6	Cipla Ltd.	DMU6	0.7959566		18
7	Dishman Pharmaceuticals & Chemicals Ltd.	DMU7	0.989366		10
8	Divi'S Laboratories Ltd.	DMU8	1	1.05671	6
9	Dr. Reddy's Laboratories Ltd.	DMU9	0.817696		17
10	Elder Pharmaceuticals Ltd.	DMU10	1	1.17039	3
11	Glaxosmithkline Pharmaceuticals Ltd.	DMU11	1	2.22988	1
12	Glenmark Pharmaceuticals Ltd.	DMU12	1	1.85119	2
13	Ipca Laboratories Ltd.	DMU13	0.838734		15
14	Jubilant Life Sciences Ltd.	DMU14	0.969771		11
15	Jyothy Laboratories Ltd.	DMU15	1	1.08901	5
16	Natco Pharma Ltd.	DMU16	1	1.09891	4
17	Pfizer Ltd.	DMU17	1	1.00174	9
18	Torrent Pharmaceuticals Ltd.	DMU18	0.843314		14

Source: Computed by Author

Top five pharmaceutical companies in Indian scenario during the recession period is derived from Table 4. It is observed from table 5 that GlaxoSmithKline pharmaceuticals Ltd is the

most efficient pharmaceutical company in Indian Scenario followed by Glenmark pharmaceuticals Ltd and Elder pharmaceutical ltd. The result is produced in Table 5:

Table 5: Top five Pharmaceutical Companies during recession period:

	Name of the Company		Efficiency	Super efficiency	Ranking
1	GlaxoSmithKline Pharmaceuticals Ltd	DMU11	1	2.22988	1
2	Glenmark Pharmaceuticals Ltd.	DMU12	1	1.85119	2
3	Elder Pharmaceuticals Ltd.	DMU10	1	1.17039	3
4	Natco Pharma Ltd.	DMU16	1	1.09891	4
5	Jyothy Laboratories Ltd.	DMU15	1	1.08901	5

It has been a further endeavour in this study to investigate into the most important independent variable influencing the efficiency score which has been computed by the linear program developed through data envelopment Analysis.

Regression analysis is run through SPSS 20.0 by taking efficiency score as dependent variable and 4 (four) independent variables (i.e. size of the firm, total debt to total assets, Dividend Payout ratio and variability in EBIT) into consideration. The result of the regression results are shown in the Table 6:

Table 6: Regression Results (taking efficiency score as a dependent variable)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.788	1.092		.721	.484
	Log Sales	.019	.271	.020	.071	.945
	Total Debt to Total Assets	.520	.676	.193	.770	.455
	Dividend Payout Ratio	.548	.583	.245	.939	.365
	Variability in EBIT	-.777	.951	-.234	-.817	.429

The weights are been derived by using the Standardized Coefficients (Beta) from the Regression table (i.e. Table 6). The total of the standardized coefficient (beta) is taken i.e. .020+.193+.245+.234 = .692. The absolute value of the standardized coefficient (beta) is taken into consideration for the study.

The weights of the independent variables are as follows:

1) Size of the Firm: .020/.692*100 = 2.89

2) Total Debt to Total Assets: .193/.692*100 = 27.89

3) Dividend Payout Ratio: .245/.692*100 = 35.40

4) Variability in EBIT: .234/.692*100 = 33.81

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The ranking of the independent variables are per their weights are given in Table 7. It is observed from the Table that Dividend payout ratio is the most important independent variable influencing the efficiency scores of the Indian pharmaceutical companies followed by **variability in EBIT** and **total debt to total assets**. The result of Table 7 is given:

Table 7: Ranking of the independent Variables (as per the regression analysis)

Name of the Independent Variables	Weights (Standardized Beta)	Rank
Size of the Firm	2.89	4
Total Debt to Total Assets	27.89	3
Dividend Payout Ratio	35.40	1
Variability in EBIT	33.81	2

5. Conclusion and Findings

We have utilized data envelopment Analysis as a non-parametric method to rank 18 pharmaceutical companies in Indian Scenario during the period of recession.

A summary of the main findings of my research study is given below:

➢ It is observed from Table 4 that out of 18 pharmaceutical companies, 9 companies (50%) are operating below efficiency and 9 companies (50%) are operating at super efficiency level during the period of recession.

➢ It is also observed from Table 5 that GlaxoSmithKline pharmaceuticals ltd with a super efficiency score of 2.22 has been ranked as the most efficient pharmaceutical company followed by Glenmark Pharmaceuticals Ltd (with super efficiency score of 1.85) and Elder Pharmaceuticals Ltd (with super efficiency score of 1.17) during the period of recession.

➢ It is observed from Table 7 that Dividend Payout Ratio is the most important independent variable influencing the efficiency score followed by variability in EBIT and total debt to total assets. The ranking were based on the standardized coefficient (beta) derived from the regression analysis during the recession period.

The present study attempts to examine the efficiency of the Indian pharmaceutical sector during the recession period utilizing data envelopment analysis. It may be concluded that as 50% of the Indian pharmaceutical companies were performing below the efficiency of 1 hence recession did have an impact on the pharmaceutical company in Indian Scenario. It was found that GlaxoSmithKline Pharmaceuticals Ltd was the most efficient pharmaceutical company in Indian Scenario during the recession period. It is also observed from Table 6 that variability in EBIT is reflecting a negative beta which implies that that with increase in this variable the efficiency score decreases. The recession has a negative impact on the operating environment of the firms hence the variability in EBIT becomes the second important variable influencing the efficiency score (refer Table 7). It is also observed that size of the firm (log sales) is least influencing the efficiency scores of the Indian pharmaceutical companies.

The study reveals that most of the pharmaceutical companies are working below their efficiency level. One of the possible ways to improve their efficiency would be encourage mergers to reap the benefits of economies of scale. It would help to reduce cost and hence increase their profits which will definitely have an impact on their efficiency level. An increased investment in research and development can also be a beneficial strategy so as to achieve higher efficiency level. One of the possible means to increase the investment in research and development could be to involve more private-public partnership in research and development activities. The firms need to be more technological competent with emphasis on process improvement and standardization to remain competitive and also increase their efficiency scores.

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Annexure I:

List of 18 Pharmaceutical Companies taken into consideration for the study

Ajanta Pharma Ltd.	Apollo Hospitals Enterprise Ltd.	Astrazeneca Pharma India Ltd.
Aurobindo Pharma Ltd.	Cadila Healthcare Ltd.	Cipla Ltd.
Dishman Pharmaceuticals & Chemicals Ltd.	Divi'S Laboratories Ltd.	Dr. Reddy'S Laboratories Ltd.
Elder Pharmaceuticals Ltd.	Glaxosmithkline Pharmaceuticals Ltd.	Glenmark Pharmaceuticals Ltd.
Ipca Laboratories Ltd.	Jubilant Life Sciences Ltd.	Jyothy Laboratories Ltd.
Natco Pharma Ltd.	Pfizer Ltd.	Torrent Pharmaceuticals Ltd.

Annexure II:

Linear Program to compute the Efficiency score of Ajanta Pharma

Min = theta;

3.522496*w1+4.168114*w2+3.568245*w3+4.45809*w4+4.26362*w5+4.707087*w6+3.583195*w7+4.027465*w8+4.637806*w9+3.803034*w10+4.265444*w11+4.043631*w12+4.134018*w13+4.386471*w14+3.674147*w15+3.437946*w16+3.912633*w17+4.083095*w18<=3.522496*theta;

0.612574*w1+ 0.374311*w2+ 0.54798*w3+ 0.614182*w4+ 0.45219*w5+ 0.33683*w6+ 0.417012*w7+ 0.179586*w8+ 0.300979*w9+ 0.551913*w10+ 0.609579*w11+ 0.44382*w12+ 0.466292*w13+ 0.602202*w14+ 0.174335*w15+ 0.409787*w16+ 0.527724*w17+ 0.541733*w18<=0.612574*theta;

0.17191*w1+0.372855*w2+0.606417*w3+0.085993*w4+0.250647*w5+0.215261*w6+0.143909*w7+0.149926*w8+0.222494*w9+0.101188*w10+0.643943*w11+0.060374*w12+0.218875*w13+0.087412*w14+0.393*w15+0.11261*w16+0.236525*w17+0.242804*w18<=0.17191*theta;

0.088397*w1+0.234356*w2+0.130357*w3+0.474095*w4+0.254938*w5+0.20853*w6+0.12384*w7+0.072917*w8+0.257595*w9+0.082336*w10+0.0327*w11+0.331008*w12+0.282004*w13+0.188055*w14+0.291784*w15+0.100697*w16+0.296292*w17+0.234374*w18<=0.088397*theta;

0.111945*w1+0.089954*w2+0.320359*w3+0.113398*w4+0.15514*w5+0.14311*w6+0.104984*w7+0.270919*w8+0.104155*w9+0.106721*w10+0.193485*w11+0.141561*w12+0.14847*w13+0.102667*w14+0.161529*w15+0.138978*w16+0.199477*w17+0.146476*w18>=0.111945;

0.06777*w1+0.084149*w2+0.173785*w3+0.109713*w4+0.182641*w5+0.167489*w6+0.193892*w7+0.351149*w8+0.14464*w9+0.091405*w10+0.294233*w11+0.221706*w12+0.108099*w13+0.139107*w14+0.121814*w15+0.158627*w16+0.31587*w17+0.151303*w18>=0.06777;

w1 + w2 + w3 + w4 + w5 + w6 + w7 + w8 + w9 + w10 + w11 + w12 + w13 + w14 + w15 + w16 + w17 +w18=1;

w1 >= 0; w2 >= 0; w3 >= 0; w4 >= 0; w5 >= 0; w6 >= 0; w7 >= 0; w8 >=0; w9 >= 0; w10 >= 0; w11

>=0; w12 >=0; w13 >=0; w14 >=0; w15 >=0; w16>=0; w17>=0; w18>=0;

Annexure III:

Linear Program to compute the Super Efficiency score of Ajanta Pharma (as Efficiency Score =1)

Min = theta;

4.168114*w2+3.568245*w3+4.45809*w4+4.26362*w5+4.707087*w6+3.583195*w7+4.027465*w8+4.637806*w9+3.803034*w10+4.265444*w11+4.043631*w12+4.134018*w13+4.386471*w14+3.674147*w15+3.437946*w16+3.912633*w17+4.083095*w18<=3.522496*theta;

0.374311*w2+ 0.54798*w3+ 0.614182*w4+ 0.45219*w5+ 0.33683*w6+ 0.417012*w7+ 0.179586*w8+ 0.300979*w9+ 0.551913*w10+ 0.609579*w11+ 0.44382*w12+ 0.466292*w13+ 0.602202*w14+ 0.174335*w15+ 0.409787*w16+ 0.527724*w17+ 0.541733*w18<=0.612574*theta;

0.372855*w2+0.606417*w3+0.085993*w4+0.250647*w5+0.215261*w6+0.143909*w7+0.149926*w8+0.222494*w9+0.101188*w10+0.643943*w11+0.060374*w12+0.218875*w13+0.087412*w14+0.393*w15+0.11261*w16+0.236525*w17+0.242804*w18<=0.17191*theta;

0.234356*w2+0.130357*w3+0.474095*w4+0.254938*w5+0.20853*w6+0.12384*w7+0.072917*w8+0.257595*w9+0.082336*w10+0.0327*w11+0.331008*w12+0.282004*w13+0.188055*w14+0.291784*w15+0.100697*w16+0.296292*w17+0.234374*w18<=0.088397*theta;

0.089954*w2+0.320359*w3+0.113398*w4+0.15514*w5+0.14311*w6+0.104984*w7+0.270919*w8+0.104155*w9+0.106721*w10+0.193485*w11+0.141561*w12+0.14847*w13+0.102667*w14+0.161529*w15+0.138978*w16+0.199477*w17+0.146476*w18>=0.111945;
0.084149*w2+0.173785*w3+0.109713*w4+0.182641*w5+0.167489*w6+0.193892*w7+0.351149*w8+0.14464*w9+0.091405*w10+0.294233*w11+0.221706*w12+0.108099*w13+0.139107*w14+0.121814*w15+0.158627*w16+0.31587*w17+0.151303*w18>=0.06777;

w2 + w3 + w4 + w5 + w6 + w7 + w8 + w9 + w10 + w11 + w12 + w13 + w14 + w15+w16+w17+w18=1;

 w2 >= 0; w3 >= 0; w4 >= 0; w5 >= 0; w6 >= 0; w7 >= 0; w8 >=0; w9 >= 0; w10 >= 0; w11 >=0; w12 >=0; w13 >=0; w14 >=0; w15 >=0; w16>=0; w17>=0; w18>=0;

A STUDY ON
MANAGEMENT OF
NON - PERFORMING ASSETS

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Meenu Gupta

Abstract:

NPAs are a key concern for banks in India and are probably the best indicator of health of banking industry. Indian Banks are struggling with $180 billion of stressed assets acting as a hindrance on growth prospects of world's fastest expanding major economy. The money locked up in NPAs will bring down the overall profitability of banks and affecting the lending capacity and thereby the high probability of credit defaults. That is, the strong credit growth is almost synonymous with a healthy operating environment and strong economic growth. Though the Govt. and regulators are paying great attention to India's large and mounting NPAs from exempting companies pursuing acquisition as part of resolution plans under IBC from open offer obligations applied under Indian Takeover Regulations; referring 12 stressed accounts, totaling about 25% of current gross NPAs to IBC; clearing an ordinance to amend Banking Regulation Act, giving thereby powers to RBI to direct banks to resolve bad loans. However, the problem is not yet resolved. The paper seeks to analyse the current Indian Banking crisis in view of rising NPAs while also enlisting the suggestions to stakeholders to its recovery.

Key Words:

NPAs, Stressed Assets, IBC, Banking Regulation Act

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Introduction

The development of banking sector and economic growth are invariably interrelated. Banking sector, through channelizing funds for productive purpose, intermediating flow of funds from surplus to deficit units, appears as a critical financial sector for supporting financial and economic policies of government. Banks ensure employment generation, priority sector lending and mass branch networks, as part of serving social objectives of economy. However, its survival and growth depends, to a large extent, on strict maintenance of asset quality and profitability and in the path of achieving such objectives, a major obstacle to banking sector is prevalence of Non-Performing Assets (NPA). Its essential in view of NPA directing towards facing of credit risk by banks and its efficiency in allocating resources. The net NPAs of banks is at Rs3.2 lakh crore till March'2017 from Rs 2.86 lakh crore a year ago. The paper will analyse the impact of rising NPAs on banking sector and Indian Economy while also studying the NPA resolution mechanism.

Research Objectives

Research is undertaken for following objectives:

i.   To anlayse the trend of NPAs in public and private sector banks.
ii. To study the impact of Bank NPAs on bank profitability and Indian Economy through statistical analysis.
iii. To delve deep into the development of NPA resolution through regulatory measures adopted by RBI and government.
iv. To enlist suggestive measures to mitigate the situation.

I. Indian Banking Sector - A Glance

The globalization era has extended the role of banking sector to not only providing financial resources to needy sectors but also acting as agents of financial intermediation and also as a major player in fulfillment of social agendas of Government. However, year-on-year rise in Non-Performing Assets (NPAs) of banks have impacted not only the banking sector but the economy of nation as a whole. To start with, prevalence of NPAs make banks fix low interest rates on customer deposits and lending advances at high rate of interest, thus, putting a pressure on recycling of funds and further creating problem in getting new buyers. Secondly, all banks are required to maintain capital on risk weighted assets as per Basel norms. A rise in NPAs pressurizes the banks to increase their capital base further. Lastly, rise in NPAs negatively impacts in attracting customers. Rise in NPAs affects the bottom-line of banks which further hinders the returns to be received by customers. Deteriorating profits impacts dividend pay-out by banks and thereby the returns customers are expecting on their deposits.

Before going further, let's clarify what is an NPA.

Non-Performing Asset (NPA):

An asset becomes NPA when it ceases to generate income for the bank. This would mean that an account would be classified as NPA on the basis of record of recovery rather than security charged in favour of bank in respect of such account. Thus, an

account would become NPA if interest charged to that particular borrower is normalized within the prescribed time frame despite the account being fully secured.

Identification of Account as NPA

RBI has laid down the under mentioned criteria for classification of various types of advances as NPA which is based on record of recovery:

i. Term Loan: When Interest and/or installment of principal remain overdue for a period of more than 90 days. As per para 2.1.3, of master circular, an account would be classified as NPA only if interest due and charged during any quarter is not serviced fully within 90 days from end of the quarter.

ii. Overdraft/Cash Credit: If an account remains out of order, it would become NPA. For this purpose, an account would be treated as 'out of order' if:

a) The outstanding balance remains continuously in excess of sanctioned limit/drawing power for 90 days or more, or
b) Even if the outstanding in the account is less than sanctioned limit/drawing power, there are no credits in account continuously for 90 days as on the date of Balance sheet, or
c) Credits in the account are not sufficient to cover interest debited during the same period.

As on 31st March 2017, if any of the above criteria is satisfied, the account would be classified as NPA.

iii. Bills Purchased/ Discounted: If the bill purchased or discounted remains overdue for a period of more than 90 days from its due date.

iv. Agricultural Advances: A Loan granted for

a) Short duration crops will be treated as NPA, if the installment of principal or interest thereon remains overdue for two crop seasons.
b) Long duration crops will be treated as NPA, if the installment of principal or interest thereon remains overdue for one crop season.

v. The amount of liquidity facility remains outstanding for more than 90 days, in respect of a securitization transaction undertaken in terms of guidelines on securitization dated February 1, 2006.

vi. In respect of derivative transactions, the overdue receivables representing positive mark-to-market value of a derivative contract, if these remain unpaid for a period of 90 days from the specified due date for payment.

vii. A credit card account will be treated as NPA, if the minimum amount due, as mentioned in the statement, is not paid fully within 90 days from the payment due date mentioned in the statement.

A strong banking sector is essential for a developing economy, however, problem of NPAs appear as a major obstacle to banks. A high level of NPAs indicates a high degree of credit defaults which, in turn affects the profitability of banks implying a weak financial statement which in turn discourages investors from investing in

banks under consideration. Thus, banks lose out on investments in long run.

Credit growth in Indian Banking Sector was in excess of 22% during the high growth phase of economy from 2002 to 2008. However, slackening in economic growth rate has resulted in both, a lower credit demand as well as a receding appetite on part of banking industry to extend credit. Strong credit growth can be correlated with a healthy operating environment and strong economic growth and this trend by and large leads to healthy and profitable asset creation within the economy and banking sector. However, high growth phases are also when Stressed assets are generated within the banking sector. This is due to excess capacity creation, easy availability of credit, less strict underwriting and easier monitoring during such a phase. This SA accumulation is however masked by strong credit growth. As a result, SAs look very low during this growth phase of the economy.

A period of downturn reverses this trend of low SA levels and asset quality concern increases as the growth in SA outpaces credit growth in banking system and as a result, credit growth is at a low of 5.10% in FY'17 (see Figure 1).

Figure 1: Credit Growth of Scheduled Commercial banks
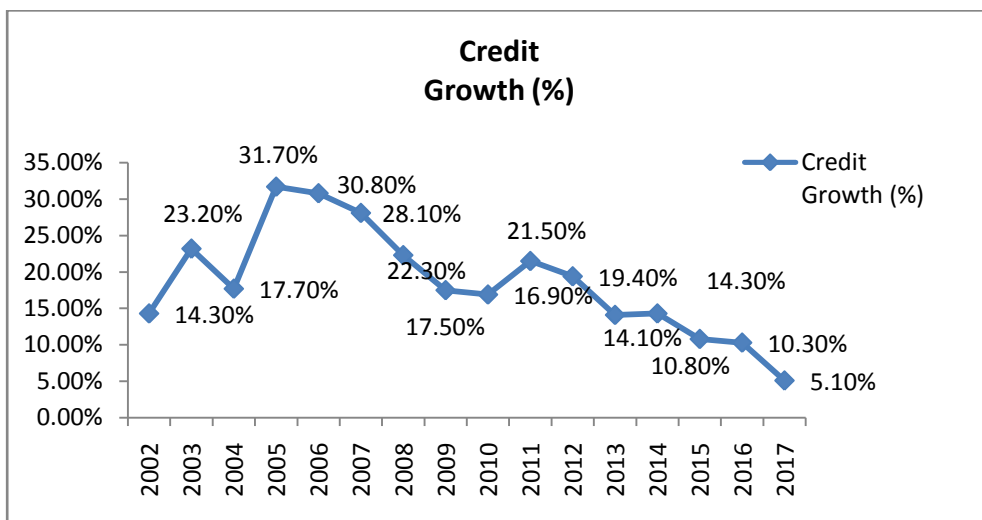
Source: Narnolia Research

Indian Banks are struggling with $180 billion of stressed assets, acting as a hindrance on growth prospects of World's fastest expanding major economy. CARE Ratings have recognized sticky loans of Rs.6.97 lakh crore or 9.3% of total advances until December'16, ie. bad loans have risen 135% from Rs. 2.62 lakh crore in past two years

despite Central Bank announcing major restructuring option to provide lenders the opportunity to revive their businesses in order to prevent further deterioration in asset quality. It is likely as per a report by S&P Global Ratings that stressed assets will increase to 15% of total loans by March'2018 amid rising requirements for regulatory capital until 2019.

Gross NPAs have been growing steadily since the global economic crisis as pressure has come on banks to classify properly. In March 2014, the revealed gross NPA were Rs.2.73 lakh crore, almost Rs.3 lakh crore by March' 2015, and crossed Rs.4 lakh crore by December' 2015.

If we analyze Table 1 above, total Indian Banking Sector assets reached USD1.96 trillion in FY'2015 from USD1.3 trillion in FY'10, with over 70% accounted for by Public Sector. And total lending and deposits have increased at a CAGR of 6% during FY'06-15 and are further poised for growth, backed by demand for housing and personal finance.

Credit off take has been surging ahead over past decade, aided by strong economy growth, rising disposable incomes, increased consumerism and easier access to credit. Demand has grown both for corporate and retail loans, particularly the services; real estate, consumer durables and agriculture allied sectors have led growth in credit.

Table 1: Indian Banking Sector at a Glance

S. No.	Items	Outstanding Amount (in billions)		
		2015-16	2014-15	2013-14
1	**Balance Sheet Operations**			
1.1	Total Liabilities/assets	129589	1,20,342	1,09,759
1.2	Deposits	100927	94,351	85,332
1.3	Borrowings	12835	11,498	11,013
1.4	Loans and advances	78965	73,882	67,352
1.5	Investments	31740	31,695	28,833
1.6	Off-balance sheet exposure (as percentage of on-balance sheet liabilities)	112.8	124.8	122
1.7	Total consolidated international claims	5774	4,053	3,777
2	**Profitability**			
2.1	Net profit	341	891	809
2.2	Return on Asset (RoA) (Per cent)	0.3	0.8	0.8
2.3	Return on Equity (RoE) (Per cent)	3.6	10.4	10.7
2.4	Net Interest Margin (NIM) (Per cent)	2.6	2.6	2.7
3	**Capital Adequacy**			
3.1	Capital to risk weighted assets ratio (CRAR)	13.3	12.9	13
3.2	Tier I capital (as percentage of total capital)	81.2	79.7	77.5
3.3	CRAR (tier I) (Per cent)	10.8	10.3	10.1

4	**Asset Quality**			
4.1	Gross NPAs	6120	3243	2644
4.2	Net NPAs	3498	1,761	1,426
4.3	Gross NPA ratio (Gross NPAs as percentage of gross advances)	7.5	4.3	3.8
4.4	Net NPA ratio (Net NPAs as percentage of net advances)	4.4	2.4	2.1
4.5	Provision Coverage Ratio (Per cent)	41.5	44.2	44.7
4.6	Slippage ratio (Per cent)	6.9	3.2	3.3
5	**Sectoral Deployment of Bank Credit**			
5.1	Gross bank credit	66500	61,023	56,208
5.2	Agriculture	8829	7,659	6,660
5.3	Industry	27307	26,576	25,165
5.4	Services	15411	14,131	13,375
5.5	Personal Loans	13922	11,664	10,097
6	**Technological Development**			
6.1	Total number of credit cards (in million)	25	21	19
6.2	Total number of debit cards (in million)	662	553	394
6.3	Number of ATMs	212061	1,89,279	1,61,750
7	**Customer Services**			
7.1	Total number of complaints received during the year	102894	85,131	76,573
7.2	Total number of complaints addressed	101148	84,660	78,745
7.3	Percentage of complaints addressed	95	96	96
8	**Financial Inclusion**			
8.1	Credit-deposit ratio (Per cent)	78.2	78.3	78.9
8.2	Number of new bank branches opened	6693	8,975	11,315

Deposits grew at a CAGR of 12.03%. During 2006-17, it reached 1.54 trillion by FY'17 (till December'16). Continued government efforts to promote banking technology and expansion in unbanked and non-metropolitan regions has allowed improved access to banking system. Deposits under Pradhan Mantri Jan DhanYojana (PMJDY) have also increased. As on November 9'2016, USD 6971.6 million was deposited, while 255.1 million accounts were opened.

Indian banking sector enjoys healthy Net Interest Margin (NIM) compared with global peers.

However, with growing NPAs, banking sector has reduced lending sharply. Average growth of 18% of bank loan has been experienced during the period 2011-14 which fell to under 12% in 2014-15, stayed at about 10% in 2016 and is now at 5% in 2017. The major reason that could be attributed is the bad loan problem.

The real adverse effect of banking sector crisis is a sharp fall in private investment, especially corporate investment, which has dropped by around 7% of GDP, hurting growth, which, in turn, has further reduced demand for credit.

Falling credit growths has resulted in a drop in investment and, in turn, drop in GDP growth by about 1%. Delays in resolving banking sector problems costs the economy about Rs.1.5 lakh crore a year in lost economic output, in a GDP of around Rs. 150 lakh crore in FY 2016-17. And a delay of five years would cost almost Rs.7.5 lakh crore, in addition to the hole in banking system estimated to be around Rs.12 lakh crore.

II. Analysis of NPA Trend in Indian Banks

The gross non-performing advances (GNPAs) ratio of scheduled commercial banks (SCBs) rose from 9.2% in September 2016 to 9.6%in March'2017, according to the Financial Stability Report released by Reserve Bank of India (Figure 2).The net non-performing advances ratio of SCBs increased marginally from 5.4% in September 2016 to 5.5% in March'2017.

Figure 2: Growth in GNPA (%)
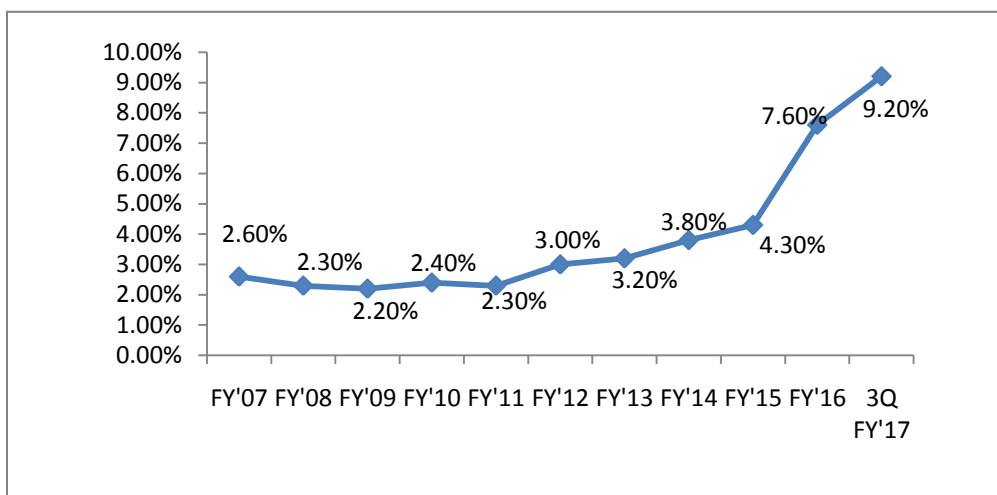
Source: Narnolia Research

Media reports state Gross NPAs of banks stood at Rs.7,14,280 lakh crore as on December' 2016. The reported numbers are quite high, and there are fresh additions every quarter, leading to further deterioration in asset quality.

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Table 2: Trend in Gross NPAs

(in Rs. Lakh crore)

GNPA	FY'11	FY'12	FY'13	FY'14	FY'15	FY'16	3Q FY'17
Private Banks	17905	18,210	20,382	24,184	33,690	55,853	84,409
GNPA %	2.5%	2.1%	1.8%	1.8%	2.1%	2.8%	4.1%
Public Banks	71,047	112,489	164,462	227,264	278,468	539,956	629,871
GNPA%	2.3%	3.2%	3.6%	4.4%	5.0%	9.3%	11.5%
Total GNPA	88,952	130699	184843	251447	312158	595809	714280
GNPA%	2.3%	3.0%	3.2%	3.8%	4.3%	7.6%	9.2%

Despite RBI announcing numerous restructuring schemes, bad loans have risen from Rs.261843cr by 135 % in last two years. They now constitute 11% of gross advances of PSU banks. In all, total NPAs including both public and private sector banks were Rs.697409 cr in dec'16 (compiled by CARE Ratings). In regards to assets quality, the Non-performing assets of SCBs have increased by 5 times in just 5 years.

Five banks reported gross NPA ratios of over 15%. IOB's gross NPA ratio reads 22.42%, which means Rs.22.42 out of 100 lent by bank can be classified as bad loan. Similarly, UCO bank reported NPA ratio of 17.18%, United Bank of India (UBI) read

15.98%, IDBI bank read 15.16% and Bank of Maharashtra read 15.08%.

Gross NPA to total Advances grew to 8% in March'17 from 4% in March'13. However, the stressed advances ratio declined marginally from 12.3% to 12.0% due to fall in restructured standard advances.

Considering the high level of NPAs surrounding the Public Sector Banks, an analysis is undertaken to study whether the high amounts of NPA have been impacting the profitability of banks and for this Return on Assets (ROAs) of 10 public banks with high NPAs for FY 2016-17 have been listed to study their relation with their Gross Non-Performing Assets (GNPA) Ratio.

Table 3: Correlation & Regression Analysis

S. No	Public Sector Banks	ROA (x)	GNPA (y)	x^2	y^2	(xy)
1.	Indian Overseas Bank	(1.21)%	22.39%	1.464	501.31	(27.09)
2.	Uco Bank	(0.75)%	17.12%	0.562	293.09	(12.84)
3.	Dena Bank	(0.67)%	16.27%	0.448	264.71	(10.90)
4.	Bank of Maharashtra	(0.86)%	16.93%	0.739	286.62	(14.55)
5.	Bank of Baroda	0.82%	10.46%	0.672	109.41	8.57
6.	Bank of India	(0.24)%	13.22%	0.057	174.76	(3.172)
7.	Punjab National Bank	0.19%	12.53%	0.036	157.00	2.380
8.	Central Bank of India	(0.80)%	17.81%	0.64	317.19	(14.24)

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9.	United Bank	0.16%	15.53%	0.0256	241.18	2.48
10.	IDBI Bank	(1.37)%	7.77%	1.8769	60.37	(10.644)
	Total	**-4.73**	**150.03**	**6.5205**	**2405.64**	**-80.006**

Source: Websites of Individual Banks

Regression Analysis has been conducted applying following formula:

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[N\Sigma x^2 - (\Sigma x)^2][N\Sigma y^2 - (\Sigma y)^2]}}$$

Putting the values in equation, R= - 0.1722, R^2 = 0.029, (assuming 0.05% significant level) t= 1.05.

There is a high degree of negative correlation between GNPA Ratio with ROA (- 0.1722) and as shown in above figures. An inverse relationship clearly defines that if non-performing assets are controlled, it increases the profitability. Therefore, it is evidently proved that NPAs has an inverse impact on ROA or profitability of banks that means the bank can have an increasing trend of ROA by the effect of the declining trend of GNPAs and NNPAs ratios. The above analysis would help in improving the quality of assets of banks. In turn, the requirement for provisioning would automatically come down and it will directly add to the profit of banks.

Banks are struggling to make up for their losses. Though agricultural loan waiver goes a long way in helping poor and marginal farmers facing crop failure due to insufficient monsoon or a natural calamity, it still comes with a cost. Whenever, there is a loan write-off, be it for loans taken by a willful defaulter like Mallya or for selectively needy farmers, the nation's taxpayers bear the cost. Such defaults and waive-offs add to woes of banks, which are already struggling with their bad debts or NPAs.

NPAs across banks are as much a problem of future as they are a mistake of past. Writing off a loan as a loss shrinks bank's capital. Under regulatory guidelines, banks must achieve a Capital-to-Risk Asset Ratio (CRAR) of 8%. Since NPAs impacts bank's capital negatively, its ability to issue fresh credit reduces significantly. With more than 90% of commercial credit in India being facilitated by banks, NPAs thus creates a deep decelerating impact on industrial growth.

III. NPA Management

The slowdown in credit can be attributed to mounting NPAs in books of banks. Reserve Bank of India (RBI), the regulator has announced various resolution mechanisms from giving instructions to banks to find loopholes in due diligence procedure, mandating regular forensic audit to identify the intention of key management persons in decision making or

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enhancing the scope of regulations around "willful defaulters" and further, allowing banks to take equity control for companies failing to repay.

It has launched Indradhanush Programme in 2015 that pegged the recapitalization required at Rs.1.8 lakh crore where it announced infusion of Rs.70,000 crore over a span of 4 years from budgetary allocations.

Table 4: Recovery of NPA Cases

Year	Recovery Channel	LokAdalats	DRTs	SARFAESI Act	Total
2014-15	No. of Cases Referred	2958313	22004	175355	3155672
	Amount Involved	310	604	1568	2482
	Amount Recovered	10	42	256	308
2015-16	No. of Cases Referred	4456634	24537	173582	4654753
	Amount Involved	720	693	801	2214
	Amount Recovered	32	64	132	228

Source: Report on Trend & Progress of Banking in India 2015-16, RBI

Banks have been making all efforts to reduce their non-performing assets through various legal channels like resolutions through LokAdalats, Debt Recovery Tribunals (DRTs) and invocation of SARFAESI. However, the amount recovered by all SCBs during 2015-16 reduced to Rs.227.68 billion as against Rs.307.92 billion during the previous year (Table 4). PSBs, which are burdened with a high proportion of banking sector's NPAs, could recover only Rs.197.57 billion as against Rs.278.49 billion during the previous year. The deceleration in recovery was mainly due to a reduction in recovery through the SARFAESI channel by 52 per cent from Rs.256 billion in 2014-15 to` Rs.131.79 billion in 2015-16.

1. Insolvency & Bankruptcy Code'2016

Indian banks and companies have filed claims worth Rs.4089 crore in past three months under IBC Code'16 which seeks to ensure time-bound settlement of insolvency. 41 cases were required for insolvency resolution with NCLT, the

adjudicating body under the new Code between December and February'17.

