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Indian Accounting Association (IAA)

Message from the Chief Editor

Dear Friends

Greetings

It has been about two years since I was given the privilege to serve as the Chief Editor of the Indian Journal of Accounting (IJA), an official publication of Indian Accounting Association (IAA). I am grateful to the Indian Accounting Association (IAA) for giving me this opportunity to shape the premiere publication forum in my field. The journal provides a forum for new advances in the field of accounting research and practices that spans a wide swath of topics. Over the past some years, the journal has not undergone major change. However, regular and timely publication is continuously being ensured, which is important for its continuing growth.

Now, we need to respond, as professionals, and to position our response appropriately. We will need to improve results from within and challenge the detractors from outside, to provide a positive response, meaningful dialogue, and self-reflection. The Journal will help to serve as the voice of our profession and provide a forum for open debate. Our main objective will be to strengthen the boundaries of the journal, the reviewer database, and to motivate potential authors from all over the country and from abroad as well, to contribute for the journal. In parallel, we all should join hands in preventing plagiarism, duplicate articles and unreliable research.

We have taken an initiative in the direction of re-including the journal in the list of approved journals by the UGC. We hope to be able to bring about gradual changes in the near future for a successful indexation and more importantly, for further progress of the journal. I invite the authors to submit original and first-hand articles, which will help to achieve our goal of obtaining higher Global Impact Factor for the journal to maintain the relevance of the quality in a highly competitive field.

Finally, I would like to thank Prof. (Dr.) Karamjeet Singh, President IAA and his team, past presidents, past secretaries, the editorial and advisory board, reviewers, technical team, authors and well wishers, who are promoting this journal. I would also like to express my gratitude to those who have supported me during the previous two years and to those who are going to be with me in the journey of the journal for a higher level. With these words, I conclude and promise that the standards will be maintained eventually.

Thanking you.

Prof. (Dr.) SS Modi
Chief Editor
Indian Journal of Accounting
A Journal of Indian Accounting Association

President's Message

Dear Friends,

Greetings!

As a president of the Indian Accounting Association (IAA), it is a matter of great pride for me to present before the accounting professionals, teachers and accountants Vol. XLIX (2) of the 'Indian Journal of Accounting'. This journal is UGC-approved and I must congratulate the Chief Editor of the Journal, Prof. (Dr.) S. S. Modi for keeping up the tradition of his predecessors for its timely publication with good research articles after getting it reviewed from the experts in the area of accounting.

Indian Journal of Accounting, a biannual research journal, is an official publication of IAA to promote research in accounting education. Inaugurated on February 14, 1970, IAA is proud to have a network of 50 branches in India with more than 5600 life members. The vision of IAA is to shape the future of accounting through teaching & research and developing thought leaders in accounting. Our endeavor is to create an environment, which could provide us an opportunity to refine teaching strategies/materials and perfect the craft of teaching accounting. We need to integrate cutting-edge technology practices into existing accounting courses and focus on critical thinking skills. Contemporary issues like big data analytics, emergence of bitcoin currency, relevance of statutory cost audit, focus on learning outcomes, ethics in classroom and profession, behavioral aspects of accounting etc need to be addressed.

In academics, research and publication have a special place. It is presumed that research enriches teaching and learning process and contributes to the body of knowledge, which results into the enhanced prestige of the publication. Any Journal will be assessed and evaluated on the basis of research output. Over a period of time, editorial team of our journal has worked hard and selected good research articles for publication. After completing almost 49 years of its publication, we are fully conscious to make efforts to enhance quality in terms of research output devoid of plagiarism, duplicate articles and unreliable research.

I am sure that under the stewardship Prof. (Dr.) S.S.Modi, Chief Editor, this Journal will meet the contemporary requirements and his team will work to produce requisite research output.

Best regards,

Prof. Karamjeet Singh
President, IAA
Director, UGC-Human Resource Development Centre
Panjab University, Chandigarh.

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SOCIO- ECONOMIC STATUS AND FINANCIAL INCLUSION:
A STUDY OF PRATAPGARH DISTRICT OF RAJASTHAN

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ABSTRACT

India from a long time recognized as the social and economic imperatives for development of inclusive growth and has made an enormous contribution to economic development by finding innovative ways to empower the poor. Starting with the nationalization of banks, priority sector lending requirements for banks, lead bank scheme, establishment of regional rural banks (RRBs), service area approach, self-help group-bank linkage programme, etc., multiple steps have been taken by the Reserve Bank of India (RBI) over the years to increase access to the poorer segments of society. Despite all these efforts, a significant proportion of the households, especially in rural areas, still remained outside the coverage of the formal banking system. It is estimated that about 40% of Indians lack access even to the simplest kind of formal financial services. Government of India took initiative of financial inclusion for the achievement of inclusive growth in the country. Keeping in mind the theme of financial inclusion, an attempt has been made to find out the usage of financial services, and to analyze the socio economic status of people and its impact on financial inclusion. The study concludes that majority of households are having bank account, MNREGA & subsidies arising out of various government schemes are found to be main motives in opening bank .The study also analyzed the impact of literacy, income, card, education etc. towards access of financial services using regression model.

KEYWORDS: *Financial Inclusion, RBI, RRB, MNREGA, Economic, Regression.*

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Introduction

Despite India's successes in the global economy, major sections of the population are under poor strata, especially those who are living in rural and tribal areas. They remain poor from birth to death, major cause behind is they are unable to access financial institutions and therefore cannot take part in banking, borrowing, and saving. The access of the poor to the banking services is important for the alleviation of the poverty. Their access to the banking services will contribute a lot to the growth and development of our country's economy. This could be made possible through successful implementation of financial inclusion which involves the delivery of financial services at an affordable cost to the vast segments of low income and disadvantaged groups. The objective is to develop a model of an inclusive financial system which will support full participation of the neglected and unprivileged section of the society in the financial system.

Review of Literature

Singh (2017) Paper summarizes some of the basic concepts encompassed in the term "financial inclusion," and discusses various empirical and institutional studies on various aspects of financial inclusion in the context of developing countries. The paper then outlines several recent studies for India sponsored by the International Growth Centre, which pertain to specific aspects of financial inclusion.

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Srivastava & Sharma (2016):-Study based on financial inclusion in rural area of Udaipur. The objective of study is to find out the level of awareness and access of financial services in the area. The results obtained from the study revealed that people are attached with bank account but not well prone with financial services. Study also suggested that PMJDY played an important role in promoting financial inclusion in rural area of Udaipur.

Verma & Garg (2016), study made an attempt to find out the level of influence of Pradhan Mantri Jan Dhan Yojana by analyzing the effectiveness of the financial literacy program and awareness towards the scheme. The study was carried on the workers of Central University of Rajasthan and villagers of Bandrasindri village in Ajmer district of Rajasthan. The primary data was collected in the form of discussions held with respondents for the period of 2015. Findings of the study suggested that there is a long way which needs to be covered to mitigate financial untouchability in actual sense.

Kaur& Singh (2015), research attempts to study the recent trends in Financial Inclusion in India with special reference to Pradhan Mantri Jan Dhan Yojana (PMJDY), highlighted action plans and its key areas. Study revealed that till (31-12-2014) 819.09 lakhs account has been opened which comprises 496.97 lakhs from the rural and 332.13 lakhs from urban areas of country. Study also suggested strategies that opening bank account procedure should be simplified to ensure maximum Financial Inclusion for the underprivileged and unbanked areas. The widely acknowledged & successful launch of the PMJDY scheme also strengthens the resolves that, when coordination, dedication, opportunism, commitment, formalization, dependence, trust, satisfaction, cooperation and continuity is provided by all the constituents and stakeholders, a framework of construct is created which acts as a dominant force for accomplishment of the mission.

Monalisa (2015), study analyzed the extent of Financial Inclusion in the rural areas of district Hisaran suggested some measures to speed up the process of Financial Inclusion. It also highlighted the problems faced by the respondents in the selected sample with the present banking system and suggestion given by them to tackle the problems. The sample size consists of covering 367 respondents. The methodology used in the research for selecting a respondent as a sample is convenient and random sampling. The study found that 65.67% households of rural areas of district Hisar have been financially included.

Scope of the Study

It is a general acceptance that the level of financial inclusion in India is at the grass root step for achieving the inclusive growth in the country. Moreover, it helps in removing the financial exclusion from the country and will enrich the standard of living of the poor masses. It has been observed from the reviews that the financial inclusion is a significant concept in the Indian financial system. As in recent past, Financial Inclusion has become an essential need and requirement for the government and attractive area of the research. It is also observed that socio economic status have kind of effect on the access of financial services, keeping in mind the theme study undertook to assess the effect of social economic status on financial inclusion. It is believed that the findings and suggestions made in the current study will be useful to the large spectrum of analysts, researchers, academicians and experts in drawing and understanding the functional feasibility in the general region as well as in the Tribal Sub Plan region.

Objectives of the Study

- To know the banking awareness and liasoning with households of banks in the Pratapgarh District.
- To assess the effect of social economic status on financial inclusion in the area.

Hypothesis

H_o:1   There is no significant impact of Socio – Economic status on the access of financial services (financial inclusion) in the area.

Universe

The universe of the survey is the family decision makers residing in Pratapgarh district of Rajasthan including BPL, APL families, marginalized people, and tribal people of nearby areas.

Sample Size

The sample size for the study is 200 respondents from household residing in Pratapgarh discrict of Rajasthan was selected for the study covering Tehsils Chhotisadri, Arnod, Pipalkhunt, Dhariyawad and Pratapgarh.

Data Collection

- **Primary data**

    The data were collected primarily through direct administration of the schedule. The questions were translated into Hindi. This has helped in augmenting the validity of the data.

- **Secondary Data**

    The study uses secondary data to support and substantiate primary data and also to form a strong theoretical base. The secondary data were collected from Research paper, SSRN, shodhganga, Local bodies, research journals, newspaper, articles, SEBI modules, RBI circulars, and published data of RBI, NSSO, and IBA, NIBM and also from selected websites.

Tools for Analysis

    For the purpose of analysis various descriptive as well as inferential statistical tools are used like percentage, mean and Regression model.

Sample Design for Household Survey

Sr. No.	District	District HQ	Population (2011)	Growth	Sex Ratio	Literacy	Area (km2)	Density (/km2)
1	Pratapgarh	Pratapgarh	867848	22.78%	983	55.97	4112	211

Demographic Characteristics

Gender		Literacy		Age		Income		House		Card	
Male	136	Illiterate	52	18-28	24	Less Than 5000	112	Kaccha	68	BPL	42
Female	64	Upto 8th	68	28-35	46	5000-10000	43	Pakka	132	APL	158
		Upto12	55	35-50	107	10000-20000	25				
		Graduation	20	50 and above	23	20000 and above	20				
		Post Graduation	5								

Liasoning of Households with Banking Habits

Bank Account	Frequency	Percentage (%)
Having Bank Account	152	76
Not Having Bank Account	48	24
Total	200	100
Reason of opening bank account		Percentage (%)
For Availing Banking Services	40	20
For Availing Subsidy from Govt.	76	38
For receiving MNREGA Payment	60	30
For kind of pension	20	10
For other reason	4	2

Period of Association with Various Financial Services

Association					
	Below 1 Year	1-3 years	3-5 years	Above 5 Years	Total
Frequency	35	70	42	53	200
Percentage (%)	22.5	35	21	26.5	100

Testing of Hypothesis

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the estimate
1	.612	.378	.269	.501

Table 1

a.   **Predictors**: (Constant): Age, Income, House, Card, Literacy

ANOVA (Table II)

Model	Sum of square	DF	Mean square	F	Sig.
Regression	56.72	5	11.34	40.11	.000
Residual	93.85	194	.251		
Total	150.573	199			

a.   Predictors: (Constant): Age, Income, House, Card, Literacy
b.   Dependent Variable : Access of Financial Services

Coefficient

Table III

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	.097	.124		.782	.435
Literacy	.216	.028	.353	7.675	.000
Income	.105	.038	.123	2.765	.006
House	.467	.056	.369	8.375	.000
Card	.141	.056	.110	2.536	.012
Age	-.045	.039	-.053	-1.168	**.244**

Dependent Variable: Access of Financial Services

From the output of model it is inferred that there is significant impact of socio-economic status on the access of financial services (financial inclusion) in the area, because P value is less than .05 which do not support the null hypothesis. Taking independent variables individually study finds that there is significant impact of income, literacy, types of house and card holders (BPL/APL) on the access of financial services (dependent variable) as significant levels less than 0.05 however, in the case of age there is no significant impact as the results highlighted in the table III which supports the null hypothesis. (P value is more than .05).

Findings

The study was based on descriptive approaches, which involved the description of characteristics associated with the liasoning of people with various banking services in order to measure the nature, extent of financial inclusion. The analysis involved both descriptive and inferential tools using SPSS 19.0. The study arrives at the following findings based on the analysis of data collected from 200 households.

- Under baseline assessment, gender constitutes 68% respondents male and 32% female.

- With respect to age factor, majority of respondents (48%) lies in between the age group 18-38 years, which are basically the family decision maker.

- Similarly, education level of respondents shows that 26% households are illiterates and 68% are below secondary level education which reflects that the respondents are not much educated. Only 8% constitute graduation and post –graduation level. Overall the area reflect that it is deprived from the education, there is a need to address the literacy rate in the area.

- It is derived from the monthly income variable that, 56% of the respondents are earning income Rs. below 5000, 21.5% fall in the income group 5000-10000 and Rs. 10000 & above are 10%. The overall economic scenario depicts that maximum of the households get income by engaging themselves with daily wage earner, farmers and involved with MNREGA scheme which hardly fetches them a two square meal.

- The household belonging to BPL category is 22% and rest belongs to APL group. It has been observed during the survey that BPL card holders are also belong to the higher income group by giving the fictitious information they get the BPL card to get advantage of the government ongoing schemes.

- The households having bank account are 75% and the results obtained indicates that the period of association with various financial/banking services under different segments of time period shows that, majority of the respondents associated between 1-5 years. All these indicators confirm moderate level of banking inclusion in the district and it implies that majority of the respondent are financially included recently.

- MNREGA and subsidies arising out of various government schemes are found to be main motives in opening bank accounts at large scale which has been conform by the data analysis as well as personal interaction during collection of data.

- The study also states that the socio -economic status has a significant impact on the accessibility of financial services based on the independent variable like-income, literacy, card and types of house, which is quite evident from the results of linear regression model. However, in the case of age there is no significant impact as the results highlighted in the table

Conclusion and Suggestions

Inclusive growth is necessary for sustainable development and equitable distribution of wealth and prosperity. Achieving inclusive growth is the biggest challenge in a country like India. Bringing millions of people living in rural India into the mainstream is the biggest concern. It is also a bare fact that the tribal areas (Pratapgarh Rajasthan) have been deprived of the basic amenities and necessities, therefore, people residing in this area remained economically as well as socially backward. The study was undertaken to know the reach of financial inclusion as well impact of socio economic status on access of financial services. The result derived from the study concludes that people are using the financial services but still there is gap of achieving inclusive growth. Financial inclusion is not a onetime effort, it is an ongoing process. If this is to be achieved, it requires the passionate involvement, dedication and commitment of all stakeholders because every new thing to implement in large scale requires determination and attitude towards success path. There must be change in the mindset of every individual involved – banker, bureaucrat, regulator, proper monitoring and persuasion by RBI and Government et al, and creating awareness at all levels.