The IBC Code provides a market-determined time bound mechanism for orderly resolution of insolvency wherever possible and ease of exit, wherever required. Further, the code provides an ecosystem which helps the creditors in resolution of insolvency. The code differs in how the other recovery option ensures reducing NPA level in the way that code is market-driven where stakeholders, namely the creditors, take the call. Commercial aspects have been segregated from adjudicating the aspects. The authorities don't examine resolution plans on merits; it is time-bound (180 days); and professional help is available to assist the stakeholders.

In 2015, banks have been allowed by RBI to take management control of defaulting company by converting their loans into equity through Strategic Debt Restructuring (SDR). In 2016, the scheme for sustainable structuring of stressed assets, also involving

conversion of loans into equity was announced. But both these schemes failed to take off, this restating all hopes of Fast Track Corporate Insolvency Resolution on new code. However, adoption by banks has been slow so far because as creditors they want to look at all options before filing for insolvency. Also, a case registered under the Code requires a turnaround plan for business, failure of which could result in liquidation of company in 180 days.

2. An estimated $90 billion as new capital has been estimated to be required by Indian banks by 2019 to meet Basel III norms and ongoing business needs. Assets quality problems have put pressure on bank profitability. A bad bank might provide a way around some of problems that have led Indian Banks to favour re-financing over resolving stressed loans. For example, large corporates often have debt spread across a number of banks, making resolution difficult to coordinate. The process would be simplified if debt of single entity were transferred to one bad bank.

3. Banking Regulation (Amendment) Act, 1949

The Union Cabinet cleared an Ordinance to amend the Banking Regulation Act which will empower RBI to give directions to banks to effectively resolve NPAs.

Under RBI, a loan becomes non-performing if interest or installment of principal remains overdue for more than 90 days. Under the Ordinance, it was clarified that default will be considered as per bankruptcy laws which means if payment is needed; it turns into a default the next day. Further, this new Ordinance is expected to improve

transparency and provide higher assurance when dealing with bad loans.

Neither, strategic debt restructuring scheme nor scheme for sustainable structuring of stressed assets of the RBI have had desired effect. Despite the risk of higher provisioning, banks were not willing to undertake deep surgery or offer higher discounting on stressed assets. Further, the RBI Guidelines on Sale of Stressed Assets issued in September 2016 also did not have the desired impact.

The promulgation of Banking Regulation (Amendment)Ordinance, 2017 inserting two new Sections (viz. 35AA and 35AB) after Section 35A of Banking Regulation Act, 1949 enables the Union Government to authorize RBI to direct banking companies to resolve specific stressed assets by initiating insolvency resolution process, where required. It has also been empowered to issue other directions for resolution, and appoint or approve for appointment, authorities or committees to advise banking companies for stressed asset resolution.

Loan recovery proceedings can be initiated by banks without waiting for the account to be classified as 'NPA' due to the amendment allowing for faster resolution of bad debt. That is, if there is a case where lenders are of opinion that they need to look at other measures including change of management, to recover their arrears from a defaulting company, they can now go ahead without waiting for 90-day period to end before initiating resolution process.

Due to fear of investigation at a later stage, PSUs are reluctant in taking decision with respect to NPA resolution, however, now the committees formed by RBI to advise

banks on resolution of stressed assets would expedite the decision process in PSU Banks and help in resolution of NPAs.

The amendment would also allow RBI to focus on top 100 accounts out of total stressed assets which account for significant chunk of NPAs and thus initiate resolution process under the Bankruptcy code, thereby fast-tracking the recovery process. Amendment further provides that RBI may specify one or more authorities or committees with such members as it may appoint or approve for appointment to advise banking companies on resolution of stressed assets.

The ordinance is aimed at solving two problems:

i. IBC has already been implemented as a law and any banker is free to trigger it if there has-been a corporate default. We speculate that bankers on their own may come under pressure if they try to initiate an insolvency resolution process under the IBC against politically connected corporate defaulters. Perhaps the amendment aims to address this problem.

If an honest banker wants to initiate a resolution process against a corporate defaulter under IBC, but is under political pressure not to, he can turn to RBI. RBI can issue a direction to relevant bank to trigger IBC. If RBI comes under political pressure, it can turn to government which will authorize RBI to issue such directions.

ii. If a banker wants to take tough decisions during resolution process or choose a specific restructuring plan, but is afraid of investigative agencies, then RBI can give regulatory cover to banker by issuing specific directions under this section, requiring the banker to take restructuring decision. The government does not have any role here. RBI on its own can issue directions to banks for resolution of stressed assets. Effectively, RBI's direction will give plausible deniability to the banker, using which he can subsequently justify his conduct and be free of the fear of investigation and prosecution.

iii. Where banks act to resolve stressed situations on advice of committee constituted by RBI, for instance, making available further working capital to revive the business of a defaulting borrower, collateral sales to an identified bidder at discount to book, higher moratorium periods, haircuts, etc such decisions could present banks with the ability to run through decisions past the committee, thereby creating a safe decision making environment.

The Ordinance looks to give sweeping powers to RBI in stressed asset situations, and replace judgment/decision making of bank management, with that of its own. If implemented efficiently, it will ensure faster resolution of stressed situations through joint action; banks will be more willing to utilize the Bankruptcy Code; decision will be on merits rather than concerns on bank profitability in short term.

How Effective are NPA Resolution Mechanism

Banks have just filed 10 cases, out of more than 1000 cases, at the end of first week of June'17 under IBC as they have been subdued because of lack of collective decision-making and also due to fears of

vigilance inquiry if they decide to take a haircut on debt.

The Internal Advisory Committee of RBI recommended referring to Insolvency and Bankruptcy Court all accounts with total outstanding loans greater than Rs.5,000 crore with at least 3/4th (60%) classified as NPA by banks as on March 31'2016 as per the Banking Ordinance Act. For other bad loans that don't fall in this category, banks will have 6 months to come up with a resolution plan, failing which they would also land up in bankruptcy courts.

After a week of announcement of Internal Advisory Committee, banks have been asked to set aside 50% of loan value as provisions on cases that are referred to NCLT and the provision will increase to 100% if company goes for liquidation. However, this RBI provisioning may pressurise banks to opt for deeper haircuts or sell loans to ARCs at a discount instead of opting for insolvency route. That is, if an insolvency case gets admitted to NCLT, banks have to set aside 50% of loan upfront, while earlier it was felt that bankruptcy route was a blessing for banks to reduce the NPA burden, its now turning out to be a curse. Banks may defer to go to NCLT but this may not stop the corporate debtors or operational creditors to exercise insolvency and in turn, involuntarily bring the banks within the IBC ambit. It is estimated that banks would need an additional 40,000 crore as bad loan provisioning for 12 large cases being referred to NCLT.

The RBI directive has come as a shock to banks who were hoping forceless stringent norms and who viewed the IBC, the newly enacted law as some sort of a magic wand to get defaulters to pay up or lose control of

their crown jewels. A lot has changed with new provisioning mandate. Lenders who earlier thought of using IBC as a better way of resolving loans will not only rethink their strategy due to fear of higher provisions eroding their profits, but also drive them to raise more capital, which is scarce especially when the owner-the government- is not inclined to provide it.

It is estimated that banks will have to set aside close to Rs.50,000 crore this fiscal year alone, leading to huge losses, and in some cases, it could trigger prompt corrective action (PCA) where RBI restricts banking activities of banks when financials deteriorate substantially. Already six banks have been placed under PCA as they lost money for two straight years and bad loans crossed the 10% threshold.

Bankers believe they may end up becoming worse off than before due to provisions. As it has been the past, banks have chosen an easier path of making lesser provision rather than taking a holistic view in restructuring a loan since that would require higher write-off. For instance, large number of loans were recast under the Corporate Debt Restructuring, since it required just 5% provisioning. The moment it was raised to 15%, the incentive dried up.

Resolution of bad loans under IBC will be limited because of strict timelines for resolution which may force some companies into liquidation and increases bank's capital requirement. High provisioning for banks will negatively affect bank's profitability over the next year if they need to take large write-downs relative to their existing loan-loss reserves for those assets. This will also accentuate capital needs of weaker PSBs,

which may require large capital infusion from Indian Government.

However, if we the other side of coin, the RBI has addressed the reluctance of banks to further mark down the asset values of these NPAs by having an oversight committee to provide guidance. Additionally, it sends a strong signal to borrowers to adhere to credit discipline, and also encourages banks to break resolution deadlocks with definite timelines. Now, it doesn't matter who goes to NCLT, banks will have to bear 50% and then 100% provisioning cost. This will force PSU banks to become far more realistic and settle for greater haircuts upfront in restructuring schemes. Hopefully, most banks will now behave in an economically rational manner.

According to RBI, banks will need capital infusion of Rs.48,000 crore in current financial year. This is nearly five times the Rs.10,000 crore allocated by government. As per Rating

Agency, Moody, 11 PSU banks will require external equity capital of Rs70,000-95,000 crore to meet Basel III capital adequacy required, much higher than government's budget of Rs.20,000 crore for capital infusion till 2018-19.

IV. Suggestions to Stakeholders

RBI and regulators are paying urgent attention to India's large and mounting NPAs. So, why it is that the recent regulatory changes have not resolved an NPA yet.

i. Majority of businesses remain under control of their founding promoters and their ongoing involvement is key for business continuity and turnaround of distressed assets as they closely control key aspects of a business such as relationships with employees, suppliers, customers, and regulators. As a result, it becomes critical that promoters should agree to and be involved in, any NPA resolution process. However, the RBI or IBC doesn't regulate promoters and other stakeholders and cannot force resolutions onto them. It is therefore critical that Insolvency Professionals under the Insolvency and Bankruptcy Board of India (IBBI) must be allowed to be independent to prevent promoters or other stakeholders from manipulating resolution process as is essential to the IBA's successful implementation.

ii. Regulatory changes also don't address gaps in institutional framework within which the NPAs will have to be resolved, ie. The NCLT, the adjudicating authority for corporate insolvency cases under IBC and in charge of managing debtor company, while being accountable to creditors and to NCLT.

The capacity of NCLT needs to expand significantly for it to handle present and past backlogs in a timely manner.

iii. Insolvency and Bankruptcy Board of India (IBBI) needs to quickly develop a well-defined process to select most qualified Insolvency Professional and consider their quality and independence for IBAs successful implementation.

iv. Government of India will require immense political will to allow bankers to take the necessary haircuts, without the fear that their decision will be investigated in future. The tight resolution timelines envisaged under IBC, cannot be achieved if

bankers don't have commercial flexibility and autonomy to make different decisions while minimizing corruption risks.

Conclusion

While the regulator and bankers are leaving no stone unturned to deal with NPA issue, however, analysis of the current banking crisis, require Indian needs to develop a track record for resolving bad loans in a timely transparent manner only by keeping in mind all what is necessary for that to happen can the value of distressed assets be maximized and capital and other productive resources get redeployed efficiently. The road to recovery is long and winding. But stakeholders are cautiously optimistic that the NPA situation will improve albeit at a slow pace.

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FINANCIAL AWARENESS AND ITS IMPACT ON INVESTMENT DECISIONS BY INDIVIDUAL – PROFESSIONALS IN NCR REGION

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Abstract:

A well functioning financial sector facilitates efficient intermediation of financial resources in economy. More efficient the financial sector for generating financial resources, greater is its contribution to the economic growth. Post liberalization, there was spurt in economic activity and decisions were taken to boost the economic growth. Demand for regulated capital markets was realized for industrial and infrastructural growth. Apart from raising requisite funds from the foreign markets, the need of raising funds from domestic sources was also tapped. In order to raise long term capital requirements from Institutional investors as well as from retail investors, Governments recognized the need for providing appropriate atmosphere, a regulated market, new investment opportunities and diversified financial products. In 1992, to regulate the capital markets the Controller of Capital issues (CCI) was replaced Securities Exchange Board of India (SEBI) with the objective of protecting investors investing in capital markets. Well regulated capital market was needed to encourage investment by large pool of household sector.

Therefore, this study aims to examine the level of financial awareness among the retail investors and comparing it with their perceived level of financial literacy. This retail investor sample includes the Individual-Professionals of Delhi-NCR Region and further

study elaborates the impact of financial awareness on the investment portfolio selected by them and their borrowing behavior.

Key Words:

Financial Awareness, Financial Behavior, Investment Portfolio

Introduction

A well functioning financial sector facilitates efficient intermediation of financial resources in economy. More efficient the financial sector for generating financial resources and its allocation greater is its contribution to the economic growth. Post liberalization, Governments recognized that there was need for providing the appropriate atmosphere, a regulated market, new investment opportunities, diversified financial products and so on as to raise long term capital requirements from Institutional investors as well as from retail investors.

In the last three decades, the number of investment options for retail investors have increased many fold along with the risk associated with them. Aggressive participation by individual investors in capital markets both directly and indirectly has been observed. After opening up of other sectors like insurance, number of options available to individuals for managing risk and return has increased. With increased competition and aggressive marketing efforts by private players, number of wrong selling products was reported in the recent past. Lack of understanding of basic financial principles and application of financial sense by individuals has cost them dearly to make wrong choices.

Retail investors are presumed to be financially literate with basic understanding of economy, banking and finance which in turn affect their returns and the risk associated with their investments in capital markets and new investment products. Traditionally, there were few simple investment opportunities available like fixed deposits, national savings certificates, life insurance policies etc. Over the period of time options for investment by retail investors has increased with increased number of products with innovative structuring like mortgage backed securities, more regulated financial markets and increased financial literacy.

Investopedia describes Financial Literacy as "The possession of knowledge and understanding of financial matters. Financial literacy is mainly used in connection with personal finance matters. Financial literacy often entails the knowledge of properly making decisions pertaining to certain personal finance areas like real estate, insurance, investing, saving (especially for college), tax planning and retirement. It also involves intimate knowledge of financial concepts like compound interest financial planning, the mechanics of a credit card, advantageous savings methods, consumer rights, time value of money etc."

Financial literacy is defined as "Knowledge and understanding of financial concepts, and

the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life." (OECD, 2013)

Investment in these new generation products like equity stocks, various classes of mutual funds, exchange traded funds, pension products, insurance, derivatives etc. requires good level of understanding of finance. The new age generations of professionals with different backgrounds are expected to be aware of the risk –return profile of these instruments. Most importantly their investment behavior depends on the level of basic financial knowledge and their perception of having that financial knowledge.

Therefore this study aims to examine the level of financial awareness among the retail investors and comparing it with their self-perceived level of financial knowledge. This retail investor sample includes the Individual-Professionals of Delhi-NCR Region. The study, further, elaborates the impact of financial literacy on the investment portfolio selected by them and their borrowing behavior.

The main objectives of the study are:

1. To examine the relationship between various demographic factors and the actual and perceived level of financial awareness;
2. To study the impact of actual financial awareness score and self perceived financial knowledge on the investment preferences of individual Professionals;
3. To examine the relationship between actual financial awareness score and self perceived financial knowledge.

Literature Review

Many studies have been conducted across the world to identify the level of financial knowledge and financial behavior. Most of these studies were conducted among high school and college students to know the level of understanding of basic financial concepts

In past few decades, researchers have been trying to find the effect of demographic factors on individual investment decisions. Most of this research considers age, gender, income level, marital status, profession, education, and financial knowledge as the factors affecting individual's portfolio and investment behavior. Number of studies has been done to understand factors affecting investment decisions of retail investors and household investors. Study by Geetha and Ramesh (2011) was conducted to find investor's behavior about investment preferences. Lack of awareness and lack of knowledge about the securities were affecting their investment portfolios to traditional products. The analysis is done on the basis of qualification; nature of profession, level of income etc. Random sample was collected from small town to reach at results.

Samudra and Burghate (2012) in their research tried to know the objectives of investment and preferred instruments by middle class households. In their study they identified the preference of bank deposits followed by insurance by middle class investors in Nagpur. The third preference is given to PPF, post office savings and the

factors affecting investment decision was the rate of return. The study also found that the investment choice was affected by age and income.

The ANZ survey of Adult financial literacy in Australia (2013) surveyed 3400 randomly selected adults in Australia. The study included financial attitudes to determine person's financial literacy. The finding highlighted their attitude towards savings, use and understanding of credit, financial control, investing and superannuation, finance information and advice, use of digital, insurance etc. The survey was done by means of telephonic interview. For every component, regression analysis was applied to compute personal and household scores for results. Challenges were found with certain groups with lower incomes, lower education and working at lower levels.

Sam Allgood and William B. Walsad (2013) in their paper related actual financial literacy with perceived financial overall financial literacy. A survey was conducted on large sample size of more than 28000 respondents on five areas related to their behavior on credit cards, investments, loans, insurance, and financial advice. Questions were tested on correct or incorrect answers in traditional way to measure the level of financial literacy. In the second part self assessment question was asked for subjective judgment on their perceived financial knowledge. Researchers used both actual test score and perceived financial knowledge score to analyze their impact on financial behaviors. The results show perceived financial literacy affects their financial behavior more than their actual financial literacy.

Lusardi and Mitchell in their paper "the economic importance of financial literacy:

Theory and Evidence" (2014) highlighted the need to invest in financial knowledge. The objectives of the paper included the assessment of preparedness and financial knowledge of the households to take complex decisions in changing economic and financial environment with introduction of new products in retail financial market. Student's loans, mortgages, credit cards, pension accounts, and annuities etc. have been difficult products to understand by unsophisticated households. The paper determines the literacy on three parameters, viz. understanding the i) application of interest rates ii) inflation and iii) risk diversification. In subsequent studies more questions were added on concepts like mortgages, asset pricing to determine the additional gaps.

There have been studies to indicate the relationship between financial literacy and participation in capital markets. Punneet Bhushan (2014) analyzed that whether the financial literacy level of individuals affects their choice of the financial products or not. The objective of the study was to analyze the awareness of salaried individuals in the terms of financial literacy, which in turn guides them to choose among the different investment preferences selected by them. The study was conducted in state of Himachal Pradesh with sample size of 500 respondents. The study concluded that the respondents with low financial literacy are still investing their money in the traditional financial products which offer low return as compared to new age financial products.

Kashif Arif (2015) analyzed the impact of financial literacy and other factors on the investment decisions of individual investors in Karachi Stock Exchange in Pakistan. Besides financial literacy, being the most

prominent factor there are several other factors which influence investment decisions of Individual Investor. The study was conducted in Pakistan with sample size of 154 respondents. Annova was used to determine the significant difference in the financial literacy among the respondents regarding age, gender, employment status, education and the work activity. A significant difference in the financial literacy was found among the respondents regarding age, gender, and marital status. The study proves that the higher literacy was found with higher age group. Males were found to be more financially aware. Married found to be more participative in investment decisions. Respondents from banking tend to be more financially literate than individuals working in other fields.

Many studies have been conducted on the impact of financial literacy on the savings of individuals (Mahdzan, N.S., Tabiani, S.- 2013). The study was done on Malaysian individuals on the questionnaire designed based on Lusardi (2008). Methodology included was the same used by Lusarsdi to segregate respondents to two groups based on their scores. The hypothesis assumed positive relation between financial literacy level and individual savings. Results shows regularity of doing the savings leads to higher literacy levels. Relationship between gender, number of children, income and probability of having positive savings is significant at 01 significance level.

Research Methodology

Primary data by way of questionnaire was used to capture the actual and perceived of financial literacy by the 116 professionals in Delhi NCR region. The primary data collection method was aimed to examine the awareness of Individual-Professionals in terms of their understanding of basic financial variables like rate of return, safety of principal and return etc. affecting their investment decisions. The Schedule cum Questionnaire method was used followed by structured interview to authenticate the results thereof.

Sample survey by way of questionnaire was conducted from professionals working in NCR. Efforts were made to include representation of all the categories as far as possible to get fair results. Questionnaire included five segments consisting of (a) Demographic variable (b) Basic questionnaire on general financial awareness (c) Self Perceived level of financial knowledge (d) Preference of financial products and (e) Other factors affecting individual investment portfolio.

Questionnaire was designed keeping in mind the basic level of financial awareness by investors on general topics of banking, investment products, financial markets, credit, risk and insurance. These questions were designed in consultation with various groups of experts from academia and practitioners in investment industry. The questionnaire was expected to fulfill the objective of this study to cover the level of actual and perceived financial literacy and its effect on investment preferences. The questionnaire designed was based on widely accepted norms of financial literacy, which include general behavior, attitude and awareness, of professionals. Efforts have been made to keep the questions simple for understanding by all participants irrespective of their educational or working background.

The questionnaire includes 29 questions to check the general financial awareness

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The Institute of Cost Accountants of India

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amongst respondents. The average median score was 18.30, which was taken as benchmark to segregate the sample into two equal groups of 58 financially aware respondents and 58 financially unaware respondents.

Data Analysis

Demographic factors and level of Financial Awareness:

Keeping in view the objective of the study to analyze the impact of various demographic factors on the actual financial awareness scores, the following five factors are considered for analysis. These factors include investor's qualification, income levels, number of dependents, area of work and area of qualifications. Efforts have been made to include wide categories of professionals in survey. Random Sampling technique is used based on convenience and judgment.

Classification of respondents on the basis of qualification is presented as table 1.

Table 1: Qualification and Financial Awareness

Classification of Respondents					
	Level of Qualification	Number of Respondents	Level of literacy	No of Respondents	Average Score
Qualification	Graduation	18	Financially Aware	0	0
			Financially Unaware	18	15
	Post Graduation	66	Financially Aware	36	20.61
			Financially Unaware	30	16.47
	Professionally qualified	32	Financially Aware	22	20.45
			Financially Unaware	10	16.8
	Total Respondents	116		116	

Source: Computed From Primary Data

The analysis reveals that out of the total sample of 116 respondents, 18 are graduates, 66 are post graduates and 32 are professionally qualified. Out of the 18 graduates none of the participants has scored sufficiently to be qualified as financially aware. 36 participants out of total of 66 post graduates are considered as financially aware and 30 are considered as financially unaware. Out of total 32 professionally qualified 22 participants are qualified as financially aware and 10 as financially unaware. The scores of financially unaware participants are 15, 16.47 and 16.8 for graduates, post graduates and professionals respectively. The overall average score for the financially aware respondents works out to 20.55 as against 16.07 for the respondents classified as financially unaware.

Classification of respondents on the basis of annual income is furnished in table 2.

Table 2: Annual Income and Financial Awareness

Classification of Respondents					
	Level of Income (P.A in lakhs)	Number of Respondents	Level of literacy	No of Respondents	Average Score
Annual Income	5-10 lakhs	48	Financially Aware	18	20.22
			Financially Unaware	30	16
	10-15 lakhs	30	Financially Aware	16	20.5
			Financially Unaware	14	16.84
	15-20 lakhs	16	Financially Aware	12	20.67
			Financially Unaware	4	16.5
	20-25 lakhs	2	Financially Aware	0	0
			Financially Unaware	2	18
	Above 25 lakhs	20	Financially Aware	12	21
			Financially Unaware	8	16.5
	Total Respondents	116		116	

Source: Computed From Primary Data

Table 2 shows that out of the total respondents of 116, 48 are having annual income between 5 lakhs to 10 lakhs. Within this category only 18 participants are financially aware with average score of 20.22 and the rest 30 are categorized as financially unaware with average score of 16. Out of 30 respondents with income between 10 to 15 lakhs 16 are considered as financially aware with average score of 20.5 and 14 are considered as financially unaware with average score of 16.84. 20 respondents are having income more than 25 lakhs and out of these 12 are considered as financially aware with maximum score of 21. Only 8 participants having income of more than 25 lakhs are considered as financially unaware with total score of 16.5. The overall average score for the financially aware respondents works out to 20.55 as against 16.37 for the respondents classified as financially unaware.

Classification of respondents on the basis of number of dependents is shown in table 3.

Table 3: No. of Dependents and Financial Awareness

Classification of Respondents					
	Number of Dependents	Number of Respondents	Level of literacy	No of Respondents	Average Score
Number of Dependents	None	8	Financially Aware	0	0
			Financially Unaware	8	15.75
	1 to 2	68	Financially	32	20.68

			Aware		
			Financially Unaware	36	16.22
	3 to 4	36	Financially Aware	22	20
			Financially Unaware	14	15.85
	5 to 6	2	Financially Aware	2	23
			Financially Unaware	0	0
	Above 6	2	Financially Aware	2	22
			Financially Unaware	0	0
	Total Respondents	116		116	

Source: Computed From Primary Data

Table 3 shows the impact of the number of dependents on the financial awareness. The proportion of financially aware participants increases with higher number of dependents as shown by the above table. None of the participants with no dependents fall under the category of being financially aware. With 1-2 dependents, out of 68 respondents 32 are financially aware with average score of 20.68 and remaining 36 are financially unaware with average score of 16.22. With 3-4 dependents, out of 36 participants 22 are financially aware with average score of 20 and the rest 14 are financially unaware with score of 15.85. The overall average score for the financially aware respondents works out to 20.55 as against 16.26 for the respondents classified as financially unaware.

Classification of respondents on the basis of area of work is analysed in table 4.

Table 4: Area of Work and Financial Awareness

Classification of Respondents					
	Area of Profession	Number of Respondents	Level of literacy	No of Respondents	Average Score
Area of work	Commercial/Banking /finance/Insurance	56	Financially Aware	34	20.41
			Financially Unaware	22	16.34
	Consulting/Engg/ IT/Manufacturing	40	Financially Aware	16	21
			Financially Unaware	24	15.83

		Financially Aware	8	20.25
Others	20	Financially Unaware	12	15.5
Total Respondents	116		116	

Source: Computed From Primary Data

Table 4 shows the relationship between the area of work and financial awareness. Out of 116 respondents, 56 are from commercial/ banking/ finance/ insurance sector. From this group of professionals, 34 respondents are categorized as financially aware with average score of 20.41 and 22 respondents are financially unaware with average score of 16.34. Out of 40 Professionals working in consulting/ engineering/ manufacturing 16 have scored average of 21 to be financially aware and 24 got score of 15.83 to be financially unaware. For others in this financially unaware are 12 and financially aware are 8 out of total of 20. The overall average score for the financially aware respondents works out to 20.55 as against 15.96 for the respondents classified as financially unaware.

Classification of respondents on the basis of stream of qualification is provided in table 5.

Table 5: Stream of Qualification and Financial Awareness

Classification of Respondents					
	Stream of Qualification	Number of Respondents	Level of literacy	No of Respondents	Average Score
Stream of qualification	Commerce/ Finance/Mgt	68	Financially Aware	42	20.71
			Financially Unaware	26	16.54
	Science/Engg/ Others	48	Financially Aware	16	20.12
			Financially Unaware	32	15.68
	Total Respondents	116		116	

Source: Computed From Primary Data

Table 5 shows the relationship between the stream of qualification and financial awareness. Out of 116 respondents, 68 belong to commerce/ finance/ management stream and the rest 48 belongs to other stream. From the first stream of qualified professionals 42 of them are financially aware with average score of 20.71 and the rest 26 are financially unaware with average score of 16.54. Out of other professionals with science/engineering and other area of qualifications, only 16 are financially aware and twice the numbers are financially unaware. The overall average score for the financially aware respondents works out to 20.55 as against 16.07 for the respondents classified as financially unaware.

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Actual Financial Awareness Score and perceived financial knowledge

To measure and quantify the level of financial awareness amongst the professional, total 27 multiple-choice questions were asked. Three options were given with one correct answer. The total FA score was computed for all 116 respondents and median was taken as cut off point to segregate the sample into two equal groups, one Financially Aware (FA) with score more than median of 18.5 and the other Financially Unaware (FU) with score less than median of 18.5.

As the investment decisions are mostly based on self-perceived financial knowledge, apart from actual FA score, self given score is also considered while establishing the impact on investment products. The actual FA score and self perceived score was also analyzed.

Table 6: Relationship between Actual Financial Awareness Score and Perceived Rank

Actual_score/Pecv_rank	1	2	3	4	5
Financially Aware	0	0	24.13	62.06	13.79
Financially Unaware	3.45	13.79	51.72	31.03	0

Source: Computed From Primary Data

The above table shows the relationship between Actual Financial Awareness Score and Perceived self-financial knowledge score on scale on 1 to 5 where 1 means low financial knowledge and 5 means high financial knowledge. 76% of Participants with high actual FA score have ranked themselves with above average financial knowledge and the rest have given themselves average rank of 3. Thirty one per cent of the participants with low actual scores in financial awareness have ranked themselves with above average score of 4 and most of the respondents (51%) gave themselves average score of 3.69% of respondents with low actual scores have given themselves average or below average financial knowledge.

Table 7: Ranking of Investment Preference by Financially Aware Professionals

INVESTMENT	RANK	WAS	AVG	SD	CV	1	2	3	4	5
Mutual_fund	1	0.5517	3.5517	1.07886	0.303759	0	20.7	27.6	27.6	24.1
PPF	2	0.3793	3.3793	1.28182	0.379315	10.3	13.8	27.6	24.1	24.1
Fixed_deposit	3	0.2069	3.2069	1.30799	0.407867	17.2	10.3	20.7	37.9	13.8
LIC	4	0.2069	3.2069	1.41122	0.440057	17.2	17.2	13.8	31	20.7
REAL_EST	5	0.069	3.069	1.21196	0.394904	10.3	20.7	37.9	13.8	17.2
PENSION	6	-0.2759	2.7241	1.39916	0.513623	27.6	17.2	24.1	17.2	13.8
GOLD	7	-0.2759	2.7241	0.98752	0.362512	10.3	34.5	27.6	27.6	0
Stock_Equity	8	-0.4483	2.5517	1.41635	0.555061	31	24.1	17.2	13.8	13.8
POST_DEP	9	-0.6207	2.3793	1.53128	0.643584	44.8	13.8	17.2	6.9	17.2
ULIP	10	-0.7241	2.2759	1.2396	0.544664	37.9	20.7	20.7	17.2	3.4

Source: Computed From Primary Data
Frequency in Percentage is Given on 5 Point Scale Where 1 is Low and 5 is High Preference for Investment

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The above table shows the preference of financially aware professional towards various investment products. The basic 10 investment products are included and the rank of preference is given to each product by each respondent on scale of 1 to 5, where 1 means low preference and 5 means high preference. The range of 5 point scale across all the investment products is of 2.2759 to 3.5517. The preference of mutual funds is the highest with above average score of 0.5517 with lowest Coefficient of Variation of 0.3038 amongst the financially aware professionals. The second, third and fourth preference is for PPF, Fixed Deposit and LIC, which are considered as conservative and traditional products. Surprisingly, direct investment in the stock gets eighth preference by this group.

Table 8: Ranking of Investment Preference by Financially Unaware Professionals

INVESTMENT	RANK	WAS	AVG	SD	CV	1	2	3	4	5
Fixed_deposit	1	0.9655	3.9655	0.97271	0.245293	3.4	27.6	0	34.5	34.5
PPF	2	0.6897	3.6897	1.2733	0.345096	10.3	3.4	27.6	24.1	34.5
LIC	3	0.4828	3.4828	0.90304	0.259286	0	13.8	37.9	34.5	13.8
REAL_EST	4	0.4483	3.4483	0.97643	0.283163	3.4	10.3	37.9	34.5	13.8
POST_DEP	5	0.1724	3.1724	1.18674	0.374083	13.8	10.3	31	34.5	10.3
PENSION	6	0.0345	3.0345	1.22783	0.404623	17.2	10.3	34.5	27.6	10.3
Mutual_fund	7	0	3	1.02598	0.341993	3.4	34.5	27.6	27.6	6.9
GOLD	8	-0.1724	2.8276	0.9203	0.32547	10.3	20.7	44.8	24.1	0
ULIP	9	-0.4828	2.5172	1.04699	0.415934	24.1	17.2	41.4	17.2	0
Stock_Equity	10	-0.8966	2.1034	1.19487	0.568066	41.4	27.6	13.8	13.8	3.4

Source: Computed From Primary Data
Frequency in Percentage is Given on 5 Point Scale Where 1 is Low and 5 is High Preference for Investment

The above table shows the preference of financially unaware professionals towards various investment options. The highest preference is given to fixed deposits followed by PPF and LIC. The coefficient of variation for fixed deposit is also lowest for this group of professionals. The range of average on 5 point scale is between 2.1034 and 3.9655 for all 10 investment products. Market oriented product like stocks, ULIP and mutual fund get the least preference along with gold. The results show high preference to the traditional investment products by this group.

Table 9: Ranking of Factors Affecting Investment by Financially Aware Professionals

FACTORS	RANK	WAS	AVG.	SD	CV	1	2	3	4	5
Rate_Return	1	1.069	4.069	0.87584	0.2152	0	3.4	24.1	34.5	37.9
Safety_Prin	2	0.7241	3.7241	1.02243	0.2745	0	10.3	37.9	20.7	31
Safety_ROR	3	0.5862	3.5862	1.07662	0.3002	0	20.7	24.1	31	24.1
Own_Analysis	4	0.2759	3.2759	1.2396	0.3784	10.3	20.7	13.8	41.4	13.8

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Prof_Advice	5	0.1034	3.1034	1.0377	0.3344	10.3	13.8	34.5	37.9	3.4
Invest_Needs	6	0.1034	3.1034	0.89226	0.2875	3.4	20.7	41.4	31	3.4
Media_advt	7	-0.6897	2.3103	0.99484	0.4306	27.6	24.1	37.9	10.3	0
Freind_adv	8	-0.8276	2.1724	0.88135	0.4057	27.6	31	37.9	3.4	0

Source: Computed From Primary Data
Frequency in percentage is given on 5 point scale where 1 is low and 5 is high preference for factors affecting investment

The above table shows the preferences assigned to various factors affecting their investment decisions by financially aware professionals. The basic 8 factors are included and the rank of preference is given to each factor by each respondent on scale of 1 to 5, where 1 means low preference and 5 means high preference. The range of 5 point scale across all the factors is of 2.1724 to 4.069. The most preferred factor is rate of return followed by safety of principal and safety of rate of returns by financially aware professionals. The standard deviation and coefficient of variation is also lowest for the highest preferred factor, i.e. rate of return. The lowest preferred factors affecting this group of financially aware professional include media advertisement and friend/relative advices. Their own analysis of investment product is preferred over professional advice. Their selection of investment products based on investment need is at 6th rank by this group.