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RETURN ON EQUITY- AN INSTRUMENT FOR DETERMINATION OF CREATION OF RESERVE AND DISTRIBUTION OF DIVIDEND

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Mridul Kumar Ghosh[***]

ABSTRACT

This is an endeavour to develop an idea about the causes of rise and fall of ROE (Return on Equity) of some reputed and profitable companies in the context of positive and rising growth of earning per share (EPS) and subsequently to develop a strategic level of ROE which the companies should consider for maximisation of wealth of shareholders. Out of many financial parameters ROE, generally, is considered as the most important one from the standpoint of both investors and promoters since it actually determines how effectively the fund of shareholders is being converted into profit. More precisely, it denotes profit per rupee of fund of shareholders used in the enterprise. Therefore depressing ROE may bring about the downfall of maximisation of wealth of shareholders as stock value to some extent connected with ROE since it is connected with earning. It has been noted that excessive growth of reserve may cause the ROE to decrease in spite of rising earnings per share (EPS) because of wider base of net worth (as reserve increases). From the stand point of opportunity cost of capital of retained profit and expected return (in the equity market) of share holders, the companies should strike a balance between ROE and creation of reserve. Concept has been developed in this respect for computation of nature of growth of EPS and reserve that will reveal the way the ROE is heading towards. Dividend distribution should be based on the decision of the company. However as dividend yield usually for a profitable company is quite low, ROE and dividend payout should satisfy the expected market return of shareholders.

KEYWORDS: ROE, Reserve, Dividend, Earnings Per Share (EPS), Retained Profit.

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Introduction

EPS is an important financial parameter in determining the strength of a company. But it suffers from some limitation. It does not focus the earning with respect to fund employed in the business. ROE on the other hand focuses more on the return of fund employed by shareholders of the company. It discloses the amount of earning per rupee of fund of shareholders used in the business. It also speaks how effectively the fund of the shareholders is used in the business. A declining ROE speaks that the fund of share holders earns at a gradual slower rate with respect to previous year. However the EPS may speak different. The apparent conflicting situation deserves grater analysis. When ROE declines maximisation of wealth of shareholders suffers to some extent as stock value is partly connected with ROE for growing companies. Expected rate of return of shareholders is risk free rate plus some risk premium for investment. In the light of opportunity cost of retained earnings, efforts have been made to focus the desired or expected rate of return of the share holders which companies should adhere to. In the subsequent paragraphs we will discuss the expected return of share holders. It is observed that the rising reserve content or book value occasionally fails to provide adequate impetus to stock price. In other words sentiment in connection with the stock somehow is affected in spite of favourable EPS. Efforts have been made in this paper also to develop an appropriate concept for identification of the conditions when ROE declines or rises and decision on amount of dividend and retained profit.

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Objective of the study

- To determine under which conditions ROE rises or declines with respect to previous year even under favourable and rising EPS situation.
- To develop a strategic concept of maintaining ROE at a level by controlling dividend that will balance the opportunity cost capital of retained earning and expectation of return of shareholders in the stock market.

Concept used in the study

Extensions of common financial parameters like EPS, net profit etc and equations have been used to arrive at a decision.

EPS signifies profit earned per share, therefore EPS concerns with number of shares and net profit for the period under consideration and there does not arise any reason to take into account the reserve and surplus of a business entity. EPS is expressed in rupees per share. ROE on the other hand is expressed as percentage of earning of net profit with respect to net worth. ROE expresses actually the amount earned by a company per rupee of fund invested by share holders.

EPS = Net profit or Profit after tax (PAT) / number of shares   …..equation 1

Therefore, EPS x number of shares = PAT ...equation 2

Net worth= equity capital + free reserves.....equation 3

$$ROE = \frac{Net\ Profit\ (PAT)}{Net\ Worth} \times 100 \quad equation\ 4$$

ROE (in percentage) x net worth = PAT... equation 5

Now equating 2 & 5, we get, EPS x no. of shares = ROE x Net Worth   equation 6

Assuming as long as number of shares remains fixed equation 6 becomes

EPS x K_1 = ROE x (Net Worth),   [here, K_1 = no of shares (constant)]

= ROE x (Equity + Reserves)

= ROE x (K_2 + Reserves), if number of shares fixed, equity (K_2) remains fixed

Or ROE= EPS x K_1/(K_2 + Reserve)

$$ROE = \frac{EPS \ x \ K_1}{(K_2 + Reserve)} \quad equation\ 7$$

From equation 7 it is evident that ROE directly related to EPS if all other factors remain same. It is however inversely related to reserve content of the enterprise if others remain constant.

In real life situation both EPS and Reserve are dynamic in nature. Under dynamic situation following two situations can happen within the limitations.

- ROE will increase with respect to previous year if the ratio increases with respect to previous year. This happens when EPS growth rate > Reserve growth rate, in other words when numerator grows at a faster rate than denominator.
- ROE will decline when denominator grows at a faster rate than numerator. The ratio decreases with respect to previous year. In such case Reserve growth rate > EPS growth rate happens.

This equation 7 helps us to high light an important point on distribution of dividend and transfer of retained profit to reserve Before distribution of dividend a company should devote its heads to decide on how much should be transferred to reserve from profit. Here enterprise should keep in mind the fact that by transferring the profit it does not hurt the return on net worth of shareholders. As we all know cost of retained earnings (K_e) under dividend model = (Dividend in next year/Market price) + g

$$K_e = \frac{Dividend\ in\ Rs\ in\ next\ year}{Current\ Market\ Price} + g$$

g = growth rate of dividend, market price of share is a function of dividend, dividend payout ratio constant.

Cost of retained earnings is the rate of return on dividend foregone by shareholders. Actually if the company would have distributed the earning to shareholders they could have invested the fund in the stocks of the company or similar companies with risk and return at the same stock price so that earning rate is similar to rate of return as proposed by dividend model. It is equal to the income that the shareholders could have otherwise earned by placing these funds in alternative investments. However, determining opportunity cost of shareholders is a tough task. Risk free rate usually is bank fixed deposit rate and is considered as the second best opportunity of average shareholders. Thus expected return of shareholders will be higher of the cost of retained earnings or bank or similar safe fixed deposit rate plus some premium amount for the risk and uncertainty involved in the capital market.

In stock market a popular notion or sentiment usually hovers around investors or speculators. They expect at least 20% annual return in view of the risk associated with investment in stock market. Andrew Sather in January 31, 2017 in his paper hinted that 20% return an investor expected. In India the Sensex value for November 2, 1979 was 123.86 points. On October 30, 2015, 36 years later it closed at 26,656.83 points. This means a return of 16.1% per year, during the period. Hence, over the long-run Indian stocks give 16% per year. In 2017 it is above 30000 ie 17%; CAGR of Sensex up to March 2015 was 15.68%. As actual return suffers some set back due to inflation, the value should be further jacked up by 4-5%; besides premium for risk is also there.

According to Warren Buffet GDP growth plus inflation is somewhat plausible rate of return. From this standpoint it is over 10% now in India. To it if risk factor is added it will be significantly higher. Generally dividend yield associated with any good stock offers a very low return; Nifty dividend yield varies between 1-1.7%. Thus, promoters of companies should keep in mind both cost of retained profit and the expected return that is prevalent in stock market. If the ROE falls below the cost of retained earnings of shareholders (K_e) on transfer of profit to reserve it creates a disappointing sentiment amongst the shareholders and the impact may even suppress the stock price. ROE should be above this value. Basically ROE and cost of retained earnings should be compared while making dividend decision and transferring retained profit to reserve.

Stock dividend or bonus simply transfer of reserve to equity and is not supplementary to cash dividend. However stock dividend is an effort on the part of the company to reward shareholders who in turn may convert the stock to cash through cash market transaction. Here promoters kill two birds with a single arrow as the fund remains within the company. This proposition will continue to provide decision making if nominal changes in equity content occur. However if huge change occurs due to bonus issue or infusion of equity capital the situation will be freshly evaluated.

Method of Study

In order to ascertain the substantiality of the concept the study has been made on the basis of data collected of some reputed companies listed in National Stock Exchange over the period 2012-2017

- Collection of data of earning per share (EPS), for uniformity EPS/face value has been used
- Collection of data of return on equity (ROE)
- Collection of data of reserves and surplus
- Collection of data of Equity
- Collection of data of Debt/Equity (D/E)

Data have been shown in tabular form and then graphical presentation of data has been shown. Next stage involves interpretation of data graph

Source of Data

Data have been collected from secondary reliable source like moneycontrol.com, indiabulls.com

Table 1: Return on Equity in %

	2012	2013	2014	2015	2016	2017
Asian Paints		32.91	30.17	29.41	30.79	25.51
Reliance Industies		11.57	11.37	10.82	11.37	11.37
larsen & Toubro	15.98	15.38	13	11.65	11.57	13.75
ITC		32.99	32.76	30.5	29.26	22.16
PTC India	8.14	7.52	12.4	8.31	12.58	
BHEL	27.89	21.92	10.56	4.24	-2.7	
	14.71	18.36	19.84	18.52	17.16	6.05 (bonus)
HeroMoto Co	55.43	42.31	37.39	36.15	38.9	34.74

Table 2: EPS in Rs.

	2012	2013	2014	2015	2016	2017
Asian Paints Re1/-	(103.08)10.3	(116.13)11.61	12.71	14.54	18	20.22
Reliance Industies Rs10/-	66.15	70.65	76.55	80.11	93.78	101.33
larsen & Toubro Rs2/-	76.81	84.79	52.97(79.5)	51.33(77)	54.69(82.04)	
ITC Re1/-		9.69	11.22	12.11	12.35	8.5 (12.75)
PTC India Rs10/-	6.92	6.71	12.19	8.66	14.54	
BHEL Rs2/-	28.96	27.35	14.31	5.93	-3.66	
PFC	23.62	33.62	41.38	45.49	46.85	bonus
HEROMOTOCO Rs2/-	119.09	106.07	105.29	118.41	154.93	179.49

Table 3: EPS per Unit Face Value in Rs.

	2012	2013	2014	2015	2016	2017
Asian Paints		11.61	12.71	14.54	18	20.22
Reliance Industries	6.615	7.065	7.655	8.011	9.378	10.133
Larsen & Toubro	38.405	42.395	26.48(39.74)	25.7(38.55)	27.35(41.03)	
ITC Ltd		9.69	11.22	12.11	12.35	8.5
PTC In9dia	0.692	0.671	1.219	0.866	1.454	
BHEL	14.48	13.675	7.155	2.965	-1.83	
PFC	2.362	3.362	4.138	4.549	4.685	
HEROMOTOCO	59.545	53.035	52.645	59.205	77.465	89.745

Figures in the bracket shows values had there been no bonus
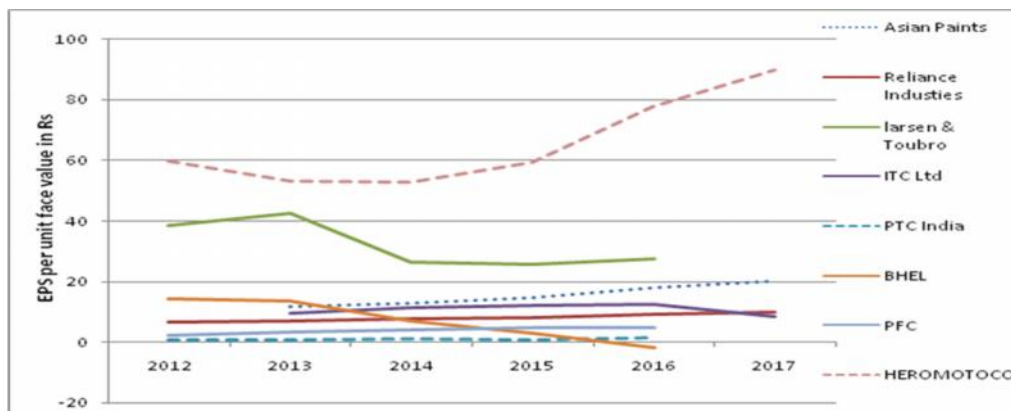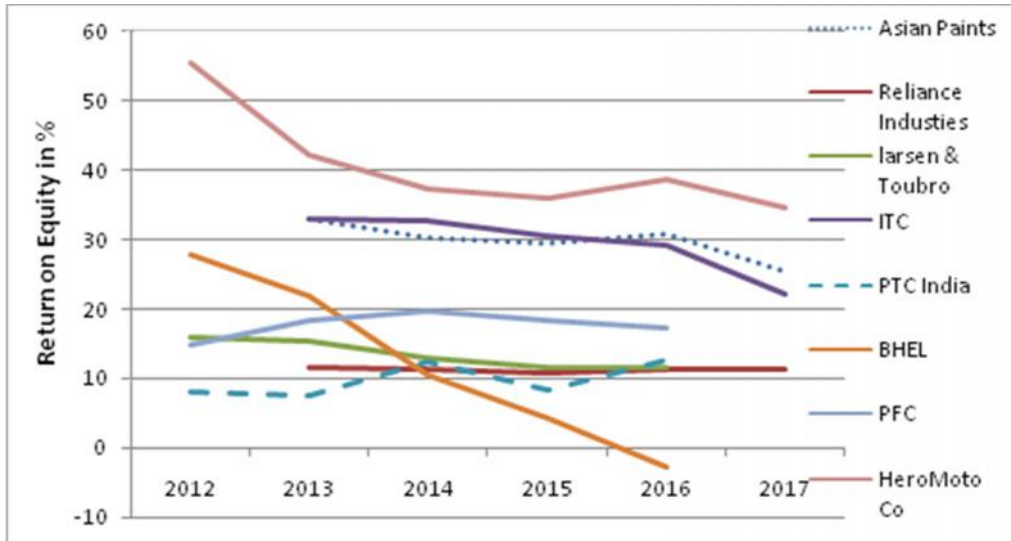
Following Table 4: Describes the yearly percentage change of the parameters with remarks

	2013	2014	2015	2016	2017	REMARKS
1.Asian Paints						When reserve growth > EPS growth
EPS	12.6	9.6	14.1	24.1	12.2	ROE declines and vice versa
ROE	-8.06	-8.3	-2.5	4.7	-17.1	
Reserve	24	20	18	19	36	
2. Reliance Industries						Same as above
EPS	6.8	8.4	4.7	17.1	8.1	
ROE	-2.8	-1.7	-4.8	5.1	0.0	
Reserve	9.04	9.83	10.18	11.71	8.35	
3. ITC Ltd						Same as above
EPS	20.4	15.8	7.9	2.0	-31.2 **(3.2)**	
ROE	2.0	-0.7	-6.9	-4.1	-24.3	
Reserve	19.7	18.3	17.4	7.1	36.7	
4. Larsen & Toubro						Same as above
EPS	10.4	-37.5**(6.2)**	-3.1	6.5		
ROE	-3.8	-15.5	-10.4	-0.7		
Reserve	15.3	11.2	8.5	7.6		
5. PTC India						Same as above
EPS	-3.03	81.67	-28.96	67.90		
ROE	-7.62	64.89	-32.98	51.38		
Reserve	5.77	11.75	6.64	12.09		
6. BHEL						Same as above
EPS	-5.6	-47.7	-58.6	-161.7		
ROE	-21.4	-51.8	-59.8	-163.7		
Reserve	20.6	8.7	3.2	-3.1		
7. PFC						Same as above
EPS	42.3	23.1	9.9	3.0		
ROE	24.8	8.1	-6.7	-7.3		
Reserve	17.3	14.7	18.7	11.6		
8.HEROMOTOCO						Same as above
EPS	-10.9	-0.7	12.5	30.8	15.9	
ROE	-23.7	-11.6	-3.3	7.6	-10.7	
Reserve	16.9	12.4	16.4	21.7	29.9	

*Bold letters indicates actual change had there been no bonus

Dividend table of these Companies

Dividend in % & RS	2012	2013	2014	2015	2016	2017
Asian Paints	400% Rs40/-	460% Rs 46/-	530% Rs5.3/-	610% Rs 6.1/-	750% Rs 7.5/-	
Reliance Industries	85% Rs 8.5/-	90% Rs 9/-	95% Rs 9.5/-	100% Rs 10/-	105% Rs 10.5/-	110% Rs 11/-
Larsen & Toubro	825%	925%	**1069%**	**1219%**	**1369%**	**1575%**
ITC Ltd	450% Rs 4.5/-	525% Rs5.25/-	600% Rs 6.0/-	625% Rs 6.25/-	850% Rs8.50/-	**712.5% Rs 7.13**
PTC India	15% Rs1.5/-	16% Rs1.6/-	20% Rs2.0/-	22% Rs2.2/-	25% Rs2.5/-	
BHEL	320% Rs6.4/-	270% Rs5.4/-	141.5% Rs2.83/-	58% Rs1.16/-	20% Rs0.4/-	
PFC	60% Rs6/-	70% Rs7/-	90% Rs9/-	91% Rs9.10/-	139% Rs13.9/-	
HEROMOTOCO	2250% Rs45/-	3000% Rs60/-	3252.5% Rs65.05/-	3000% Rs60/-	3600% Rs72/-	

Bold letters indicates had there been no bonus, in such case actual dividend is different. Adjustment has been made for clear comparison.

Table of ROE and cost of retained profit or opportunity cost of retained profit

	CAGR of dividend growth (g) upto 2016	Assuming Dividend in 2017 in RS	average price in Rs = average P/E x EPS in 2016	K_e cost of retained profit =(Div/Price) +g	ROE in 2016	ROE in 2017	Remarks For 2017
Asian Paints	15%	8.6	58.4 x 18=1051.20	0.7%+15% =15.7%	30.8%	25.51%	ROE >K_e & over 20%
Reliance Industries	5%	11	10.2 x 93.78=956.56	1.09%+ 5% = 6.09%	11.4%	11.37%	ROE >K_e & below20%
Larsen & Toubro	14%	31.24	27 x 54.69=1476.6	1.9% + 14% =15.9%	11.6%	13.75	ROE<K_e & below 20%
ITC Ltd	10%	9.35	26.6 x 12.35=328.51	2.6% + 10% =12.6%	29.3%	22.16%	ROE >K_e & over 20%
PTC India	14%	2.85	9.8 x 8.31=81.44	3% + 14% = 17%	12.6%		
BHEL	negative	0	133*	Less than 0.3%	-2.7%		
PFC	23%	17.1	174.8**	8% + 23% = 31%	17.2%	6.05%	ROE<K_e & below 20%
HEROMOTOCO	14%	82.1	17.7 x 154.93 =2742.26	2.6% + 14% =16.6%	38.9%	34.74%	ROE >K_e & over 20%

*As eps negative, we have used average of high and low values of 2016, ** we have used average of high and low values of 2016 because of data unavailability.Average stock price of 2016 on the basis of average P/E of 2016 (https://www.equitymaster.com/stock-research/financial-data/PFC/POWERFINANCECORPORATIONLTDDetailedShareAnalysis?utm_source=researchit&utm_medium=website&utm_campaign=factsheet&utm_content=search)

Interpretation of Data in Various Tables

If we analyse the data with respect to each enterprise the following message develops

	The message
Asian Paints	ROE > cost of retained profit, though ROE above 20%, over years gradually decreasing inspite of rising EPS, the reserve growth is very high, Reserve78 times the equity (2017). The company may distribute more dividend to shareholders. Growth of reserve is much higher than dividend growth. Almost zero debt equity company
Reliance Ind	ROE > cost of retained profit, however, ROE very low (below 20%), huge reserves 88 times the equity (2017) and its high growth rate. The company should distribute more as cash dividend at higher rate or may turn into zero debt equity company gradually with the huge reserve content. With decline of reserve ROE may increase & stock price may increase further
Larsen & Toubro	ROE < cost of retained profit; ROE is below 20% and declining, huge reserves, 268 times the equity (2017). Company should distribute more cash dividend to reduce the growth of reserve & enhance the ROE. Company should endeavour to increase the Profit / networth ratio if it intends to keep reserve. With high reserve the debt equity ratio can be lowered by reducing the debt. However disappointment may develop because of lower ROE
ITC Ltd	ROE > cost of retained profit; ROE though above 20% yet it is showing declining signs, enough scope for higher dividend. Reserve 37 times the equity (2017). Zero debt equity company
PTC India	ROE below 20% but rising with fluctuation, the company is in rising stage, may concentrate on reserve, however reserve in 2017 almost 12 times equity, may increase dividend rate significantly
BHEL	ROE declined sharply as EPS declined also , both negative in 2016, dividend declined gradually, because of past good performance the company has good reserve more than 60 times the equity and may tide over the critical time in 2016-2017. Reserve 65 times the equity (2017)
PFC	ROE less than 20%, reserve 12 times the equity base in 2017, dividend grew slowly, because write-off of bad debt performance declined in 2017. In 2016 bonus declared, in 2017 another bonus on foot. Shareholders rewarded by bonus rather than high dividend. Once turn around happens the company will emerge as attractive stock.
Hero Moto Co	ROE much higher than 20% but declining, reserve 257 times the equity base, very high dividend rate. company should spend more on dividend to raise the ROE as declining ROE reveals earning with respect to net worth slowly declining

Inference and Discussion

The aforesaid tables disclose the fact that when ever reserve growth exceeds the growth rate of EPS the ROE declines and vice versa and in consonance with the concept mentioned herein earlier. Regarding distribution of dividend, ROE, opportunity cost of retained earning and dividend growth rate are to be considered very carefully. As dividend yield ,usually, is very low the higher growth rate of dividend supplies fuel to opportunity cost of retained earning. So long dividend growth rate is feeble the lower opportunity cost of retained earning (as the case of Reliance Industries) provides relief for companies with low ROE. However, if ROE is less than opportunity cost of retained earning it may dampen the spirit of investors and stock price. In such case bonus issue (case of Larsen & Toubro) may rescue the depressed sentiment of the investors when investors may derive the benefit from cash market by sale of stock or enjoy dividend on higher number of shares in subsequent years.

In this connection the view of world famous industrialist Warren Buffet can be cited (http://www.businessinsider.in/Warren-Buffett-Does-A-Beautiful-Job-Of-Explaining-Dividends-And-Why-Berkshire-Isnt-Paying-One/articleshow/21299788.cms). If the company can compound the retained earning at a much higher rate than the investor the company may retain the earning instead of dividend distribution. Actually his Berkshire Hathaway retained all earnings in 2011.As preference for cash in current situation is more than future cash to share holders a balance should be struck between dividend rate, retained earning and ROE and many shareholders in the aforesaid case desired some dividend from Warren Buffet's company. In companies with high opportunity cost of retained earning and low or no dividend , if share holders desire to earn cash instead of dividend the share holders exercise the option of selling shares in the cash market and in the process their stake in the company declines if bonus shares are not considered.

Conclusion

The model developed in this paper indicates that whenever growth of reserve exceeds the growth of earning per share, the growth of ROE of the enterprise slows down and when growth of earning per share exceeds the growth of reserve the ROE becomes jubilant. Regarding distribution of dividend, the decision of the company is final since various factors are associated with the business and these are to be complied with. As preference for present dividend is more than future ones a acompany should pay maitainable handsome dividend to shareholders. However efforts will be made to keep the ROE in an attractive zone (preferably above 20% in indian situation) in the context of both opportunity cost of retained earning and and expected return of shareholders. In this context one thing can be said as nothing is universally and eternally true all our observation may not be true for all times to come with change in situation.

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⇒   average inflation 6.93%

Table: Average inflation India (CPI) - by year

Average Inflation	Inflation	Average Inflation	Inflation
CPI India 2017	1.97 %	CPI India 2007	6.39 %
CPI India 2016	4.97 %	CPI India 2006	5.79 %
CPI India 2015	5.88 %	CPI India 2005	4.25 %
CPI India 2014	6.37 %	CPI India 2004	3.77 %
CPI India 2013	10.92 %	CPI India 2003	3.81 %
CPI India 2012	9.30 %	CPI India 2002	4.31 %
CPI India 2011	8.87 %	CPI India 2001	3.77 %
CPI India 2010	12.11 %	CPI India 2000	4.02 %
CPI India 2009	10.83 %	CPI India 1999	4.84 %
CPI India 2008	8.32 %	CPI India 1998	13.17 %

http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india.aspx average inflation 6.93%.

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CORPORATE GOVERNANCE PRACTICES IN INDIAN CORPORATE IT SECTOR INCLUDED IN BSE SENSEX: A COMPARATIVE STUDY

Dr. Meenu Maheshwari*

ABSTRACT

In India, the question of Corporate Governance has come up mainly in the wake of economic liberalization and deregulation of industry and business as well as the demand for a new corporate ethics and stricter compliance with the legislation. This study presents the issue related to Corporate Governance in Indian Corporate IT sector included in BSE SENSEX **(Infosys Ltd., Tata Consultancy Services Ltd., Wipro Ltd.).** For this purpose following objectives of this study are:

- To lay down the Corporate Governance Disclosure Practices in three IT Companies included in BSE SENSEX viz., Infosys Ltd., Tata Consultancy Services Ltd., Wipro Ltd.
- To construct Corporate Governance Disclosure Index on the basis of Mandatory and Non-Mandatory requirement issued by SEBI in SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 and Companies Act 2013.
- To make comparative analysis of Corporate Governance Disclosure Practices by using index score among the sampled companies. (Three IT Companies listed in BSE SENSEX)

The study finds that the degree of Corporate Governance Disclosure Practices is excellent in all sampled companies. All IT Sector companies included in BSE SENSEX fulfilled almost mandatory requirements in all sub-indices of the SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015. The Infosys Ltd. scored the highest score i.e.95 in Corporate Governance Index.

However, all the companies are doing excellent corporate governance practices, but in order to maintain interest of stakeholders and for more transparency in business operation, SEBI should take more stringent steps to avoid any kind of fraud and to fair trading in the stock market. Good legislation and a market environment that is free from corruptions are essential for Corporate Governance disclosure to be efficient. There should be a provision of penalty in case of non-compliance of mandatory governance practices.

KEYWORDS: Corporate Governance, Clause 49, SEBI, Companies Act 2013, BSE SENSEX.

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Introduction

Corporate Governance is the foundation of corporate excellence. It is an ongoing measure of superior delivery of a company's objectives with a view to translate opportunities into reality. It focuses on equitable treatment of all stakeholders. The term "Corporate Governance" refers to the system that prevents misuse of power by the management and thus safeguards the interests of shareholders and also of other stakeholders. Corporate Governance helps in establishing a system where a director is showered with duties and responsibilities of the affairs of the company because Responsibility,

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Transparency, Fairness and Accountability are the four vital pillars for strong Corporate Governance. Security Exchange Board of India (SEBI) has described number of mandatory and non-mandatory necessities for the companies to be in agreement concerned with Corporate Governance beneath Clause 49 of the listing agreement. The revised Clause 49 of the listing agreement has broadened the scope of Corporate Governance in India and should provide for a good governance framework. Clause 49 mandates for all listed companies to disclose a detail report on Corporate Governance Disclosure Practices they have followed.

The study examines the Corporate Governance Disclosure Practices in selected companies based on SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015. This research is trying to find that IT Companies comply or not of mandatory and non-mandatory requirements of Corporate Governance which are issued by SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015.

Review of Literature

This section deals with the review of literature revealed to Corporate Governance Disclosure Practices. This part throws light on various articles, working papers and research papers published at International and National level:

Praharaj and Deshmukh (2013) in their article titled "Corporate Disclosure Practices in Indian Companies: Clause 49 of the Listing Agreement." tried to determine the extent to which Indian listed companies disclose their corporate practices. Authors concluded that there is substantial scope for improvement in the Corporate Governance disclosure practices. The study highlights that many companies did not disclose   number of important issues.

Dembo and Rasaratnam (2014) conducted a study on "Corporate Governance Disclosure in Nigeria : An empirical study". According to this study the provisions of the Companies and Allied Matters Act. (CAMA), that requires the directors of public companies in Nigeria to prepare financial statements for each financial year that give a true and fair view of the state of financial affairs of the company at the end of the year and of its profit or loss. The Corporate Governance index was used to evaluate the standard and quality of Corporate Governance practiced in Oando PLC based on the disclosure and Sec (2011) code as a yardstick. Their result showed that the company performance as "excellent" as per their disclosure practice and indicated that Oando PLC is in the forefront of implementing governance best practices.

Kaur et al. (2014) examined the disclosure practices adopted by the Indian banking sector. For this purpose they developed checklist consisting of more than 104 items both mandatory and non-mandatory which is based on various research and Clause 49 of the Listing Agreement. Their study revealed that Indian banking sector compliance with the mandatory disclosure practices but not enough to hit the highest point.

Subramanyam and Dasaraju (2014) analyzed the level of disclosure on Corporate Governance practices among IT companies in India (in terms of exports as per Electronic and Computer Software Export Promotion Council) in the period 2004-2005 to 2011-2012 and its effects an performance and profitability. They studied six IT companies with the standard &poor's score card to assess the Corporate Governance Disclosure Practices of the companies as a benchmark. Authors observed that among the sample IT companies Infosys, Wipro, TSCL and HCL scored high score and Tech Mahindra and Mphasis scored low score.