Table 10: Ranking of Factors Affecting Investment by Financially Unaware Professionals

FACTORS	RANK	WAS	AVG	SD	CV	1	2	3	4	5
Rate_Return	1	0.8966	3.8966	0.93075	0.238862	3.4	0	27.6	41.4	27.6
Safety_ROR	2	0.8276	3.8276	1.06191	0.277435	3.4	3.4	34.5	24.1	34.5
Safety_Prin	3	0.7586	3.7586	1.04815	0.278867	0	13.8	27.6	27.6	31
Invest_Needs	4	0.4138	3.4138	1.19992	0.351491	13.8	3.4	24.1	44.8	13.8
Own_Analysis	5	0.2759	3.2759	0.9137	0.278916	3.4	13.8	41.4	34.5	6.9
Prof_Advice	6	-0.034	2.9655	1.13887	0.38404	13.8	13.8	44.8	17.2	10.3
Freind_adv	7	-0.069	2.931	1.21196	0.413497	17.2	17.2	27.6	31	6.9
Media_advt	8	-0.275	2.7241	1.15155	0.422727	24.1	6.9	44.8	20.7	3.4

Source: Computed From Primary Data
Frequency in Percentage is Given on 5 Point Scale Where 1 is Low and 5 is High Preference for Factors Affecting Investment

The above table shows the preferences assigned to various factors affecting their investment decisions by financially unaware professionals. The basic 8 factors are included and the rank of preference is given to each factor by each respondent on scale of 1 to 5, where 1 means low preference and 5 means high preference. The range of 5 point scale across all the factors is of 2.7241 to 3.8966. The most preferred factor is rate of return followed by safety of rate of returns and safety of principal by financially unaware professionals. The coefficient of correlation is also lowest for the highest preferred factor, i.e.rate of return.

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The lowest preferred factors affecting this group of financially aware professional include media advertisement and friend/relative advices.

Conclusion

Demographic Factors and Financial Awareness

On the basis of analysis presented in tables 1 to 5, we can infer that demographic factors impact the levels of financial awareness and thereby affecting their investment preferences. Significant impact was found based on qualification of these respondents. Where none of the graduates were found to be financially aware, the proportion of financially aware individual is higher for post graduate and qualified professionals. Output from the data also shows the positive impact of annual income as the numbers of financially aware individuals are more with higher income group. Financial awareness scores are also affected by the number of dependents. Higher the number of dependents more financial awareness has been observed. In this study, area of works has also been considered for analysis and professionals working in commercial/ banking/ finance/ insurance are more financially aware than those professionals working in other areas.

Actual Financial Awareness score and Investment Preference

The result on the given sample of 116 participants shows the highest preference of mutual funds by financially aware professionals with average score of 3.5517 followed by PPF, fixed deposits, LIC and real estate having above average preference with scores of 3.38, 3.21, 3.21 and 3.07 respectively. Interestingly financially aware participants have given lower preferences to

pension, gold, direct stock, post office deposits and ULIP. The first four preferences include the three traditional investment products.

Financially unaware professionals also have the same three products preference with first preference given to fixed deposits followed by PPF, LIC, real estate and post office deposits. Out of the ten products five products got rank of more than 3 including the mutual funds with fifth preference. Gold, ULIP and direct stock are negatively preferred options by the financially aware professionals. It can be concluded that there is no major difference in the investment preferences by financially aware and unaware professional working in NCR region.

Actual Financial Awareness score and Factors affecting Investment

Again in this segment also the results are almost similar without substantial difference in their ranking of various factors affecting their investment-portfolio. Financially aware professional looks at the rate of return as the first preferred factor for investment decisions followed by safety of principal, safety of rate of return and own analysis on the first four places. Media advertisements and friend's advice were given the last preference affecting their investment decisions.

For financially unaware professionals rate of return was also given the first preference followed by safety of rate of return, safety of principal and investment needs. The first three factors i.e. rate of return, safety of rate of return and safety of principal are the

same for financially aware and unaware professionals thereby indicating risk averse nature of all investing professionals.

The study reveals that there are various demographic factors which affect the financial awareness and there is a positive relation between actual financial score and self perceived financial knowledge but despite the difference in the levels of actual FA score and perception, the preference for the investment products and the factors affecting the investment decisions are not very different. Despite the fact that this survey has been done on working professionals with different backgrounds, they showed a conservative behavior in creating their portfolios. Still professional advice is not preferred for taking investment decisions. There is lot of scope for financial service industry especially professional portfolio managers to provide advisories to these professionals to fulfill their investment objectives.

Factors such as lack of understanding the concept of risk, lack of application of risk-return trade off in investments decisions, lack of confidence in the new products and concentration of their portfolios towards traditional products pose the challenges for the corporates and governments to channelize the savings to capital markets. More efforts are required for educating and creating financial awareness about the financial products with risk and return profiles. These professional are also to be informed about the process of creating portfolio to achieve their short term and long term needs.

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FINANCIAL LITERACY AND ACCESS TO FINANCIAL SERVICES IN THE UNORGANIZED SECTOR IN WEST BENGAL:
A STUDY OF PASCHIM MEDINIPUR DISTRICT

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Abstract:

The present paper focuses on the effect of demographic variables on financial literacy and access to financial services with the help of 400 respondents from the unorganized sector in Paschim Medinipur district of West Bengal. It ends up with a finding of positive and significant correlation between financial literacy and access to financial services, and also that different demographic factors like occupation, income and educational qualification along with access to financial services having a positive influence on the level of financial literacy. Again, income and financial literacy have direct positive impact on access to financial services level when effect of different demographic variables and financial literacy have been looked upon alternatively on access to financial services.

Key Words:

Unorganized Sector, Demographic Profile, Paschim Medinipur Financial Literacy, Access to Finance

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1. Introduction

It is well known that in India a major part of the workforce is engaged in the unorganized sector because of which it is a very significant field of study for looking into any social and economic impact of any policy decision or any event. Financial literacy remains an interesting issue in both developed and developing economies and has elicited much interest in the recent past with the rapid change in the finance landscape (Wachira and Kihiu, 2012). That is why, it remains an interesting part of discourses among the social issues in finance to test the level of financial literacy among the people in this sector and to further look into its possible determinants which would cover likely the demographic issues. Financial literacy indicates the ability of a person in any sector or society to understand financial matters. In other words, it means the awareness, knowledge and skill of individuals to make decisions about savings, investment, borrowings and expenditure in an informed manner.

In India, the need for looking into financial literacy is considered really important because a large section of the population remains out of the formal financial setup. Such serious is the need that the Reserve Bank of India has undertaken a project titled 'Project Financial Literacy' in 2007. In line with the need to spread financial literacy, another important aspect that has been on the spotlight of the banking regulator is access to finance, especially for the poor and vulnerable groups. This has been really proven to be a burning issue which is an essential requisite for employment, economic growth, poverty alleviation and social upliftment.

The demand side of the broader and more widely known term 'financial inclusion' is represented in this paper by 'Access to financial services'. This implies the provision of affordable financial services by the formal financial system to those who remain excluded till now. It is a term that is aimed at enabling the poor and the vulnerable section of our country to be given a chance for opening a bank account that will give them a channel to save and invest, and ultimately to borrow and to repay, and there from to insure and take part in the credit which may even consequently lift them out of poverty.

In the RBI Annual Policy Statement (2005-06), policies were made to encourage banks to provide extensive banking services to the unbanked / vulnerable sections of the country. By the term 'vulnerable sections', various unorganized sections which include marginal farmers, landless labourers, self employed, employees of unorganized sector enterprises, socially excluded groups and the like are referred. As per National Commission for Enterprises in the Unorganized Sector (NCEUS, 2004), "the informal sector consists of all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than total ten workers". As the unorganized sector has informal arrangements between the employer and the employee, there is a total lack of social security for the people engaged in the sector. Hence, it needs to be ensured that whatever saving they create gets invested in such schemes or instruments that will help them to earn if they lose their employment during old age. Hence, there should be a proper understanding of the different

options of investment which automatically calls for the need for financial literacy which is becoming increasingly more important. Hence, in both developed and developing countries, there is a focus on programmes for imparting education on financial literacy.

Statement of the problem

The Indian financial sector has shown tremendous growth and development during the last few decades. Despite making significant improvements in all the areas relating to financial viability, profitability and competitiveness, there are concerns that the financial institutions have not been able to include vast segment of the population, especially the underprivileged sections of the society, into the fold of basic financial services. Consequently, the Reserve Bank of India and Central Government are making efforts to study the causes of financial exclusion and designing strategies to ensure financial inclusion of the poor and disadvantaged into the formal financial system. The reasons may vary from one country to another and hence the strategy could also vary. But, all out efforts are being made to include financially the majority of the populace as it has the capacity to lift the poor and disadvantaged out of poverty. The present study aims to analyze the status of financial literacy and access to financial services and identify their determinants, among the unorganized sector workers in Paschim Medinipur district in West Bengal.

Paschim Medinipur, located in the southern part of West Bengal, has been carved from the erstwhile Medinipur district, the then largest district of India, and came into existence in the present form from 1st January 2002. Geographical area of the

district is 9295.28 sq. km. In 2006, the Ministry of Panchayati Raj named Paschim Medinipur as one of the country's two hundred fifty most backward districts (out of a total of 640). It is one of the eleven districts in West Bengal currently receiving funds from the Backward Regions Grant Fund Programme (BRGF). The district is characterized by less number of rural industrial development programmes, poor agricultural productivity, shrinking forest cover which is endangering the development potential. Thus, Paschim Medinipur district may be considered an ideal place for conducting such work as the problems associated with backwardness coupled with the very own problems of the unorganized sector would make it an ideal case of doing away with this study.

Significance of the Study

Financial literacy and Access to financial services have two way cause-effect relationships making it very important for the policy makers to focus on both these aspects. Consequently, following this realization and looking into the potentiality that they have on the growth of the country, the Reserve Bank of India and Central Government have been taking measures aimed at improving access to financial services as a part of its much celebrated financial inclusion programme and also stepping up financial literacy levels among the masses. So, the present district-level study focuses on the present situation of financial literacy and access to financial services among the unorganized sector workers in Paschim Medinipur district in West Bengal and also identifies the major factors that affect both. The knowledge gained therein can be used for designing strategies by the policy-makers.

Literature Review

Some important relevant studies are mentioned below chronologically year-wise: Hung *et al.* (2009) examine the effect of different demographic variables on financial literacy which reveals gender and age to affect literacy level. Annan (2012) discusses the measures adopted to remove financial exclusion in India. Bhatia (2012) aims to examine how financial literacy helps investors to improve their understanding level of financial products, services, risks and markets. Bhushan and Medury (2013) look into the financial literacy level among salaried individuals and look into the relationship between financial literacy and various demographic and socio-economic factors. The study reveals higher financial literacy level for males and also supports the positive and significant effect of education, age and income on literacy levels. Paramasivan and Ganeshkumar (2013) opine that financial literacy alone cannot guarantee high level of financial inclusion in a state. Branch density and improving investment opportunities affect financial inclusion. Rao (2013) computes financial inclusion level across different states in India for the period from 1969-2012 using different parameters like bank branches in India into the rural areas, per capita GDP, literacy rate and unemployment rate. Shivani (2013) cites under-developed IT, poor rural infrastructure, high administrative expenses, population growth and low poverty etc. to be the main reasons behind financial exclusion. Bhattacharjee (2014) shows the influence of age, education, income and nature of employment on financial literacy but no effect of gender. Kaur and Singh (2014) show how financial inclusion contributes towards inclusive growth by studying six selected developing countries. Mathivathani and Velumani (2014) examine the factors that influence financial literacy among the marginalized women in rural areas of Tamil Nadu which reveals the dominating effect of low income, communication gap, illiteracy in Hindi (or English), lack of computer knowledge and less number of earning members of the family on literacy level. Singh (2014) looks into how financial literacy helps the low and middle income group people in sustainable development of the country and also highlights the RBI initiatives in this regard. Singh *et al.* (2014) mention that opening banking branches together with using the existing network of post offices, fair price shops etc. in rural areas are correct measures towards financial inclusiveness. Thenmozhi and Sudalaimuthu (2014) observe the falling rural-urban divide resulting from growth in rural banking penetration. However, it further mentions that despite such efforts, the banking penetration is only 59 percent in India with wide regional disparities. Alpana and Yashpal (2015) mention the need for financial inclusion which leads to better living and improves household welfare. Sekar and Gowri (2015), in a Coimbatore-based study on young employees, show the effect of age, region, income, family composition, number of dependents etc. on literacy levels.

Research gap

The aforesaid reviewed studies reveal the presence of low financial inclusiveness in the country with wide disparities across the states. There are a few exploratory studies on financial literacy and inclusion which identify the determining factors among the demographic variables. Moreover, there are several conceptual studies on financial inclusion that look into the developments

and progress over time. The number of empirical studies on the subject is however low. After summarizing different research findings, it is further identified that there is no unorganized sector-focused study simultaneously on financial inclusion and literacy in West Bengal. Furthermore, the study tests the effect of access to financial services on financial literacy and also the other way round. Hence, the present research focuses on one of the most vulnerable sections of the society and tries to capture an idea and identifies the factors that dominate in affecting financial literacy and access levels. The identification of cause and effect relationship between financial literacy and access can help policy makers to come up with appropriate programmes and strategies.

Objectives of the Study

The following two are the dual objectives of the study:

i)   To assess financial literacy and access to financial services in the unorganized sector in Paschim Medinipur district and establish relationship, if any between them.
ii) To examine the effect of demographic factors on financial literacy and access to financial services.

Hypotheses

The hypotheses that are tested are:

H_{01}:   There is no relationship between financial literacy and access to financial services.

H_{02}: There is no effect of demographic variables on access to financial services and financial literacy separately.

H_{03}: There is no mutual effect of financial literacy and access to financial services upon each other taken together with the demographic variables.

Research Design

Data Source

The research work is based on primary data which is collected through a structured questionnaire (Annexure-I).

Sampling Frame and Sample Size

The sampling frame for this study includes the people employed in the unorganized sector of Paschim Medinipur district of West Bengal as already stated.

Sampling Method

Multi-stage sampling method is applied. First, eight blocks from the district are chosen, following which five villages are chosen from each of them. Then, ten respondents from each village are interviewed with the help of a questionnaire. The blocks that are randomly selected include Narayangarh, Sabang, Pingla, Chandrakona - II, Daspur - II, Mohanpur, Keshiary and Salboni.

Sample size

Based on our sampling design, the study is made on 400 respondents.

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Statistical techniques used

For analyzing the data, different statistical measures like Descriptive Statistics, Cronbach's Alpha, Factor Analysis, Correlation, Regression Analysis, ANOVA, F-test and t-test are used.

Analysis and Findings

Demographic Profile of the respondents

Table-1: Respondents' Profile

Particulars		Total (%)
Gender	Male	72
	Female	28
Domicile	Rural	90
	Non-Rural	10
Marital Status	Married	82
	Unmarried	18
Age Band (in years)	16-25	15
	26-35	20
	36-45	25
	46-55	21
	56-65	13
	Above 65	6
Occupation	Landless Labour	42
	Cultivator	44
	Small Scale Business	14
Average Monthly Income (in Rs.)	Less than 5000	42
	5000-7500	31
	7501-10000	13
	10001-12500	8
	Above 12500	6
Family Type	Nuclear	84
	Joint	16
Educational Qualification	Up to V	28
	VI- Class X	53
	Beyond Class X	19

Source: Primary Data

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Reliability Test:

For the purpose of measuring the reliability of the questionnaire, Cronbach's alpha which identifies the consistency of the entire scale is measured using this reliability coefficient.

Table-2: Reliability Statistics

Cronbach's Alpha	N of Items
0.833	54

Source: Authors' Calculation

According to researchers, for acceptance of reliability, the cut-off point for alpha is 0.70. In our case, the value of 0.833 justifies the correctness of the questionnaire and confirms that overall the scales are reliable enough to be used for further analysis.

Measurement of Financial Literacy Score

The section on financial literacy has questions that are put in eight sub-categories, named as FL_1, FL_2, FL_3, FL_4, FL_5, FL_6, FL_7 and FL_8,
where,

FL_1 measures basic awareness about different banking products,
FL_2 measures knowledge about banking product,
FL_3 measures knowledge about regulatory bodies,
FL_4 measures awareness about risk and return on investment and decision making ability,
FL_5 measures awareness about basic financial management concept,
FL_6 measures securing family security,
FL_7 measures planning for basic financial necessities, and
FL_8 measures concern for future security.

Factor analysis is run to test the sampling adequacy and to determine the weight for the sub-categories that is used to compute the weighed score. The table below gives the details.

Table-3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.767
Bartlett's Test of Sphericity	Approx. Chi-Square	660.320
	Df	28
	Sig.	.000

Source: Authors' Calculation

According to the criterion suggested by Kaiser (1974), a value up to 0.5 is unacceptable. Hence, if the KMO measure exceeds 0.50, factor analysis can be applied. In this case, the KMO measure of 0.767 shows adequate sample size for factor analysis to be applied.

Table-4: Communalities

Variables	Initial	Extraction
FL_1	1.000	0.732
FL_2	1.000	0.564
FL_3	1.000	0.749
FL_4	1.000	0.701
FL_5	1.000	0.532
FL_6	1.000	0.671
FL_7	1.000	0.528
FL_8	1.000	0.598

Source: Authors' Calculation
Extraction Method: Principal Component Analysis.

The table above has been used for arriving at the data-driven weights for computing the weighted score of financial literacy.

$FLS_i = W_1.FL_{1i}+W_2.FL_{2i}+W_3.FL_{3i}+W_4.FL_{4i}+W_5.FL_{5i}+W_6.FL_{6i}+W_7.FL_{7i}+W_8.FL_{8i,}$

Where, FLS_i is the financial literacy score of the i_{th} respondent,
   W_i is the data driven weight in variable i, and
   FL_{1i} is the score of i-th respondent in sub-category 1 under financial literacy and
    Likewise for the remaining seven sub-categories.

Measurement of Access to Financial Service (AFS) Score

A similar approach is used for computing the AFS score. Under this factor, the questionnaire is designed to have five sub-categories (AFS_1 to AFS_5).

where,
   AF_1 is Access to basic banking,
   AF_2 is Access to other financial services,
   AF_3 is Access to KCC/ATM card,
   AF_4 is Usage of Services, and
   AF_5 is Easy access to Bank/ATM.

Factor analysis is again run to look into the sample adequacy and to arrive at weights for determining the weighed score. The table below shows the details.

Table-5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.622
Bartlett's Test of Sphericity	Approx. Chi-Square	143.381
	Df	10
	Sig.	0.000

Source: Authors' Calculation

Table-6: Communalities

	Initial	Extraction
AF_1	1.000	0.471
AF_2	1.000	0.578
AF_3	1.000	0.545
AF_4	1.000	0.569
AF_5	1.000	0.667

Source: Authors' Calculation
Extraction Method: Principal Component Analysis.

The table above is used for arriving at the data-driven weights for computing the weighted score of access to financial services:

$$AFS_i = Y_1.AF_{1i} + Y_2.AF_{2i} + Y_3.AF_{3i} + Y_4.AF_{4i} + Y_5.AF_{5i},$$

where, AFS_i is the access to financial services score of the i_{th} respondent,
Y_1 is the data driven weight in sub-category 1, and
AF_{1i} is the score of i_{th} respondent in sub-category 1 under access to financial services and likewise for the remaining four sub-categories.

Relationship between financial literacy and access to financial services

To test the relationship between these two aspects, the researchers the following hypothesis:

Null hypothesis (H_0): There is no relationship between financial literacy and access to financial services.

Alternative hypothesis (H_1): There is relationship between financial literacy and access to financial services.

Table-7: Correlations

		Financial Literacy	Access to Financial Services
Financial Literacy	Pearson Correlation	1	0.346[**]
	Sig. (2-tailed)		0.000
	N	400	400
Access to Financial Services	Pearson Correlation	0.346[**]	1
	Sig. (2-tailed)	0.000	
	N	400	400

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Authors' Calculation

From the above table, it is observed that there is a positive correlation coefficient of 0.346 between the two variables, financial literacy and access to financial services, which is significant at 1% level. This coefficient value suggests a positive and moderately strong linear relationship between them.

Testing for the effect of demographic variables on financial literacy and access to financial services

Dependent variable: Financial Literacy

The regression analysis is conducted to find the relationship between dependent variable and independent variables. Thus, this helps to identify the variation in financial literacy based on variation in different demographic variables and Access to financial services.

To test the hypothesis representing the relationship between Financial Literacy with demographic factors and Access to financial services, multiple regression was run, the output of which result is given as follows:

Table-8: Model depicting the relationship between Demographic factors and Access to financial services with Financial Literacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.634	0.402	0.386	3.112

Source: Authors' Calculation

Predictors: Access to Financial Services, Age, Male Member Ratio, Occupation, Family Type, Gender, Domicile, Educational Qualification, Marital Status and Income

From the above table, it is the evident that the coefficient of determination is 40.2%. It implies that the independent variables like Gender, Male Member Ratio, Domicile, Marital

Status, Age, Occupation, Income, Family Type, Educational Qualification and Access to financial services have explained up to 40.2% of the variation in Financial Literacy

Table-9: ANOVA: Demographic factors and Access to financial services with Financial Literacy

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2530.729	10	253.073	26.117	0.000
	Residual	3769.450	389	9.690		
	Total	6300.180	399			

Source: Authors' Calculation
Dependent Variable: Financial Literacy

Predictors: (Constant), Access to Financial Services, Age, Male Member Ratio, Occupation, Family Type, Gender, Domicile, Educational Qualification, Marital Status and Income.

Based on the table above, the F value is 26.117 which is significant at 1% level (p-value being 0.000). Hence, the overall regression model with Financial Literacy being the dependent variable and Gender, Domicile, Marital Status, Age, Occupation, Income, Educational Qualification and Access to financial services being the independent variables fits properly.

Table-10: Regression estimate of Financial Literacy

	B	Std. Error	Std. Beta	t value	Sig.	Tolerance	VIF
(Constant)	4.573	1.135		4.029	.000		
Gender	0.542	0.354	0.061	1.534	.126	0.961	1.041
Male Member Ratio	-1.066	1.128	-0.038	-0.945	.345	0.968	1.033
Domicile	-0.127	0.556	-0.010	-0.229	.819	0.871	1.148
Marital Status	0.434	0.471	0.042	0.921	.358	0.749	1.335
Age	0.031	0.128	0.011	0.239	.811	0.735	1.360
Occupation	0.725	0.178	0.173	4.081	.000	0.859	1.164
Income	0.534	0.156	0.161	3.422	.001	0.698	1.433
Family Type	-0.456	0.461	-0.042	-0.989	.323	0.838	1.194
Educational Qualification	1.016	0.116	0.380	8.730	.000	0.812	1.232
Access to Financial Services	0.509	0.080	0.256	6.338	.000	0.945	1.058

Source: Authors' Calculation
Dependent Variable: Financial Literacy, B = Unstandardized Beta

From the above table, it appears that there is no multicollinearity problem among the independent variables considered for the research (all the VIF values being less than 10). Then, the standardized beta values and the probability values provided in coefficient

table are examined to determine which independent variable(s) have a significant impact on Financial Literacy (Table 10).

The standardized regression coefficient values reveal that 'Occupation' has such a value of 0.173 (t = 4.081, p = .000), which indicates a positive and significant impact (at 1% level) on the level of financial literacy. Another demographic variable, 'Income' reveals a coefficient value of 0.161 (t = 3.422, p = .001), which again reveals a positive and significant impact (at 1% level) on the level of financial literacy. Another variable, 'Educational Qualification' having a coefficient of 0.380 is also found to be significant at 1% level (t = 8.730, p = .000), which indicates its positive influence on financial literacy. The interesting aspect that is captured by the model is that the independent variable 'Access to Financial Services' is also significant at 1%. The results can be of relevance to policy makers.

The above results imply when an individual is engaged in qualitatively better occupation among the various types of unorganized work, s/he is having more financially literate. This also in turn makes such an individual wealthier. Similarly, the more education one acquires, more financial literacy s/he can be expected to have. With more access to financial services, the respondents will be more financially literate as per the empirical findings too as hypothesized earlier with relatively weaker theoretical argument.

Dependent Variable: Access to Financial Services

The regression analysis is conducted to measure the variation in the level of Access to financial services (dependent variable), based on variation in different demographic variables and level of financial literacy (independent variables).

To test the hypothesis representing the relationship between Access to financial services with demographic factors and financial literacy, multiple regression has been run, the output of which result is given as follows:

Table-11: Model depicting the relationship between Demographic factors and financial literacy with Access to financial services

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.583	0.339	0.326	2.515

Source: Authors' calculation
Predictors: (Constant), Financial Literacy, Gender, Age, Occupation, Domicile, Income, Male Member Ratio and Educational Qualification.

From the above table, it is evident that the coefficient of determination is 33.9%. It implies that the independent variables like Gender, Male Member Ratio, Domicile, Age, Occupation, Income, Educational Qualification and Financial Literacy explain up to 33.9% in the variation in access to financial services.

Table-12: ANOVA: Demographic factors and Financial literacy with Access to financial services

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1271.202	8	158.900	25.117	0.000
	Residual	2473.620	391	6.326		
	Total	3744.822	399			

Source: Authors' Calculation
Dependent Variable: Access to Financial Services
Predictors: (Constant), Financial Literacy, Gender, Age, Occupation, Domicile, Income, Male Member Ratio and Educational Qualification.

From the ANOVA table, it is seen that the F-statistic is 25.117 which is found to be significant at 1% level. Hence, the overall regression model with Access to financial services being the dependent variable and Gender, Male Member Ratio, Domicile, Age, Occupation, Income, Educational Qualification and Financial Literacy being the independent variables is a good fit.

Table-13: Regression estimate of Access to financial services

	B	Std. Error	Std. Beta	t value	Sig.	Tolerance	VIF
(Constant)	-0.851	0.669		-1.272	.204		
Gender	0.247	0.286	.036	0.863	.388	0.962	1.039
Male Member Ratio	0.043	0.675	.003	0.064	.949	0.976	1.024
Domicile	0.761	0.461	.071	1.649	.100	0.907	1.103
Age	0.016	0.093	.008	0.175	.861	0.908	1.102
Occupation	-0.047	0.179	-.011	-0.265	.791	0.953	1.050
Income	0.306	0.118	.119	2.596	.010	0.801	1.249
Educational Qualification	0.014	0.102	.007	0.138	.890	0.692	1.445
Financial Literacy	0.388	0.039	.504	10.048	.000	0.672	1.487

Source: Authors' Calculation
Dependent Variable: Access to Financial Services, B = Unstandardized Beta

From the above table, it appears that there is no multicollinearity problem among the independent variables considered for the research (all the VIF values being less than 10). Then, the standardized beta values and the probability values provided in coefficient table are examined to determine which independent variable(s) have a significant impact on Access to financial services. The demographic variable, 'Income' reveals a coefficient value of 0.119 (t = 2.596, p = 0.010), which indicates a positive and significant impact (at 1% level) on the level of Access to financial services. Similarly, 'Financial Literacy' with a coefficient of 0.504 (t = 10.048, p = 0.000) also has a

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significant impact at 1% level on the dependent variable. Although 'domicile' is an important factor, it is found to be significant at 10% level only with a coefficient of 0.071 (t = 1.649, p = 0.100). The above results imply when an individual is engaged in better income among the various types of unorganized work, s/he is finding out more Access to financial services. This also in turn makes such an individual wealthier. In addition to that when the individual is financially more literate, s/he will have better Access to financial services. Another important observation is that non-rural respondents are having more Access than rural respondents.

Findings and Conclusion

The present study enriches our understanding of financial literacy and access among the unorganized section of the economy in Paschim Medinipur district of West Bengal. The research concentrates on how development can be made by making people more financially literate and helping them to get access to financial services. The investigation reveals that different demographic factors like occupation, income, educational qualification and access to financial services have a direct positive influence on financial literacy. Similarly, domicile, income and financial literacy also have a positive influence on access to financial services.

The study shows that individuals who are more financially literate have access to more financial services and vice versa. This may be interpreted as to financial literacy making a person more capable of taking financial decisions and thereby giving him the interest to know more about financial services and access them. The education level attained by individuals provides a strong foothold for such progress, particularly with respect to financial planning. Similarly, another interesting finding is that even financial literacy depends positively upon access to financial services. In other words, more the access to services, the more knowledgeable a person becomes in terms of financial literacy. Based on the findings of this study, the policy makers may understand the genuine need of raising the level of financial literacy and making financial services more accessible to the unorganized class. It will help them to take better financial decisions that will not only secure their future but also guide them about how to make depsoits in banks to be used later at the time of various types of need after they become old or jobless or sick.

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Annexure-I

QUESTIONNAIRE

General Information:-

1	Name of the respondent						
2	Gender	Male			Female		
3	Address	Rural		Semi-urban		Urban	
4	Language known	Bengali		English		Hindi	
5	Marital status	Single			Married		
6	Member of family						
	i) Number of male						
	ii) Number of Female						
7	Age bands:						
	i) Age between 16-25						
	ii) Age between 26-35						
	iii) Age between 36-45						
	iv) Age between 46-55						
	v) Age between 56-65						
	vi) Above 65						
8	Occupation	Unemployed		Agriculture		Labour	
		Business		Others			
9	Number of earning member:						
	i) Number of male						
	ii) Number of Female						
10	Monthly income (Rupees):						
	i) Less than 5000						
	ii) 5001 to 10,000						
	iii) 10001 to 15000						
	iv) 15001 to 20000						
	v) Above 20000						
11	Family Type:						
	i) Nuclear family						
	ii) Joint family						
12	Educational qualification:						
	i) No Formal Education						
	ii) I-V						
	iii) VI-VIII						
	iv) M.P						
	v) H.S						
	vi) Graduate						
	vii) Post Graduate						
	viii) Technical/Vocational Courses						

For Financial Literacy

1.	Do you know about Bank or Post office?			Yes/No
2.	Have you heard about the following?			
		i)	Mortgage	Yes/No
		ii)	Stock / Share	Yes/No
		iii)	Bond/ Debenture / Mutual Fund	Yes/No
		iv)	Chit Fund	Yes/No
		v)	Life Insurance	Yes/No
		vi)	Health Insurance	Yes/No
		vii)	Postal Life Insurance	Yes/No
		viii)	General Insurance	Yes/No
3.	Do you know about Savings A/C?			Yes/No
4.	Do you know about Current A/C?			Yes/No
5.	Do you know about Recurring Deposit A/C?			Yes/No
6.	Do you know about Fixed Deposit A/C?			Yes/No
7.	Do you know about Loan A/c or overdraft?			Yes/No
8.	Do you know about the scheme of deposit in which you should keep your money in bank?			Yes/No
9.	Have you heard about the following?			
		i)	RBI	Yes/No
		ii)	SEBI	Yes/No
		iii)	IRDA	Yes/No
10.		i)	Have you heard about PAN?	Yes/No
		ii)	If yes, do you know its utility?	Yes/No
11.		i)	Have you any idea about risk associated with investments?	Yes/No
		ii)	Have you any idea about interest rates charged by different Financial Institutions like banks, money lenders etc.?	Yes/No
		iii)	Have you compared while deciding where to deposit or lend from?	Yes/No
12.	Are you able to fill up basic form/cheque in bank / post office yourself or require help?			
		i)	Self	Yes/No
		ii)	Require help(if the above answer 'No')	Yes/No
13.	Who is responsible for day-to-day decisions about money in your household?			
		i)	Self	Yes/No
		ii)	In consultation with others	Yes/No
14.	Does your household have a budget?			Yes/ No
15.	Income stability: whether earning income on an average an equal amount over the months?			Yes/ No
16.	If you have any surplus money, where to deposit?			
		i)	Saving cash at home	
		ii)	Saving in your bank account(short-term deposit)	
		iii)	Saving in Post Office	
		iv)	Saving in an informal savings club	

	v)	Buying financial investment instrument (such as, fixed deposits certificate, stocks, shares, gold etc.)	
	vi)	Some other way (including remittances, buying livestock, etc.)	
17.	If you have lost your main source of income, how long could you continue to cover living expenses, without borrowing any money?		
	i)	Less than a week	
	ii)	At least a week, but not one month	
	iii)	At least one month, but not three months	
	iv)	At least three months, but not six months	
	v)	More than six months	
18.	For buying any financial product/ service, which source is preferred for information?		
	i)	Own experience	
	ii)	Advice of friends / relatives (who may work in the financial service industry)	
	iii)	Advice of friends/relatives (who may not work in the financial service industry)	
	iv)	Information from sales staff of the firm providing the products	
	v)	Television or Radio programme	
	vi)	Newspaper	
	vii)	Other source	
19.	Have you ever calculated the amount of money that you and your family will need in order to maintain your standard of living when you are not in working position?		Yes/No
20.	Do you have a specific plan to save for your emergencies?		Yes/No
21.	Do you have a specific plan to save for your children's higher education?		Yes/No
22.	Do you have a specific plan to save for the purpose of any major purchases in near future like house, car etc.?		Yes/No
23.	What do you think about the amount of life insurance that will protect you and other family members, if the earning member dies?		Yes/No
24.	What do you think about the amount of health insurance that will protect you and other family members (especially old parents)?		Yes/No
25.	Can you tell us whether you will be able to buy same quantity of goods/commodities with Rs. 100 after one year as compared to present?		Yes/No
26.	Can you tell us if you require Rs.10000 after 1 year how much amount should you invest in bank per month if the bank given interest rate 9%?		Yes/No

For Financial Inclusion

1	Sources of income?		Agriculture		Labour	Business		Others	
2	i) Whether any bank a/c?							Yes/No	
	ii) If yes, which bank?		Public		Private	Co-op		Grameen	Others
	iii) If no, while opening an account, have you faced any problem relating to documents asked to be submitted?							Yes/No	
	iv) Number of times going to bank in a month?								
	v) Have you any Debit Card?							Yes/No	
	vi) Have you any Credit Card?							Yes/No	
	vii) Have you Kisan Credit Card?							Yes/No	
	viii) Have You Jan Dhan Yojana Bank A/C? In case the answer is 'No' in 2 (i)							Yes/No	
	ix) Have your family been registered under Rashtriya Swastha Bima Yojana?							Yes/No	
	x) Have you/your family member been registered under Pradhan Mantri Suraksha Bima Yojana?							Yes/No	
	xi) Have you/your family member been registered under Pradhan Mantri Jeevan Jyoti Bima Yojana?							Yes/No	
3	How many members of your family have bank a/c?								
	i) Jointly with you								
	ii) Separately								
4	Is there any bank in your locality?							Yes/No	
	If 'Yes'			Public	Private	Co-op		Grameen	Others
	i) Within 1 KM	Yes/No							
	ii) Within 2 KM	Yes/No							
	iii) Within 5 KM	Yes/No							
	iv) Above 5 KM	Yes/No							
5	Is there any ATM in your locality?							Yes/No	
	If 'Yes'			Public	Private	Co-op		Grameen	Others
	i) Within 2 KM	Yes/No							
	ii) Within 4 KM	Yes/No							
	iii) Within 6 KM	Yes/No							
	iv) Within 8 KM	Yes/No							
	v) Within 10 KM	Yes/No							
	vi) Within 15 KM	Yes/No							
	vii) Above 15 KM	Yes/No							
6	For deposit, which modes do you/your family use?								
	i) Visiting branch for cash deposit							Yes/No	
	ii) Visiting branch for cheque deposit							Yes/No	
	iii) Deposit at ATM							Yes/No	
	iv) BFs/BCs							Yes/No	
7	For withdrawal, which modes do you/your family use?								
	i) Visiting branch for cash withdrawal							Yes/No	
	ii) Visiting branch for withdrawal using cheque							Yes/No	
	iii) From ATM							Yes/No	

	iv) BFs/BCs	Yes/No
8	What type of loan account you/your family has?	
	i) Bank loan	
	ii) Loan from Govt.	
	iii) Loan from MFI	
	iv) Loan from Money Lenders	
	v) Loan from friends/relatives	
	vi) Gold loan	
	vii) Others	
	viii) No loan account	
9	Purpose of loan taken?	
	i) Personal loan	
	ii) For purchase of house	
	iii) For health	
	iv) For education purpose	
	v) Others (Marriage)	
10	For banking service which one does you/your family prefers most?	
	i) Public sector bank	
	ii) Private sector bank	
	iii) Both public and private sector banks	
	iv) Co-operative banks	
	v) Grameen bank	
	vi) Do not know	
11	Do you/your families have life insurance policy?	
	i) LIC	
	ii) Others	
12	Do you/your families have general insurance policy?	
	i) Public sector insurer	
	ii) Private sector insurer	

IMPACT OF
FINANCIAL RATIOS ON
STOCK PRICE:
A COMPARATIVE STUDY WITH
HANG SENG AND NIFTY DATA

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Sarbajit Paul
Gautam Mitra

Abstract:

Selected financial ratios have impact on share price as financial ratios are used as tools for selecting stocks by investing communities. It is obvious that changes in financial ratios will have immediate effect on demand as well as supply side.