Fung (2014) realized in his study that Transparency and Disclosure (T&D) are essential elements of a robust Corporate Governance framework as they provide the base for formed decision making by shareholders, stakeholders and potential investors in relation to capital allocation, corporate transaction and financial performance monitoring. Author observed that Corporate Governance in today's global environment has become more complex and dynamic in recent years due to increased regulatory requirements and greater scrutiny creating increased responsibilities for Board of Directors to comply with rigorous governance standards and also to cope with increasing demand from shareholders and other stakeholders for T&D.

The paper showed best practices regarding Corporate Governance in Hong Kong and found that more than half of the top ten firms with the best Corporate Governance practices are state owned or backed with finding from china reflecting that many large state owned enterprises management have devoted the time and resources needed to improve transparency to clarify the

power and responsibilities of the board of directors and to enhance their firms corporate social responsibility efforts.

Maheshwari and Meena (2016) have tried to understand the Corporate Governance Disclosure Practices of Automobile Companies listed in BSE Top 100 to know Corporate Governance practices in India more closely. For this purpose, they developed Corporate Governance disclosure Index to measure Corporate Governance standard practices in Automobile Companies. Their result showed that the degree of Corporate Governance compliance is fairly good in all sampled companies. Also, revealed that Tata Motors Ltd. gained highest score in all the selected companies.

Verma and Saxena (2016) explained article in context of Indian Corporate Governance. They examined the transparency & disclosure practices adopted by the different selected Energy sector companies of India alongwith the extent and compliance of disclosure practices fulfilled by the selected companies. They used ANOVA to generalize their hypothesis and revealed that there is no significant difference between disclosure practices adopted by selected energy sector companies in India.

Research Methodology

- **Objectives of the Study**

  The main objectives of the study are:

  - To lay down the Corporate Governance Disclosure Practices in Indian Corporate IT sector companies (Three IT Companies included in BSE SENSEX viz., Infosys Ltd., Tata Consultancy Services Ltd., Wipro Ltd.).
  - To construct Corporate Governance Disclosure Index on the basis of Mandatory and non-Mandatory requirement issued by SEBI in SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 and Companies Act 2013.
  - To make comparative analysis of Corporate Governance Disclosure Practices by using index score among the sampled companies.

- **Sample size and Collection of data**

  The study covers three companies of IT Sector, which are included in BSE SENSEX. IT sector is the most renowned sector in any economy. The study is based entirely on secondary data. The present study is related to the financial year 2016-17. All data have been collected from the annual report to the company's website that has been updated. Some other informations have been collected from various journals, reports etc.

- **Hypothesis**

H1$_0$: IT Sector Companies (Selected Companies) do not show compliance with Corporate Governance standards and disclosure practices mentioned in SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015.

H1$_1$: IT Sector Companies (Selected Companies) show compliance with Corporate Governance standards and disclosure practices mentioned is SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015.

Interpretation and Analysis

The research comprises comparative analysis of Corporate Governance Disclosure Practices between three IT Companies listed in BSE SENSEX for the financial year 2016-17. For this purpose company's performance have been measured against certain governance parameter. The research has been undertaken to assess the level of compliance to key governance parameter in these companies in tune with mandatory and non- mandatory requirements under the Companies Act 2013 and the SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015. To evaluate how much these companies are following governance standard, a 100 point Index has been framed, whereby an appropriate weightage in terms of points has been awarded for governance parameters according to their importance. These key governance parameters and the criterion for evaluation of governance, standard have been selected on a hundred-point scale consisting of 18 parameters with their sub parameter both mandatory and non-mandatory which are based on various research, Clause 49 of the Listing Agreement, Companies Act 2013, SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 and model suggested by S.C. Das as shown in Table 2. After determining total scores on the parameters given in table 2 companies will be graded on a five-point scale as given below in Table 1.

Table 1: Score Result

Marks	Remarks
90-100	Excellent
75-89	Very Good
60-74	Good
50-59	Satisfactory
0-49	Bad

Table 2: Criterion for Evaluation of Governance Standard of IT Companies

For the Financial Year 2016-2017

S. No.	Governance Parameters	Points	Total score	Infosys Ltd.	TCSL	Wipro Ltd.
1)	**Statement of Company's Philosophy on Code of Governance**	1	1	1	1	1
2)	**Composition of the board and BOD meetings held.**		5			
i)	Not less than 50% of the Board of Directors comprising of non-executive directors.	1		1	1	1
ii)	At least one woman director.	1		1	1	1
iii)	Where Chairman is Non-Executive Director-At least 1/3 of the board comprise Independent Director where Chairman is Executive- At least ½ of the board comprise Independent Director.	1		1	1	1
iv)	At least four BOD meetings in a year.	1		1	1	1
v)	Attendance record of BOD meetings.	1		1	1	1
3)	**Chairman and CEO Duality**		5			
i)	Promoter Executive Chairman- cum-MD/CEO	1		-	-	1
ii)	Non-Promoter Executive Chairman-cum-MD/CEO	2		-	-	-
iii)	Promoter Non-Executive Chairman	3		-	-	-
iv)	Non-Promoter Non-Executive Chairman	4		-	4	-
v)	Non-Executive Independent Chairman	5		5	-	-
4)	**Disclosure of tenure & age limit of directors**	2	2	2	2	2
5)	**Disclosures regarding to Independent Director (ID)**		6			
i)	Definition of ID.	1		1	1	-
ii)	Familiarization program to ID & Details of such training imparted to be disclosed in the annual report.	1		1	1	1
iii)	Separate meeting of the ID.	1		1	1	1
iv)	Selection criteria the terms and condition of appointment shall be disclosed on the website of the company.	1		1	1	1
v)	Formal letter of appointment of ID.	1		1	1	1
vi)	Limit of No. of Directorship for ID (If whole time director then three or If not whole time director then seven)	1		1	1	1
6)	**Disclosure of :**		2			
i)	Remuneration policy	1		1	1	1
ii)	Remuneration of directors	1		1	1	1
7)	**Directorship and Committees' Membership/Chairmanship of directors across all companies**	2	2	2	2	2
8)	**Code of Conduct**		2			
i)	Information on Code of Conduct	1		1	1	1
ii)	Affirmation of compliance	1		1	1	1
9)	**Post board meeting follow up system and compliances of the Board procedure.**	2	2	-	-	2
10) A)	**Board Committees :** **AUDIT COMMITTEE :**		8			
i)	Transparency in composition of the committee.(Qualified and Independent)	1		1	1	1
ii)	Compliance of minimum requirement of No. of Independent Directors in the committee. (Minimum three director and 2/3of the member should be ID)	1		1	1	1
iii)	Compliance of minimum requirement of the number of committee meetings. (At least four times).	1		1	1	1

iv)	Information about literacy & financial expertise of the committee.	1		1	1	1
v)	Information about participation of Head of Finance, Statutory Auditors, Chief Internal Auditors, and other invitees in the committee meetings.	1		1	1	1
vi)	Disclosure of audit committee charter & terms of reference.	2		2	2	2
vii)	Disclosure of Committee report	1		1	1	1
B)	**NOMINATION AND REMUNERATION COMMITTEE :**		6			
i)	Formation of the committee	1		1	1	1
ii)	Information about number of committee meetings.	1		1	1	1
iii)	Compliance of minimum requirement of No. of Non-Executive Directors in the committee. (At least 3 members)	1		1	1	1
vi)	Compliance of the provisions of independent director as chairman of the committee	1		1	1	1
v)	Information about participation of meetings.	1		1	1	1
vi)	Disclosure of Committee report.	1		1	1	1
C)	**SHAREHOLDERS'/STAKEHOLDERS' RELATIONSHIP COMMITTEE :**		5			
i)	Transparency in composition of the committee	1		1	1	1
ii)	Information about nature of complaint & queries received and disposed-item wise.	1		1	1	1
iii)	Information about number of committee meetings	1		1	1	1
iv)	Information about action taken and investors/shareholder survey	1		1	1	1
v)	Disclosure of Committee report	1		1	1	1
D)	**Risk Management Committee**	1	2	1	1	1
i)	Formation of committee	1		1	1	1
ii)	Disclosure of committee charter report					
E)	**Additional committee**		4			
i)	Health and Safety & Environment Committee	1		-	1	-
ii)	CSR and Sustainable Development Committee	1		1	1	1
iii)	Investment Committee	1		1	-	-
iv)	Other Committee	1		1	1	1
11)	**Disclosure and Transparency :**		24			
i)	Significant related party transaction having potential conflict with the interest of the company	2		2	2	2
ii)	Non-compliance related to capital market matters during the last 3 years.	2		2	2	2
iii)	Board disclosure-Risk Management	2		2	2	2
iv)	Information to the board on Risk Management	2		2	2	2
v)	Publishing of Risk Management Report	1		1	1	1
vi)	Management Discuss And Analysis	2		2	2	2
vii)	Information to Shareholders-					
	• Appointment of new director/re-appointment	1		1	1	1
	of retiring directors	1		1	1	1
	• Quarterly results & presentation	1		1	1	1
	• Share-Transfers	1		1	1	1
viii)	• Directors' responsibility statement	2		2	2	2
ix)	Shareholder right	2		2	2	2
x)	Audit Qualification	2		2	2	2
xi)	Training of board members	2		2	2	2
xii)	Evaluation of non-executive directors	1		1	1	1
	Resignation of Director with reason					
12)	**General Body Meetings :**		3			
i)	Location and time of General Meetings held in last 3 years	1		1	1	1
ii)	Details of Special Resolution passed in the last 3 AGM	1		1	1	1
iii)	Details of resolution passed last year through Postal Ballot including the name of conducting official and voting procedure	1		1	1	1

13)	**Means of Communication and General Shareholder Information**	2	2	2	2	2
14)	**Whistle-Blower Policy & Vigil Mechanism**	2	2	2	2	2
15)	**CEO/CFO certification**	2	2	2	2	2
16)	**Compliance of Corporate Governance and Auditors' Certificate :**		5			
i)	Clean certificate from auditors	5		5	5	5
17)	**Code for prevention of insider trading practices**	5	5	5	5	5
18)	**Disclosure of stakeholders' interest :**		5			
i)	Environment, Health & Safety measures (EHS)	1		-	1	-
ii)	Human Resource Development initiative (HRD)	1		1	1	-
iii)	Corporate Social Responsibility (CSR)	1		1	1	1
iv)	Industrial Relation (IR)	1		1	-	-
v)	Disclosures of policies on EHS, HRD, CSR, & IR	1		-	-	1
	Total	**100**	**100**	**95**	**94**	**90**

Sources: Annual Reports of Sampled Companies.

Findings and Suggestions

- **Findings**

    Following points have been found from the index table:
    - All companies have their own philosophy on code of governance.
    - All the three companies have separate post of Chairman and MD/CEO. In Infosys Ltd. the Chairman is NED as well as ID. While in TSCL the Chairman is NED and in Wipro Ltd. the Chairman is promoter as well as executive director also.
    - The Board of Director of all three companies is duly constituted with proper balance of Executive Director, Non-Executive Director and Independent Director.
    - According to SEBI's Regulations Company's BOD should be meet minimum four times with maximum gap 120 days. All three companies also comply it.
    - Companies disclose tenure and age limit of Board member according to SEBI's Regulations.
    - All sampled companies gave detail of the training program for ID in their respective annual reports.
    - Only Wipro Ltd. have post board meeting follow up system and compliances of the board procedure.
    - Companies disclose their director's remunerations as per SEBI's Regulation. Also all have Remuneration policy towards the Director's remuneration.
    - All companies comply mandatory requirements of statuary committee like Audit Committee, Stakeholders' Relationship Committee, Remuneration Committee, Risk Management Committee and Corporate Social Responsibility Committee.
    - All company framed policy towards the related party transactions and insider trading.
    - Companies inform their shareholders regarding the appointment of new director, quarterly result of the company and directors, responsibility statement.
    - Companies give detail about AGM and detail of special resolution passed in the 3 AGM. They also inform their stakeholders with venue.
    - All companies have an auditor's certificate to comply with corporate governance.
    - All Companies have adopted an insider trading policy to regulate, monitor and report trading by insiders.

- **Suggestions**

    According to Index table Infosys got 95,TCS got 93 and Wipro got 90 marks. Well, all the company's scores are excellent, but to bring full marks, the company should adopt the following suggestions-
    - TCS Ltd and Wipro Ltd. have Non-Executive Director Chairman, but to get more marks they should appoint Independent Director Chairman.
    - Wipro Ltd. should disclose definition of Independent Director in its annual report.
    - Infosys Ltd. and TCS Ltd. should have post board meeting follow up system and compliances of the board procedure.

- ▪ Infosys Ltd. and Wipro Ltd. should constituted Health and Safety & environment Committee and TSC Ltd. and Wipro Ltd. should constituted Investment Committee.
- ▪ All Companies should disclose the policy for stakeholders' interest like Environment, Health and Safety measures, Human Resources Development initiative, Corporate Social Responsibility and Industrial Relation.

Comparison of IT Companies with Corporate Governance Standards and Disclosure for 2016-17

For the eighteen parameters with their sub–parts of Corporate Governance Disclosure Practices mentioned the SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 scores have been obtained for all the three IT companies i.e. Infosys Ltd., TCS Ltd. and Wipro Ltd. on the basis of their fulfillment of requirements. Using IBM SPSS22 paired t-test has been applied to test whether these three companies show compliance with Corporate Governance Disclosure Practices mentioned the SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015.

Table 3: Pair wise t-test for year 2016-17of IT Companies

Pair	Corporate Governance standards and disclosure practices mentioned in Clause 49 of Listing Agreement v/s Score of	t	p-value
1	Infosys	-1.317	0.205
2	TCSL	-0.825	0.421
3	Wipro	0.000	1.000

From the above table, it is concluded, that p-value for all the IT companies is greater than 0.05. This implies that at 5% level of significance and with 17 degree of freedom, all the three IT companies show compliance with Corporate Governance Disclosure Practices mentioned in the SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 in year 2016-17.

Conclusion

From the above analysis and interpretation it can be concluded that IT Sector companies have excellent Corporate Governance Practices. Alternative hypothesis has been proved from p-value. In Infosys eight board meeting, in TSCL nine board meeting and in Wipro Ltd. five board meeting were held during the financial year 2016-17. All companies have disclosed the changes in the structure of Board of Directors in their annual reports. Also, the terms and conditions of appointment of the Independent Director are disclosed in annual report of all three companies. All three companies had statuary committees like Audit Committee, Stakeholders' Relationship Committee, Remuneration Committee, Risk Management Committee and Corporate Social Responsibility Committee and also complied all mandatory requirements of Clause 49 of the Listing Agreement. Independent Director is the chairman of the Audit Committee in all three companies according the SEBI's regulation. However, all the companies are doing good corporate governance practices, but in order to maintain interest of stakeholders and for more transparency in business operation, SEBI should take more stringent steps to avoid any kind of fraud and to fair trading in the stock market. Good legislation and a market environment that is free from corruptions are essential for Corporate Governance disclosure to be efficient. There should be a provision of penalty in case of non-compliance of mandatory governance practices.

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HUMAN RESOURCE ACCOUNTING AND ORGANIZATIONAL PERFORMANCE

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ABSTRACT

Assessing the value of human resources is a complex process. It cannot be assessed as other resources used in the organization. It is important to have cost benefits analysis to rank inputs appropriately. In an organization human resource play most important role to accomplish the organizational objectives. Human resource account is to decide the amount of cost incurred on it and how much value it is giving to the organization. This study comprises of review of seventy research articles related to human resource accounting and its impact on organizational performance. This study is exploratory in nature and qualitative analysis has been done to identify the impact of HRA on organizational performance. This study is entirely depending on secondary resources. Findings of the study are not possible to generalize. But on the basis of available research papers it can be said that whether HRA has positive impact or negative impact on organizational performance.

KEYWORDS: *Human Resource Accounting, Organization, Performance, Employee, Capital.*

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Introduction

In light of the history of labor and human resource management, HRA suggests a vehicle for improvement of management as well as measurement of human resources. HRA can demonstrate that improvement in human resource management enhances profits, and then managers will integrate human capital implications in their decision making to an enhanced degree (Flamholtz, 2002). Human Resource Accounting is the process of assigning, budgeting, and reporting the cost of human resources incurred in an organization, including wages and salaries and training expenses. HRA was first developed by Sir William Petty in the year 1691. However the true research in HRA began in 1960 by RensisLikert, founder of the University Of Michigan Institute of Social Research and well known for his work on management styles and management theory (Likert 1961, 1967).

Human resource accounting is the activity of knowing the cost invested for employees towards their recruitment, training them, payment of salaries & other benefits paid and in return knowing their contribution to organization towards its profitability. Human resource accounting is a new branch of accounting. It is based on the traditional concept that all expenditure of human capital formation is treated as a charge against the revenue of the period as it does not create any physical asset. But now a day this concept has changed and the cost incurred on any asset (as human resources) should be capitalized as it yields benefits measurable in monetary terms. It seems that in order to achieve goals such as economic and human value in financial reports, considering an organization's investment in human resources, human resource management, increasing efficiency and creating opportunities for evaluating personnel policies, assessment of human resources of an organization in terms of preservation, analysis and development, identifying non-operational and productivity gains resulting from investment in human

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resources and calculating the value that human resources creates in other financial and physical resources in an organization, human resources accounting should have quantitative and practical dimensions (Dawson,1994).

It is the measurement of the cost and value of people to organizations. It involves measuring costs incurred by private firms and public sectors to recruit, select, hire, train and develop employees and judge their economic value to the organization. HRA is the art of valuing, recording and presenting systematically the work of human resources in the books of accounts of an organization. According to - Eric Flamholtz "Human resource accounting is the measurement of the cost and value of the people for the organization". It follows the traditional concept that all expenditure on human capital formation is taken as a charge against the revenue of the period as it does not create any physical asset. Modern view is that cost incurred on any asset as human resources need to be capitalized as it provides benefits measureable in monetary terms. Measurement of cost and value of the people to organizations is highly important, costs incurred in recruitment, selection; hiring, training and development of employees along with their economic values are very much relevant for human resource accounting (Islam et al. 2013).

Literature Review

Various articles related to human resource accounting and organizational performance are reviewed to find out relations between HRA and organizational performance:

In the study of Akindehinde, Enyi and Olutokunbo (2015) have revealed that human asset accounting significantly affects organization performance as supported by the various empirical findings, the study concluded that the current accounting practice of expensing every expenditure on human asset does not present the true and fair view of organizations balance sheet. It also leads to understatement of the organizations' profit which subsequently has negative effect on earnings per share, shareholder's funds, market value and return on asset. Another study of Enyi & Akindehinde (2014) the result of the statistical analysis which revealed that human asset significantly affects management decisions as supported by various empirical findings and relevant literatures which also considered employees as important asset critical to the survival of organizations within the competitive economic environment, there is need for this assets to be valued and capitalized like other intangible assets, like goodwill that are captured on organizations balance sheets or statement of financial position.

In the article of Islam, Kamruzzaman & Redwanuzzaman (2013) have found that as per accounting standards disclosure of human resource accounting information follows historical cost approach to human asset valuation but this fails to show current cost. This is why economic value approach is more relevant. Still true cost of capital for discounting the net cash flows related to human assets is also difficult to find out. As a result replacement cost valuation method and non monetary behavioral approach might be suitable for their valuation of human resources in an organization. Human resource accounting system helps the management in taking various decisions for achieving their organizational goals by accurate estimation of the human resources. Managerial decision making related to the human resource in terms of both quantitative and qualitative assessment of efficacy and effectiveness can be achieved through the implementation of human resource accounting system. Thus the study reveals that HRA system helps in personnel selection process, recruitment, estimate cost and budget for the acquisition and development of human resources and also helps in utilization of human resource effectively by providing better reward administration and it is important in the evaluation process by developing reliable methods of measuring the value of employees to an organization Dhanabhakyam & Mufliha (2016).

In the article of Hossain, Akhter and Sadia (2014) have elaborated that the volume of investments on human resources usually made by corporate entities and the impact of such investments on the productivity level of the humans justify their treatment and recognition as assets rather thanexpenses. Additionally, the arguments against the concept of HRA and its application are issues that can be solved significantly. When human resources are quantified and reported as assets in the balance sheet of corporate entities, the multiple users of the reports will be awarded with more qualitative and quantitative information, which will boost their decision making abilities.

Surarchith, Vaddadi, and Cura (2017) their article aims at ascertaining the relationship between human resource accounting and performance of firm. According to findings of current study, shelter cost and training & development cost were strongly correlated with firm's performance, but health and safety cost was moderately correlated with firm's performance. The research helps the banks to

identify the importance of investment on human capital. The research helps the banks to identify the importance of investment on human capital towards achieving higher levels of human productivity.

Pandurangarao, Basha and Rajasekhar (2013) have explored that Human resources appear to be important to Indian organizations, most organizations do not value their human resources and plans to implement valuation of human resources are at a very early stage. Despite the interest in valuation there will be little or moderate progress in the area over the next five to ten years. In order to show greater progress, more needs to be done at both the theoretical and practical level.

Cherian & Farouq (2013), in their study have found that developing HRA was complicated since it requires the organization's cooperation to act as research sites for the purposed study. Hence, only few major studies were conducted in this field. In addition to this, this research involves the HRA implementation in organizations, and hence the cost of operation is high. The benefits of HRA implementation to the sponsoring firm and also to the field are not certain. This study includes the adaption process of HRA technology and can be extended to evaluate the different types of intellectual property. The HRA implementation helps to improve managerial decisions like layoffs, better performance evaluation measures of the firm and also acts as a guide during buying, selling and merger transactions.

Micah, Ofurum and Ihendinihu (2012), their study suggests that an inverse relationship exists between the performance metrics (ROA) of a firm and its level of human resource accounting Disclosure. This is not surprising because, return on assets (ROA**)** indicates a company's overall profitability. When investments on human capital development are expensed, the result will be that both assets and earnings will be understated. This will motivate companies with a low level of earnings to provide relevant information to investors and stakeholders regarding investment in human capital not reflected on the balance sheet.

Ezeagba (2014), his paper has attempted to bring the views of different researchers on the concept of human resource accounting into focus and the practicability of this concept, peruse the objectives of human resource accounting, different valuation methods from various literature emphasizing the need to show human asset in the balance sheet and finally sensitizing professional accountants to an in-depth look at the balance sheet and for professional bodies to bring up Accounting Standards to back up adequate treatment of human assets in the balance sheet.

Tomassini (1977), in his study revealed that very little evidence is available regarding the impact of HRA data on managerial decisions. Perhaps the most significant need for future behavioral HRA research is the collection of scholarly evidence of decision making in actual HRA systems.

Saremi & Naghshbandi (2012) in their paper have explored the current literature on human capital and its impact on employee's performance. The conceptualization of human capitals is closely linked to some fundamentals of economics and employees performance. The literature reviews show that there are reasonably strong evidences to show that the infusion of 'human capital enhancement' in employees promotes innovativeness and greater employees' performance. There is no doubt that the management of organizations should be serious about human resources and increasing their performance which will affect on productivity and efficiency.

Kenneth & Sinclair (1991) Eze & Chiamaka (2016), Srivastava (2014), Ifurueze, Odesa and Ifurueze (2014), Edom, Inah and Adanma (2014) in their studies have found that human resource accounting is positively associated with performance of organization. Amount of cost incurred on development of human resources has always helped in achieving organizational objectives.

Research Methodology

The research design of this study is exploratory in nature. The existing literature has been derived from various online sources such as Elsevier Products, Emerald E-Journals, Indian Journals, JSTOR, Sage Online Journals, Springer, Taylor & Francis Online, Wiley Online Library, Google scholar etc. The literature was searched with the help of various related key words like, human resource accounting, HRA, Human resource capital etc. Most of the articles have derived from Google scholar related to HR accounting. These papers were published in different journals of management. Seventy research studies from various double blind peer reviewed journals were found appropriate for this article. The qualitative analysis of existing literature is done with the help of R-software. The R-software which helps in word clouding, text search, data mining and helps in establishing correlation between text and terms.

"R Studio" a software package that allows users to import, sort and analyze text documents, PDFs, audio files, video files, spread sheets, databases, documents, bibliographical data, web pages etc. The qualitative analysis of articles available in these formats has been done. The results provided by R – software have been presented and concluded in the following section of the paper.

Findings and Discussion

Human resource accounting and its impact on organizational performance is an important dimension which is explored in this study through analysis of various available literature on human resource accounting.

Figure 1: Word Cloud of Most Frequently Used Words
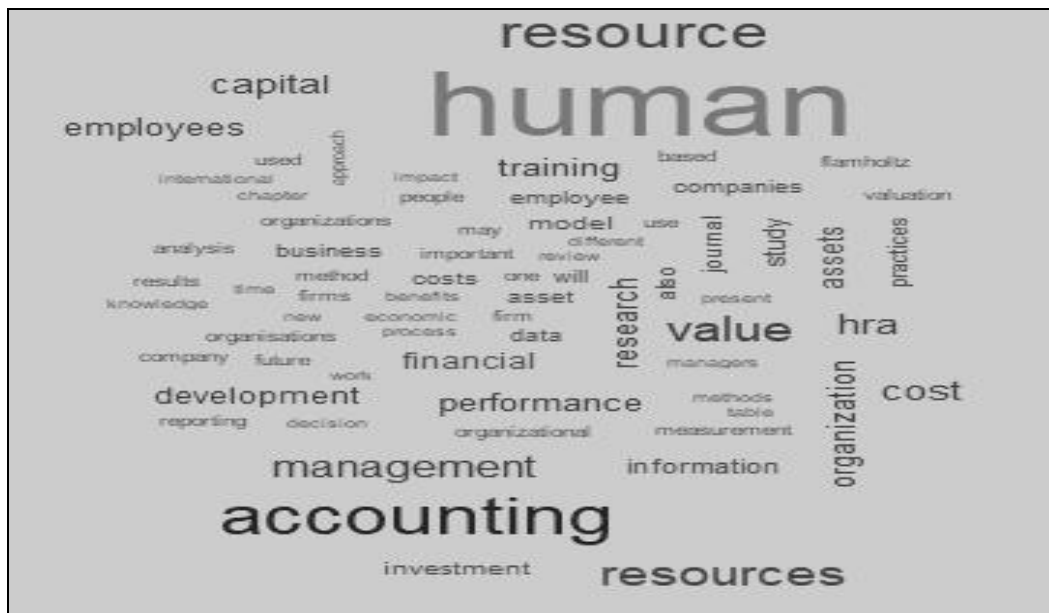
The above word cloud shows that human resource accounting is positively associated with the performance of an organization. It is clearly evident that HRA add value to the organization. Cost incurred on training and Development led organizational performance. Cost incurred on research and development also led to capital formation in the organization.

Table 1: Fifteen Most Frequently Used Words in the Literature

Human	9197
Accounting	4868
Resource	4178
Resources	3083
Value	2955
Management	2324
Cost	2133
HRA	2074
Capital	2055
Organization	1816
Training	1751
Performance	1702
Employees	1671
Research	1654
Development	1556

The above table shows that human resource accounting is used maximum times in all previous literature. This table clearly indicates that human resource accounting led organizational performance. Maximum frequency of words shows that these term were elaborated exhaustibly and close association exist among these terms.

Figure 2: Frequency Plot of Most Frequently Used Words in the Literature
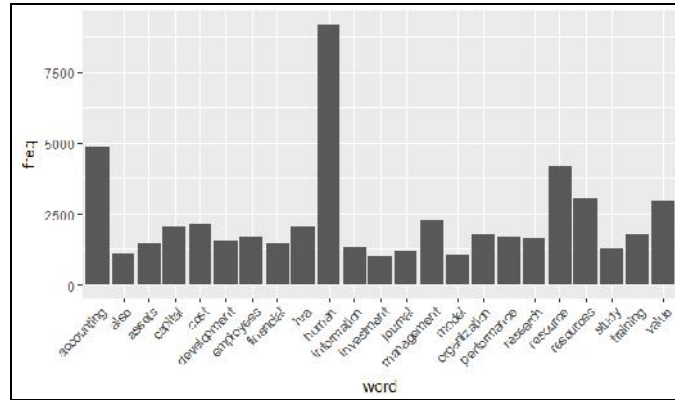
The above table shows status of various terms in previous literature. This frequency plots help to understand that the HRA has impacted organizational performance. It has added value to it and proved that investment into human resources will always lead to value addition to the organization.

Table 2: Correlation with the term Human

Human			
Accounting	0.95	Department	0.91
Reduction	0.93	Describe	0.91
Time	0.93	Effective	0.91
Activities	0.92	Effectiveness	0.91
Appropriate	0.92	Existing	0.91
Management	0.92	Explain	0.91
Provide	0.92	Extreme	0.91
Purpose	0.92	Greater	0.91
Required	0.92	Ias	0.91
Resource	0.92	Others	0.91
Approach	0.91	Quickly	0.91
Approaches	0.91	Taken	0.91
Current	0.91	Terms	0.91

The above table shows that how closely each term is associated with human. It is evident that accounting is very much highly associated with human. It is clear from above data sheet that HRA increases the effectiveness of organization. In this table 26 most correlated terms were presented and among this high correlation is found.