Is the degree of impact same across countries? We have conducted a study taking Nifty stock prices and Hang Seng stock prices as dependent variable and three financial ratios e.g., Price Earnings Ratio, Return on Investment and Earning per Share as independent variables. Result shows that financial ratios have the great impact on share price in both the countries. However, result shows that Hongkong market is slightly ahead of India.

Key Words:

Nifty, Hang Seng, Return on Investment

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1.0 Introduction

Among different investment avenues available for investment for a common investor, across the border and time, stock market offers highest return much ahead of bullion, real estate, stock market, banks etc. On the other hand percentage of people investing in the stock market is lowest, again across border and time. It is because of the inherent risk embedded in the market. Therefore always there have been attempts of greater return with reduced risk.

Different methods of stock price analysis like algorithmic trading, technical analysis, artificial intelligence, neural network or fuzzy logic have attempted to predict or analyze stock price. But all these methods could not outdate fundamental analysis which is basically based on ratios either it is CIE (Company-Industry-Economy) or EIC (Economy-Industry-Company) approach.

In this paper we are back to the basics. We raise the distinct research question, whether financial ratios influence stock price across border and whether the degree of influence same across countries?

Although we have huge number of ratios which have significant influence on stock price, we have chosen just three ratios, price earnings ratio (PE), earning per share (EPS) and return on Investment (ROI) to keep our project feasible. We have chosen multicounty analysis as we attempt to generalize our result to the extent possible. We note that both indices we have chose have same number of stocks. Number is fifty in both cases.

2.0 Literature Review

Motivation for our research is backed by significant number of earlier researches. Some of those we mention here.

Jr. Menaje, Placido M. (2012), worked on 50 publicly listed firms taken from the OSIRIS electronic database. He has analyzed the impact of financial variables on share price. He used two financial ratios Earning per Share (EPS) and Return on Assets (ROA) to predict the impact of these on share price. He has applied Spearman Rank Correlation and Multiple Regression tools. Investigation depicted that his model was able to explain 73 percent of the average change in share price caused by EPS and ROA.

Kheradyar, S. and Ibrahim, I. (2011) investigate the role of financial ratios as empirical predictors of stock return. They have taken data for a period of 10 years starting from January 2000 to December 2009 and analyze 960 companies data listed on Malaysian Stock Exchange. They considered Dividend Yield (DY), Earning Yield (EY) and Book to Market Ratio (B/M) as the predictor of stock return. They have introduced panel data model and Generalized Least Squares (GLS) model to estimate the predictive regression. Their paper reveals that these financial ratios have the significant impact for predicting the share return.

Shubiri, Nasif AL, F.(2010), has made a study on 14 commercial banks of Amman Stock Exchange for the period of 2005 to 2008. He applied simple and multiple regression techniques for finding the relationship of economic variables with the stock price. In his study he has found a high degree of positive significant relationship between the market price of stock and different variables e.g. net asset value per share, market price

of stock, dividend percentage and Gross Domestic Product (GDP).

Ong, T.S. and Teh, B.H. (2010) have made a study on P/E ratio as a predictor of stock market ups and downs in Malaysia. They have taken Malaysian Stock Market Index and Kuala Lumpur Composite Index (KLCI) and their 16 years P/E Ratios from 1994 to 2010 and tried to depict the impact of Asian financial crisis of 1997-98 and late global financial crisis. They used statistical tools like correlation and regression to predict the impacts of P/E Ratios on stock market. They have suggested that P/E Ratio is the useful performance predictor of KLCI and not for Malaysian Stock market index.

Maditinos, D. I., Sevic, Z and Theriou, N.G. (2007), have made an interesting survey to evaluate the individual investors behavior about the stock market in Athens Stock Exchange . They have conducted the study on 1014 respondents of Greece in the period December 2003 to June 2004. After completion of their research work they have got very useful information that individual investors rely more on newspaper and media and the professional investors on the other hand depend more on their fundamental and technical analysis and less on portfolio switching.

Iqbal, N., Khattak, S.R. and Khattak, M.A. (2013), have studied non-financial companies of Karachi Stock Exchange (KSE). They investigated whether historical accounting data can predict the future share returns. They have introduced a new logic of fundamental score (FSCORE) to identify the predictive quality. They applied ordinary least square (OLS) method for analyzing the data ranging from 2000 to 2009.They concluded that they found FSCORE has the significant impact on future stock price return in listed companies of Pakistan.

3.0 Research Gap

Plethora of research works have been done on composite impact of financial variables on share price. Most of the papers used Dividend Yield (D/Y) ratio, Book Value to Market Value (B/m) ratio, Earning Yield (E/Y) ratio, Price to Sales etc. as explanatory financial variables and return on stock price as dependent variables. However, not a single paper has analyzed the impact of changes in P/E Ratio, Return on Investment Ratio or EPS on change in stock price. In our study we have chosen Price Earnings Ratio, Return on Investment Ratio and EPS which are more appropriate ratios for measuring the organization's performance and predicting stock price. We have selected these as independent variables and stock price as dependent variable.

4.0 Objective of the Study

The objective of the study is to investigate the combined impact of financial ratios on share price and measure the degree of association among the variables under the study in relation to India and Hong Kong.

5.0 Data

In this paper we have selected share price as a dependent variable and P/E ratio, ROI and EPS as independent variables. We have taken fifty shares of Nifty and fifty shares of Hang Seng Index and their closing prices and the P/E ratio, ROI and EPS of respective company.

Secondary data of P/E ratio, ROCE and EPS have been collected from different books, research papers, reports, journals (mainly Dalal Street and Corporate India), news papers, Money Control.com and online data base and the data of closing share price have

been collected from Equal Solution data vendor and Yahoo Finance.

Data for financial ratios for both the countries are in relation to Financial Year 1st April 2013 to 31st March 2014 but cross section data of share price of two countries have been collected with reference to 31st March 2014.

5.1 Hypothesis

H_0: There is no significant impact of financial ratios on stock price.

H_1: There is a significant impact of financial ratios on stock price.

For analyzing data, the technique of ratio analysis, simple mathematical tools like percentage, average etc. and for testing the significance of association among the variables statistical techniques like Pearson's simple correlation analysis and linear regression analysis have been applied.

Closing Share Price, P/E Ratio and ROI and EPS were not normally distributed so we have applied natural logarithm transformation and finding out the descriptive statistics as shown in the Table-II of each segment. We used SPSS a statistical package to determine whether the chosen model below is a suitable fit for the data.

6.0 Hypothesis

$$Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + \mu,$$

Where, Y = share price, a = constant, x_1 = P/E Ratio, x_2 = ROI, x_3 = EPS of respective share under study and μ = error terms.

We have adopted multiple regression analysis on cross section data. Motivation for adopting the model is based on attempts made by earlier researchers but better result could have been obtained had the attempt could be made on panel data and experiments being done in more number of countries for bigger data period.

7.0 Discussion

Table I and Table V shows the descriptive statistics of Nifty and Hang Seng data respectively. In Table II, Correlation Matrix for India shows that the correlation coefficient between stock price and P/E Ratio is 0.233. It indicates that there is a low degree of positive association between P/E ratios and the share price and the result is also not at all significant. Similarly, other financial ratio ROI also show low degree of positive association of 0.281 with the share price of fifty stocks of Nifty and the result is significant at 5% confidence level. EPS shows the high degree of positive association with share price i.e. 0.698 and the result is significant at 1% confidence level.

In case of Hang Seng Index (Table VI) correlation among stock price and other three exploratory variables are (-0.065), 0.143 and 0.631. The association between stock price and EPS is statistically significant at 1% level of confidence.

Table IV depicts the result of multiple correlations and multiple regression analysis. By use of these techniques we attempted to examine the joint influence of the selected financial ratios on the share price and the regression coefficients have been tested with the help of student 't' test. Table-IV indicates that stock price has increased by 0.814 in response to increase in P/E ratio by one units and that is not at all statistically significant. Similarly, ROI increased by one unit, stock price has declined by 0.159 units which are also not at all statistically significant and one unit of EPS change the

share price changed by 0.726 units and it is also not significant.

In reference to Hang Seng index (Table VIII), it can be inferred that stock price has increased by 1.128 in response to increase in P/E ratio by one unit and that statistically not significant. Similarly, the result of increase in ROI by one unit influenced the share price by declining 0.017 units which is also not at all statistically significant. Again, changes in EPS by one unit result in change of share price by 1.063 units which also not significant at all.

The value of multiple correlation coefficients between the explanatory variables P/E Ratio, ROI, EPS and the dependent variables stock price taken together were 0.844 in case of Nifty and 0.980 in Hang Seng index. It indicates that the share price was highly influenced by these financial ratios. It is also proved from the Table III and Table VII that the value of R^2 is 0.713 in case of Nifty and 0.960 for Hang Seng that is 71.3% of variation in Nifty's stock price was caused due to joint variation of the explanatory variables (P/E Ratio, ROI and EPS) and 96% of variation in Hang Seng's stock price was caused due to joint variation of the explanatory variables (P/E Ratio, ROI and EPS). It implies that 71.3% and 96% of the stock price explain by these three ratios compositely in both the index stock price respectively. Therefore it appears from the Table III and Table VII that P/E Ratio, ROI and EPS are the influential elements of stock price and the changes in stock price is also largely depends on this three financial ratios. Here the Durbin-Watson test statistic indicates that the residuals are not dependent as the value of DW model lies between1 to 2. Variance Inflation Factor (VIF) measures the multicollinearity problem. In this paper the variables are totally safe from the multicollinearity problem as the calculated value of VIF has been found to be negligible. (Ref. Table No. IV and Table VIII).

8.0 Conclusion and Policy Implications

Our moot research question was to examine whether the degree of impact is same across countries? Our result shows that financial ratios have the great impact on share price in both the countries. However, result shows that Hongkong market (**R^2=.960**) is slightly ahead of India (**R^2=.713**).

Our research is having significant policy implication as both the countries have shown high R^2 values. It explains that changes in financial ratios explains stock price across nations but in economically advanced countries its impact is greater.

Another important policy implication is about degree of influence. In case of Nifty financial ratios influence at about 71.3 percent of its share price movement where as in Hang Seng it is 96 percent. Investors can use these ratios for selecting a growth stock or for value analysis of a stock.

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Appendix

Results: India (Nifty and related financial ratios)

Table I: Descriptive Statistics

Variables	N	Mean	Standard Deviation	Skewness	Kurtosis
Y	50	6.4134	1.00540	-.126	-1.001
X_1	50	2.7428	.65564	.458	.441
X_2	50	2.8848	.74515	-.001	1.187
X_3	50	3.2248	1.23474	-.762	.478

Table II: Correlation Matrix of Nifty Index

	Stock Price	PE Ratio	ROI	EPS
Stock Price	1			
PE Ratio	.233	1		
ROI	.281*	.260*	1	
EPS	.698**	-.300*	.292*	1

*Correlation is significant at 0.05 level (1 tailed),
**Correlation is significant at 0.01 level (1 tailed)

Table III: Model Summary of Nifty Index

R	R²	Adjusted R²	Std. Error	Durbin-Watson
.844	.713	.694	.55578	2.000

Table IV: Multiple Correlations and Regression of Nifty Index

Variables	b	t	Sig.	VIF
Constant	2.298	4.772	.000	
PE Ratio	.814	5.927	.000	1.285
ROI	-.159	-1.317	.194	1.279
EPS	.726	9.865	.000	1.310

Results: Hong Kong (Hangseng and related financial ratios)

Table V: Descriptive Statistics

Variables	N	Mean	Standard Deviation	Skewness	Kurtosis
Y	50	3.2364	1.06982	.377	-.129
X_1	50	3.4688	1.20684	.298	-1.117
X_2	50	2.0906	.63045	-.013	-.482
X_3	50	-.2552	1.66658	.054	-1.194

Table VI: Correlation Matrix of Hang Seng Index

	Stock Price	PE Ratio	ROI	EPS
Stock Price	1			
PE Ratio	-.065	1		
ROI	.143	.207	1	
EPS	.631**	-.806**	-.067	1

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

Table VII: Model Summary of Hang Seng Index

R	R²	Adjusted R²	Std. Error	Durbin-Watson
.980	.960	.958	.21962	1.949

Table VIII: Multiple Correlations and Regression of Hang Seng Index

Variables	b	t	Sig.	VIF
Constant	-.368	-2.242	.030	
PE Ratio	1.128	24.770	.000	3.066
ROI	-.017	-.330	.743	1.077
EPS	1.063	32.891	.000	2.947

INSTITUTIONALIZED WHISTLEBLOWING – A STUDY OF THE PERCEPTION OF EXECUTIVES OF SELECTED CENTRAL PUBLIC SECTOR ENTERPRISES IN KOLKATA

Madhu Agarwal
Madhusree Mukherjee

Abstract:

Whistleblowing is an effective tool for ensuring a holistic environment in organizations that rely upon the pillars of accountability and integrity. Usually whistleblowers face dilemma about whether to raise their concern, to whom to raise the issue, what may be the consequences, will they be heard or shall they remain silent. This study is an attempt to assess the perception of executives in the Central Public Sector Enterprises having offices in Kolkata with respect to whistleblowing.

Key Words:

Whistleblowing, Central Public Sector Enterprises, Executives, Whistleblower Procedure & Protection Index (WPPI), Whistleblower Procedure and Protection Model (WPPM)

Introduction

Whistleblowing is an essential element for safeguarding the public interest and for promoting a culture of accountability and integrity (Organization for Economic Co-operation and Development, 2015). Whistleblowers around the world have one common characteristic that they have observed malpractice in workplace and raised their voice voluntarily to combat such practice. However, almost, all whistleblowers generally face similar dilemma about whether to raise their concern, to whom to raise the issue, what may be the consequences, will they be heard or shall they remain silent. The key reason behind such hesitation is the ineffective implementation of the legal provisions by the government.

This study is an attempt to assess the effectiveness of Whistleblower policies and employee perception in the Central Public Sector Enterprises (CPSEs) having offices in Kolkata. There has been a circular to frame a policy for employees under whom they can raise their concern about malpractices without fear since 2010 (Government of India, 2010). However, there are not many instances of whistleblowing inspite of having a high corruption perception index[1] 79 and score[2] 40 (Transparency International, 2016). In-spite of having a number of Acts and Bills passed during the tenure (2009 – 2016), the desirable impact has not been visible. As public sector deals with huge public fund and responsibility, chances of corruption is also very high.

TABLE1: INDIA: Corruption Perception Index and Score for Public Sector Corruption

Year	2016	2015	2014	2013	2012	2011	2010	2009
Score	40	38	38	36	36	31	33	34
CPI	79	76	85	94	94	95	87	84

Such trend shows that inspite of having a number of Acts and Bills passed during the tenure 2009 – 2016 (such as Public Interest Disclosure and Protection of Informer's Act (PIDPI) 2004, PIDPI 2014, Listing Agreement 2014, Companies Act 2013, Whistleblower Bill 2011 and finally the Whistleblower Act in 2014), the desirable impact has not been visible. Thus, mere framing of policy is not enough in itself. Although whistleblower policy or the mechanism has been in existence since 2010 in one way or the other in public sector, the expected outcome has been lacking somehow.

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[1]*CPI represents country's position w.r.t. other countries (out of 176).*
[2]*Score represents perceived level of public sector corruption at a scale of 0 (highly corrupt) to 100 (very clean).*

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2. Brief Survey of Literature

Corporate governance promotes the culture of consciousness, accountability, transparency and sincerity in company (Puri, Trehan, & Kakkar, 2010). Organization's reputation suffers immensely if the internal illicit activities are exposed publicly (Barnett T. , 1992).Under such circumstances, strong Whistleblower Policy can act as an alarm to caution concerned stakeholders about uncertain activities including probable fraud in near future (Puri, Trehan, & Kakkar, 2010). Therefore, it should be incorporated as an essential segment of corporate philosophy (Puri, Trehan, & Kakkar, 2010) because a whistleblower can be a rescuer in various potentially adverse situations (Trevino & Victor, 1992).

Available literature on whistle blowing highly emphasizes upon internal whistle blowing as an important control mechanism to check wrongdoings. At initial stage the problems may not be very harmful (Miceli, Near, & Dworkin, 2009), (Dworkin & Baucus, 1998) and internal whistleblowing can save companies from possible hazards. This is also termed as **"Institutionalized Whistle blowing"**. It refers to the set of procedure allowing potential whistleblowers to raise the matter internally before they become whistleblowers in the strict sense of the term (Vendekerckhove & Commers, 2004). The companies having institutionalized whistle blowing mechanism tend to have more internal disclosures and a steep fall in the cases of going to media (Barnett, Cochram, & Taylor, 1993).

Researchers argue that retaliation (such as demotion, involuntary relocation, unjustified delay in promotion, social retaliation, and physical harm to the person or property) discourages whistleblowing and affects the organization adversely in long run ((Miceli &

Near, 1992), (Ethics Resource Centre, 2012), (Rehg, Miceli, Near, & Scotter, 2008)). The protection available to whistleblowers closely affects the employee's willingness to disclose malpractices. The statutory guidelines worldwide theoretically claim to protect the whistleblower in every possible way ((Dworkin & Near, 1997), (Second Administrative Reforms Commission, 2007), (The Whistleblowers Protection Act 2011)).

The act of Whistleblowing gained more significance on global platform since its inclusion in Sarbanes Oxley Act 2002 (Sabanes-Oxley Act, 2002). In India, the term whistleblowing started gaining recognition since its inclusion in the Narayan Murthy Committee Report 2003 and subsequently various developments took place in this regard such as the Public Interest Disclosure and Protection of Informer's Act (PIDPI) 2004, PIDPI 2014, Listing Agreement 2004 & 2014, the Companies Act 2013, and then the Whistleblower Act in 2014. Whistleblowing has been globally accepted as an important measure to achieve good governance in companies.

3. Research Gap

The pivotal role of whistleblowing in identification of malpractices and its rectification has been recognized world-wide. However, Indian research has a void in this particular area. Certain studies on whistleblowing in Indian context have been done such as (Keenan J. P., 2002), (The World Bank, 2006). However any study on Indian public sector with regard to the whistleblower policy as well as the perception of executives on whistleblowing has not been noticed. Surprisingly, on international platform also there is only countable research done in this area. Significant contributors in this area are

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Brown (2007), Hassink, Vries, Bollen (2007) and Robinett, Marathe, & Kikeri (2010).

This study is an attempt to address the gap to the extent possible. This research is focused to measure the perception of executives in this regard.

The study is centered on the CPSEs having offices in Kolkata. Though it seems that the study covers only the employees in Kolkata region, in reality it also reflects the perception of employees throughout India. The reason behind such statement is that the executives working in CPSEs have transferrable job and have work experience of working in different locations throughout the country. Hence, an executive who is in service for more than 3 years is likely to provide an opinion independent of geographical boundary.

4. Objective of the Study

As the country gradually emerges as one of the future powers in the global arena, an exploratory journey into the field of institutionalized whistleblowing in order to ensure effective corporate governance seems to be extremely relevant. The present study finds a real void in this field when it comes to the Indian scenario.

This study, therefore, attempts to ascertain the perception of the managerial personnel / employees in the CPSEs towards the mechanism of institutionalized whistleblowing in their organizations.

5. Methodology

A field survey has been conducted among central public sector companies having offices in Kolkata in two phases namely **Phase I- 2012 – 2013** (prior to the passing of the Whistleblower Act) and **Phase II – 2015 –**

2016 (after the passing of the mentioned Act). The information gathered can be categorized to show three broad dimensions of the respondents:

1. *Psychographic information of respondents*- such as the age group, educational background, service tenure, department (work profile), designation (level) of the executives
2. *General awareness about the subject* among respondents
3. *Knowledge about the procedure and protection with respect to whistleblowing* in the organizational and the prevailing practice.

The collected data has been tested using statistical software SPSS to find various statistical results. The processing of data and the recording of significant insights has been done in following manner:

Step 1: Identification of Factors which turn out to be relevant in the context of whistleblowing[3]

Step 2: Calculation of **WPPI** (Whistleblower Procedure & Protection Index)[4].

Step 3: Finding relationship between WPPI and other psychographic variables (such as Gender, Qualification, Service Tenure, Level, & Department) through **WPPM** (Whistleblower Procedure & Protection Model)

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[3]*A questionnaire has been designed to collect the responses of the employees about whistleblowing. The questions focused around the reporting procedure and protection of whistleblower has been framed in the form of Likert Scale.*
[4]*A cluster analysis (2 groups) has been done on the basis of the variables namely, gender, qualification, service tenure, level and department.*

Step 4: Make comparative analysis of the results obtained in both the phases

Step 1 is aimed at finding the key areas that are related with the executive's awareness about the issue of whistleblowing, internal reporting mechanism and the safeguards available to them. The number of questions raised is large and captures various dimensions in the context. Factor analysis has been chosen as the method to identify key components that reflect the various dimensions considered under the study.

Step 2 is aimed at calculating an index to measure the awareness level among the executives about the general content, procedure and protection available thereon. The index value would be calculated on the scale of 0 and 1. This study assumes that index value of 40% shows reasonable awareness about the whole concept of whistleblowing (WPPI >=0.4).

WPPI calculation has been done on the basis of the Factors identified in step1. It has been verified that these factors follow normal distributions. This is absolutely necessary for Discriminant Analysis

Step a: Cluster analysis method has been used to classify the whole data into two clusters on the basis of the psychographic variables.

Step b: Using the factors, Discriminant Analysis has been done based on two groups identified by Cluster Analysis of the psychographic data. Discriminant Scores which are in the form of the following; $a_1F_1 + a_2F_2 + a_3F_3 \ldots\ldots + a_nF_n$

Where a_i = coefficient associated with the ith Factor i.e. F_i

For the purpose of index computation the Discriminant Score (DS) is then mapped on a scale of 0 to 1 so that it can act as a measure of overall awareness of executives in context of whistleblowing. WPPI values close to 1 indicates high level of awareness and 0 indicates no awareness at all. The following formula has been used:

$$WPPI = \frac{DS - Minimum(DS)}{Maximum(DS) - Minimum(DS)}$$

Where,

WPPI = Whistleblower Procedure and Protection Index

DS = Discriminant Score

0	0.4	1
No Knowledge	Moderate	Excellent Knowledge and Perception
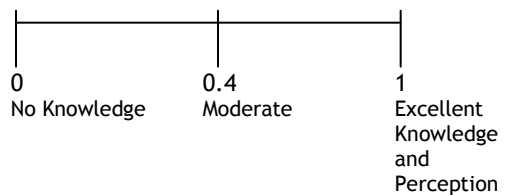
Step 3 is aimed at building a Whistleblower Procedure and Protection Model (WPPM) which examines the relationship between various parameters and WPPI. In order to build the model, a correlation regression analysis is to be done. Linear Regression function has been chosen to do the analysis and find the estimated model. Through SPSS, collinearity check has also been done to find the existence of multi-collinearity. The regression model for WPPM can be stated as:

WPPI = f (G, Q, S, L, D)

Where, G=Gender, Q=Qualification, S=Service Tenure, L=Level, D=Department

It signifies that the awareness level among the executives is likely to vary as per the variation in gender, qualification, years spent in an organization, level (position seniority) of an executive and also the department for which they work. Thus, Whistleblower Procedure and Protection Model (WPPM) can be built as below:

The Estimated Model:

$$\text{WPPI} = \alpha_0 + \alpha_1 G + \alpha_2 Q + \alpha_3 S + \alpha_4 L + \alpha_5 D + \varepsilon$$

$$\text{Estimated WPPI} = \hat{a}_0 + \hat{a}_1 G + \hat{a}_2 Q + \hat{a}_3 S + \hat{a}_4 L + \hat{a}_5 D$$

The condition index (CI) value should be compulsorily less than 30. CI value greater than 30 shows very serious problem of collinearity and requires serious reconsideration of the data set collected. CI values within 20 is considered as acceptable values and can be accepted as valid results where problem of collinearity do not exist at all or even if it exists, it is insignificant. Correlation Coefficients obtained after the analysis should be checked for the Unstandardized values as well as standardized values. Unstandardized coefficients should be less than 1 and standardized values shows the relationship between WPPI and the various parameters considered.

6. Sampling scheme and dataset

The primary research population of this study is the central public sector companies that are listed on the Bombay Stock Exchange. The population comprises the Kolkata-based Central PSEs, having registered office and/or corporate office within the jurisdiction of Kolkata Municipal Corporation. The names of such companies have been collected from the website of the Department of Public Enterprises (DPE) under Government of India (GOI) as on 31.03.2012. The names have been enlisted in the Public Enterprise Survey Report 2011-2012 (Volume 1, Chapter 1, Performance Overview, page number 19, Table 1.15)[5] conducted under GOI. The total number of companies stood at 45. The HR managers in each of these companies was contacted for the required permission to reach the executives of the company. This helped in stratified sampling. Then from each level, executives were approached on a random basis.

The study does a field survey among the executives of CPSEs having offices in Kolkata to assess their perception about whistleblowing.

The survey is questionnaire based and aimed towards finding out the knowledge of executives across the departments about the internal whistleblowing mechanism prevailing in their organization. It had two parts, one the psychographic components – such as age, gender, qualifications, length of service, position held – managerial level [top/ middle/lower], etc. the second part presents questions / statements [both open-ended and closed ended] – to capture their perception about whistleblowing.

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[5]http://dpe.nic.in/sites/default/files/Chapter%20merge%20file_2.pdf

The field survey has been conducted in two phases.

Phase I – Prior to the passing of the Whistle-blower Act in the year 2014

Phase II – After the passing of the Whistle-blower Act in the year 2014

In phase I, 250 employees and in phase II, 200 employees are randomly (stratified random sampling technique) chosen from different organizations for the survey. These employees are investigated with the structured questionnaire. Due to non-responsive respondents and also due to data being unreliable, sample size has been reduced to 238 in the 1st phase and 150 in the 2nd phase.

7. Results - Comparative Findings for Phase I & Phase II

This study was conducted by two surveys, one in 2012-2013 (identified as Phase I) and another in 2015-2016 (identified as Phase II). In both the cases Kolkata based public sector company executives were asked to fill up a questionnaire comprising queries on the basic awareness, reporting procedure, protection available in the context of whistleblowing. Significant findings are summarized below comparing the situation before and after the passing of the Act[6].

1. In Phase I, ten key components have been identified which explains the total variance upto 72.984%.In Phase II, seven key components have been identified which explains the total variance upto 66.464%. It has been identified that clarity about the concept of

whistleblowing, reporting procedure, reporting authority, organizational support, expected consequences and the protection available thereon are the key components affecting the perception of executives. These components play crucial role in the taking a stand and raising voice against malpractices.

2. The components identified in both the phases are significant as reflected by the results. In phase I, eigen value is .127 (very low), however, the situation has improved in Phase II (eigen value =.344). Also the canonical relation has improved from .336 to .506. The results are accepted as they are positively correlated and show p value <.05 (highly significant). It means the components identified are positively correlated with each other and play a significant role in building executive perception.

3. The collected dataset has been classified correctly (>50%) in Phase I. In Phase II, the classification achieved a better result (>70%).

4. Psychographic variables considered as the basis of analysis are all significant as established through the ANOVA results. In Phase II, gender could not be established as significant variable due to low workplace gender composition.

5. WPPI results for Phase I show that 86.1% has WPPI >=.4 and 13.9% has WPPI <.4. In Phase II, 51.3% has WPPI >=.4 and 48.7% has WPPI <.4. It reflects that although more than 50% executives are aware about whistleblowing and the reporting mechanism, the tendency to raise their voice has reduced after passing the Act. Due to lack of clarity in the protection mechanism and the

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[6]For report on the detailed analysis in phase wise manner, authors can be reached at their email ID.

remedy for the risks and the losses incurred in this regard, executives have become more introverts. The hesitation in expression for observed malpractices has increased which is unfavourable for the health of the organization as well as our country.

6. The WPPM model built through regression is significant.

WPPM for Phase I is –

Estimated WPPI = .578 - .020 G + .014 Q - .028 S - .042 L + .020 D

Where, G = gender; Q = qualification; S = service tenure, L = level; D = department.
Q and D are directly related with WPPI. On the other hand, gender, service tenure and level has inverse relationship with WPPI. It shows that as the seniority and responsibilities of an executive in organization increase, the propensity to blow the whistle reduces significantly and hence, they give lesser effort to keep themselves updated with the procedure related information about whistleblowing. Also, female executives seem to have very less urge to know and blow whistle for malpractices. The R value is .431 and R square is low 0.186. However, the model result is significant (p<.05) and hence provides significant results. Thus, model can be accepted and used to draw important inferences. It is further established through ANOVA results for the model which is again highly significant.

WPPM for Phase II is -

Estimated **WPPI = .166 + .016 G + .043 Q + .060 S - .085 L + .043 D**

Where, G = gender; Q = qualification; S = service tenure, L = level; D = department.

G, Q, S and D are directly related with WPPI and level has inverse relationship with WPPI. It shows that as the seniority and responsibilities of an executive in organization increase, the propensity to blow the whistle reduces significantly and hence, they give lesser effort to keep themselves updated with the procedure related information about whistleblowing.

The R value is .525 and R square is low 0.276. However, the model results are significant (p<.05) and hence provides significant results. Thus, model can be accepted and used to draw important inferences. It is further established through ANOVA results for the model which is again highly significant.

7. The Variance Inflation Factor (VIF >1) is favourable for all the psychographic variables considered and the Condition Index (CI<20). It shows the absence of any serious problem of collinearity among the variables.

8. It has been noticed that **gender** had an inverse relationship with the perception index in Phase I. However, a significant change has come and now there exists a positive relationship. It means earlier, female executives used to completely ignore the instances of wrongdoing and never used to take any systematic steps to report about it. However, after the Act has been passed, it has a positive impact. Although the value obtained here is very low (<.1), the situation can be improved.

9. Higher **qualification** is generally expected to play a major role in building the perception among employees. It bears a positive correlation with the WPPI. However, it does not show any significant change

among the two phases. Interestingly, the **department** of the executive plays a critical role in building the perception. It depicts that the motivation, cohesiveness, leadership and the type of work plays a significant role in encouraging an executive to keep updated with the company policies and raise voice against malpractices whenever required. The departments (such as audit, quality control, vigilance, logistics) that demand timely action and ethical work culture play pivotal role in building the perception of executives on whistleblowing.

10. Surprisingly, the **level** of executive bears an inverse relationship with WPPI. After the passing of the Act, the situation has deteriorated. As noticed during the interviews, with a rise in the position and respect in an organization, executive himself generally becomes less interested in taking risks. Also, if the organization fails to provide the required protection to the whistleblower, higher level executive prefers to stay silent.

However, top level executives are enthusiastic about the implementation of internal reporting mechanism and support the idea to make employees aware about their responsibility to report against wrongdoing. It has been found that management is equally concerned about the negative impact of whistleblowing. Top level executives including executive-directors and Chairman-cum-Director (CMD) of a number of companies shared that many of the whistleblowing complaints received do not have any base. Those complaints are made merely to create some trouble or to set personal scores as the target. Investigation and the documentation of such cases eat up lot of management and vigilance team's time. Thus, time which is a valuable resource is wasted which could have been utilized for more meaningful purposes. Hence, top level managers desire that while whistleblowing will be encouraged, the malicious complaints should be dealt with rigorous punishments.

11. **Service tenure** means the number of years spent by an executive in the organization. In Phase I, it has a negative relation with WPPI. However, in Phase II, there is a noteworthy change as it shows a positive correlation. As the association with an organization increases, executive becomes more loyal towards organization. In Indian context, due to absence of dedicated law, many people used to avoid reporting. The reason is that if the executive's allegations are not established, organization may consider him to be disloyal. Also, the consequences of whistleblowing are risky. In the absence of proper protection, experienced executives used to stay silent because of the fear of appearing to be disloyal, loss of job and other security issues. In interview, middle level executives have given a mixed response. Few mention that whistleblowing is a good attempt to combat corruption. Many share that though theoretically the concept of whistleblowing is good, real picture is quite different. Even if the organizational policy is in existence, employees do not feel much comfort in raising concern. Cordial relations with peers and pressure from superiors often restrict them in raising the issues officially. Also, confidentiality is guaranteed only theoretically.

Practically, it is not there. Hence, fear of victimization becomes a real constraint. Some of the executives in this level seem to be quite indifferent towards the whole idea. Middle level managers are found to be more concerned about the public image following the act of whistleblowing. Very interestingly it is observed that the operational level executives are largely not even aware about the concept of whistleblowing. Many pleaded ignorance about the company policy in this regard.

In Phase II, the situation has improved, and a positive relation has been established. However, the Act could have had a better impact on executives provided it comprised of more clarity on protection of whistleblowers.

8. Conclusion and Recommendations

To build an effective internal reporting mechanism, on the basis of survey findings this study recommends the following points to be considered:

1. *Organizational environment* must be such that the observed malpractices can be reported. Hence, clarity in the reporting procedure, language in which concerns can be raised (regional, English or national), competent authority approachability, ways to report about retaliation, transparency in the shield available to the whistleblowers as their right, types of protection available etc. should be stated meticulously in the policy framed.

2. *Dedicated Whistle Authority* for reporting malpractices who may work more independently and efficiently as compared to a person who is delegated with multi-facet responsibilities.

3. *Frivolous reporting* should be made punishable.

4. *Identity protection* is a very sensitive issue. Organization and the competent authority have the full responsibility of maintaining identity of the complainant confidential.

5. *Periodic awareness sessions* should be conducted from time to time to sensitize and build confidence among employees towards the positive effects of whistleblowing.

6. *Ethical work practices* build better work culture and encourage executives to report any unusual activity. The study establishes that the departments where ethical and time-based performance is the way of work, better perception for the whistleblowing has been achieved. Departments such as quality control, audit, vigilance and logistics shows better perception index.