Figure 3: Tree Map
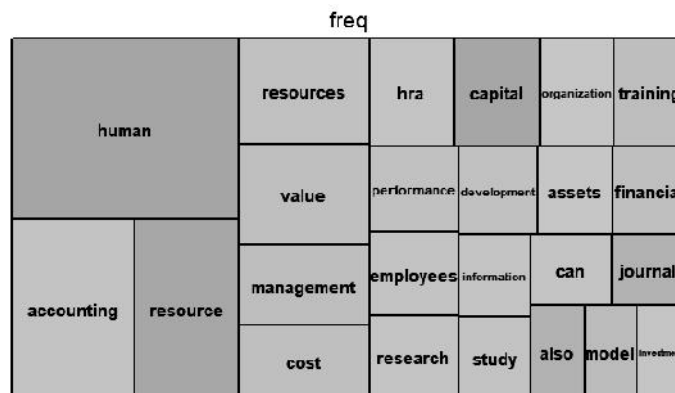
This tree map led to understand importance of various term in previous studies. If we examine the above table it is evident that human has found prominent position in all the available literature. Subsequently accounting and resources also have strong position in previous studies. HRA separately found prominent place in existing literature. It is clear from analysis of existing literature that many studies have been done in field of HRA and how it impacts organizational performance. All above analysis indicated that human resource accounting has positive impact on organizational performance. There is always a debate among HR practitioner that it should be treated as assets to the organization or liability. The argument in favor is that it always adds value to the organization. But against it is said that it required huge amount of cost which is a kind of burden to the organization. But all existing literature has highlighted the positive relationship between HRA and organizational performance.

Conclusions

The objective of this paper was to identify the relationship between human resource accounting and organizational performance. For the purpose of this study seventy most relevant existing literature related to human resource accounting were analyzed. It was found through this analysis that performance of organization is impacted by HRA. The cost incurred on human resources adding value to the organization. Investment on human resources always led to organizational performance. Giving value to existing HR supported organizational development, job involvement, job satisfaction, motivation, high morale and sense of belongings to the organization. All these helped organization to improve performance.

Studies suffer from limitations and conducting study on the basis of secondary sources has many limitations these are as follows:

- The data used for the purpose of the study may or may not be authentic or accurate.
- The data can be vague which cannot be used to draw any conclusion.
- It is not possible to decide that whether the sample used for the study purpose is appropriate or not.
- Author of the paper has **lack of control over data quality used for this study**

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MEASURING BANKING EFFICIENCY IN INDIA:
AN EMPIRICAL STUDY OF COMMERCIAL BANKS

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ABSTRACT

India's banking system is going through a crisis of unprecedented nature since 2010. The gross non-performing assets are estimated to be around 9.3 percent of gross loans and advances in 2016/17, having risen from 5 percent a year earlier. Bank credit has been sluggish for the reason that increase in bad loan provisioning and falling net interest incomes have only added to the stress of the banks. The Economic Survey of 2016-17 has highlighted the rising concerns about the rapidly deteriorating deficiency of India's banks. While the government protects banks in the public sector from any capital inadequacy problems, banks in the private sector and those owned by foreign interests have to face hurdles on their own with no assurance of support of any kind from government. This paper undertakes an empirical study for measuring the efficiency of banks and finds privately owned banks and foreign banks performed a lot better than the public sector banks.

KEYWORDS: *Gross Non-Performing Assets, Capital Inadequacy Problems.*

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Introduction

India's financial system has been recognized to be more sophisticated in the developing world with numerous institutions. Among the financial sector institutions commercial banks have been playing a major role. Aside from functioning as an intermediary between savers and investors, their role of significant providers of credit to small and as big investors and households has been growing in importance over the years. As a proportion of total domestic credit, credit to private sector has been increasing: from 27.8 percent of gross domestic product (GDP) in 2000 to 52.6 percent in 2015 (World Bank, 2017). Consequently,   private sector investment went up as well, It increased from 24.3 percent of GDP in 2000 to 33.3 percent in 2015 (World Bank, 2017).

The rise in bank credit to private sector is also worrisome. Inefficiency of banking system reflected in poor appraisal of projects and sanction of loans to undeserving borrowers due to political pressures have led to high costs on the economy. Bank failures are not unusual in the private sector, where public sector banks are free from such possibility of government's full protection. In the Indian context public sector banks (PSBs), dominate the banking sector with 70 percent share of and their share of non-performing assets is the highest: more than 80 percent of NPA of the banking system. The proportions of NPA as percent of total loans and advances have gone up since 2015-16. It grew from 5 percent (IMF 2017a) to reach 9.3 percent in 2016-17. According to the Economic Survey for 2016-17 (Government of India, 2017), NPAs of all banks (public and private sector banks and foreign banks)

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stood at a record level of 12 percent of as of January 2017[1]. This figure is the highest among amongst the emerging markets. In this context, measurement of efficiency of banks ever since the banking reforms which were introduced in the early 1990s and implemented well into the late 1990s becomes important not only for the bank managements but also for the central bank, the Reserve Bank of India (RBI), which is the entrusted with the responsibility of maintaining financial stability. The objective of this paper is to undertake an empirical study on the measurement of banking efficiency in India over a period of 17 years (1999-2000 to 2015-16). The paper is organized along the following lines. Section 1 review of trends in operations of commercial banks during 2002-15 since the introduction of economic reforms; Section III outlines different measures of efficiency of banks operations; Section IV quantifies efficiency of banks in terms of index numbers with base year as 1990-2000=100; and the last Section lists some conclusions with policy implications.

India's Financial Sector and Commercial Banks

India's financial sector (Figure 1) has undergone drastic changes since the introduction of reforms in the late 1990s towards economic liberalization (Mohan and Ray, 2017). India is ranked India as the sixth largest economy (International Monetary Fund, 2016).

Figure 1: Financial Institutions in India: 2017
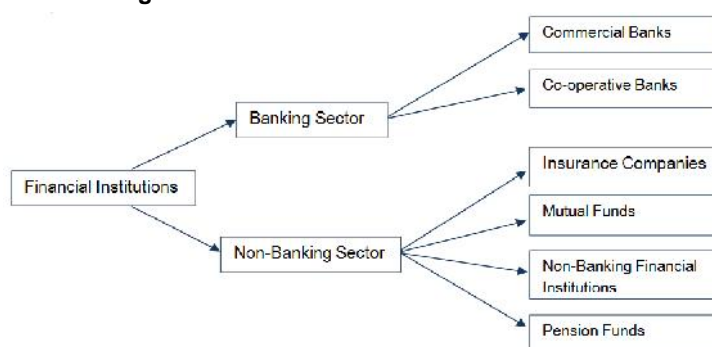
Source: Mohan and Ray (2017)

The financial sector consists of 93 scheduled banks out of which 27 are public sector banks and 21 are in the hands of private ownership, the rest being owned by foreign interests. The other institutions cover development finance institutions; cooperative institutions, regional rural banks, post office banks, insurance companies and two major stock markets.

Table 1: India's Financial Sector Institutions: Number

India's Financial Sector Institutions: Number									
Institutiuons	Av. (2000-2005)	Av. (2002-2010)	2010	2011	2012	2013	2014	2015	2016
Commercial Banks									
Public Sector Banks	27	28	28	28	28	26	27	27	27
Private Sector Banks	29	24	20	20	20	20	20	20	21
Foreign Banks	0	29	32	34	41	43	43	44	45
Non-Banking Fis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Insurance Companies									
Life	11	18	23	23	24	24	24	24	24
Non-Life	12	17	25	25	27	27	28	28	29
Re-Insurers	1	1	1	1	1	1	1	1	1
Pension Fund	1	0	1	1	1	1	1	1	1

Source: RBI (2017)

N/A = not available

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[1] An Asset quality review (AQR) carried out by the banks in response to Reserve Bank of India's directive in late 2014-15 reveals that the stressed assets (defined as sum of gross NPA, re-structured assets and written off accounts) was estimated to be in the range of 17.7 percent of gross advances in 2016 (Mohan and Ray 2017, Mundra 2016a and 2016b). A subsequent estimate released in May 2017, shows that it was 16.6 percent (Panagaria, 2017).

Commercial banks, which dominate the financial sector because of their ability to create money under the fractional reserve system, are our main focus in our study. The non-banking financial institutions (NBFI) sector operates under the following three institutionalized categories: (i) All-India Financial Institutions (AIFIs), (ii) Non-Banking Financial Companies (NBFC) and (iii) Stand-Alone primary dealers. The insurance sector in India is considered as one of the largest in the world. The establishment of Insurance Regulatory and Development Authority Act (1999) has contributed to make the insurance sector becoming more competitive.

Commercial banks have made substantial progress in mobilizing savings and disbursed credit during the 17-year study period. Table 2 reports the performance. Deposits, which were 41.35 percent of GDP in 1999-2000, reached 73.80 percent of GDP in 2015-16. The loans and advances increased from 20.37 percent in 1990-2000 to 57.74 percent of GDP in 2015-16

**Table 2: Growth of Commercial Banks in India: 2000-2016**

Year	Deposits (Billions) Rs.	GDP (Billions) Rs.	Deposits As Percentage (%) of GDP	Loans & Advances (Billions) Rs.	Loans as Percentage (%) of GDP
1999-00	9003.07	21774.13	41.35	4434.69	20.37
2000-01	10552.33	23558.45	44.79	5256.83	22.31
2001-02	12026.99	25363.27	47.42	6457.43	25.46
2002-03	13556.23	28415.03	47.71	7392.33	26.02
2003-04	15755.3	32422.10	48.59	8636.32	26.64
2004-05	18375.59	36933.69	49.75	11508.36	31.16
2005-06	21646.79	42947.06	50.40	15168.10	35.32
2006-07	26969.34	49870.90	54.08	19812.35	39.73
2007-08	33200.61	56300.62	58.97	24769.36	43.99
2008-09	40632.01	64778.27	62.72	29999.24	46.31
2009-10	47524.56	77841.15	61.05	34970.54	44.93
2010-11	56158.74	87360.39	64.28	42974.88	49.19
2011-12	64535.49	99513.44	64.85	50735.59	50.98
2012-13	74296.77	112727.64	65.91	58797.73	52.16
2013-14	85331.73	124882.05	68.33	67352.13	53.93
2014-15	94351.01	135760.86	69.50	73881.79	54.42
2015-16	100927.0	136753.31	73.80	78965	57.74

Source: RBI (2017) and Authors' Calculations

In 2015-16, deposits of public sector banks in 2015 were Rs. 65,025 billion (47.9 percent of GDP) which amounted to 72.9 percent of market share. The loans and advances of public sector banks in 2015 were Rs. 49,283 billion (36.3 percent of GDP), the market share being 71.6 percent., whereas the deposits held by private sector banks were Rs. 17,573 billion (12.9 percent of GDP), with a market share of 19.7 percent of market share. Their lending was Rs. 14,334.22 billion (10.6 percent of GDP), amounting to 20.8 percent of market share; the deposits held by foreign banks were Rs. 2,679 billion (2.9 percent of GDP). Their share was 4.4 percent. Their lending was Rs. 3,355 billion (2.5 percent of GDP) with a market share of 4.9 percent.

The market share of the regional rural banks, also in the public sector and mainly serving the rural families was 3 percent of deposits in 2016. They were 2,678 billion (2.0 percent of GDP). The credit share was 2.6 percent with Rs. 1,812 billion (1.3 percent of GDP) for the same year.

The rise in bank deposits and credit disbursed over time also reflects the growth in number of bank branches across the country. According to RBI (2016a), there were around 65,920 branches in 2000, which went up by 91 percent to reach 125,672 in 2015. The spread of banking operations was well the across rural, semi-urban, urban and metropolitan centers in the country (Figure 2). In 2015, it is reported that public sector banks had the largest number of branches: 89,711 (68.8 percent), whereas the number of branches of private sector banks were 20,343 (15.7 percent) and foreign banks had 332 branches (0.3 percent). The numbers of branches of regional rural banks were 20,005 (15.3 percent)

Figure 2: Commercial Banks: Deposits and Advances (Rs. Billions):1999/00 – 20015-16
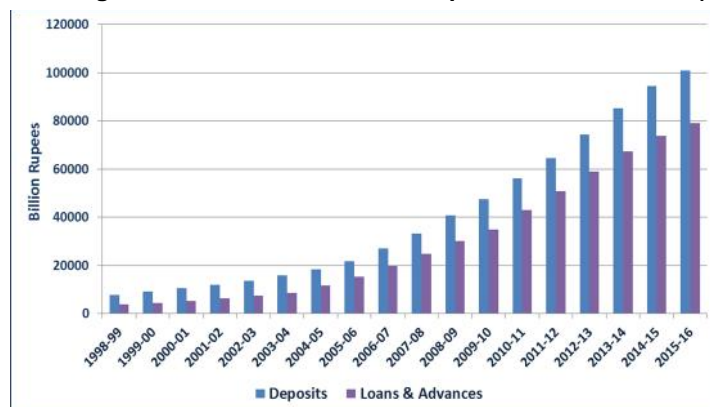
Source: RBI, Handbook of Statistics on Indian Economy 2015-16

Figure 3: Gross Non-Performing Assets of Commercial Banks (Percentage): 2000-2016
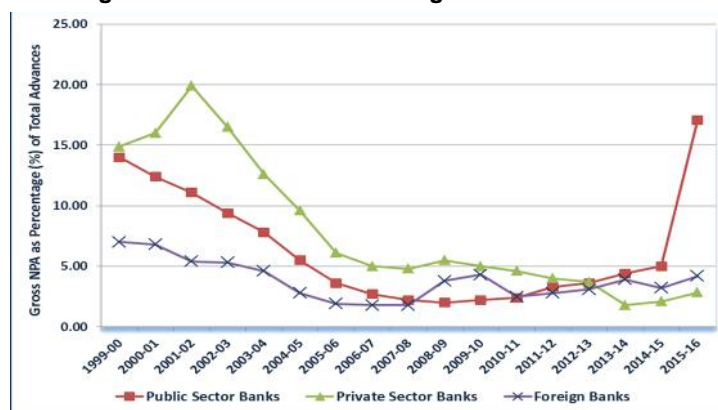
Source: RBI, Handbook of Statistics on Indian Economy 2015-16

Concerned with the weakening quality of the assets, which was duly reflected in the rising ratio of gross NPA to gross advances since 2013-14, the RBI applied rigorous assessment standards in late 2014. The newly introduced Asset Quality Review (AQR) undertaken in mid-2015 revealed that the system-wide ratio of gross NPA to gross advances jumped up from 5.1 percent in September 2015 to 7.6 percent in March 2016 (IMF, 2017a). The stressed assets (non-performing assets plus restructured loans plus written-off assets), expressed as a ratio of GA was more alarming as it reached 17.08 percent in 2016 for public sector public sector banks, as compared to the corresponding ratios of 2.83 percent for private banks and 4.20 percent for foreign banks. The share of PSBs in the total stressed assets was 70.84 percent stressed assets for the entire banking system (Figure 3). The growing poor quality of assets has given rise to fears about the stability of financial system. The suggested reforms suggested since 2015 include several which range from the re-capitalization of PSBs to setting an up "bad bank" purchasing the NPAs.