7. The *time-frame* for reporting, investigation and outcome should be clearly specified. As the time gap increases, the likelihood of loss of evidence and non-availability of witness increases and in the same context the extent of damage may also increase manifold. Late outcome sometimes results in profound damage to the organization as well as the whistleblower in terms of retaliation.

8. Whistleblower must *report in good faith* and also must have sufficient reasons to prove that. Organization must be helpful to the whistleblower in gathering evidence and must also reimburse the expenses in this connection.

9. There must be clarity about the *designated authority to which retaliation must be reported*. Also, most of the companies support whistleblower policy on paper, but they do not mention to whom such cases shall be reported.

10. *Secondary appeal* option is a very significant for the unsatisfied whistleblower.

11. Although in this study workplace composition in terms of *gender* has not been considered in the beginning, it has been observed that female executives generally avoid raising their voice against malpractices. It is generally due to the fear of retaliation. Interview observations also noted the same. In Phase I, it has inverse relationship with the WPPI. However, in Phase II the relationship has become positive, further analysis is needed to establish it.

12. Due to increasing importance of data, companies should have a separate *independent policy to deal with the issues related with data manipulation and misuse*.

Whistleblowing is powerful weapon. It can be used effectively only if the required accessories as well as the method to use it are clearly stated to the ultimate end-user. However, mere framing of the policy or making it mandatory does not ensure that it will be used efficiently. Transparency in the reporting procedure, reliable outcomes, and protection to the whistleblower are the key issues that need special attention. The Whistleblower Act 2014 is expected to strengthen whistleblowers; however, it has many constraints that still keep the potential whistleblower away. In fact, the study reveals that the situation has worsened because the expected protection for whistleblower has not been considered carefully and carries a lot of ambiguity. The state of whistleblower can be improved if such ambiguities are clarified and the Act is reframed to make every step transparent. Also, the organizational policy on internal reporting mechanism must be reframed making the procedure transparent, protection rules clear and also the punishment for the frivolous complaint clear. Raising voice internally is a very effective solution to many problems of the organization and organizations should make use of it effectively.

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IS FOREIGN DIRECT INVESTMENT DELIVERING WHAT IT PROMISED?

EMPIRICAL EVIDENCE FROM INDIAN HEALTHCARE INDUSTRY

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Abstract:

Foreign Direct Investment (FDI) was permitted in the Indian Drugs & Pharmaceutical (D&P) sector with the expectations of additional capital influx, technology spillover, improved managerial practices, export promotion and import substitution. But as the prime aim of the foreign investors is profit augmentation and market capture by way of Brownfield acquisitions, the accessibility and affordability of essential drugs and healthcare services are going way beyond the reach of the Indian commoners. Contextually, using the Auto Regressive Distributed Lag (ARDL) model and the Toda-Yamamoto approach to Granger non-causality, the present paper attempts to identify whether there is actually any role of FDI in improving the performance of the D&P sector of India or not. The study finds no conclusive evidence of long run cointegrating relationship between FDI equity inflows in Indian D&P sector and the sectoral stock index, and export and import of pharma products. In the short run, the sectoral stock index, exports and imports of Indian D&P sector, taken together, is found to granger cause FDI equity inflows, but it is not the other way round.

Key Words:

ARDL, Drugs & Pharmaceutical (D&P) Sector, FDI, Stationarity, Toda-Yamamoto Approach to Granger Non-causality

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Introduction

Public health has been a matter of serious contemplation for the humankind since ages and is expected to remain so, India being no exception. Drugs and Pharmaceuticals (D&P) are an inseparable part of the healthcare industry and thus, they are treated as 'Essential Commodities' in India. Healthcare assumes more significance in Indian context because majority of her civilians are poor and expenditure on medicines constitute almost 70 per cent of the total medical expenditure. Moreover, virtually 80 per cent of the total healthcare expenditure in India is not covered by either insurance or any other social security measure (Kumar, 2013). In other words, merely 25 to 30 per cent of total healthcare expenditure comes by way of government expenditure which is quite insufficient given the number of people below poverty line residing in this nation (World Bank, 2016).

Prior to 1970s, the D&P market of India was dominated (85 per cent share) by foreign Multi Nation Corporations (MNCs) with little domestic participation. Then the Indian Patent Act was passed in 1970 allowing process patent, thereby encouraging domestic producers to manufacture and export generic drugs. Thereafter, came the Foreign Exchange Regulation Act, 1974 (FERA), Drug Price Control Order (DPCO) and sectoral reservations for public sector and small scale sector, to build up self-sufficiency. The DPCO governed the prices of all bulk drugs and formulations to ensure the widespread availability of medicines at reasonable prices. India used to be a net exporter of D&P during this period. The gradual tightening of exchange control norms and restrictions on FDI fostered the dominance of Indian generic drugs manufacturers over the years. The seeds of liberalization of Pharma FDI policy were sown in the 1986 Drug Policy. The liberalization measures in the Industrial Licensing Policy Statement of July 1991 were implemented in the D&P sector in the year 1994. The key elements of the liberalization measures were:

a) Abolition of industrial licensing for all bulk drugs and their intermediaries and for all formulations except specific cell/ tissue-targeted ones;
b) Elimination of the ratio parameter linking the production of formulations to that of indigenous production of bulk drugs from the basic stages;
c) Abolition of restrictions on import of D&P and placing them in the Open General License (OGL) category;
d) Reduction in tariffs for the import of D&P;
e) Permitting FDI in the sector;
f) Relaxation of the drug price control mechanism and
g) Relaxation, dilution and replacement of FERA by the Foreign Exchange Management Act (FEMA) (Joseph, 2012)

Initially, FDI up to 51 per cent, under the automatic approval route, was allowed in manufacture of drugs, medicines and allied products. By the prescription of the Drug Policy 1994, the sector was further opened up in the year 2000, by permitting FDI up to 74 per cent, under the automatic route. FDI in hospitals, clinics and diagnostic centers was allowed up to 100 per cent through automatic route. Further liberalization of the sector took place in 2001 and it was opened up for 100 per cent FDI, in respect of drugs not attracting compulsory licensing (CL) or involving use of recombinant Deoxyribonuclic Acid (DNA) technology and specific cell/ tissue targeted formulations. Eventually, bowing to the Trade-Related Aspects of Intellectual Property Rights

(TRIPS) Agreement obligations in 2005, India amended her Patent Act, 1970 to recognize product patents. As the global pharma majors were compelled to get into the business of generic drugs due to their patent expiry, they targeted leading Indian generic firms which were more export oriented. Thus, India was recognized as a cost effective field to manufacture D&P that were compliant with European Union (EU) and US export requirements (Jhunjhunwala & Sah, 2013). From 2005, drugs manufacturing was freed from licensing. In 2011 the Arun Maira Committee recommended that, FDI is to be allowed up to 100 per cent in the pharmaceutical sector; in the case of Greenfield investment (fresh set up) it would continue to be permitted under the automatic route, and for the Brownfield investments (taking over of existing enterprises) it would require prior

approval from the Foreign Investment Promotion Board (FIPB). Those recommendations were accepted subsequently, and are currently in vogue. Moreover, even in insurance, an emerging component of healthcare services, foreign investment was allowed up to 49 per cent: investments up to 26 per cent was placed under the automatic route and investments beyond 26 per cent and up to 49 per cent required prior government approval. From 2015, 100 per cent FDI has been allowed through automatic route in medical devices also, irrespective of Greenfield or Brownfield investment (Department of Industrial Policy and Promotion, 2015).

The wide gamut of activities under the healthcare sector can broadly be classified into the following sub-sectors, as in Figure (1):
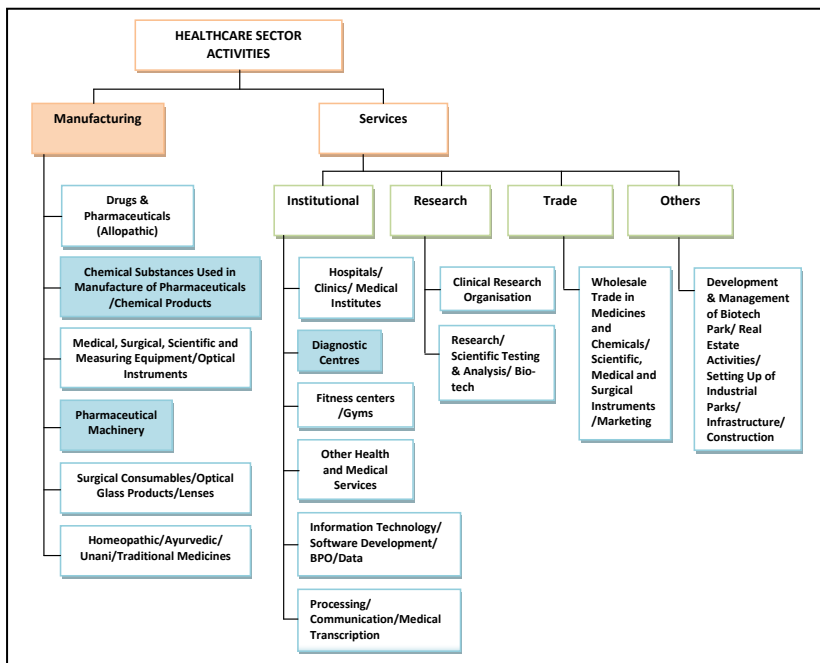
Figure 1: Classification of Indian Healthcare Sector Activities

Source: Compiled from Joseph & Ranganathan (2016)

The market segmentation pattern of Indian Pharmaceutical Industry has been presented in Figure (2):

Figure 2: Market Segmentation of Indian Pharmaceutical Sector
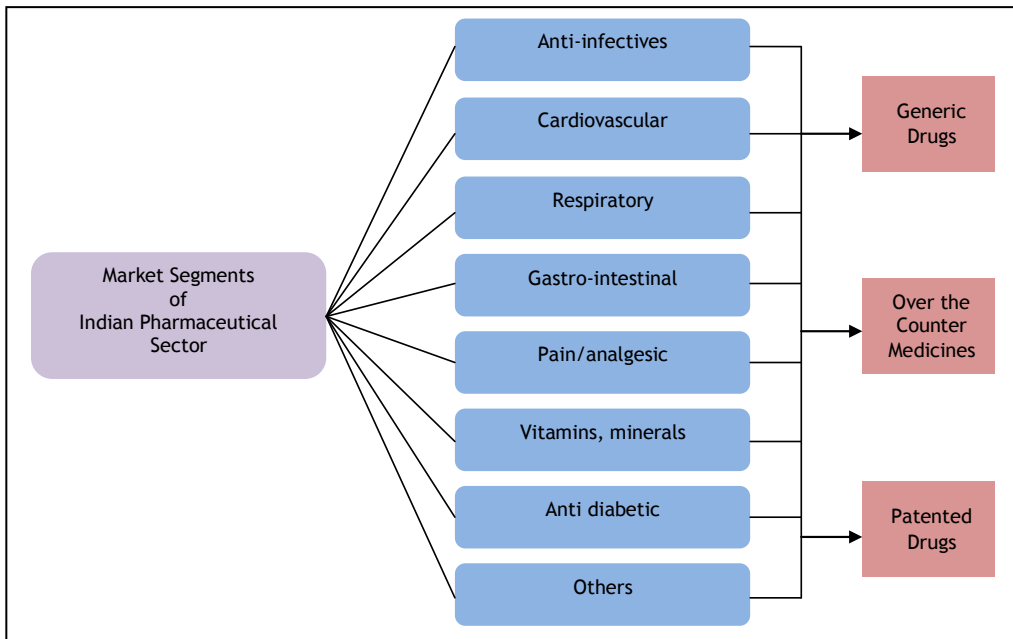
Source: Compiled from India Brand Equity Foundation, 2017

As evident from Figure (2), depending on the nature of ailments, the healthcare products and services of India can broadly be classified into eight segments. The products of each segment can again be categorized into, generic drugs, over the counter medicines and patented drugs. India is the world's largest provider of generic medicines and accounts for 20 per cent of global generic drug exports (in terms of volumes). USA is the largest export market for India. The Indian pharmaceutical industry accounts for the 2nd largest number of Abbreviated New Drug Applications (ANDAs), is the world's leader in Drug Master Files (DMFs) applications with the USA, and is the largest exporter of formulations in terms of volume, 12th in terms of export value with 14 per cent market share. Moreover, in 2016, India became the 3rd largest global generic Active Pharmaceutical Ingredients (API) merchant market.

FDI was permitted in the D&P sector with the expectation that, along with an additional flow of capital, it would bring about advanced technology, managerial expertise, spillover effects, newer and bigger export markets and import substitution. The different entry routes of FDI equity inflows

into the Indian sub-continent can be either by way of Mergers & Acquitions (M&A) or Joint Ventures or Strategic Alliances. M&A can again be in the form of either Greenfield investment or Brown-field investment. The investors may be either realistic FDI investors, or private equity/ venture capital/ hedge funds etc., or India-related foreign investors i.e., investors falling under the category of Indian diaspora. From January 2000 to June 2015, the Indian D&P sector managed to bag Rs. 666,697.66 million (US$ 13,351.54 million) (5.14 per cent of total FDI equity inflows into India). It is the sixth largest sector in terms of attracting FDI equity inflows in India. However, most of the inflow into the D&P manufacturing was due to the acquisition of leading Indian firms in the D&P industry resulting in the transfer of ownership and not in new investments. Pharma, healthcare and biotech segments have witnessed significant increases in M&A activities over the years. Of late, pharmaceuticals segment has accounted for more than 70 per cent of M&A deals in India. An illustrative list of recent M&A deals in D&P sector where an Indian company has been taken over by a foreign conglomerate is being appended hereunder in Table (1):

Table 1: Foreign Acquisition in Indian D&P Sector

Foreign Company	Country of Origin	Indian Company	Year of M&A	Deal Value (in million US$)
Mitsui	Japan	Arch Pharmalabs	Sep 2012	26.7
Danone	France	Wockhardt	Sep 2011	350
Reckitt Benckiser	UK	Paras Pharmaceuticals	Dec 2010	726
Abbott	USA	Piramal Healthcare	May 2010	3720
Hospira	USA	Orchid Chemicals (Injectables)	Dec 2009	400
Sanofi Aventis	France	Shanta Biotech (Vaccines)	June 2008	783
Daiichi Sankyo	Japan	Ranbaxy Labs	June 2008	4600
Fresenius	Singapore	Dabur Pharma (Oncology)	April 2008	219

Source: www.ipekpp.com

The D&P (allopathic) segment received the majority of the FDI inflows via Brownfield acquisition route from the realistic FDI investors. In healthcare services, more than half of the investments came into hospitals and clinics in the form of private equity funds, signaling the focus of investors on earning opulent profits and not on long term commitment or desire for expansion. The overall analysis of the D&P sector highlighted R&D as the only segment where FDI resulted in the development of the capabilities of the domestic sector. But unfortunately, FDI in R&D of generics and formulations constitute an insignificant portion of total FDI inflows into the sector (Joseph & Ranganathan, 2016).

Literature review

There is a vast literature highlighting on different potential and observed impacts of FDI equity inflows in Indian D&P sector:

Joseph (2012) apprehended that due to liberalization in the pharmaceutical sector, firms would shift from indigenous production to imports, especially of bulk drugs, and this

concern would aggravate with the change in the patent law. But his paper found that such fears have only partially come true. Exports of formulations had grown faster while their imports had not registered any jump, keeping the balance of trade positive. However, there had been a decline in domestic production of bulk drugs and a growth in imports because the industry was moving away from intermediates and was focusing on bulk drugs at the high end of the value chain.

The findings of Vyas, Narayanan & Ramanathan (2012) suggested that, the foremost motive of firms undertaking M&A activity in Indian D&P sector was net addition to its physical and capital assets. To remain competitive, firms, in addition to high amount of investment, required continuous upgradation of technology and capital assets. Due to limited availability of resources, small firms were unable to expand, but the larger firms had resources to invest in multiple capacity expansion as well as technological expansion. In-house R&D was complementary to technology acquisition via M&A route in a highly technology-oriented industry like D&P. The study specified that, around 6 percent of the sample firms participating in M&A activity had foreign affiliation, and Logit analysis reiterated that MNC affiliation positively influenced a firm's decision to participate in M&As.

Sahu & Agarwal (2015) identified M&A as a common strategy of firms to increase their performance through different measures. Their empirical findings suggested that, export intensity, import intensity, firm size and R&D intensity were the major determinants of M&A in the Indian D&P sector. Capital intensity was found to be more important while acquiring by share as compared to other determinants. Using

propensity score matching technique, the study concluded that M&As had positive impact on the post-acquisition profit margin scenario.

Pant (2015) observed that, all mergers did not produce synergies. However, he noted M&As to be crucial for the long terms benefits of the D&P sector. During 1995-2005, most of the M&A deals in India were aimed towards consolidation and growth orientation. The consolidation deals were targeted towards profit in the long term for the acquiring company, whereas the growth oriented deals were focused at capturing newer markets. Nevertheless, Greenfield acquisitions had always contributed to lesser economic growth primarily because they were investment oriented and secondly, due to the pressures of the creation of newer strategies.

Joseph & Ranganathan (2016) compiled data for 376 companies each individually accounting for inflow of above $1 million during the period between September 2004 and March 2013 and observed that, FDI had not resulted in the percolation of its widely acknowledged benefits, like technology transfer and export. On the contrary, it was the Indian companies which were doing better in terms of exports and R&D that got converted into FDI companies.

Research Problem

Many studies have been undertaken to identify the causes and effects of liberalization on Indian D&P sector, the motives behind M&As in D&P sector, company-specific impact analysis of FDI and the pre and post-acquisition performance of D&P companies of India. However, no study could be found on the long run and short-run relationship between FDI equity inflows into the Indian D&P sector and its resultant

performance, i.e., whether FDI is delivering what it promised.

Objectives of the Study

In this context, the objectives of the present study have been set as:

a. To test the existence or non-existence of long-run cointegrating relationship between FDI equity inflows in D&P sector of India and the performance of the sector; and

b. To test the short run causal relationship between FDI equity inflows in D&P sector of India and the performance of the said sector.

Research Methodology

Information pertaining to FDI equity inflows has been collected from the website of Department of Industrial Policy and Promotion (DIPP), the values for S&P BSE Healthcare Index have been collected from the BSE website and the data for exports and imports of pharmaceutical products have been obtained from the Industry Outlook, Centre for Monitoring Indian Economy (CMIE). Such data have been collected for the period of January 2007 to June 2015, i.e. for 102 months for the purpose of analysis. The selection of the study period is solely dependent on the availability of data.

Logged value of FDI inflows in the D&P sector (LFDIP), logged value of S&P BSE Healthcare Index (LBSEP), logged value of pharmaceutical products exported (LXM) and logged value of pharmaceutical products imported (LIM) have been considered to conduct the investigation.

The Auto Regressive Distributed Lag (ARDL) framework has been undertaken to study the cointegrating relationship among the variables, and the Toda-Yamamoto approach to Granger non-causality has been adopted, to understand the short-run dynamics among the selected variables.

Empirical Analysis & Findings

When two or more time series are individually integrated in the same order i.e. I(d), where d is the order of integration, but their linear combination has a lower order of integration, then such series is understood to be cointegrated. Hence, testing for stationarity of the data-series for identifying the order of integration is a pre-condition to the cointegration study. Here, at first, the Augmented Dicky-Fuller (ADF) test (Dickey & Fuller, 1981), Dicky-Fuller Generalized Least Square (DF-GLS) de-trending test (Elliott, Rothenberg, & Stock, 1996) and Philip Perron (PP) test (Phillips & Perron, 1988) have been conducted to ascertain about the existence of unit roots in the data series.

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Table 2: Unit Root Tests

			LFDIP	LBSEP	LEP	LIP
At levels	ADF	Intercept	-0.471106 [0] (0.8913)	0.533343 [0] (0.9871)	-0.359354 [2] (0.9108)	-0.378436 [2] (0.9076)
		Intercept + Trend	-1.499639 [0] (0.8235)	-2.210746 [0] (0.4782)	-2.555991 [2] (0.3013)	-4.269044 [1] (0.0052)*
	DF-GLS @	Intercept	1.290442 [0]	1.537959 [0]	2.240559 [2]	0.483714 [2]
		Intercept + Trend	-1.376052 [0]	-1.515791 [0]	-2.449057 [2]	-2.220041 [2]
	PP	Intercept	-0.499466 [3] (0.8858)	0.504934 [4] (0.9862)	-1.469347 [8] (0.5451)	-0.954082 [8] (0.7670)
		Intercept + Trend	-1.608468 [1] (0.7830)	-2.353141 [5] (0.4017)	-9.624571 [7] (0.0000)*	-7.040247 [6] (0.0000)*
At first differences	ADF	Intercept	-8.674549 [0] (0.0000)*	-10.37666 [0] (0.0000)*	-17.60139 [1] (0.0001)*	-11.92581 [1] (0.0001)*
		Intercept + Trend	-8.630177 [0] (0.0000)*	-10.45513 [0] (0.0000)*	-17.50439 [1] (0.0000)*	-11.88720 [1] (0.0000)*
	DF-GLS @	Intercept	-8.549271 [0]	-1.769238 [3]	-0.711988 [10]	-2.886465 [3]
		Intercept + Trend	-8.673717 [0]	-8.819454 [0]	-1.439306 [10]	-15.86630 [0]
	PP	Intercept	-8.599779 [5] (0.0000)*	-10.37259 [5] (0.0000)*	-33.71772 [13] (0.0001)*	-28.39140 [16] (0.0001)*
		Intercept + Trend	-8.551331 [5] (0.0000)*	-10.44177 [4] (0.0000)*	-33.95998 [13] (0.0001)*	-29.04722 [16] (0.0001)*

Figures in [ ] represent Lag Lengths based on SIC in case of ADF Test and Bandwidth based on Newey-West in case of PP Test, * indicates the statistical significance level of one per cent; Figures ( ) represent MacKinnon (1996) one sided *p* values.
@ Critical Values [MacKinnon (1996)] of Elliott-Rothenberg-Stock DF- GLS Test are shown as under:

	Intercept			Intercept + Trend		
	1 per cent	5 per cent	10 per cent	1 per cent	5 per cent	10 per cent
At levels	-2.588530	-1.944105	-1.614596	-3.578800	-3.033200	-2.743000
At First Difference	-2.589020	-1.944175	-1.614554	-3.580000	-3.030000	-2.740000

The findings of Table (2) indicate that, LFDIP and LBSEP are integrated at first differences i.e., I(1) whereas, LEP and LIP are integrated at levels i.e., I(0). Now as the conventional Johansen and Juselius (1990) and Vector Error Correction Model (VECM) approaches to cointegration study require the variables to be integrated of the same order, such models cannot be applied for the present study. Therefore, the ARDL bounds testing approach, as popularized by Pesaran and Shin (1997, 1999) and subsequently extended by Pesaran et. al. (2001) has been taken resort to. This approach is applicable irrespective of the underlying regressors being purely I(0), purely I(1), or is a mixture of both. This model dealing with single cointegration, yields consistent and robust results for both the long-run and short-run relationships; and this test is relatively more efficient in the case of small and finite sample data sizes. Moreover, all the variables here are assumed to be endogenous.

Here, the model is a general vector autoregressive (VAR) model of order p, in Z_t, where Z_t is a column vector composed of the four selected variables. The ARDL model used in this study is appended hereunder:

$$\Delta LY_t = \propto_0 + \sum_{i=1}^{n} \propto_{1i} \Delta LY_{t-1} + \sum_{i=0}^{n} \propto_{2i} \Delta LZ_{t-1} + \beta_1 LY_{t-1} + \beta_2 LZ_{t-1} + \mu_{1t} \qquad (1)$$

Where,

Δ = the first difference operator,
LY_t = log of dependent variable,
LZ_t = log of independent variable
μ_t = the usual white noise residuals

The left-hand side of the equation signifies the dependent variable. The first part of the right hand side of the equation ($\alpha_1 - \alpha_2$) represents the short-run dynamics of the model; whereas, the parameters β_1 and β_2, on the right-hand side, correspond to the long-run relationship among the independent variables. This is a test of the hypothesis of no cointegration among the variables against the existence of cointegration among the variables, denoted as:

H_o: There is no long run cointegration among the variables

H_a: There is long run cointegration among the variables.

The ARDL bounds test is based on the Wald-test (F-statistic). Two critical values are given by Pesaran et al. (2001) for the cointegration test. When the computed F-statistic is greater than the upper bound critical value, then the H_0 is rejected symptomatic of the variables being cointegrated in the long run. If the F-statistic is below the lower bound critical value, then the H_0 cannot be rejected suggesting that there is no long run cointegration among the variables. When the computed F-statistics falls between the lower and upper bound, then the results are inconclusive.

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Table 3: Results from ARDL Bounds Test

Dependent Variable	AIC Lags	*F* Statistics	Decision
F $_{LFDIP}$ (LFDIP| LBSEP, LEP, LIP)	3	2.870616	Inconclusive
F $_{LBSEP}$ (LBSEP| LFDIP, LEP, LIP)	3	1.444682	Not cointegrated
F $_{LEP}$ (LEP| LFDIP, LBSEP, LIP)	3	2.326362	Not cointegrated
F $_{LIP}$ (LIP| LFDIP, LBSEP, LEP)	3	2.460668	Not cointegrated
	Lower Bound	*Upper Bound*	
1 per cent level of significance	4.29	5.61	
5 per cent level of significance	3.23	4.35	
10 per cent level of significance	2.72	3.77	

Following the earlier explanation, Table (3) identifies that there is ambiguity regarding the existence of long run cointegrating relationship between LFDIP and the other selected variables. In case more independent variables are added or the time period is extended, the outcome of the model might change and conclusive outcome might be obtained. Furthermore, no evidence of any long-run cointegration is there when LBSEP, LEP and LIP are treated as dependent variables consecutively.

Now, while contemplating towards the short run perspective, the causality approach has been applied. Causality is understood to be a measure of identifying the cause and effect relationship between the dependent and the independent variables. In a non-stationary and cointegrated time-series, using a standard GCT or Wald test to test linear restrictions on the parameters of a VAR model might lead to Wald test statistic not following its usual asymptotic chi-square (χ^2) distribution under the null (Giles, 2011). Hence, Toda & Yamamoto approach to Granger non-causality has been applied here, as the basic idea of this model is to artificially augment the correct VAR order, k, by the maximal order of integration, say d_{max}. Then a $(k+d_{max})^{th}$ order of VAR is estimated and the coefficients of the last lagged d_{max} vector are ignored. The following Toda-Yamamoto model has been constructed in the VAR system:

$$LY_t = \propto_{10} + \sum_{i=1}^{k} \propto_{11i} LY_{t-i} + \sum_{j=k+1}^{d_{max}} \propto_{12j} LY_{t-j} + \sum_{i=1}^{k} \beta_{3i} LZ_{t-i} + \sum_{j=k+1}^{d_{max}} \beta_{3j} LZ_{t-j} + \mu_{4t} \ (4)$$

The hypothesis being tested in Toda and Yamamoto model, Modified-Wald (MWALD) test, is as under:

H_0: The independent variables do not granger cause the dependent variable

H_a: The independent variables granger cause the dependent variable

To implement the Toda-Yamamoto approach to Granger non-causality, initially the lag length (k) of the VAR model was determined by finding out the minimum value as per the Akaike Information Criterion (AIC). The lag length criterion according to all, Final Prediction Error (FPE), AIC, SC (Schwarz information criterion and Hannan-Quinn (HQ) Information

Criterion, selected the 19th lag. But as the model could not qualify the stability test and it restricted the further increase of lags, finally the 16th lag was considered (by sequential modified LR test statistic and AIC) after it qualified the diagnostic tests of no serial correlation, stability and normality. Thereafter, the maximum order of integration, (d_{max}) was selected, which is I(1) in this case.

Table 4: Toda-Yamamoto Granger Non-Causality Test

Dependent Variable	F Statistics (p-value)				All variables	Direction of Causality
	LFDIP	LBSEP	LEP	LIP		
LFDIP	-	22.54185 (0.1265)	38.76119 (0.0012)*	28.55770 (0.0271)**	137.8983 (0.0000)*	LEP, LIP → LFDIP
LBSEP	21.81892 (0.1491)	-	22.43612 (0.1297)	42.72817 (0.0003)*	85.11501 (0.0008)*	LIP → LBSEP
LEP	15.54360 (0.4852)	31.55859 (0.0114)**	-	18.54766 (0.2928)	64.15012 (0.0595)***	LBSEP → LEP
LIP	13.40234 (0.6431)	13.93418 (0.6036)	9.738793 (0.8799)	-	51.00264 (0.3564)	-

*, ** and *** indicate the statistical significance level of one per cent, five per cent and ten per cent respectively

Table (4) reports the χ^2-test statistic along with the estimated p-values. The results for the multivariate Granger non-causality tests establish that, there is causality running from LBSEP, LEP and LIP taken together as independent variables, towards LFDIP, the dependent variable. As the p-value is 0 per cent, it is evident that the probability of seeing a value for the test statistic of 137.8983 or larger, if the hypothesis is true, is negligible. Hence, the null hypothesis cannot be accepted, meaning that, the independent variables together causes LFDIM. This implies that, in the short-run FDI equity inflows in the D&P sector of India is impacted by the performance of the said sector, as measured by the stock index movements, exports and imports. Similarly, the multivariate Granger non-causality provides evidence of LBSEP as well as LEP, as dependent variables respectively, being caused by the other independent variables. Hence, from table (4) it is evident that, in the short run, LFDIP combined with LEP and LIP can influence LBSEP at one per cent level

of significance; and LFDIP in combination with LBSEP and LIP can cause LEP at 10 per cent level of significance.

In the bi-variate Granger non-causality tests, it could be observed that, there is uni-directional causality running from LEP and LIP to LFDIP at one per cent and five per cent level of significance respectively, i.e., in the short run, export and imports of D&P products can influence the quantum and quality of FDI equity inflows into the sector. But contrary to popular beliefs, there is no evidence of short-run causality running from LFDIP to any of the remaining variables. In the short run, LIP causes LBSEP at one per cent level of significance and LBSEP causes LEP at five per cent level of significance. Only LIP, or imports of D&P sector, is not caused by any of the selected variables, neither in a bi-variate study nor in a multi-variate one.

Concluding Observations and Recommendations

The findings reveal that, FDI equity inflows in Indian D&P sector have neither long-run nor short-run cointegrating relationship with the selected sectoral performance indicators of stock index, export and import of the sector. FDI is supposed to promote continuous improvisation in technology and bring in innovations. It must help create and also strengthen local capabilities to augment and diversify production; bring in best practices that would help add value to exports, and enhance the complementarities and linkages between economic sectors by increasing employment opportunities and augmenting knowledge base. But the reality is disconcerting since FDI has not brought any real benefits to Indian pharma industry except transfer of ownership of successful, big domestic pharma companies into foreign hands (Joseph & Ranganathan, 2016). It is instead apprehended that, India might lose her prowess in generics medicine through acquisitions of her domestic pharma companies by pharma MNCs through FDI route (Kumar, 2013).

FDI, in itself is not bad. But then, FDI in Indian D&P sector was also not promoted to encourage acquisitions of domestic pharma units; rather it was introduced to endorse more investments into the D&P industry so that there is more research, adequate production and enhanced competition ensuring quality medicine and healthcare services at affordable prices. The decimation of the strength of local pharma companies is against the coveted position since there would be few or no Indian companies left having necessary wherewithal to manufacture generics once a drug goes off patent or comply with a compulsory license. The permission to allow merger would finally leave generics production in the hands of pharma MNCs who would never prefer to promote them in comparison to their branded medicines.

Hence, the Government needs to take concrete steps to ensure that the life-saving drugs are within the ambit of the common people. A large section of Indian populace is deprived of medicines due to their high price. Unbranded generic medicine is the only hope for the millions of residents of India and other parts of the globe. Hence, all measures are to be taken to guard the domestic generics industry. Moreover, actions should be taken to attract and ensure substantial amount of investments into R&D of the D&P industry with special emphasis on tropical diseases. As the patented monopolies are rising in cases of products with growing market demand, the newer drugs are fast becoming unaffordable in the case of chronic and acute conditions related therapies. According to Abrol et. al. (2016), there is a dire necessity to implement the provisions of compulsory licensing and introduce public procurement and price control to allow the willing firms to participate in the introduction of patented compounds through local production to ensure inexpensive access to them.

FDI, though believed to be a strong propeller of growth, is not uniform across all the sectors of every nation. Its impact even varies depending on the nature and form of FDI, the technology absorption capacity of the particular sector and human capital. Hence, it is of utmost importance to make sector specific study to decide the depth and spread of FDI in Indian context, especially for D&P sector, so as to make it a facilitator of healthcare needs of the Indian populace, and not an impediment towards it (Banerjee, 2013).

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MEASURING THE TECHNICAL PERFORMANCE OF ORISSA POWER GENERATION CORPORATION LIMITED USING DEA-SBM

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Abstract:

The operational well-being of the generation sector is crucial for the financial viability of the entire value chain of the power industry. The objective of this research work is to assess the operational performance of Orissa Power Generation Corporation Limited who is engaged in the generation of power, which is transmitted to the end consumers through intermediaries. The slacks-based measure (SBM) of efficiency proposed by Tone (2001) has been used to assess operational performance, to which results have shown that 25% DMUs are efficient and exhibit a constant return to scale, where the remaining 75% DMUs are inefficient and exhibit increasing return to scale. The SBM model could facilitate inefficient DMUs in identifying the inputs slack and ways to become efficient. Kendall's monotonic correlation that was applied on pure technical efficiency (PTE) and earnings per share (EPS) has been used to conclude that there is no monotonic dependence between operational efficiency and earnings per share. Results of this research paper are useful for policy and decision makers to achieve better overall performance and provide more reliable energy at a reasonable rate to final consumer or society as a whole.

Key Words:

Benchmarking, Data Envelopment Analysis, Earning per Share, Performance Evaluation, Technical Efficiency

Introduction

Power is undeniably a vital element in any country's economic growth regardless of the country is developed or developing. Like any other country, India's economic growth can also be directly linked to the fast growing demand for energy. Involvements of private players in this sector are less in comparison with the public sector. The main reason attributed to this is that the capital-intensive nature of this industry and policies paralysis. Many reforms had been taken place for the last decade, and more incentive-friendly policies have been initiated to increase participation of various players. These initiatives, however, increase market competition and state power generation utilities are forced to perform well due to the various incentives schemes introduced by the government. Looking at the consumption profile of electricity across different regions of the country, a direct correlation between per capita consumption of electricity and level of economic development can be seen [Giokas, D.,1991]. In the case of India, the power sector has noticed a remarkable growth, especially after the independence.