Measurement of Efficiency

The methodologies for measuring bank efficiency vary. They depend upon the objectives of the researchers, who aimed at varying degrees of sophistication and technical superiority. In his contribution on measuring efficiency, Sathye (2003) highlights the problems faced in developing countries. He refers to the use of financial ratios. He approvingly cites Yeh (1996), while listing the demerits of benchmark ratios, which often happen to be arbitrary. Further, financial ratios have been found inadequate, as they fail to take into account the long term performance (Sherman and Gold, 1985). For this reason, a non-parametric approach, known as data envelopment analysis (DEA) came to be adopted by different studies, which include Charnes et al. (1978), Seiford and Thrall (1990), Casu ans Molyneux (2003) and Sathye (2003).

The DEA is a linear programming technique and is sensitive to the choice of variables, as it takes up a given year for studying a sample case of banks. It has also two approaches: production approach (PA) and intermediation approach (IA). Under PA, DEA takes into consideration number of accounts of deposits or loans as inputs and outputs respectively. The assumption is that banks consider deposits as inputs and financial services as outputs. Under IA, banks as financial intermediaries, consider deposits as inputs and loans as output. Using DEA, the mean efficiency of banks is calculated and compared with the world mean efficiency level. If the mean efficiency is lower than the world efficiency, the conclusion is there is a need for the banks to improve their efficiency. The DEA procedure is applied to a given year, which has to be compiled for each year. For calculation of the world mean efficiency for each year, researchers pick up one year for a given country and compare the mean efficiency for the world for the same year.   It is obvious that choice of years is arbitrary

Our objective is to compile a data series for India from the year, where adequate information is available on a consistent basis to the latest year for which similar, full information is equally available. The approach is simpler and measurement is easy and replicable. This would also enable the series to be updated with minimum effort. We adopt the well known benefit and cost approach (Campa and Hernando (2006)) Bank efficiency ratio is calculated following the standard procedure given below:

$$BER_t = \sum_{b=1}^{n} \left\{ \frac{\text{Net Profit}}{\text{Total Expenditure}} \right\} * (\text{Market Share})$$

BER = bank efficiency ratio

t = time

n= number

b = bank

The formula takes into consideration the business share of each bank in a given year in relation to each other. Thus, we derive the BER for a given year, as a weighted average for that year. The base year BER ratio is set equal to 100; and thereafter for each year following the base year = 100, index numbers are constructed. The next section presents the BEI calculated on the basis of the Equation 1 above.

The Results

Applying the BEI calculation procedure outlined in the Section III, we present the tabulated data on net interest income (interest earned on loans *minus* interest paid on deposits) and other income (charges and fees and others), and net profit (total income minus total expenditure, including provision for bad loans and contingencies) for all the commercial banks. Using the procedure above, we calculated the efficiency ratios for each bank in three categories: (i) PSBs; (ii) private banks; and (c) foreign banks, for each year (1990-2000 to 2015-2015) covering 16 years in all. Thereafter, we also derived the weighted average efficiency ratio for each bank by using market shares of each bank in each of the 16 years in three different categories.

Thus, we have 16 plus 16 Tables for each category of banks, totaling 32 for each category of banks These are provided as work-sheets as three *Appendices*: Appendix A for PSB, Appendix B for private banks and Appendix C for foreign banks. Using the base year 1999-2000 =100, we calculate annual bank efficiency index (BEI) for each year. While Table 3 provides BEI index numbers for PSB covering a 16 year period; Table 4 and Table 5 present BEI index numbers for private and foreign banks.

Public Sector Banks (PSBs)

In all, 27 PSBs' performance was evaluated. At the end of 2015-16, 15 PSBs had net losses. Table 3 presents BEIs for each year beginning from fiscal year 1999-2000 to 2015-16 (base year 1999-2000 =100). We observe the BEI was subject to fluctuations throughout for the next the nine year from 1999-2000. From the base year 1999-2000 index of 100, BEI fell to 40 in the very next year, 2000-01; the index, steadily rose to 70 in 2001-02 only to decline in 2003 to 68. But it rose in 2003-04 to 170. However, BEI had a big fall in the following year to 88 and there was a recovery. It rose to 106 and reached 135 in 2008-09. Thereafter, the trend in declining efficiency continued and it reached a negative 21 in 2015-16. This negative BEI was due to re-classification of bad loans due to application of rigorous standards.

The Asset Quality Review of 2015-16 that was carried out to identify and reclassify bad assets shows that banks had to increase provisions for non-performing assets (Appendix 1), which deprived the banks of their interest income, as these provisions are locked in and cannot be lent. Further, rise in prudential norms requirements as well as operating expenses besides reduced interest spread margin have been identified to be the causes for declining profits.

Table 3: Public Sector Banks Index

Public Sector Banks			
Year	Weighted Market Share	Efficiency Ratio	Weighted Efficiency Index
1999-00	0.8221	0.2898	100
2000-01	0.8168	0.1156	40
2001-02	0.7972	0.2084	72
2002-03	0.7788	0.1970	68
2003-04	0.7835	0.4927	170
2004-05	0.7666	0.2556	88
2005-06	0.7412	0.2636	91
2006-07	0.7341	0.3065	106
2007-08	0.7334	0.3778	130
2008-09	0.7606	0.3918	135
2009-10	0.7755	0.3786	131
2010-11	0.79	0.3253	112
2011-12	0.7703	0.3153	109
2012-13	0.7678	0.2922	101
2013-14	0.7656	0.1753	60
2014-15	0.7532	0.1609	56
2015-16	0.7271	-0.0601	-21

Private Banks

The market share of private banks is 22.7 percent and its share of NPA is 11.7 percent of the entire banking sector. The weighted BEI (base year 1999-2000 = 100) displays fluctuations similar to ones we saw in respect of PSBs (Table 4). However, despite setbacks in the initial years (1999-2000 to 2008-09), private banks did far better than public sector banks during the subsequent years. Their BEIs were during 2009-10 were higher than those of PSBs during the same corresponding period. In sum, compared to PSBs, private banks had to perform as well as they have no protection of re-capitalisation privileges which are enjoyed by the former. Further, they are less exposed to bad loans as the PSBs (Appendix 2).

Table 4: Private Banks Index

Private Banks			
Year	Weighted Market Share	Efficiency Ratio	Weighted Efficiency Index
1999-00	0.1262	0.3192	100
2000-01	0.1288	0.2842	89
2001-02	0.1463	0.3222	101
2002-03	0.1649	0.2852	89
2003-04	0.1634	0.3808	119
2004-05	0.1793	0.2755	86
2005-06	0.2014	0.2955	93
2006-07	0.2066	0.2866	90
2007-08	0.2059	0.3176	100
2008-09	0.1857	0.3096	97
2009-10	0.1765	0.3369	106
2010-11	0.1853	0.4145	130
2011-12	0.1857	0.4534	142
2012-13	0.1908	0.4820	151
2013-14	0.1922	0.4687	147
2014-15	0.2032	0.4557	143
2015-16	0.2272	0.3881	122

Foreign Banks

The market share of foreign banks is the least among the categories. With the BEI at 100 in the base year (1999-2000), we observe the BEI has been subject to volatility. Although it rose to 115 in the very next year, it fell to 28. It made a recovery by climbing up to 134 in 2003-04 again declining to 116 following year. But the subsequent fiscal years witnessed swings in BEI. However, it is notable that BEI was well above 100 until the fiscal year 2008-09. The BEI declined to 86 in 2009-10. Thereafter, foreign banks made a remarkable recovery. The final year of study, 2015-16 saw a fall in BEI: 149. It is due to application of stricter standards of classification of bad loans laid by RBI's new regulations (Table 5). A study of banks in three categories shows the PSBs as a category was the *worst* performer (Figure 5).

Table 5: Foreign Bank Index

Foreign Banks			
Year	Weighted Market Share	Efficiency Ratio	Weighted Efficiency Index
1999-00	0.0517	0.2437	100
2000-01	0.0544	0.2809	115
2001-02	0.0565	0.0694	28
2002-03	0.0563	0.2143	88
2003-04	0.0531	0.3270	134
2004-05	0.0541	0.2822	116
2005-06	0.0574	0.3249	133
2006-07	0.0592	0.3588	147
2007-08	0.0608	0.3717	153
2008-09	0.0537	0.3017	124
2009-10	0.048	0.2092	86
2010-11	0.0248	0.3647	150
2011-12	0.044	0.4193	172
2012-13	0.0415	0.5005	205
2013-14	0.0422	0.3632	149
2014-15	0.0436	0.4439	182
2015-16	0.0457	0.3621	149

Figure 5: All Scheduled Banks Weighted Efficiency Ratio by Market Share
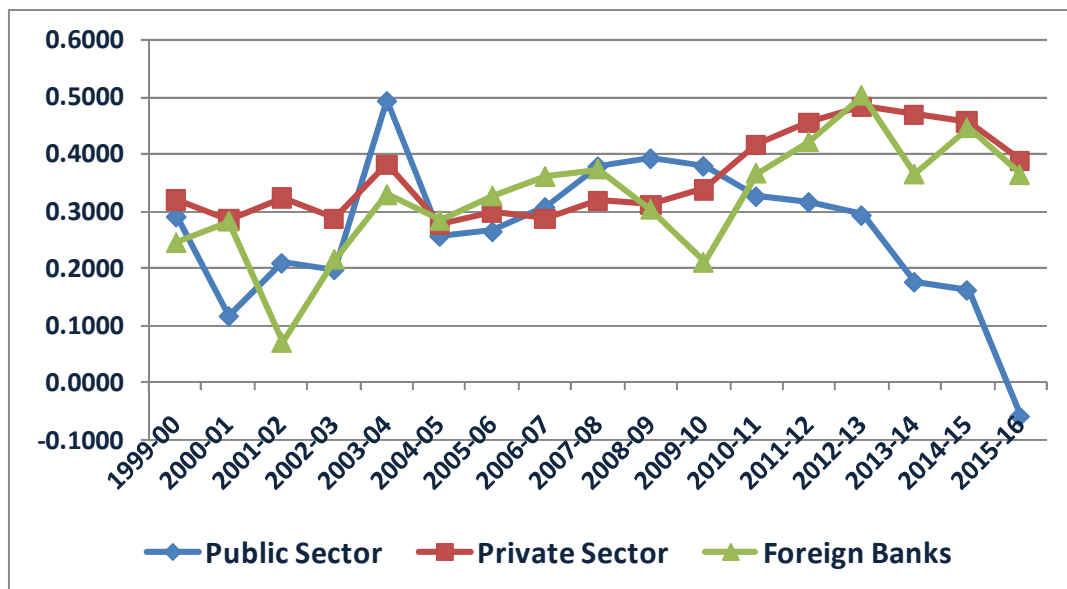
Summary and Conclusions

This paper applied simple benefits-cost approach to measure efficiency of banking operations in the Indian banking system. It covered three categories for ownership: the public and private sectors and foreign. A detailed year to year analysis of all banks in three categories showed PSBs did poorly during the entire period of study, covering 16 fiscal years: 1999-2000 to 2015-16. It is understandable that PSBs dominate the Indian banking scene to the extent of 70 percent. Further, in the absence of any pressures of market forces in a competitive economy, their lending operations and recovery measures of loans were below acceptable standards, ever since 1969 when the country witnessed nationalization of the then existing 19 major commercial banks. They have been carrying the burden of the past with accumulated bad loans which are to the 80 percent of non-performing assets of all banks.

The ultimate remedy is to get away from the past obsessions of the socialistic era by privatizing the publicly owned state banks of the colonial India before 1947 and re-privatizing the nationalized banks, which were private banks until 1969, for promoting efficiency. As a former deputy governor of India's central bank pointed out, that is one of the dilemmas of "efficiency and equity" (Mohan and Ray, 2017) faced by all the past governments whose policies were steeped in socialism, which have proved elsewhere that public ownership of commercial activities would never work.

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Appendices

Thus we have 16 plus 16 Tables for each category of banks, totaling 32 for each category of banks These are provided as work-sheets as three Appendices: Appendix A for PSB, Appendix B for private banks and Appendix C for foreign banks.*

*Appendices, which are not provided here in the interest of saving space, can be requested and obtained from the authors.

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RELATIONSHIP BETWEEN LONG-RUN MARKET PERFORMANCES OF IPO'S AND OPERATING PERFORMANCE OF IPO ISSUING COMPANIES: AN ANALYSIS

Dr. Amit Kumar Singh[*]
Ms. Surbhi Jain[**]

ABSTRACT

This paper investigates the relationship between long-run market returns and post-issue operating performance of 36 Indian companies over a three-year period. Karl Pearson Correlation and Cross-Sectional Regression have been employed to test the causality between the two. A positive correlation is detected between the major operating performance measures and post issue long-run market returns. The given relation is further strengthened by positive and significant regression coefficients of sales and sales growth rate of companies, showing a direct influence on long run market returns of IPOs. Thus, the paper endeavors to provide an empirical evidence that post issue operating performance has a significant role in governing the long-term performance of stocks in the market post IPO.

KEYWORDS: *Cross Sectional Regression, Long-Run Market Performance, CMAR, Operating Performance.*

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Introduction

An Initial Public Offering (IPO) refers to the first offer by the company for subscription of its shares to the public. Prior to IPO, the company is considered as a private company where its shares are held by relatively small number of shareholders, consisting early investors such as founders and their family and friends. On the other hand, a public company refers to a company in which company can offer its shares to public at large. The term public covers each and every individual or institutional investor other than the early investors who are willing to invest in the company. IPO is also referred to as "going public", as it allows a company to raise funds from the public. IPO helps fast growing company to raise additional funds necessary for its future growth prospects, which can't be further met by small group of early investors or other sources of finance such as loans and borrowings from banks or NBFCs and etc. IPO also renders many other advantages to the company, namely, lower cost of capital, large and diverse group of investors which prevents concentration of decision making power in few hands, facilitates acquisition of other companies and many more. At the same time IPO yields benefits to the investors as well. Investors find investment in stocks of the company an attractive alternative as compared to other investment options as it allows higher return in a lesser period of time.

However, an investment in the stock market is a two-edged sword, having darker and lighter sides simultaneously. Thus, an investor needs to analyze all the factors influencing stock prices before investing in the shares. A wide range of analytical tools and techniques are present to anlayse these factors, among which Fundamental Analysis and Technical Analysis are the two prominent analytical techniques that are generally used. Fundamental analysis refers to an approach in which an investor studies the economic factors known as fundamentals, which are present in the financial reports and other

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economic reports produced by the company. Some of these factors are company's earnings history, leverage levels, profitability, growth etc. In the said approach, the analyst tries to estimate the intrinsic value of the stock by looking at the fundamentals or the operating performance of the company. If a share is traded at a price below such intrinsic value, the investor seeks to buy that share as he expects share price to rise in future. On the other hand, if share is traded at a price above intrinsic value he expects the opposite.