Data Envelopment Analysis (DEA) is considered to be the best method for measuring efficiency, and it allows benchmarking with multiple inputs and outputs. On the other hand, regression analysis and stochastic frontier analysis can be used for performance evaluation. As DEA model does not require the specification of any particular functional form to describe the efficient frontier or envelopment surface, it has been selected over other methods of performance evaluation. Charnes, Cooper, and Rhodes in 1978 highlighted new aspects of DEA based on previous work by Farrell on production efficiency [Charnes et al., 1978]. DEA

methodology has been most commonly used for benchmarking and calculating the efficiency of utilities. It also draws attention to the best practices followed in the industry [Golany et al., 1994]. However, the relative operational efficiency performance of Orissa Power Generation Corporation Limited (a joint venture of Govt. of Orissa with AES Corp. USA) is rarely addressed in existing literature. This research study uses a non-radial measure of efficiency i.e. SBM. The objective of this paper is to suggest benchmarks for inefficient DMUs (Year) and to highlight the input slacks of inefficient DMUs. Other than that, this article also aims to analyse the impact of operational efficiency on the profits obtained by the company.

Conceptual Framework

One of the most widely used benchmarking techniques of measuring X-efficiency is the Data Envelopment Analysis (DEA) approach. DEA was introduced by Charnes et al. and widely applied to a various sector like the banking industry, power industries, etc. [Charnes et al., 1978]. The basic two models of DEA are Banker, Charnes, and Cooper (BCC) and Charnes, Cooper, and Rhodes (CCR). Both of these models will be used in this analysis.

CCR Model

In 1978, A. Charnes firstly introduced CCR model. The model assumed that the constant returns to scale (CRS) [Charnes et al., 1978]. Let's assume that there are data's on K inputs and M outputs for each of N firms, therefore, for the ith firm, these can be represented by the column vectors xi and yi respectively. The K × N input matrix, X, and the M × N output matrix, Y, represent the data for all N firms. A measure of the ratio of all outputs over all inputs would be

obtained for each firm, such as $u'y_i/v'x_i$, where u is an M × 1 vector of output weights, and v is a K × 1 vector of input weights [Meenakumari and Kamraj, 2008]. The optimal weights are obtained by solving the following:

Max $_{u,v}$ $(u'y_i/v'x_i)$,
st $u'y_j/v'x_j \leq 1$,
$j = 1, 2....N$,
$u,v \geq 0$ (1)

It is essential to calculate the values of u and v, such that the efficiency measure for the ith firm is maximised, subjected to the constraint that all efficiency measures must be less than or equal to one. The main issue in this ratio formulation is that it has an infinite number of solutions. It can be avoided by imposing the constraint $vx_i = 1$, which provides:

$Max_{\mu,v}$ $(\mu'y_i)$,
st $v'x_i = 1$,
$\mu'y_j - v'x_j \leq 0$,
$j = 1, 2....N$,
$\mu,v \geq 0$,   (2)

Where the notation is changed from u and v to μ and v, to stress that this is a different linear programming problem. Equation (2) is known as the multiplier form of the DEA linear programming problem. By the duality in linear programming, equivalent envelopment form of this problem can be derived as:

$min_{\theta,\lambda}$ θ,
st $-y_i + Y\lambda \geq 0$,
$\theta x_i - X\lambda \geq 0$,
$\lambda \geq 0$,   (3)

Where θ is a scalar and λ is an N × 1 vector of constants. The efficiency score for the ith firm will be the value of θ. According to the definition, it will satisfy: θ ≤ 1, with a value

of 1 indicating a point on the frontier, hence, the firm is technically efficient firm [Farrell, 1957].

BCC Model

Banker, Charnes, and Cooper introduced BCC model in 1984. The BCC model produces a variable return to scale (VRS), which the determination of the performance of each DMU was conducted whether in the region of increasing, constant or decreasing returns to scale in multiple outputs and multiple inputs situations [Banker et al., 1984]. The overall efficiency (CCR efficiency) can be decomposed into PTE and SE (components of BCC model), thus investigating the scale effects. According to this model, an inefficient firm is only "benchmarked" against firms of a similar size. Therefore the DMU is said to be efficient if and only if it is both technical and scale efficiently [Meenakumari and Kamraj, 2008]. The CRS linear programming problem can be easily modified to account for VRS by adding the convexity constraint: N1λ = 1 to (3) to provide:

$min_{\theta,\lambda}$ θ,
st $-y_i + Y\lambda \geq 0$,
$\theta x_i - X\lambda \geq 0$,
N1'λ = 1
λ ≥ 0,   (4)

Where N1 is an N × 1 vector of ones. This approach forms a convex hull of interesting planes which envelope the data points more tightly than the CRS conical hull, thus providing TE scores that are greater than or equal to those obtained using the CRS model. The VRS specification has been the most commonly used specification in the 1990s.

Slack-Based Measure Model

Tone (2001) proposed a slacks-based measure (SBM) of efficiency in DEA and measured deals directly with the input excesses and the output limitations of the DMU concerned. An SBM of efficiency is defined, along with its interpretation as a product of input and output inefficiencies. Two efficiency measures are radial, and non-radial measures of efficiency and CCR and SBM are also called radial and non-radial measures of efficiency, respectively [Tone, K. (2001]. By assuming that n DMUs with the input and output matrices X = (xij) ∈ Rm × n and Y = (yij) ∈ Rs × n, respectively, the input-oriented SBM model is formulated as follows:

$$\text{Min } \rho_{in} = \frac{1-\left(\frac{1}{m}\right)\Sigma_{i=1}^{m} s_i^-/x_{io}}{1+\left(\frac{1}{s}\right)\Sigma_{r=1}^{s} s_r^+/x_{ro}}$$

s.t. $x_o = X\lambda + s^-$
$y_o = Y\lambda + s^+$
$\lambda \geq 0, \ s^- \geq 0, \ s^+ \geq 0$ 　　　　　(5)

Where ρ_{in}^* denotes SBM scores and λ represents a non-negative in Rn. Additionally, s− and s+ represent the input surplus and output shortfall of expression, respectively, and are called slacks. The mixed efficiency (ME) is defined as ME = $\frac{\rho_{in}^*}{\theta_{crs}^*}$. By using Eq. TE = PTE × SE, the non-radial TE ρ_{in}^* has the decomposition into ME, PTE and SE, as shown ρ_{in}^* = ME×PTE× SE.

The rest of this paper is structured as follows: subsequent section gives literature survey on Data Envelopment Analysis (DEA). Section 4 presents detailed research methodology. In section 5, several experimental results are shown. Section 6 is the conclusion.

Literature Review

A large number of studies on the DEA application is available for literature review; some selected studies are dealing with performance efficiency have been examined. Behera, S. K.et al (2010) had applied DEA approach with the primary objective to estimate excess consumption of inputs while maintaining the same level of output for India's 74 coal-fired power plants over a period of 5 years (2003-04 to 2007-08). Based on a few selected variables (five inputs: - Capacity, Planned Maintenance (PM), Forced Outage (FO), Specific Coal Consumption (SCC), Auxiliary Power Consumption (APC), and one output: - Generation), it was concluded that the fuel efficiency, as well as the capacity factor, significantly affects TE of China's Thermal energy production. TE of around 51% of units lies below the average TE i.e. 83.2%, which means that there exists a scope for improving the TE by reducing the inputs consumption to the desired level as suggested by an input oriented variable return to scale model. Out of these 74 units, 2.70% shows the constant return of scale over a span of 5 years.

Shanmugam, K. R., and Kulshreshtha, P. (2005) examined India's 56 coal based thermal power stations during the period 1994-95 to 2001-02, to which the Stochastic frontier production function methodology was employed. Factors, which were included as outputs/inputs, are a generation, capital, capacity, coal, oil consumption and auxiliary consumption. The average TE recorded was approx. 73%, leaving the scope of improvement in its performance by 27%. Other Regions are technically less efficient as compared to the western region and old plants require more attention so that they can compete with younger ones. It is also suggested that units can achieve their

current levels of generation while reducing their inputs by 27%. Moreover, the TE of 39% thermal power stations was less than 70%. The study also indicates that the efficiency varies widely across the plants and regions.

Dhillon, A. S., and Vachhrajani, H. (2013) had applied Karle Pearson's coefficient correlation tool to measure the impact of Plant Load Factor (PLF) on the overall profitability of Gujarat's leading thermal power plant and examined that positive relationship exist between plant load factor and overall profitability. Thus, this research paper supports the usual phenomenon that higher PLF results into greater or better returns on assets.

Lam, P. L., and Shiu, A. (2001) had applied DEA approach and concluded that the fuel efficiency, as well as the capacity factor, significantly affects TE of China's Thermal power generation. Provinces and autonomous regions that were under the control of the private ownership achieved higher levels of efficiency. It also noticed that regions with rich supplies of coal had higher TE.

Dhillon, A. S., and Vachhrajani, H. (2013) had applied Karle Pearson's coefficient correlation to unearth the relationship of operational efficiency on the overall profitability of Gujarat Industries Power Company Limited, of the period of 2005-06 to 2010-11. It was examined that insignificant positive correlation between overall profitability and operational efficiency exists.

Vachhrajani, H., and Dhillon, A. S. (2014) had assessed the relative performance of western Indian state of Gujarat's thermal power plants (coal/ lignite based) over a period of a year from 2011 to 2012. The study utilizes the DEA model, which

indicated that private owned generation units have no more advantage over state owned generation units. Scale inefficiency is highly dictating the Government own generation units.

Xie, B.; Gao, J.; Zhang, S.; and Zhang, Z. (2017) studied the factors that affect the competitiveness of power generation sector in China. This study first adopts the game cross-efficiency approach to evaluate the environmental efficiency of the generation sectors in China's 30 provinces. It was highlighted that the average firm size and capacity utilization rates are positive factors boosting the environmental efficiency.

Research Methodology

The objective of this paper is to suggest "benchmarks" for inefficient DMUs (Year) and to highlight the input slacks of inefficient DMUs. Other than that, this article aims to analyse the impact of operational efficiency on the profitability of the company. To achieve the objective of this paper, a non-radial measure of efficiency, i.e. SBM and Kendall tau's coefficient correlation tool has been used.

The scope of this research paper is limited to one of the leading company in the field of power generation industry i.e. Orissa Power Generation Corporation Limited. The Data was collected from the official site of Orissa Power Generation Corporation Limited. An annual report for a period 2001-02 to 2012-13 has been used for this research.

DEA assumes that there is, to some degree, a relationship between the input and the output. To draw the relevant variables for the DEA models, an exhaustive literature review has been carried out from various published reports and reputed journals. After giving due consideration to all aspects

input oriented SBM model was used, which emphasised on minimization of inputs at the current level of output. The critical input and output components utilized for the analysis are shown in Table I. In same manner, descriptive statistics of variables were used, and the correlations among factors are listed in Table II and Table III respectively.

Table I: Definition of input/output variables

Variable	Unit	Define
Inputs		
Auxiliary Consumption	(%)	Electricity consumption within the power plant premises.
Secondary Fuel Oil Consumption	(Ml/KWh)	SFOC consumed during the generation of per Kwh
Special Fuel Coal Consumption	(Kg/KWh)	SFCC consumed during the generation of per Kwh
Cost of Generation	(Rs Cr.)	It includes the initial capital, discount rate, as well as the costs of continuous operation, fuel, and maintenance
Outputs		
Generation	(MU)	Total electricity generated during the year
Plant Load Factor	(%)	Measure of average capacity utilisation

Table II: Descriptive Statistics of Selected Input and Output variables

Input/ Output	Variables	Mean	Median	Maximum	Minimum	Range	Standard Derivation	Coefficient Variation
Inputs	Aux. Cons.(I_1)	10.48	10.44	11.06	10.11	0.95	0.28	2.69
	Sp. Oil (I_2)	0.86	0.77	1.67	0.38	1.29	0.38	44.72
	Sp.Coal (I_3)	0.84	0.85	0.88	0.67	0.21	0.05	6.44
	Cost Of Gen (I_4)	310.20	298.49	385.98	273.50	112.48	36.72	11.84
Outputs	Gen (O_1)	3026.93	3070.98	3317.81	2598.80	719.00	212.65	7.03
	PLF (O_2)	82.21	83.36	90.18	70.64	19.54	5.78	7.04

Source: Collected and Compiled from Year Wise OPGCL's Data Base

Table III: Correlation Coefficients among Selected Input and Output Variables

Input/Output	Aux. Cons. (%)	Sp. Oil (Ml/Kwh)	Sp.Coal (Kg/KWh)	Cost Of Gen. (Rs Cr.)	Gen (MU))	PLF (%)
Aux. Cons.(I_1)	1					
Sp. Oil (I_2)	0.89	1				
Sp.Coal (I_3)	(0.06)	0.02	1			
Cost Of Gen (I_4)	(0.15)	(0.21)	(0.45)	1		
Gen (O_1)	(0.65)	(0.88)	(0.20)	0.33	1	
PLF (O_2)	(0.65)	(0.88)	(0.21)	0.33	0.99	1

Limitations are always a part of any research work and point of further research to the existing study. As the report is mainly based on secondary data, proper care has been taken to overcome identified limitations.

Result and Analysis

The input-oriented approach has been used on twelve DMUs based on four inputs and two outputs. All data were compiled and run in software called Data Envelopment Analysis Program [Coelli, T. 1996], a tool for analysis to find the Technical Efficiency (TE), Pure Technical Efficiency (PTE), Return to Scale (RTS) and Scale Efficiency (SE).

Table IV: Efficiency Scores of Selected Years of OPGCL obtained using DEA

DMU	TE Score (CRS)	CRS Peers	PTE Score (VRS)	VRS Peers	Scale TE	RTS
2001-2002	0.64	0	0.81	0	0.79	IRS
2002-2003	0.63	0	0.82	0	0.77	IRS
2003-2004	0.74	0	0.83	0	0.90	IRS
2004-2005	1.00	0	1.00	3	1.00	-
2005-2006	0.93	0	1.00	7	0.93	IRS
2006-2007	1.00	9	1.00	2	1.00	-
2007-2008	0.82	0	1.00	0	0.82	IRS
2008-2009	0.82	0	0.85	0	0.96	IRS
2009-2010	0.74	0	0.82	0	0.90	IRS
2010-2011	0.81	0	0.84	0	0.96	IRS
2011-2012	0.70	0	0.79	0	0.89	IRS
2012-2013	1.00	0	1.00	1	1.00	-
Average	0.82		0.90		0.91	

Source: Collected and Computed From OPGCL's Annual Report

SBM model measures the TE, and the following was observed from Table IV. Three DMUs have achieved an overall efficiency of 1 and considered as a benchmark for others to improve their performance. The remaining DMUs having the score below 1 are termed as "inefficient." It was observed that 50% of DMU's lies below the average TE of 0.82. Similarly, the PTE is measured via the same model. It has been observed that five DMUs have achieved PTE of 1 and considered as a benchmark for others to improve their performance. Rests of the DMUs are termed as "inefficient." It was analysed that 58% of DMU's lies below the average PTE of 0.90. (As shown in Table IV)

Normally three types of return to scale (RTS) are applied by various researchers. They are constant, increasing and decreasing return to scale. DMUs that performed well as compared to other DMUs are termed as efficient with constant return to scale. It means that these DMUs should continue their business activities without any changes. Nevertheless, DMUs that are inefficient have to improve their overall performance by increasing or decreasing their business activities variables. From Table IV, it can be observed that 25% DMUs termed as efficient and having a constant return to scale. Remaining 75% are having an increasing

return to scale. It means that there is the scope for further improvement for these inefficient DMUs to reach the level of Most Productive Scale Size (MPSS) and for these DMUs to achieve the maximum possible economy of scale.

Table V: Slack in Inputs under CRS

DMU	Score	Input Inefficiency	Benchmark (Lambda)	Slack Movement			
				Aux. Cons. (%)	Sp. Oil (Ml/Kwh)	Sp.Coal (Kg/KWh)	The cost of Gen.
2001-2002	0.64	0.36	2006-2007(0.78)	-2.74	-1.21	-0.19	-45.28
2002-2003	0.63	0.37	2006-2007(0.79)	-3.04	-1.37	-0.20	-38.62
2003-2004	0.74	0.26	2006-2007(0.90)	-1.73	-0.85	-0.12	-6.25
2004-2005	1.00	0.00	2004-2005(1.00)	0.00	0.00	0.00	0.00
2005-2006	0.93	0.07	2006-2007(0.93)	-0.76	-0.04	-0.07	-0.67
2006-2007	1.00	0.00	2006-2007(1.00)	0.00	0.00	0.00	0.00
2007-2008	0.82	0.18	2006-2007(0.91)	-0.79	-0.27	-0.12	-25.31
2008-2009	0.82	0.18	2006-2007(0.96)	-0.58	-0.30	-0.09	-42.89
2009-2010	0.74	0.26	2006-2007(0.89)	-1.38	-0.50	-0.12	-60.41
2010-2011	0.81	0.19	2006-2007(0.95)	-0.77	-0.33	-0.07	-50.50
2011-2012	0.70	0.30	2006-2007(0.88)	-1.41	-0.55	-0.14	-100.69
2012-2013	1.00	0.00	2012-2013(1.00)	0.00	0.00	0.00	0.00

Source: Collected and Computed From OPGCL's Annual Report

Table VI: Slack in Inputs under VRS

DMU	Score	Input Inefficiency	Benchmark (Lambda)	Slack Movement			
				Aux. Cons. (%)	Sp. Oil (Ml/Kwh)	Sp.Coal (Kg/KWh)	Cost of Gen.
2001-2002	0.81	0.19	2004-2005(0.117); 2005-2006(0.876); 2012-2013(0.006)	-0.44	-1.08	0.00	0.00
2002-2003	0.82	0.18	2004-2005(0.894); 2005-2006(0.105)	-0.73	-1.04	-0.02	0.00
2003-2004	0.83	0.17	2004-2005(0.389); 2005-2006(0.610)	-0.67	-0.70	-0.03	0.00

2004-2005	1.00	0.00	2004-2005(1.000)	0.00	0.00	0.00	0.00
2005-2006	1.00	0.00	2005-2006(1.000)	0.00	0.00	0.00	0.00
2006-2007	1.00	0.00	2006-2007(1.000)	0.00	0.00	0.00	0.00
2007-2008	1.00	0.00	2007-2008(1.000)	0.00	0.00	0.00	0.00
2008-2009	0.85	0.15	2005-2006(0.570); 2006-2007(0.429)	-0.14	-0.27	-0.05	-42.50
2009-2010	0.82	0.18	2005-2006(1.000)	-0.21	-0.44	-0.02	-47.72
2010-2011	0.84	0.16	2005-2006(0.596); 2006-2007(0.403)	-0.31	-0.31	-0.02	-50.09
2011-2012	0.79	0.21	2005-2006(1.000)	-0.21	-0.49	-0.03	-87.02
2012-2013	1.00	0.00	2012-2013(1.000)	0.00	0.00	0.00	0.00

Source: Collected and Computed From OPGCL's Annual Report

The mean TE and PTE of all the DMUs is 82% and 90%, which means DMUs can reduce their inputs by 18% and 10% respectively without reducing their outputs. Input-oriented SBM model results are incorporated in Tabular form for easy and better understanding of inputs slack movement as shown in Table V and VI.

For every DMU, DEA identifies a set of corresponding efficient units that can be benchmarked for improvement. Under CRS, one DMU has been marked nine times as a point of reference for other DMUs. Similarly, under VRS, four DMUs have been characterized as benchmarks for other DMUs. Table V and VI also highlighted that input inefficiency against each inefficient DMU with input slack movement.

Table VII: Descriptive Statistics of TE Scores

Methods	Mean	Median	Maximum	Minimum	Range	Standard Derivation	Coefficient Variation
CRS	0.82	0.81	1	0.63	0.37	0.13	15.95
VRS	0.90	0.84	1	0.79	0.21	0.09	9.86
SE	0.91	0.92	1	0.77	0.23	0.08	8.65

Source: Table IV

The mean and median of technical efficiency scores of CRS is smaller than VRS and SE. Minimum TE score is different and maximum score is one and same under all the methods. Standard deviation is higher under CRS as compared to other methods. SE has the lowest coefficient of variation, which means steadiness of performance efficiency has been observed in SE (as shown in Table VII).

Benchmark Ranking Method

The simplest benchmark ranking method is the approach when it is counted how many times a given DMU is peer to the other decision-making units. The same method is used on derived results in Table IV, we have ranked them according to their number of times as a benchmark for another DMU (as shown in Table VIII) and tried to highlight the relatively best performing year for OPGCL.

Table VIII: Ranking DMUs based on Efficiency Score

DMU	CRS RANKING	VRS RANKING
2001-2002	11	11
2002-2003	12	9
2003-2004	9	8
2004-2005	2	2
2005-2006	5	1
2006-2007	1	3
2007-2008	6	5
2008-2009	6	6
2009-2010	2	9
2010-2011	8	7
2011-2012	10	12
2012-2013	2	4

Source: Table IV

From Table VII, it is apparent that range of efficiency score is higher in CRS than VRS method. Thus, VRS proposed by Banker et al. (1984) has overcome the shortcoming of CRS assumptions and therefore, is more appropriate relative to CRS in this case. Thus, we have selected pure technical efficiency (PTE) score and earnings per share (EPS) to analyse the impact of operational efficiency on the profitability of the company. Data regarding PTE and EPS has presented in tabular form below:-

Table IX: Descriptive statistics of PTE and EPS

DMU	PTE	EPS
2001-2002	0.81	341.69
2002-2003	0.82	279.78
2003-2004	0.83	234.78
2004-2005	1.00	165.69
2005-2006	1.00	227.29
2006-2007	1.00	344.29
2007-2008	1.00	347.39
2008-2009	0.85	330.43
2009-2010	0.82	313.00
2010-2011	0.84	301.02
2011-2012	0.79	402.51
2012-2013	1.00	269.84

Source: Collected and Computed From OPGCL's Annual Report

The Kendall tau's coefficient correlation tool is applied on PTE and EPS variables to find out the relationship between both. Here: x = Pure technical efficiency (PTE): y = Earning per share (EPS). Before computing the Kendall tau's coefficient correlation, the hypothesis has formulated as below:

H1: = 0 (There is no monotonic dependence between PTE and EPS)

H1: ≠ 0 (There is a monotonic dependence between PTE and EPS)

Table X: Result of Kendall's monotonic correlation

Analyzed variables	PTE; EPS
Significance level	0.05
Size = number of pairs	12
tau	-0.28216
Z statistic for tau	-1.276997

Figure I: - Graphical Representation of PTE and EPS Data
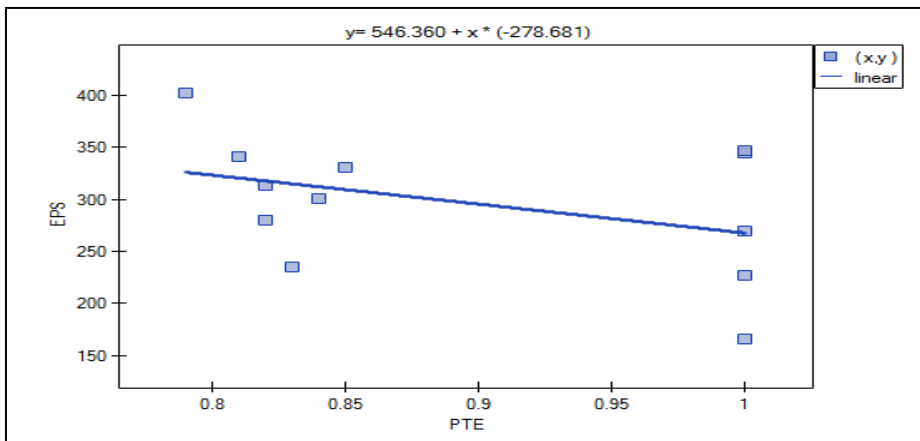
Figure II: - Graphical Representation of PTE and EPS Ranks
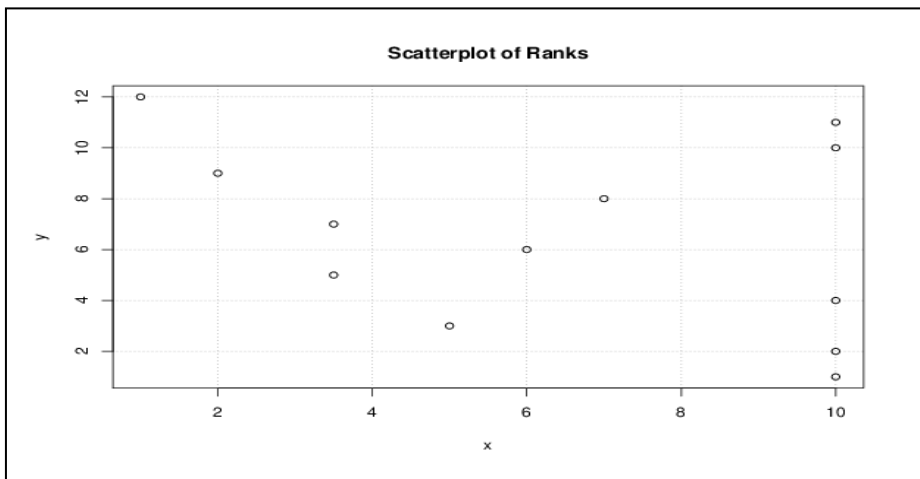
Comparing the p-value = 0.201603 with the significance level α = 0.05, one can accept the null hypothesis and conclude that there is a no monotonic dependence between PTE and EPS. It means that both the analysed variables are independent of each other. Graphical representation of PTE and EPS data and scatter-plot between ranks of X and Y as shown in figure I and II for better understanding of the derived results of Table 10.

Conclusion

During the whole study, we tried to highlight the input inefficiency of inefficient DMUs and identified crucial areas where more concentrated efforts are required to eliminate the slacks in various inputs/outputs to achieve better overall performance. Minimising the inputs slack will result in cost savings and push the profitability to newer heights. The overall level of TE has been found to be 82 percent, which implies that there is the further scope of improvement of 18 percent. The study also found that 25% and 41.67% DMUs are efficient under CRS and VRS respectively. The range of efficiency score is higher in CRS than VRS method. Thus, VRS proposed by Banker et al. (1984) has overcome the shortcoming of CRS assumptions, and it looks more appropriate than CRS in this case. Based on this conclusion, PTE variable has selected for analysing the impact of operation performed on the profitability of the company. Kendall's monotonic correlation has applied on PTE and EPS to conclude that there is a no monotonic dependence between PTE and EPS. The whole purpose of this study was to highlight the efficient DMUs (years) and benchmark them against inadequately performed year. Results of this research paper are useful for policy and decision makers to achieve better overall performance and provide more reliable energy at a reasonable rate to final consumer or society as a whole.

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PERFORMANCE EVALUATION OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS IN INDIA BY USING CAMEL MODEL – A COMPARATIVE STUDY

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Abstract:

Indian Banking sector has been experiencing severe competition between the public sectors banks and private sector banks. Thus, it becomes pertinent to compare the financial performances of public sector banks and private sector banks. The period from 2000-2001 to 2014-2015 is taken as the study period. CAMEL model is considered here for the purpose of such comparative performance evaluation. t-test is applied to test the statistical significant difference between both the sectors in terms of capital adequacy, asset quality, management efficiency, earnings and liquidity.

Key Words:

Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity

1. Introduction

Banking sector is the backbone of the Indian economy. It has undergone sea change during the onset of 21st century. Indian banking industry has got this revolution mostly because of advent of banking sector reforms, Basel norms, Core Banking Services, entry of foreign banks, financial inclusion, globalization etc. Moreover, severe competition exists among public sector, private sector and foreign banks. In this context, the paper aims at undertaking a comparison between the performance of public sector banks and private sector banks. CAMEL Model is used for such analysis. It compares the financial performance of banks based on five aspects. CAMEL is the acronym of these five aspects – Capital adequacy (C), Asset quality (A), Management efficiency (M), Earnings (E) and Liquidity (L). This study is organized in seven sections as follows. *Section 2* narrates the literature reviewed. Section 3 identifies the research gap. Section 4 states the objectives of the study. *Section 5* narrates the research methodology. *Section 6* presents the analysis and findings of the study and *Section 7* deals with the conclusions.

2. Review of Literature

Some of the noteworthy research works reviewed prior undertaking the study are cited as follows:

Chowdhury (2011) evaluated the financial soundness of 12 select commercial banks in India during 2000-2009 by using CAMEL analysis. The private sector banks- ICICI bank, HDFC bank and Kotak Mahindra Bank occupied the top three positions based on the overall grand ranking. Furthermore, the banks were categorized into four categories based on their range of CAMEL scores.

Mani (2011) undertook a study to identify the important parameters or ratios under the CAMEL rating.

Kouser and Saba (2012) conducted a comparative analysis of the financial performance of Conventional, Mixed and Pure Islamic Banks in Pakistan. It was found that there was significant difference in the mean CAMEL ratios of these three types of banks. Islamic banks were found to have better capital adequacy, asset quality and management efficiency than conventional banks.

Prasad (2012) made a comparative study on the performance of the public sector and private sector banks in India during 2006-10, by using the CAMEL approach. Twenty ratios were used under the CAMEL model and arithmetic mean and t-test were used for the purpose of analysis. It was concluded that there was no significant difference between the public sector and private sector banks on an overall basis.

Prasad and Reddy (2012) made an approach to compare the performance of State Bank of India and its associates with other nationalised banks in India using CAMEL model during 2006-2010. They concluded that there was no significant difference between the financial performance of SBI group and other nationalised banks in terms of all the parameters excepting capital adequacy.

Reddy (2012) applied modified CAMEL approach in analyzing financial performance of public sector, private sector and foreign banks in India for the year 1999 and 2009. The approach was modified by assigning weights to each factor and the ratios as well, based on the discussion with the bank authority. A significant improvement was witnessed in the Public sector banks which

were attributed to the reforms in liberalizing interest rates, rationalizing directed credit and investments and increasing competition.

Aspal and Malhotra (2013) undertook a study to evaluate the financial performance of public sector banks in India excluding State Bank of India and its associate banks during 2007-11 by using CAMEL model. It was observed that there were significant differences between the mean values of the CAMEL ratios of the public sector banks.

3. Research Gap

From the survey of literature, it is found that not many works have been undertaken to compare the performance using CAMEL, of public sector banks and private sector banks as a whole. Even though such analysis has been done, the time period considered is too short (*Prasad, 2012*). Thus, it gives rise to the unanswered question that whether there is significant difference between performance of public sector banks and private sector banks in the long run or not? This study is undertaken to find an answer to this question and fill in the gap. The following section elaborates the objectives framed to plug in the gap.

4. Objectives of the Study

Primarily, the present study aims at analyzing the financial performance of the Indian banking sector in the context of 21st century. It tries to compare the financial performance of public sector banks with that of private sector banks during the period 2000-2001 to 2014-2015 by using CAMEL model to observe whether there exists any significant difference between performances of the two. However, the specific objective of this study is to examine whether there is any significant difference between the public sector and private sector banks in

terms of each of the parameters of CAMEL model i.e. capital adequacy, asset quality, management efficiency, earnings quality and liquidity.

5. Research Methodology

The study includes 30 (15 public sector banks and 15 private sector banks) randomly selected banks. The sampled banks from the Indian public sector banks are Allahabad Bank, Andhra Bank, Bank of Baroda, Bank of India, Canara Bank, Central Bank of India, IDBI Bank, Indian Bank, Indian Overseas Bank, Oriental Bank of Commerce, Punjab National Bank, State Bank of India, Syndicate Bank, UCO Bank and Union Bank. The sample banks from the Indian private sector banks are Axis Bank, City Union Bank, DCB Bank, Dhanalakshmi Bank, Federal Bank, HDFC Bank, ICICI Bank, IndusInd Bank, Jammu & Kashmir Bank, Karnataka Bank, Karur Vysya Bank, Kotak Mahindra Bank, Lakshmi Vilas Bank, South Indian Bank and Yes Bank. Financial years ranging from 2000-01 to 2014-15 is taken as the study period. Data required for this purpose has been obtained from the Capitaline - 2000 Database Package.

CAMEL (Capital adequacy, Asset quality, Management efficiency, Earnings quality and Liquidity) model is used to assess the relative financial performance of banks. The CAMELS approach was originally introduced in the US for measurement of financial condition of financial institutions. Accordingly, the "Uniform Financial Institutions Rating System" was established by the Federal Financial Institutions Examination Council in the US. Here, the acronym CAMELS stands for Capital adequacy (C), Asset quality Management efficiency (M), Earnings Quality (E), Liquidity (L) and Sensitivity to market risk (S). In 1995, RBI set up a committee under the chairmanship

of S. Padmanabhan and it suggested the CAMELS model based on the lines of the international model. In this acronym C, A, M, E, L meant the same as that represented in the international model. Only "S" stood for Systems and controls.

In this study, C, A, M, E and L (i.e. CAMEL model) is considered. Four ratios or sub-parameters are considered under each of the parameters namely, Capital Adequacy, Asset Quality, Management Efficiency, Earnings Quality and Liquidity. The Banks are not rated as such, instead a comparative study is made between the performance of public sector banks and private sector banks. The study tries to find out whether there exists any significant difference between the performances of two banking sectors from the view point of each of the aspect. At first mean of each ratio for the period of 15 years i.e. 2001-2015 is computed for each bank. Then the mean of that ratio for 15 banks is computed for each of the sector. Therefore, the mean of each ratio of each sector represents mean of data of 15 years and for 15 banks. t-test is performed via SPSS to test the statistical significance of the difference between the mean of each ratio between both the sectors. The sub-parameters i.e. the ratios used for this study along with their brief description are shown in the table below:

Table 1: Ratios and Their Brief Description

Capital Adequacy Ratios	
Capital Adequacy Ratio	It is a measure of the bank's capital expressed as a percentage of its risk-weighted assets. It measures the proportion of the bank's capital to its risks. The protection for investors increases with the increase in the ratio.
Debt-Equity Ratio	This ratio reflects the degree of leverage of a bank. It indicates how much portion of capital is financed by debt and how much by equity.
Advance to Total Asset Ratio	This ratio depicts the proportion of advances in total assets. This ratio reflects the bank's risk taking ability in lending of funds. The aggressiveness of the bank in lending funds increases with the increase in this ratio.
Government Securities to Investment Ratio	Government securities are the risk-free debt instruments and thus, safe. This ratio measures the proportion of Government securities in the total investment of the bank. It shows the risk-taking ability of the banks. The higher the ratio the lesser the risk for the bank.
Asset Quality Ratios	
Net NPAs to Net Advances	This ratio measures the extent of net NPAs in portfolio of net advances. This reflects the quality of advances. The lower the ratio, the better the asset quality.
Net NPAs to Total Assets	This ratio measures the proportion of net NPAs to total assets. This depicts the effectiveness of banks in evaluating credit risk. The asset quality improves with the decrease in this ratio.
Total Investments to Total Assets	This represents the portion of total assets which is locked in investments. Investments are those assets, income from which does not form the core income of banks. Thus, with the increase in

	deployment of fund in investments, the grant of loans and advance decreases.
Percentage Change in NPAs	This ratio measures the change in net NPAs. It reflects the improvement or deterioration in asset quality over the years. The decrease in ratio signifies improvement in asset quality and vice-versa.
Management Efficiency Ratios	
Business per Employee	Business per employee signifies the competence and yield of human resources of banks. Higher the ratio, better the managerial efficiency and financial performance of banks.
Profit per Employee	It reflects the surplus earned per employee. It is the ratio of profit after tax to number of employees. The higher the ratio, the more efficient the bank.
Return on Net worth	It is the ratio of net profit after tax to net worth. It measures the rate of return on the resources provided by the shareholders. The higher the ratio, the better the managerial efficiency.
Advance-Deposit Ratio	This ratio measures the ratio of total advances to total deposits. It reflects the managerial efficiency in utilizing deposits in creating higher earning advances.
Earnings Quality Ratios	
Operating Profit to Average Working Fund	This ratio indicates how efficiently the bank has utilized its working funds in generating operating profit. The higher the ratio, the better the profitability.
Return on Assets	It relates the profits to the size of the bank which is measured in terms of its assets. A higher return on its total assets is an indicator of higher profitability and a good overall efficiency.
Interest Income to Total Income Ratio	Interest forms to be the prime source of bank's earnings. This ratio measures the proportion of interest income to total income.
Spread to Total Assets Ratio	It measures the relation of spread to total assets. Income spread is the difference between interest earned and interest expended.
Liquidity Ratios	
Liquid Assets to Total Assets Ratio	This ratio evaluates the liquidity position of the bank as a whole. The liquid assets comprise of cash in hand, money at call and short notice, balance with Reserve Bank of India and balance with other banks/ financial institutions. It thus reflects what proportion of total assets is in the liquid form to meet the overall liquidity requirements.
Liquid Assets to Total Deposits Ratio	This ratio measures the liquidity position of the bank from the view point of the depositors. It reflects to what extent of liquid assets are available to meet the requirement of the depositors.
Liquid Assets to Demand Deposits Ratio	Demand deposits are those deposits which are immediately payable by the bank on demand and bear no restrictions on withdrawal. This ratio indicates the proportion of liquid assets available to meet the requirement of the demand depositors.

Government Securities to Total Assets Ratio	Government securities are safest investment and possess easy liquidity as well. This ratio measures the proportion of Government Securities in Total assets. A higher ratio is preferable to a lower one.

6. Analysis and Findings

This section deals with the analytical part of the study. It contains comparison of financial performance of public sector and private sector banks in terms of each parameter as discussed above. It is organized in five sub-sections- (i) Comparative Study of Capital Adequacy Ratios (ii) Comparative Study of Asset Quality Ratios (iii) Comparative Study of Management Efficiency Ratios (iv) Comparative Study of Earnings Quality Ratios and (v) Comparative Study of Liquidity Ratios

(i) Comparative Study of Capital Adequacy Ratios

The following hypothesis is framed to test the difference in between capital adequacy ratios of public sector banks and private sector banks:

H_0 = There is no significant difference between each of the capital adequacy ratios of public sector banks and private sector banks

H_1 = There is significant difference between each of the capital adequacy ratios of public sector banks and private sector banks

The result of the mean difference test gives the following results:

Table 2: t-test Results of Capital Adequacy Ratios

Ratios	Banks	Mean	St. Dev.	t-test for Equality of Means	
				t	Sig. (2-tailed)
Capital Adequacy Ratio	Public Sector	12.11	0.74	-3.125	0.006
	Private Sector	13.72	1.86		
Debt-Equity Ratio	Public Sector	18.19	2.91	4.341	0
	Private Sector	13.44	3.07		
Advance to Asset Ratio	Public Sector	56.38	2.59	1.213	0.235
	Private Sector	55.07	3.3		
Government Securities to Investment Ratio	Public Sector	79.01	7.4	1.861	0.074
	Private Sector	73.34	9.19		

Source: Author's compilation using SPSS

The mean of the capital adequacy ratio of the sample public sector banks during the study period is 12.11 % and that of private sector banks is 13.72 %. The result of mean difference t-test is t-value of -3.125 with p-value of 0.006. Since p-value < 0.01, the t-test is significant at 1% level of significance. The null hypothesis is rejected and it is concluded that there is significant differences in capital adequacy ratio of both sectors. The mean of capital adequacy ratio of private sector banks (13.72%) is higher than that of public sector banks (12.11%).

The mean of debt-equity ratio of the sample public sector banks during the study period is 18.19 and that of private sector banks is 13.44. It is observed that t-value is 4.341 with p-value of 0.000. Since the p-value <0.01, the test is significant at 1% level of significance. Thus, the null hypothesis is rejected and it is concluded that there is significant difference in debt-equity ratio of both sectors. The mean of debt-equity ratio of public sector banks (18.19) is higher than that of private sector banks (13.44).

The mean of advance to asset ratio of public sectors banks is 56.38% whereas that of private sector banks is 55.07%. It is found that t-value is 1.213 with p-value of 0.235. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in advance to asset ratio of both sectors.

The mean of the Government securities to investment ratio of the sample public sector banks during the study period is 79.01 and that of private sector banks is 73.34. It is observed that t-value is 1.861 with p-value of 0.074. Since the p-value >0.10, the test is not significant at 10% level of significance.

Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in Government securities to investment ratio of both sectors.

(ii) Comparative Study of Asset Quality Ratios

The following hypothesis is framed to test the difference in between asset quality ratios of public sector banks and private sector banks:

H_0 = There is no significant difference between each of the asset quality ratios of public sector banks and private sector banks

H_1 = There is significant difference between each of the asset quality ratios of public sector banks and private sector banks

Table 3: Table 3: t-test Results of Asset Quality Ratios

Ratios	Banks	Mean	St. Dev.	t-test for Equality of Means	
				t	Sig. (2-tailed)
NetNPA/ Net Advances	Public Sector	2.54	0.76	1.369	0.182
	Private Sector	2.04	1.19		
NetNPA/ Total Assets	Public Sector	1.36	0.55	1.508	0.143
	Private Sector	1.03	0.64		
Total Investments/ Total Assets	Public Sector	14.47	8.76	-0.636	0.53
	Private Sector	16.53	9.03		
% Change in NPA	Public Sector	25.54	14.15	-1.356	0.196
	Private Sector	56.17	86.32		

Source: Author's compilation using SPSS

The mean of net NPA/ net advances of the sample public sector banks during the study period is 2.54% and that of private sector banks is 2.04%. It is studied that t-value is 1.369 with p-value of 0.182. Since the p-value > 0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in net NPA/ net advances of both sectors.

The mean of net NPA/ total assets of public sectors banks is 1.36% whereas that of private sector banks is 1.03%. It is found that t-value is 1.508 with p-value of 0.143. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in net NPA/ total assets of both sectors.

The mean of total investments/ total assets of public sectors banks is 14.47% whereas that of private sector banks is 16.53%. It is noticed that t-value is -0.636 with p-value of 0.53. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in total investments/ total assets of both sectors.

The mean of percentage change in NPA of the sample public sector banks during the study period is 25.54% and that of private sector banks is 56.17%. It is observed that t-value is -1.356 with p-value of 0.196. Since the p-value > 0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in percentage change in NPA of both sectors.

(iii) Comparative Study of Management Efficiency Ratios

The following hypothesis is framed to test the difference in between management efficiency ratios of public sector banks and private sector banks:

H_0 = There is no significant difference between each of the management efficiency ratios of public sector banks and private sector banks

H_1 = There is significant difference between each of the management efficiency ratios of public sector banks and private sector banks

The result of the mean difference test gives the following results:

Table 4: t-test Results of Management Efficiency Ratios

Ratios	Banks	Mean	St. Dev.	t-test for Equality of Means	
				t	Sig. (2-tailed)
Business per Employee	Public Sector	8.01	3.81	0.784	0.439
	Private Sector	7.08	2.5		
Profit per Employee	Public Sector	0.04	0.02	-1.422	0.17
	Private Sector	0.06	0.04		
Return on Networth	Public Sector	17.92	3.91	1.152	0.259
	Private Sector	16.19	4.26		
Adance-Deposit Ratio	Public Sector	90.56	2.193	0.613	0.545
	Private Sector	74.88	0.15		

Source: Author's compilation using SPSS

The mean of business per employee of the sample public sector banks during the study period is Rs.8.01 (Cr.) and that of private sector banks is Rs.7.08 (Cr.). It is observed that t-value is 0.784 with p-value of 0.439 is considered. Since the p-value > 0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in business per employee of both sectors.

The mean of profit per employee of public sectors banks is Rs.0.04 (Cr.) whereas that of private sector banks is Rs.0.06 (Cr.). t-value of -1.422 with p-value of 0.17 is obtained from the statistical test. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in profit per employee of both sectors.

The mean of return on networth of public sectors banks is 17.92% whereas that of

private sector banks is 16.19%. The result of the test is t-value of 1.152 with p-value of 0.259. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in return on networth of both sectors.

The mean of advance-deposit ratio of public sectors banks is 90.56% whereas that of private sector banks is 74.88%. It is observed that t-value is 0.163 with p-value of 0.545. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in advance-deposit ratio of both sectors.

(iv) Comparative Study of Earnings Quality Ratios

The following hypothesis is framed to test the difference in between management efficiency ratios of public sector banks and private sector banks:

H_0 = There is no significant difference between each of the earnings quality ratios of public sector banks and private sector banks

H_1 = There is significant difference between each of the earnings quality ratios of public sector banks and private sector banks

The result of the mean difference test gives the following results:

Table 5: t-test Results of Earnings Quality Ratios

Ratios	Banks	Mean	St. Dev.	t-test for Equality of Means	
				t	Sig. (2-tailed)
Operating Profit/ Average Working Fund	Public Sector	2.02	0.26	-2.148	0.045
	Private Sector	2.39	0.62		
Return on Assets	Public Sector	0.89	0.2	-1.067	0.126
	Private Sector	1.13	0.54		
Interest Income/ Total Income Ratio	Public Sector	87.22	1.55	3.373	0.003
	Private Sector	83.7	3.74		
Spread/ Total Assets Ratio	Public Sector	2.49	0.5	-0.727	0.473
	Private Sector	2.65	0.67		

Source: Author's compilation using SPSS

The mean of operating profit to average working fund of public sectors banks is 2.02% whereas that of private sector banks is 2.39%. It is obtained that t-value is -2.148 with p-value of 0.045. Since the p-value < 0.05, the test is significant at 5% level of significance. Thus, the null hypothesis is rejected and it is concluded that there is significant difference in operating profit to average working fund of both sectors. The mean of operating profit to average working fund of private sector banks (2.39%) is higher than that of public sector banks (2.02%).

The mean of return on assets of public sectors banks is 0.89% whereas that of private sector banks is 1.13%. It is observed that t-value is -1.067 with p-value of 0.126. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in return on assets of both sectors.

The mean of interest income to total income ratio of public sector banks is 87.22% whereas that of private sector banks is 83.7%. It is found that t-value of 3.373 with p-value of 0.003 is considered. Since the p-value < 0.01, the test is significant at 1% level of significance. Thus, the null hypothesis is rejected and it is concluded that there is significant difference in interest income to total income ratio of both sectors. Interest income to total income ratio of public sector banks (87.22%) is higher than that of private sector banks (83.7%).

The mean of spread to total assets ratio of public sectors banks is 2.49% whereas that of private sector banks is 2.65%. It is noticed that t-value of -0.727 with p-value of 0.473 is considered. Since the p-value >0.10, the test is not significant at 10% level of

significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in spread to total assets ratio of both sectors.

(v) Comparative Study of Liquidity Ratios

The following hypothesis is framed to test the difference in between liquidity ratios of public sector banks and private sector banks:

H_0 = There is no significant difference between each of the liquidity ratios of public sector banks and private sector banks

H_1 = There is significant difference between each of the liquidity ratios of public sector banks and private sector banks

The result of the mean difference test gives the results in table 6:

Table 6: t-test Results of Liquidity Ratios

Ratios	Banks	Mean	St. Dev.	t-test for Equality of Means	
				t	Sig. (2-tailed)
Liquid Assets to Total Assets Ratio	Public Sector	9	1.81	0.524	0.605
	Private Sector	8.67	1.66		
Liquid Assets to Total Deposits Ratio	Public Sector	11.72	4	0.526	0.603
	Private Sector	11.1	2.25		
Liquid Assets to Demand Deposits Ratio	Public Sector	9	1.81	0.524	0.605
	Private Sector	8.66	1.66		
Govt. Securities to Total Assets Ratio	Public Sector	24.27	3.31	1.41	0.17
	Private Sector	22.87	1.98		

Source: Author's compilation using SPSS

The mean of liquid assets to total assets ratio of public sectors banks is 9% whereas that of private sector banks is 8.67%. A t-value of -0.524 with p-value of 0.605 is obtained. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in liquid assets to total assets ratio of both sectors.

The mean of liquid assets to total deposits ratio of public sectors banks is 11.72% whereas that of private sector banks is 11.10%. It is found that t-value is -0.526 with p-value of 0.603. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in liquid assets to total deposits ratio of both sectors.

The mean of liquid assets to demand deposits ratio of public sectors banks is 9% whereas that of private sector banks is 8.66%. It is observed that t-value of -0.524 with p-value of 0.605 is considered. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in liquid assets to demand deposits ratio of both sectors.

The mean of Government securities to total assets ratio of public sectors banks is 24.27% whereas that of private sector banks is 22.87%. A t-value of 1.41 with p-value of 0.71 is obtained. Since the p-value >0.10, the test is not significant at 10% level of significance. Thus, the null hypothesis is accepted and it is concluded that there is no significant difference in Government securities to total assets ratio of both sectors.

7. Conclusions

The above discussion analyses the differences in performance of public sector and private sector banks during the study period 2000-2001 to 2014-2015. Based on the above analysis, the following conclusions can be arrived at.

In terms of capital adequacy significant differences in mean is observed between public sector banks and private sector banks in case of capital adequacy ratio and debt-equity ratio whereas no significant mean difference is witnessed regarding advance to asset ratio and Government securities to investment ratio. The mean of capital adequacy ratio is higher for private sector banks which means that their quality of capital is better than public sector banks. The mean of debt-equity ratio is higher for public sector banks which symbolizes their more dependence on debt capital as compared to that of private sector banks.

It is observed that there is no significant difference in means of any of the ratios under asset quality of public sector banks and private sector banks.

It is observed that there is no significant difference in means of any of the ratios under management efficiency of public sector banks and private sector banks.

In terms of earnings quality significant differences in means is observed in case of operating profit to average working fund and interest income to total income ratio between both the sectors whereas no significant difference exists regarding return on assets and spread to total assets ratio. The profitability position of private sector banks is better in terms of operating profit to average working fund. The mean of interest income to total income is higher for public sector banks which symbolizes their higher dependence on interest income than other incomes.

It is observed that there is no significant difference in means of any of the ratios under liquidity of public sector banks and private sector banks.

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TAXABILITY OF STOCK TRANSFER UNDER GST & IMPACT ON WORKING CAPITAL

Usha C.

Abstract:

India, being a federal country has dual taxes. As far as changes are concerned, Goods and Services Tax is the biggest indirect tax reform in the history of India since Independence. Finally, Goods & Services Tax (hereafter referred to as GST), is implemented with effect from 1st July 2017 is expected to result in greater transparency, an improved flow of credit and reduced trade barriers from a tax perspective. It is also expected that consequent to elimination of cascading effect of tax, then goods and services will become cheaper as well as broaden the tax base across the entire supply chain and across all the States / Union Territories. At present Stock Transfer from one State to another take place free of tax by way of issuance of Form F. However, under GST tax is required to be paid on inter-state stock transfers leading to additional working capital requirement depending on GST rate, valuation and availability of credit for utilization at the transferee state. This paper starts with a brief overview of GST, structure of GST, IGST and scope of supply. Finally this paper aims at identifying the mechanism to be adopted for valuation of interstate stock transfers to estimate the impact on the working capital.

Key Words:

GST, Cascading Effect, Stock Transfer, Transparency, Mechanism

Introduction

The current Indirect Tax regime in India provides for a complex tax environment and therefore the constitutional provisions are amended. The present amendments would subsume a number of indirect taxes presently being levied by Central and State Governments into GST thereby doing away the cascading of taxes and providing a common National Market for Goods and Services.

Introduction of GST will be a game changer for the enterprises. GST would have an impact on the pricing, working capital, contracts with vendors and customers, ERP systems, processes, internal control and accounting. Concepts like *manufacture, captive consumption, inter-unit supply, branch transfer, consignment sale, sale at factory gate*, etc. will lose their meanings under the GST regime. GST will ensure optimal allocation and utilization of resources based on pure commercial reasons.

It is common that in the business operations there will be stock transfer of its goods to its units, depots, warehouses which cater to customers' orders in different geographical area. In the current regime there is levy of excise duty on removal of goods when there is stock transfer of manufactured goods both within the state and outside the state. However there is no impact of VAT or CST in the case of stock transfer of goods by obtaining a form called 'Form F' from the destination State dealer. In the GST law there is paradigm shift of taxable event which is 'supply'. Accordingly, all transactions qualifying as a supply for a *consideration* would be subjected to either levy of CGST/SGST or IGST depending on whether the supply is intra-state or inter-state.

Objectives of the Study

1. To understand the overview of GST, CGST, SGST & IGST.
2. To identify the mechanism to be adopted for valuation of inter-state stock transfers.
3. To analyse the impact on the working capital for inter-state stock transfers.

Scope of the Study

The aim of present study is to know the impact of inter-state stock transfers within the same entity on working capital. The relevant data are collected from various secondary sources.

Overview of GST

GST is a blanket indirect tax that will subsume several indirect state and federal taxes such as value added tax (VAT), excise duty, custom duty, stamp duty, different state taxes, central surcharges, entertainment tax, luxury tax and a related levies by local bodies.

GST is a tax on value addition at each stage of supply of goods and services. The purpose of the staged collection process of GST is to ensure that the businesses shall not bear the burden of taxes and enable the smooth flow of taxes to the final consumers.

A uniform and single taxable event of 'supply' would replace multiple taxable events such as manufacturing (excise), sales (VAT), and services (service tax) as prevalent under the current regime.

GST Rate

The Goods and Services Tax (GST) will be levied at multiple rates ranging from 0 per cent to 28 per cent. GST Council finalised a

four-tier GST tax structure of 5%, 12%, 18% and 28%, with lower rates for essential items and the highest for luxury and de-merits goods that would also attract an additional cess. The cess is expected to provide the additional income to the Central Government in order to overcome the losses incurred.

Exemption from payment of tax

A common threshold exemption would apply to both CGST and SGST. Taxpayers with an annual turnover of Rs.20 Lakhs (₹ 10 Lakhs for special category of States) would be exempt from GST. GST council allowed traders, manufacturers and restaurants with turnover of up to ₹ 75lakhs to avail composition scheme against ₹ 50lakhs earlier which boost MSMEs in the country.

Structure of GST

It would be a dual GST with the Centre and the States simultaneously levying it on a common base. Dual GST having two concurrent components

1. CGST
2. SGST

Figure – 1: Structure of GST
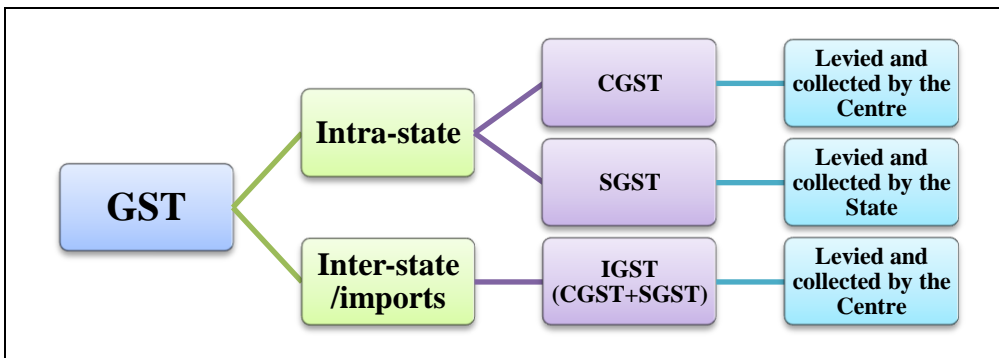
Source: Primary

1. Central GST (CGST)

CGST means Central Goods and Services Tax. It is covered under Central Goods and Services Tax Act, 2017. Taxes collected under Central Goods and Service tax will be the revenue for Central Government. Present Central taxes like Central Excise Duty, Additional Excise Duty, Special Excise Duty, Central Sales Tax, Service Tax etc. will be subsumed under Central Goods and Services Tax which is shown in figure-2.

2. **State GST (SGST)**

SGST means State Goods and Services Tax. It is covered under State Goods and Services Tax Act, 2017. A collection of SGST will be the revenue for State Government. After the introduction of SGST all the state taxes like Value Added Tax, Entertainment Tax, Luxury Tax, Entry Tax, etc. will be merged under SGST which is shown in figure-3.

Figure – 2: Inclusion of CGST
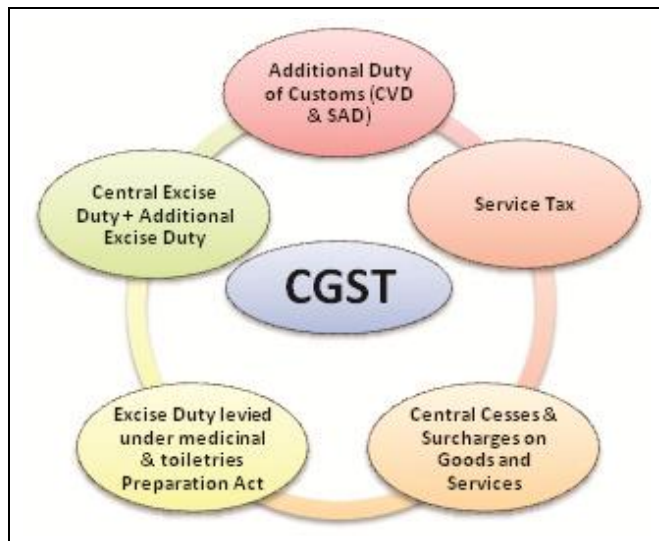
Source: Primary

Figure – 3: Inclusion of SGST
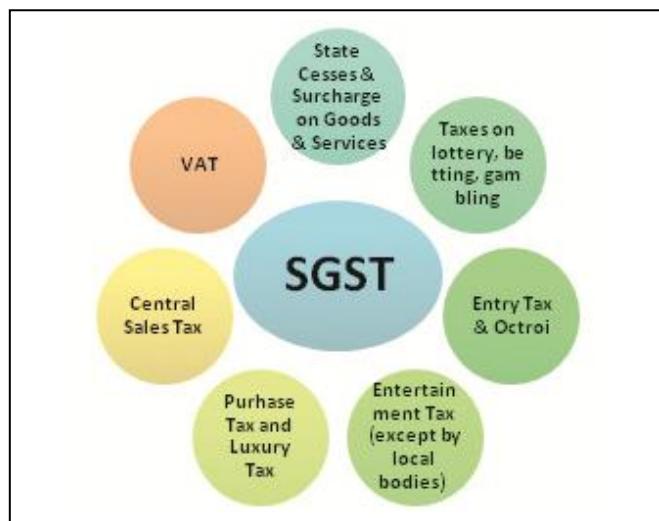
Source: Primary

Note:
- *GST on petroleum products would be levied from a notified date recommended by the GST Council.*
- *Alcoholic beverages for human consumption are proposed to be kept out of the purview of GST.*

Integrated GST (IGST)

IGST means Integrated Goods and Services Tax. IGST falls under Integrated Goods and Services Tax Act, 2017. Revenue collected from IGST will be divided between Central Government and State Government as per the rates specified by the Government.

IGST levied & collected by the Centre applicable to

    a)   Inter-State supplies of goods / services in India
    b)   Inter-State stock transfers of goods
    c)   Import of goods / services

Figure – 4: Inclusion of IGST
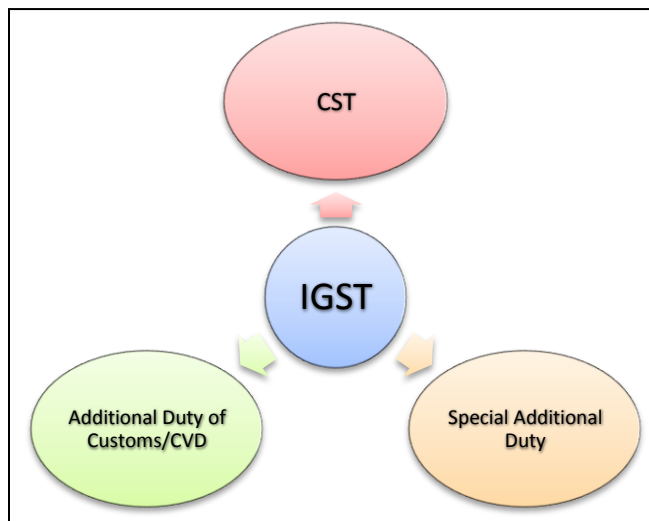
Source: Primary

Set-off mechanism of credit of CGST, SGST and IGST

The dual GST to be introduced will be a state-specific levy where the credit will accrue to the registered tax payer at the place of supply and will be required to be accounted separately as CGST, SGST or IGST is outlined in Figure-5.

•   IGST credit can be utilized against IGST, CGST and SGST liability on supply.
•   CGST credit can be utilized against CGST and IGST
•   SGST can be utilized against SGST and IGST.
•   Cross utilization of CGST and SGST is restricted.

Figure – 5: Taxability & Set off of IGST
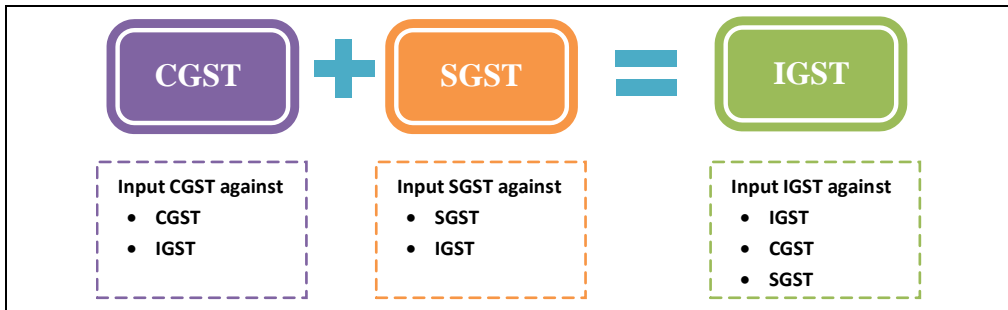
Source: Goods & Services Tax: Industry Insights, Impact on the Retail Industry, Deloitte, January 2017

Meaning and Scope of Supply

Under the GST regime there is shift of the taxable event that is supply. As per Sub-section (1) of Section 7, Supply includes:

1. All forms of supply of goods or services or both such as sale, transfer, barter, exchange, licence, rental, lease or disposal made or agreed to be made for a consideration by a person in the course or furtherance of business;
2. Import of services for a consideration whether or not in the course or furtherance of business;
3. The activities specified in Schedule I, made or agreed to be made without a consideration; and
4. The activities to be treated as supply of goods or supply of services as referred to in Schedule II.

Figure - 6: Supply of Goods and/ or Services
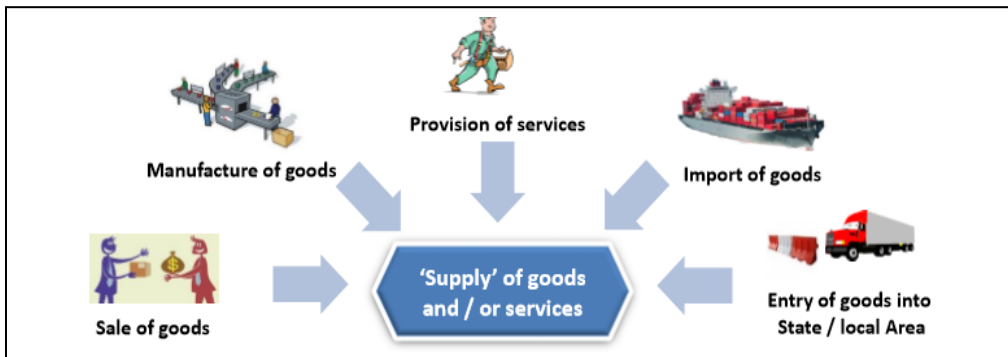
Source: Impact of GST in India, BMR & Associates LLP

The activities enumerated in Schedule I will qualify as supply even if made *without consideration*. Accordingly, such supplies in the absence of consideration are liable to tax.

Following are the activities which will qualify as supply in the absence of consideration and eventually would be liable to tax:

1. Permanent transfer or disposal of business assets where input tax credit has been availed on such assets.
2. Supply of goods or services or both between related persons or between distinct persons as specified in section 25, when made in the course or furtherance of business.
3. Supply of goods— (a) by a principal to his agent where the agent undertakes to supply such goods on behalf of the principal; or (b) by an agent to his principal where the agent undertakes to receive such goods on behalf of the principal.
4. Import of services by a taxable person from a related person or from any of his other establishments outside India, in the course or furtherance of business.

Stock Transfer under Goods and Services Tax (GST) Regime

- It is quite common in an organization, having PAN in India's operations, to stock transfer its goods to its other units, depots, warehouses which cater to customer orders in different geographical area.
- Currently on stock transfer of manufactured goods, both intra-state and inter-state, there is a levy of excise duty on removal of goods.

However, no output VAT or CST is payable.
- In the GST law there is paradigm shift of taxable event which is 'supply'.
- Accordingly, all transactions qualifying as a supply for a *consideration* would be subjected to either levy of CGST/SGST or IGST depending on whether the supply is intra-state or inter-state.

The implication of the aforesaid provision is as follows-

A. Inter-State Stock Transfer:

What transpires out from aforementioned provisions is that if goods are transferred from one establishment to another (of same entity) in different state shall be treated as an inter-state supply and hence liable to IGST. In terms of Section 25(5) of the CGST Act, 2017, every person is required to obtain separate registration for every branch located in different state or union territory and shall be treated as distinct persons. Accordingly, the supply of goods (stock transfers) to a branch located outside the State would qualify as supply liable to tax in terms of clause 2 to Schedule I of the CGST Act, 2017. Establishment receiving the goods can claim input tax credit of IGST paid.

B. Intra-State Stock Transfer:

i) Single Registration: Two establishments of same entity within same state would get covered under single BIN (Business Identification Number). Thus, any stock transfer between them would not amount to supply and thus, no tax would be levied.

ii) Separate Registration: Stock transfer of goods between two business verticals in the same state and decides to have two

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different registrations in that state, any stock transfer between these establishments of these two verticals would be liable to CGST + SGST.

Supply of goods to a branch / unit located within the same State having separate registration would also be liable to tax since both such units (supplying unit and recipient unit) would qualify as distinct person in terms of Section 25(4).

Figure – 7: Valuation of Stock Transfer
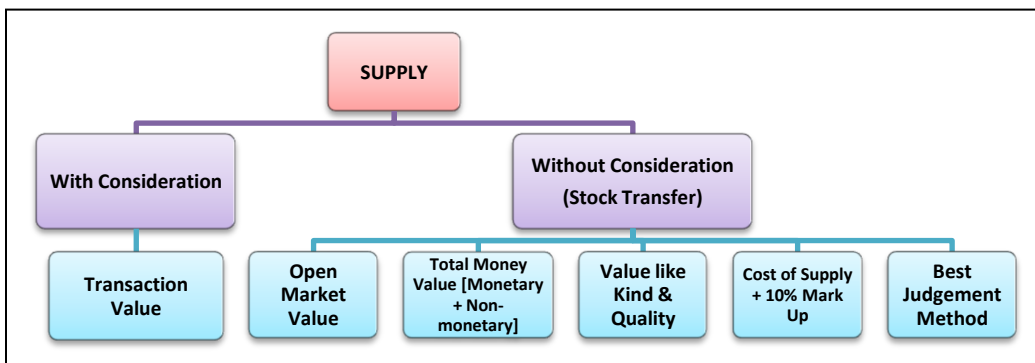
Source: Primary

A. Supply with Consideration

Under GST law, when goods are stock transferred from one place to another of the same business the value of such supplies shall be *"transaction value"*. The Transaction value is the price actually paid or payable, provided the supplier & the recipient are not related and price is the sole consideration.

B. Supply without Consideration

As there is no price paid or payable for the supply of goods under stock transfer, above provision cannot be implemented. Hence,

Valuation and Taxability of Stock Transfer under Gst

In GST, tax is payable on ad-valorem basis i.e. percentage of value of the supply of goods or services. Section 15 of the CGST Act and Determination of Value of Supply, CGST Rules, 2017 contain - provisions related to valuation of supply of goods or services made in different circumstances and to different persons are explained in figure-7.

there should be specific valuation mechanism for stock transfer preferably cost plus percentage otherwise it will increase the administration and compliance cost.

These Valuation Rules will have to be relevant in cases such as free supply of goods and/or services, supply of goods and/or services to related parties, captive consumption of goods and /or services, transaction between branch and head office, stock transfer between factory and warehouse, cost allocation of shared services, etc.

As per CGST Rule 2017, if valuation is not possible as transaction value following values have to be taken sequentially to determine the taxable value:

i. Open Market Value of such supply
ii. Total money value of the supply i.e. monetary consideration plus money value of the non-monetary consideration
iii. Value of supply of like kind and quality
iv. Value of supply based on cost i.e. cost of supply plus 10% mark-up
v. Value of supply determined by using reasonable means consistent with principles & general provisions of GST law (Best Judgement method).

Impact of Stock Transfer on Working Capital

Figure – 8: Working Capital Requirement
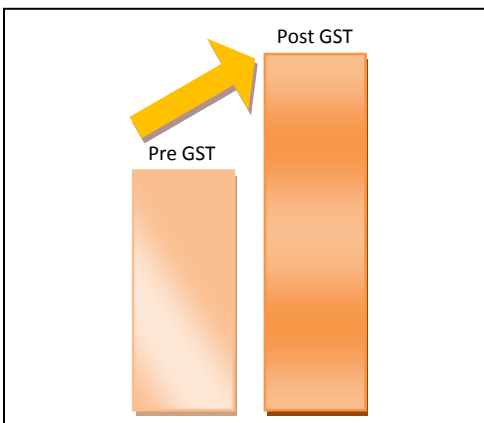
Source: Primary

There are several different areas where businesses will need to optimize to achieve a smooth transition. One important area where every business has to concentrate is on their working capital. GST is also likely to have an impact on the cash flow requirements of business. This would be especially prominent in case of transactions involving supply of goods.

At present Stock Transfer from one State to another take place free of Tax against Form F. However, under the GST, Stock transfers from one State to other to one's branch or consignment agent might be treated as inter-State sale are subject to tax.

Under GST Law, all stock transfers are liable to tax in the originating state at the time of dispatch. However input tax credit can be effectively utilised only when the sale is made by the receiving branch at the arriving state. Thus, it will lead to blockage of working capital for the time period from Stock transfer to stock sales by the receiving branch. This will impact a lot while managing the working capital. The quantum of impact will vary depending on stock turnaround time at warehouse, credit cycle to customer, quantum of stock transfer, etc. To avoid this situation, entrepreneur will be tempted to maximize warehousing in the State of manufacture itself.

Adverse Effect on Working Capital

There is a benefit of getting registered under the Goods and Services Tax. However, there is a flip-side to it. Businesses registering voluntarily under GST may have to face extra compliance and working capital liquidity. Some of these consequences are:

i. **Stock transfer liable to tax:** In Current regime of tax, stock transfers are not taxable against "Form F" whereas under GST, stock transfer made taxable.

ii. **Established more branches:** Today, in order to leverage tax benefits as

stock transfers not taxable under current tax regime, many businesses have established branches purely out of statutory needs. This is to enable the business to do billing with local VAT which allows buyer to get the credit. But GST law made stock transfers taxable from one to other warehouse decision has to be taken more appropriately.

iii. **No compliance of "C" and "F" Forms:** As stock transfer has been made taxable in GST Regime hence Concept of "F" Forms is no more relevant and IGST has been levied on all inter-state purchases or sale and credit will be allowed, hence no concept of form "F" is relevant.

iv. **Late realisation of tax:** In GST Regime of tax, stock transfer has been made taxable, which requires the huge working capital because the realizations of tax going to be on final supply till that it may block the Capital.

v. **Digitalisation:** Since GST requires businesses to maintain funds in the form of electronic credit ledger with the tax department, it may result in liquidity crunch. Also, the harsh 'input tax credit' mechanism will also lead to working capital blockage.

vi. **Registration woes:** Under the GST law, every supplier (including small players) of goods or services is required to be registered under the GST Act, if their turnover in a financial year is ₹20 lakhs or more (for special category states such as those from the northeast, this

threshold is ₹10 lakhs). Thus, there is no exemption for small industries.

vii. **Rate and threshold limit of excise duty:** Presently rate of Excise Duty is 12.5%, whereas GST rate will be around 18%. Further, in the current central excise law threshold is ₹1.5 crores which is reduced under GST to ₹20 lakhs. Small manufacturers with threshold more than ₹20 lakhs will have to register under GST. This increase of tax rates and reduction of threshold limit will significantly impact the working capital.

viii. **The burden of higher tax rate for service provider:** Presently Service Tax rate is 15%, whereas rate of GST will be around 18%. The scenario in the service sector will further be impacted as the concept of Centralised Registration has been done away with and each unit in different states will have to take separate registration. Thus, there is a greater impact on working capital.

ix. **Seasonal industries:** In many of the seasonal industries, where production continues on 24*7 basis but sale happens in specific periods (fertiliser, woollen clothes etc), if the goods are warehoused in a state other than the State of manufacture, blockage of funds may be considerably for a long period.

x. **Maintaining of inventory:** Even in industries where production and sale is evenly distributed throughout the year, certain level of inventory needs to be maintained in different states. Funds will always remain blocked to that extent.

Favourable Impact on Working Capital

There are some favourable impact on working capital is mentioned below;

a. **Full utilisation of input tax credit:** Under GST, tax paid on stock transfer will be fully available as input tax credit. Thus, it eliminates the cascading effect and as a result, the product will be cost effective.

b. **Stock transfer on high demand:** Businesses can leverage this by transferring the goods to a branch having high demand. In this way goods are liquidated quickly and there will be lesser impact on the working capital needs of the business.

c. **Ease of getting refund as GST is single tax:** Moreover GST being a single tax levied now in place of VAT, Service Tax, Central excise duty, etc., it is expected that the refund or the credit as the case may be, will be obtained soon which will decrease the blocking of the Working capital.

d. **No reversal of credit on goods sent for stock transfer:** Currently as stock transfer is not liable to VAT as well as CST, hence, credit pertains to goods sent to stock transfer needs to be reversed. However, in GST Regime stock transfer got made taxable, hence No reversal of Credit is required.

e. **Reduces the cost of maintenance of warehouses:** Under GST, the company can strategically set up 4 or 5 warehouses to fulfil their demand across all the states as they would not have to pay CST and entry taxes at every state border. Even though this arrangement might look expensive, the company will still save a lot of money by not managing twenty different warehouses. This will help them save big on working capital.

All the normal stock transfers are taken for tax purpose under GST. We need to consider the exact requirement and based on this, the stock transfers need to be made to the respective location. Then immediate input credit can be taken. If the goods can be sold quickly after transfer, then it will be good else this will lead to blocking of working capital. Business can transfer the goods to the branches with high demand for sales. This is the way how goods will be liquidated quickly and there will be lesser impact on the working capital needs of the business. Effective planning of stock transfer and use of working capital is required in each business as their practice.

Conclusion

The host of indirect taxes currently levied either by Central or State government will be subsumed in GST and it will be a single unified and comprehensive Tax to be levied on supply of goods and services. GST is increasingly being seen as a business issue and just a tax issue. Under GST, there will be no distinction among manufactures, traders and service providers. 'One India, One Tax, One Market' will be the new reality with GST, removing the State barriers and unified tax rate across the nation.

Keeping into consideration the above mentioned facts, it can be concluded that GST implementation will have a great impact on various aspects of business in India by changing the traditional pattern of pricing the products and services. The GST is bound to affect most aspects of business on procurement, Supplies, Geographical Presence, etc. Accordingly, it is advisable

for all business entities, especially those having business in multiple locations or is having multiple registrations, to analyze their business structure in the light of the proposed law and have a complete impact analysis of their business process. Since companies won't need to comply with CST, Octroi, or entry taxes, so it will be simpler and more affordable to move goods across the country. This will help businesses operate their warehouses more efficiently and locate them where it makes the best business sense. Although this is bound to create a crunch in working capital, effective planning of branches and leveraging of stock transfers can reduce the impact on working capital.

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VALUE RELEVANCE OF CORPORATE SUSTAINABILITY REPORTING IN ASIA: A COMPARATIVE ANALYSIS

Najul Laskar

Abstract

The present study examines the corporate sustainability reporting practices in Asian countries and also examines its impact on the firm performance measured by MBR (market to book ratio). The independent variable (CSP) is measured by content analysis technique using GRI framework as a base. Considering a sample of 36 listed non-financial firms from Japan, 28 from India, 26 from South Korea and 21 from Indonesia for a period of 6 years from 2009 to 2014, the study finds that there is an increasing trend in the disclosing CSP related information in case of developed countries whereas some fluctuation is observed in case of developing countries. The study also finds that impact of CSP on MBR is positive and significant for both developed and developing countries of Asia. Additionally, the relative impact of CSP on MBR is found to be more in developed countries than in developing countries of Asia.

Key Words:

Corporate Sustainability Performance, Firm Performance, GRI, Content Analysis, Quality of Disclosure, Asia

1. Introduction

Corporate sustainable business practices lead to a new industrial revolution in the 21st century. Such business practices can develop and maintain healthy relationship with stakeholder, which is very crucial for value creation (Ameer and Othman, 2012). The concept of corporate sustainability (CS) is derived from the board societal guiding model 'sustainable development' (SD) (Dyllick and Hockerts, 2002). The concept SD was first popularized in the '*Brundtland Report'* published by World Commission for Environment and Development (WCED) in 1987, which is defined as "*the development that meets the needs of the current generation without compromising the ability of future generation to meet their needs and aspirations*" [WCED, (1987), p. 16]. According to this report, the organization must play a key role in contributing to SD. Thus, when this broad concept of SD is applied at the corporate level, it is termed as CS. International Institute for Sustainable Development(IISD) in conjunction with Deloitte and Touche and the World Business Council for Sustainable Development (WBCSD) have defined CS as "*adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be neededin the future*" [IISD, Deloitte, Touche and WBCSD (1992), p.1]. It is after the publication of Brundtland report; the CS started gaining importance globally and has been encouraging firms' to integrated economical, social and environmental aspects into their management strategy (Burhan and Rahmanti, 2012; Ameer and Othman, 2012). Thus, CS is considered as a corporate strategy that integrates economic, social and environmental issues (triple bottom line)

in balanced and holistic manner (Elkington, 1997).

When firms' fulfil their responsibility towards the triple bottom line, it becomes utmost important to communicate such performances, known as corporate sustainability performance (CSP), to stakeholders in the form of a report called sustainability report. In order to facilitate such reporting, numbers of standardized framework have been developed, such as Global Reporting Initiatives (GRI), United Nations Global Compact (UNGC), United Nations Environment Programme etc. Among these frameworks, the most popular is the GRI framework (KPMG, 2013; Hussain, 2015). As per the survey reports (KPMG, 2008; 2013) there exist a theoretical relationship between CS reporting/CSP and firm performance. According to KPMG (2008; 2013) CS report/CSP helps in reducing cost through efficient utilization of resources, develops healthy relationship with stakeholders, reduces the risk of being boycott from society and attracts ethical investment, which eventually enhances firm performance. In addition, evidences reveal that there are a growing number of firms publishing CS report based on GRI framework (KPMG 2008; 2013; GRI, 2013) and the reporting rates are very high in developed countries like United Kingdom Germany, Japan, United States and many other European countries. In respect of Asia, except Japan and South Korea, sustainability reporting is very new to India, Indonesia, Malaysia and China. Most of the companies from these nations (India, Indonesia, Malaysia and China) have started reporting consistently from 2008-09 onwards (KPMG, 2008; 2013).Thus CS reporting has emerged as an important research domain. Researchers have tried to address empirically the association between CS reporting/CSP and firm performance

throughout the globe. However, majority of the studies are concentrated in developed economies like Australia, Europe, USA, Germany and New Zealand (McWilliams and Siegel, 2000; Lopez *et al.,* 2007; Lo and Sheu, 2007; Tracy *et al.,* 2010). Existing literature relating to this issue is very scanty in the developed and developing countries of Asia (Ho and Taylor, 2007; Cortez and Cudia, 2011; Burhan and Rahmanti, 2012; Hidemichiet al., 2012; Maji and Laskar, 2014; Laskar and Maji, 2017). The outcomes of these studies are however inconclusive. Again, none of these studies have analyzed the quality aspects of such reporting. This gap in the existing literature calls for a comprehensive study to examine the CS reporting in Asia.

In order to fulfil the research gaps, the present study is a modest attempt to find out the answers of the following research questions in the context of Asia.

1) What is the quality of corporate sustainability disclosure of the companies in Asia?
2) What is the impact of corporate sustainability performance on the financial performance?

In order to address the above research questions, the study has undertaken the following research objectives:

1) To analyze the corporate sustainability reporting practices in Asian countries.
2) To investigate into the association between corporate sustainability performance and financial performance in Asian countries.

It is important to note that using the methodology of content analysis, the concept of 'CS reporting/disclosure', and 'corporate sustainability performance (CSP)'

are used synonymously by a number of researchers (Ameer and Othman, 2012; Burhan and Rahmanti, 2012; Hussain, 2015). Thus, in the present study we also use these terms synonymously.

The rest of the paper proceeds as follows: Section 2 presents literature review and development of hypotheses. Section 3 is devoted to data, and methodology adopted in this study followed by Section 4, that presents results and discussion and finally concluding remarks in section 5.

2. Review of Literature and Development of Hypotheses

Plethora of empirical studies relating to the association between sustainable business practices and firm performance in developed economies like Australia, New Zealand and US have observed significant positive association between sustainable business practices and firm performance (Jones et al., 2007; Reddy and Gordon, 2010; Tracy et al., 2010; Hussain, 2015). Similarly, Ameer and Othman (2012) examined the sustainability practices through quality disclosure in the context of top 100 sustainable global companies. They found superior sustainable practices leads to better financial performance. They further observed a simultaneous relationship between corporate sustainability practices and firm performance. Lo and Sheu (2007) in case of US firms also reported that the firm's market value is very sensitive to CSP. The finding is consistent with the study of Isabel et al., (2011) for the US market. Again, in case of Indonesian stock exchange, Burhan and Rahmanti (2012) have reported positive and significant association between CS reporting and firm performance. The finding is consistent with the study of Laskar and Maji (2016a) in case of India.

Similarly, in case of South Korean firms and Indian firms, Laskar and Maji (2017) encountered a positive and significant association between CS reporting and firm performance. Waddock and Graves (1997) found similar outcomes in case of Standard & Poor 500 firms. Employing Kinder, Lydenberg and Domini (KLD) index, as a measure of social performance, Hillman and Keim (2001) examined the influence of social performance on firm performance. Their findings also advocated in favour of efficient social performance and asserted employees and customers to be the most influential components of social responsibility that improved the firm performance. Similarly, Laskar and Maji (2016b) reported a positive and significant association between social performance and firm performance in case of Indian firms. On the other hand, Garcia-Castro et al., (2010) observed mixed results for the US market. In addition, McWilliams and Siegel (2000) failed to disentangle any clear association between social performance and firm performance, in case of 524 US firms. Again, Maji and Laskar (2014) failed to encounter any significant impact of CSP on firm performance. However, Ho and Taylor (2007) using classical linear regression model have encountered significant negative association between CS reporting and financial performance in case of US and Japanese firms. Similarly, Lopez et al., (2007) encountered significant negative association between CSP and firm performance in case of US firms.

Using environmental performance as a proxy to CSP, there are a large number of studies to support the assertion that corporate environmental performance can generate benefits for the companies. For instance, Michael and Fouts (1997) after considering environmental performance as a proxy for sustainability performance examined the influence of environmental performance on the financial performance in case of 243 firms from US. They observed that environmental performance was significantly associated with the financial performance of the firm. Researchers have argued that companies with better environmental performance deliver better financial performance (both in terms of profitability and market performance). Plethora of studies found a significant positive association between environmental performance and firm performance (Wagner et al., 2002; Hidemichi et al., 2012) in case of European paper manufacturing industry and Japanese manufacturing companies. Similarly, in the case of Japanese automotive and manufacturing companies, Cortez and Cudia (2011) investigated the impact of environmental innovation on the performance of the firm. They found a significant positive impact of environmental innovation (as a proxy for sustainability performance) on sales, income and assets only in the case of automotive companies of Japan. The outcomes of this study are consistent with the study of Angelo and Cudia (2011) for listed electronics companies of Japan. On the contrary, Hassel et al., (2005), examined the value-relevance of environmental performance measured by environmental index, in the context of Swedish firms. The study found a negative impact of environmental performance on the market value of the firms. The outcomes of the study support the cost-concerned school of thought that environmental investments increase cost, which negatively influences firm's profitability.

The review of extant literature reveals that the researchers have observed mixed results. Although, some researchers have found a significant positive association between sustainability and firm performance, a large number of studies

indicated insignificant association. Nevertheless, based on the theoretical positive relationship between CS (along with its components) and firm performance, the present study intends to test the following alternate hypotheses:

H_1: *There is a positive association between corporate sustainability performance and firm performance.*

Developed countries provide legal safeguard to their companies in order to support the development of sustainability strategies which is linked to the economic development of the country (Ho et al., 2012). Thus, Porter and Kramer (2006) rightly asserted that the companies from developed countries are relatively better than developing countries in terms of sustainability reporting practices. These differences are also due to the availability of advanced technology and other resources. According to the study conducted by Bhatia and Chander (2014) in case of 25 Indian leading companies, the level of disclosure is very low in India. Their study also reported that the companies from the developed countries disclose sustainability related information more rigorously than that of developing countries. Additionally, the survey reports of KPMG(2008, 2013) also indicated that South Korea and Japan being a developed country are relatively in much advanced stage in disclosing sustainability information as compared to the developing countries of Asia (e.g. India, China, Malaysia and Indonesia). Thus, it is legitimate to expect that the relative impact of CSP on firm performance is significantly different between developed and developing country of Asia. Accordingly, the following hypothesis is formulated for empirical testing:

H_2: *The positive association between CSP and firm performance is significantly different between developed and developing countries of Asia.*

3. Data and Methodology

3.1 Source of data, study period and sample

The study is based on secondary data collected from the published annual reports and corporate sustainability reports of the respective company's website, for a period of 6 years from 2009 to 2014. The base year is 2009 because most of the firms form Asian countries except Japan and South Korea have started disclosing their sustainability report from 2009 onwards on a continuous basis(KPMG, 2013). In order to select the sample of this study, all the Asian countries (Japan, South Korea; India; Indonesia; China and Malaysia) are considered as per the KPMG report (2013). In order to select the sample companies from these countries following criteria are developed: a) companies must be listed non-financial companies publishing their respective sustainability report in English language on their respective website; b) non-financial companies must be publishing their respective sustainability report continuously during the study period. We find only 36 non-financial companies from the Tokyo Stock Exchange (for Japan), 26 from Korean Stock Exchange (for South Korea), 28 from the Bombay Stock Exchange (for India) and 26 from the Indonesian Stock Exchange (for Indonesia) that have fulfilled the above criteria. However, Malaysia and China are excluded because only few companies from Malaysia were found to be disclosing their sustainability report for only one or two years; whereas, in case of China, it is difficult to access the company's website. In the present study, we relied only on the

company's respective website because it provides quick and easy accessibility. Moreover, the logic behind excluding the financial firms because the financial firms are not directly associated with the environmental related activities like green house gas emissions, waste management, water management etc. and subsequently may not comply with the GRI framework that is being employed in this study for measuring CSP.

3.2 Measurement of variables

In this study, firm performance is the dependent variable measured by market to book ratio (MBR). Because of stakeholders' expectation, market share is considered to be very useful measure of firm performance (Hussain, 2015). MBR is calculated by dividing the market value of common stock by book value of common stock. Market value of common stock is calculated by multiplying the number of outstanding equity share with the share price at the end of each financial year.

The independent variable of the study is corporate sustainability performance (CSP). In order to measure CSP, content analysis technique is employed using GRI 3 and 3.1 sustainability reporting framework based on their applicability in the sustainability report. GRI reporting framework is found appropriate for measuring the disclosure score in the present context as almost all select companies followed GRI guidelines to publish their respective sustainability report. In order to measure the quality CSP, we have used a four-point scale. We have assigned the code as '0' if the GRI specified item is not disclosed, '1' if the item is partly disclosed in the published report, '2' if the item is fully disclosed in descriptive form,

and '3' for quantitative form[1]. After obtaining the item-wise score, the overall disclosure score for CSP of a particular company is calculated by the following formula:

$$\mathbf{Score_j} = \frac{\sum_{i=1}^{n} \mathbf{X_{ij}}}{\mathbf{n_j}} \dots (\mathbf{1})$$

Where, 'n_j' is the maximum expected score, 'j' is the company, 'i' is the items and 'X_{ij}' assumes the code 0-3 for the quality assessment of the disclosure.

Two control variables – leverage (DER) and firm size (SIZE) are considered in the present study. Leverage is measured by the debt-equity ratio. On the other hand, firm size is measured by natural log of total assets.

3.3 Empirical Models

In order to examine the impact of CSP along with other explanatory variables on MBR of select firms, logistic/logit regression model is employed here. For employing logit model in the present context, the outcome variable (MBR), which is continuous in nature, is segregated into two groups using median value as the threshold limit (δ). Median is used as the threshold limit to control the influence of the outliers present in the dataset. Mathematically, let π be defined as:

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[1] *If the disclosed items are not articulated in terms of numeric form, we have assessed these disclosed items in terms of their preciseness and clarity of expression to assign the code '3' otherwise '2'.*

$\pi = P[MBR \geq \delta]$, also called performing firms; then a logit model can be written as

$$\ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \cdots + \beta_k X_k$$

Where $X_1, \dots, X_k$ are various predictor and control variables of interest, $\beta_1, \dots, \beta_k$ are the parameters to be estimated as the effects of the predictors, and β_0 is a constant. The specific logit models used in this study are:

$$\ln\left(\frac{\pi}{1-\pi}\right)_{it} = \beta_0 + \beta_1 CSP_{it} + \beta_2 DER_{it} + \beta_3 SIZE_{it} \dots (Model\ 1)$$

Where $\ln\left(\frac{\pi}{1-\pi}\right)$ in both the equations (i.e., Model 1) is the log odd of MBR being classified in the class of performing firm.

To investigate the relative impact of CSP on firm performance between developed and developing countries in Asia, the select countries are divided into two groups based on the IMF's World Economic Outlook Report (April, 2014). According to this report, Japan and South Korea are identified as developed countries, whereas India and Indonesia are identified as developing countries. Following logit model are employed for combined data set:

$$\ln\left(\frac{\pi}{1-\pi}\right)_{it} = \beta_0 + \beta_1 CSP_{it} + \beta_2\ D \times CSP_{it} \dots (Model\ 2)$$

Where, D is a dummy variable that represents 1 for developed countries and 0 for developing countries. The sign and significant level of the interaction effect of CSP and dummy (Dx) after controlling the influence of CSP will provide statistical evidence whether there is any difference in the influence of CSP on firm performance between developed and developing countries.

4. Results and Discussions

4.1 Disclosure Trend

The year-wise disclosure score of CSP for the developed, developing and Asia as whole are shown in Figure in 1 and 2 respectively. The graph in Figure 1 depicts that the quality of disclosure of CSP in case of developed countries (CSP(dv))is found to be increasing throughout the study period. Whereas in case of developing countries CSP(dvlpg) is found to be fluctuating. For instance, the graph of developing countries initially increases till 2012 then it decreases in 2013 and then it again increases in 2014.The

graph also depicts that the quality disclosure of CSP is very high in developed countries as compared to developing countries. For instance, the average quality disclosure of CSP in developed countries was maintained at nearly 77% in 2009 as compared to 60% in developing countries. Though the gap was slightly reduced in 2011 and 2012, but at the later period of the study(2014)the gap was again found to be very high (about 19%), which indicates that the developing countries are not consistent in maintaining transparency in disclosure which may give rise to a problem of maintaining better relationship with stakeholder. Unlike developed countries, the level of awareness

as well as the concern towards their society and environment is less, which results in fluctuation in the average disclosure scores of CSP in case of the developing countries. If we look into the graph in Figure 2, it shows that average disclosure score of CSP in Asia

as a whole is continuously rising with negligible decrease in 2013. In 2009, the quality disclosure of CSP in Asia was nearly 69% which increases to 77% in 2012 and then to 79% in 2014 which is quite satisfactory.


Figure 1. Disclosure score of CSP

	2009	2010	2011	2012	2013	2014
CSP(dv)	0.7699	0.7896	0.8236	0.8380	0.8507	0.8864
CSP(dvplg)	0.6026	0.6594	0.6908	0.7046	0.6865	0.7016

Figure 2. Disclosure of CSP(Asia)

	2009	2010	2011	2012	2013	2014
CSP(Asia)	0.6863	0.7245	0.7572	0.7713	0.7686	0.7940
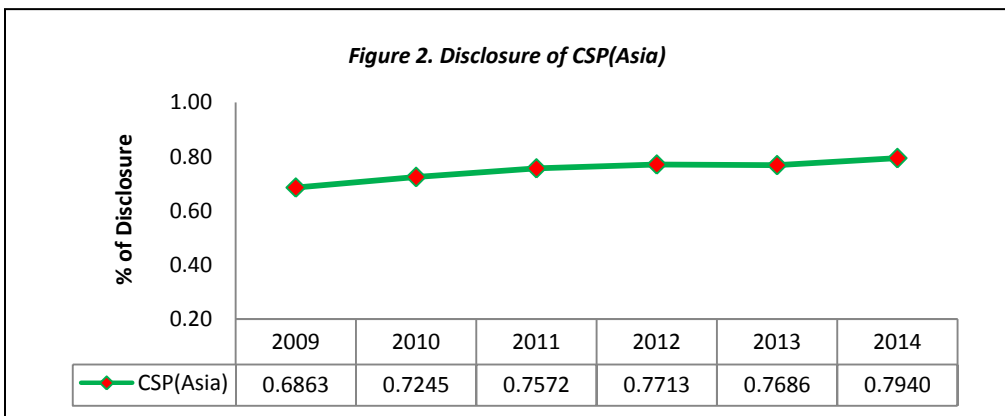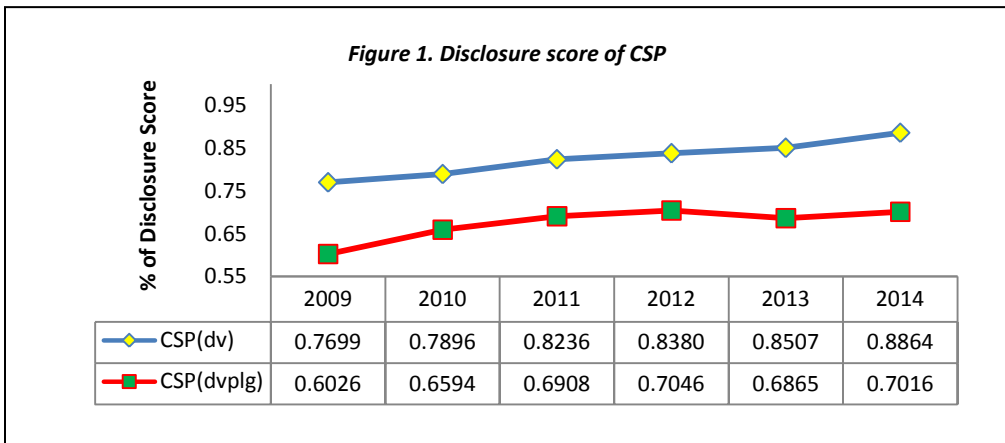
For a better comparison of CS disclosure score between developed and developing counties, we have also employed box plots shown in Figure 3. The Figure clearly depicts that the middle line of box which indicates median is higher in case of developed countries. This indicates that the average

disclosure of CSP in case of developed countries is relatively higher (i.e. nearly 83%) than that of developing countries (i.e. 67%). The box plots further depicts that the developed countries have maintained consistency in disclosing CSP related information, which indicates that the

distribution is symmetric and that is clearly lacking in developing countries. According to the survey reports of KPMG (2008; 2013) and GRI (2013), the CSP reporting in developing countries is very much in the nascent stage, thus the disclosure scores of developing countries are much lower as compared to developed countries.

Figure 3. Box Plots of CSP
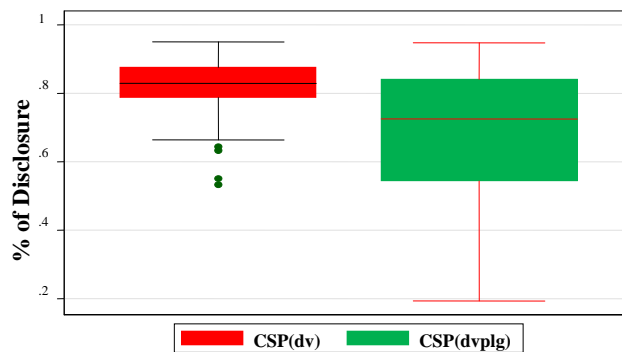
4.3 Association between CSP and Firm performance

In order to have a primary impression of the association between CSP and financial performance, we have carried out an exploratory analysis using bivariate scatter plots shown in Figure 4 and 5 respectively for both the developed and developing countries. The Figures clearly depict a slow but steady increase in the slope of the linear relationship in case of developed countries, whereas such an impression is not very evident in case of developing countries. Unlike developing countries, the relationship between the CSP and MBR is found to be significantly linear in developed countries, since all except only one point is along the fitted line as depicted by the scatter plot in Figure 4.

Figure 4. Scatter Plot of CSP vs MBR Developed Countries

Figure 5. Scatter Plot of CSP vs MBR Developing Countries
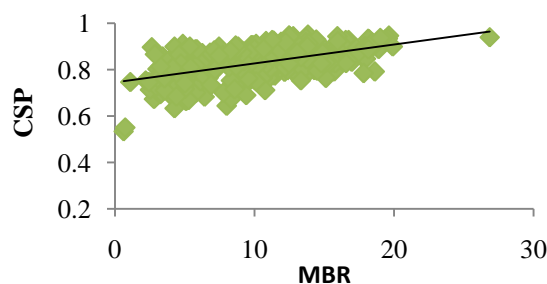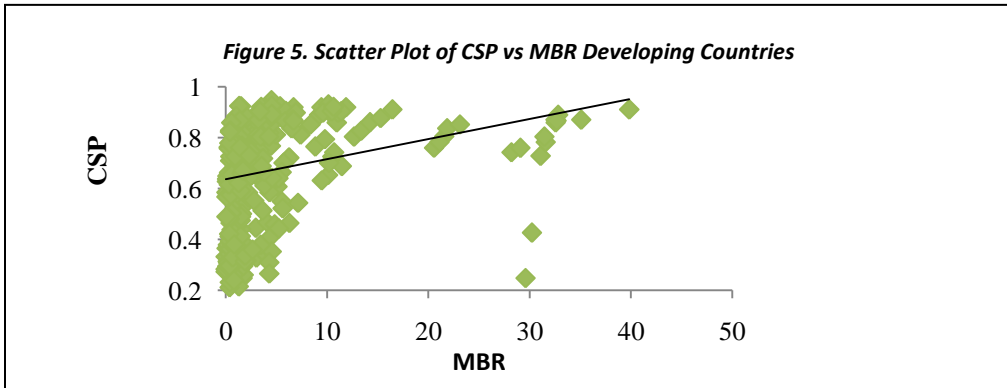
The influence of CSP on MBR for the developed, developing and Asia as a whole is estimated using the logit regression model 1. The results are shown in Table 1. The results in Table 1 indicate that the influence of CSP is positive and significant at 1% level in all the cases. Further a look into the Table 1 indicates that the odds ratios of CSP are found to be 1.238, 1.025, and 1.119, in case of developed, developing and Asian context respectively. These odds ratio are interpreted as with one unit increase in the level of CSP disclosure, it increases the probability of impact in the market value of firms by nearly 24% in case of developed countries. On the other hand, such increase is nearly 3% only for the developing countries. However, for the combined data set (i.e. Asian context) the probability of positive impact on MBR is expected to be increased by nearly 12%. The outcomes of the logit result thus, clearly demonstrate that the influence of CSP is relatively more in the developed countries than in developing countries. The outcomes further demonstrate that to have a favourable impact in the market value of the firm, the high awareness regarding the importance of CSP plays a very crucial role for any nation. Among the two control variables, only DER is

negative and significant at 1% level in case of developing countries. Again, the influence of SIZE is negative and significant at 1% level in case of both developed and developing countries. However, in case of Asian context, the influence of SIZE is positive and significant at 1% level. The LR chi-Square statistics are found to be significant at 1% level and Pseudo R^2 is found to be moderately high for all the cases, which indicates that the outcomes of the logit model are reliable. The findings of the study are consistent with the findings of Lo and Sheu (2007), Ameer and Othman (2012), Burhan and Rahmanti (2012), Hussain (2015) and Laskar and Maji (2017). Thus, based on the outcome of the logit results, the first alternative hypothesis (H_1) is accepted for all the cases.

Table 1. Regression result of CSP and Firm performance							
Model	Variables	Developed Countries		Developing Countries		Asia	
		Odds Ratio	z- statistics	Odds Ratio	z- statistics	Odds Ratio	z- statistics
1	CSP	1.238	6.22***	1.025	2.81***	1.119	9.91***
	DE	1.406	1.56	0.486	-2.42**	1.186	1.29
	SIZE	0.1800	-9.29***	0.806	-3.82***	1.093	3.01***
	Pseudo R^2 = 0.4870; LR Chi-Square = 251.13***			Pseudo R^2=0.226; LR Chi-Square= 92.09***		Pseudo R^2= 0.2239; LR Chi-Square = 206.68***	

*Note: Dependent variable =MBR; *** and ** indicates level of significance at 1% and 5% level*

4.4 Relative impact of CSP on Firm performance

The above regression results exhibit positive and significant influence of CSP on the firm performance for both the developed and developing countries. Moreover, it appears that the influence of CSP is more in the developed countries as compared to developing countries. Thus, it is important to analyze whether this influence is significantly different or not. To examine the relative impact, models 2 is employed here. The results of the model 2 are shown in table 2. The result indicates that the coefficient of the interaction effect is positive and significant at 1% level. This clearly demonstrates that there is a significant difference between developed and developing countries of Asia in terms of the relative impact of CSP on firm performance. Since in the dummy variable 1 is used for developed countries and 0 for developing countries, the results advocate that the impact is significantly more in developed countries in comparison to developing countries. This may be due to the fact that the level of awareness regarding the CS issues is very high in developed countries. Additionally, due to high economic status, companies from developed countries go for rigorous reporting (KPMG, 2008; 2013; GRI, 2013). The outcome of the present study is consistent with the findings of the survey reports of KPMG (2008; 2013) and GRI (2013).Pseudo R^2 is considerable high and the LR chi-square is also significant at 1% level, which indicates that the outcome is reliable. Thus, based on the outcomes of logit model, the second alternate hypothesis (H_2) is accepted.

Table 2. Relative impact of CSP and Financial Performance			
Model	Variables	Odds-Ratio	z-statistics
2	CSP	1.0821	6.34***
	DxCSP	1.0269	10.35***

*Notes: Dependent variable is MBR; Pseudo R^2 = 0.3395; LR chi-square = 313.48**** *
*** signifies level of significant at 1% level.*

5. Concluding Remarks

The present study attempts to analyze the disclosure pattern of CSP and to also examine the impact of CSP on firm performance measured by MBR. Considering a sample of 36 listed non-financial firms from Japan, 28 from India, 26 from South Korea and 21 from Indonesia for a period of 6 years from 2009 to 2014, the study finds that there is an increasing trend in disclosing CS related information in case of developed

countries (Japan and South Korea), whereas, some fluctuation is observed in case of developing countries of Asia (India and Indonesia). Moreover, the average quality disclosure of CSP is found to be nearly 83% for developed countries which is quite satisfactory. But, in case of developing countries the average disclosure is only 67%. However, the regression results demonstrate that the impact of such disclosure is positive and significant not only for both the group, but also for the Asian context as a whole. Further the outcome of the logit model (2) reveals that the relative impact of CS disclosure (CSP) on MBR is more in developed countries in comparison to developing countries of Asia. Thus, both the alternate hypotheses of the study are accepted.

The outcomes of the study give implications to the corporate managers that if CSP is implemented as a strategy it will enable them to maintain healthy relationship with stakeholders, improve operational efficiency, develops competitive advantage, which eventually leads to value maximization. It may also help the policy maker in formulating policy for contributing towards sustainable development. Moreover, the outcome of the study may also stimulate the large number companies to publish their respective CS report consistently.

The present study is relied only on the company's respective website thus, the sample companies are less. There are different platforms where companies publish their respective CS report like the website of Corporate Registrar, UNGC, GRI, which can used in the future study to increase the sample size. Again, irrespective of having global acceptability of GRI framework which is employed here, it has certain limitations. The GRI framework is general and used by different industries in both developed and developing countries. However, the levels of activities in different industries are different, which is not possible to report by using a single framework. Thus, the combination of other frameworks like UNGC, Carbon Disclosure Project etc., along with GRI may be very effective in not only reporting but also in examining the sustainability related activities of the firm.

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