On the contrary, Technical Analysis uses statistical analysis to predict the future market price of a share based on its past performance. In other words, an investor is only making a use of statistics and no importance is given to the fundamentals of the company. The primarily assumption behind technical analysis is that stocks' price movements repeat itself and can be used to forecast the appropriate time to buy and sell stocks. A fundamental analyst uses financial reports of the company whereas various analytical charts are studied by a technical analyst. A technical analyst only has one aim, to sell the stock at an inflated price as compared to its purchase price in short run. On the other side, fundamental analyst follows relatively a long-term approach to analyze the market. An individual can be regarded either as "investor or trader" on the basis of method of analysis adopted. An investor will always have a long-term goal as compared to a trader. Hence, an investor will invest in the stocks that will increase in value over a long period of time using fundamental analysis as compared to the trader who will buy stock with an aim to sell it at a greater price in the short run with the help of technical analysis. Technical analysis helps a trader to earn high profits in a short span of time, say weeks, days or even minutes but this frequent buy and sell trade increases the volatility of the market and leads to speculation. There is a strong relationship between volatility and market performance. Volatility tends to decline as the stock market's performance rises and increase as the stock market falls. In addition, when volatility increases, risk increases and returns decrease. Thus, stock market performance improves only when funds are infused for a long period of time and this is only possible with the help of investors adopting fundamental analysis. Also, this is important to know whether in practice investors or fundamental analyst evaluates operating performance to forecast long term performance of stocks in the market post IPO or not.

In India, major research work is carried out in the area of post IPO stock price behaviour and long run operating performance of companies. Past studies suggest that regardless of all the perceived benefits of IPOs for the companies and the investors, a long run decline in post issue performance have been empirically verified by a large number of finance researchers. Three probable factors have been identified by the researchers for such a decline. First, is the origin of principal-agent problem once the company "go public". This inflates agency cost as the contention between owners and managers widens due to decline in ownership of early investors and dilution of their managerial powers post IPO(Jensen & Meckling, 1976). Second, is pre-issue earnings management, where the company adjusts their discretionary currentaccruals in such a way that its net income grows before, peaks during and declines after issue period (Teoh, Welch, & Wong, 1998). Third, is the timing of the IPO as per the market conditions. Companies come out with public issue at the time when it is performing extraordinarily good or during times when its shares can be valued high (Pagano, Panetta, & Zingales, 1998). Till date, most of the empirical researches are focussed on the post IPO stock price behaviour and long run operating performance of companies. There is very less research work present in regardto the association between long-run market returns and post-issue operating performance of IPOs. Thus, this study attempts to study the above regard and tries to throw some light over the relation between operating performance and valuation of stocks in case of Indian stock market or putting in other words, whether a fundamental analyst evaluates operating performance to forecast long term performance of stocks in the market post IPO or not?

Data and Methodology

The study uses data of IPOs listed with NSE during April 2010 to March 2013. Further, NSE listed companies having at least three years historic trade data from the date of listing, is chosen as the inclusion criteria of the study. Based on the above criterion, 36 companies are identified (Table 1) and remaining are excluded from the study.

Table 1: Number of IPOs per Year

Year	No of IPOs
2010-11	17
2011-12	15
2012-13	4
Total	**36**

Following (Chi & Carol, 2005), three-year cumulative market-adjusted returns (CMAR) exhibits long term market returns of each IPO. It is calculated for a period of thirty-six months, following the first month of trading. The monthly return is measured by comparing the closing price on the last trading day of each month with the closing price of the previous month. These returns exclude the first trading month, therefore the initial under pricing. Nifty50 represents market index. Following (Ritter, 1991), long-run returns are calculated as follow:

$$\text{CMAR} = \sum_{t=2}^{t=37} [\ln(Pi,t \,/ Pi, t-1) - \ln(Im,t \,/ Im, t-1)]$$

Where,

CMAR: Cumulative market-adjusted return for stock i over a thirty-six-month period after listing

$P(i,t)$: Closing price of the stock i

$I(m,t)$: Market index in the tth month

Operating performance is represented with the help of several measures. In order to match the time horizon with the three-year market-adjusted returns, we use the average of the operating measures from the listing year (year 0) to two years after listing (year 2) resulting in 3 years figures. (Collins,Maydew &Weiss, 1997)in their paper titled "Changes in the Value-Relevance of Earnings and Book Values over the Past Forty Years" found that earnings and profitability are positively related to share prices and annual stock returns. Thus, if operating performance influences market return than it can be inferred that companies with better operating performance to have high market returns in the long run. Hence in our study, Return on Asset (ROA) and Asset Turnover(AST) are used as a proxy for profitability and efficiency of the companies respectively.

(Levis, 1993)and (Khurshed, 1999) explored during their research that bigger firms outweigh smaller firm in terms of better growth prospects and opportunities. The probable reason is that bigger firms are better quality firms as compared to smaller firms and hence better long term performers. Therefore, in our study size of the company is represented by sales of the company. According firms with high sales growth are likely to better long-term performance.

Level of leverage is determined by Debt Asset Ratio (DST). Leverage refers to the debt amount that a firm uses in its capital structure. (Modiglian & Miller, 1963) proposes high debt leads to increased firm value. (Jensen M. C., 1986) explored that managers of levered firms are less likely to invest in projects giving poor returns as they are left with lower cash flows after fixed periodic payments of principal and interest as compared to unlevered firms. Table 2 shows definitions of various operating performance measures.

Table 2: Definitions of Operating Performance Measures

ROA	Return on assets (ratio in decimal form): net income before tax divided by total assets
Sales	Total sales (Rs. in crores)
SG	Sales-growth rate (in decimal form): total sales in the current year minus total sales in the previous year, divided by total sales in the previous year
AST	Asset turnover (ratio in decimal form): total sales divided by total assets
DAR	Debt-to-asset ratio (ratio in decimal form): total debt divided by total assets

To test the relation between the post-issue operating performance and the corresponding three-year cumulative market-adjusted returns of IPOs, following hypotheses are formed:

H₁ There is a positive relation between the average return on assets from year 0 to year 2 and the three-year market-adjusted returns of IPOs.

H₂ There is a negative relation between the average sales from year 0 to year 2 and the three-year market-adjusted returns of IPOs.

H₃ There is a positive relation between the average sales-growth rates from year 0 to year 2 and the three-year market-adjusted returns of IPOs.

H₄ There is a positive relation between the average asset turnovers from year 0 to year 2 and the three-year market-adjusted returns of IPOs.

H₅ There is a positive relation between the average debt-asset ratios from year 0 to year 2 and the three-year market-adjusted returns of IPOs.

Relationship between long-run market returns and post-issue operating performance of IPOs is empirically verified using ordinary least squares and the results have been corrected for heteroscedasticity. Karl Pearson Correlation has also applied to know the degree of association between long-run market returns and post-issue operating performance of IPOs. The same has been calculated as follows:

$$r = \frac{\sum (x - \overline{x})(y - \overline{y})}{\sqrt{\sum (x - \overline{x})^2 \ \sum (y - \overline{y})^2}}$$

To verify the causality following regression equation is estimated:

$$CMAR36_i = \ + \ _1 ROA_i + \ _2 Ln\ (sales_i) + \ _3 SG_i + \ _4 AST_i + \ _5 DAR_i + u_i$$

In the above equation, CMAR is the dependent variable representing three-year cumulative market-adjusted returns of 36 companies which got listed with NSE from April 2010 to March 2013. The independent variables are the average operating measures from year 0 to year 2, return on assets (ROA), sales, sales growth rates (SG), asset turnover (AST) and debt-to-asset ratio (DAR).

Results

Cross sectional regression analysis revealed a strong relationship between long-run market returns and post-issue operating performance of IPOs. The value of adjusted R^2 is 25.08 percent. Statistical analysis shows a positive but statistically insignificant relationship between long-run markets returns i.e. CMAR and Return on Assets (ROA) at 5% level of significance. This indicates that firms with higher post issue ROA are expected to have better market performance in the long run.

Consistent with the results for U.K. IPOs in (Levis, 1993), positive and significant relationship is found between coefficient of sales of the companies and three-year market-adjusted returns of IPOs at 5% level of significance. This indicates that Indian companies with higher sales post IPOs are assumed to have improved long run market returns. Empirical tests further affirm that coefficient of sales growth rate of companies also has strong positive influence on long run market returns of IPOs at 5% level of significance. Hence, greater the future development prospectus of the company higher will be return on its shares in the long run. Thus, it can be inferred that investors perceive size of the company represented by sales and sales growth rate as two of most important factors while estimating future stock prices in Indian stock market.

Further, a positive and insignificant association is evident between Asset Turnover and CMAR at 5% level of significance. Asset turnover ratio is regarded as an efficiency ratio which measures the efficiency of a company to generate sales from per rupee invested in assets. Thus, after listing when asset of the company increases sales are also expected to move in the same direction thereby indicating higher efficiency. Hence, stocks of firms with greater asset turnover ratio post IPO are supposed to realise superior market return in the long run. Lastly, the study explains a negative and insignificant relationship between Debt asset ratio (DAR) and three-year market-adjusted returns of IPOs at 5% level of significance. However, it is found to be significant at 10% level of significance. The above result does not support the theory proposed by (Modiglian & Miller, 1963)which states that "the firm should use as much debt capital as possible tomaximize its value". Hence, Indian companies with higher levels of debts in their capital structure are assumed to have lower stock market return in the long run.

Table 3 Demonstrates estimation results of the cross-sectional analysis after correcting for heteroscedasticity.

Table 3: Regression Analysis

Variable	Coefficient	t-statistics	p value
Intercept	-2.9	-3.66	0.001
ROA	2.10	1.05	0.303
LN (SALES)	0.31	2.26	0.032
SG	2.17	2.67	0.012
AST	0.27	0.69	0.495
DAR	-3.77	-1.68	0.104
R^2	0.36		
Adjusted R^2	0.25		
F-statistics	3.28		
P-value (F-statistics)	0.018		

Table 4 Illustrates results of Karl person coefficient analysis between independent and dependent variables. The correlations among dependent variables are not high enough to cause multicollinearity in the cross-sectional analysis.

Table 4: Correlation Matrix

	CMAR	ROA	SALES	SG	AST	DAR
CMAR	1					
ROA	0.348*	1				
SALES	0.354*	0.233*	1			
SG	0.340*	0.067*	0.030*	1		
AST	0.023*	-0.132*	0.262*	-0.091*	1	
DAR	-0.011*	-0.120*	0.153*	0.571*	-0.178*	1
* significant at 1% level of significance (two tailed)						

The study concludes that post issue operating performance plays a significant role in valuation of stock price in Indian stock market and fundamental analyst evaluates operating performance to forecast long term performance of stocks in the market post IPO.

Conclusion

This purpose of this paper is to evaluate the relationship between long-run market returns and post-issue operating performance of IPOs. Cross sectional regression and Karl Pearson correlation have been employed to validate the relationship. Long run market return is represented by cumulative market-adjusted return (CMAR) which is calculated over a thirty-six-month period post IPO. Operating performance measures such as Return on assets (ROA), sales, sales growth rates (SG), asset turnover (AST) and debt-to-asset ratio (DAR) are used. To match the time horizon with the three-year market-adjusted returns, we deployed the average of the operating measures, from the listing year (year 0) to two years after listing (year 2) resulting in 3 years figures. The study concludes that majority operating measures are positively correlated to cumulative market-adjusted return (CMAR). The given relation is further strengthened by positive and significant regression coefficients of sales and sales growth rate of companies, showing a direct influence on long run market returns of IPOs. However, study also witness a negative and significant relationship between Debt asset ratio (DAR) and three-year market-adjusted returns of IPOs at 10% level of significance. To conclude, the study provides sufficient empirical evidence that post issue ope (Krishnan, Ivanov, Masulis, & Singh, 2011)rating performance has a significant role in governing the long term performance of stocks in the market post IPO.

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Appendix 1

Name of the issue	CMAR	ROA	LN(SALES)	SG	AST	DAR
INDO THAI SECURITIES LIMITED	-0.3520	0.0098	2.1278	0.7821	0.2248	0.0007
FLEXITUFF INTERNATIONAL LIMITED	-0.3520	0.0471	6.6885	0.2597	0.9077	0.1699
ONELIFE CAPITAL ADVISORS LIMITED	-0.5708	-0.0065	1.4002	7.4685	0.0523	0.0000
Prakash Constrowell Ltd	-4.9788	0.0494	5.0662	0.0677	1.0088	0.0019
PG ELECTROPLAST LIMITED	-1.5937	-0.0434	5.4971	-0.1315	0.8620	0.1203
TD POWER SYSTEMS LIMITED	-0.2119	0.0827	6.1089	-0.0696	0.6640	0.0000
SRS Limited	-0.8243	0.0417	7.9455	0.1919	2.2530	0.0339
BROOKS LABORATORIES LIMITED	0.0465	0.0711	4.2853	0.1868	0.5819	0.0000
TREE HOUSE EDUCATION & ACCESSORIES LIMITED	0.6620	0.1097	4.7144	0.6098	0.2618	0.0538
L&T FINANCE HOLDINGS LIMITED	-0.1824	0.0433	5.1386	6.5636	0.0376	0.0185
INVENTURE GROWTH AND SECURITIES LTD	-2.9845	0.0160	2.4169	-0.3114	0.0524	0.0295
RUSHIL DECOR LIMITED	-1.4137	0.0294	5.2135	0.2835	0.7012	0.2636
SANGHVI FORGING AND ENGINEERING LTD	-1.4432	0.0039	3.8310	0.1588	0.2690	0.1706
MUTHOOT FINANCE LIMITED	-0.1549	0.0517	8.4980	0.3581	0.1887	0.2691
SHILPI CABLE TECHNOLOGIES LIMITED	0.4818	0.0688	6.5025	0.6421	1.3215	0.1713
Bharti Infratel Limited	0.4961	0.0916	8.5040	0.0905	0.2233	0.0000
PC Jeweller Limited	0.6613	0.1115	8.5449	0.2587	1.2584	0.0002
Speciality Restaurants Limited	-0.6175	0.0652	5.5652	0.1526	0.7594	0.0010
Tribhovandas Bhimji Zaveri Limited	-0.2745	0.0661	7.4967	0.1191	1.4317	0.0128
RAVI KUMAR DISTILLERIES LIMITED	-2.9108	0.0013	3.8606	-0.0444	0.3082	0.0658
MOIL LIMITED	-0.6477	0.2616	6.9050	0.0138	0.3678	0.0000
GRAVITA INDIA LIMITED	-1.4573	0.1118	5.3612	0.3717	1.6715	0.0228
COAL INDIA LIMITED	-0.2061	0.2515	5.9698	-0.0745	0.0129	0.0360
GYSCOAL ALLOYS LIMITED	-1.0684	0.0200	5.4328	0.2210	1.1299	0.1073
PRESTIGE ESTATES PROJECTS LIMITED	-0.4413	0.0573	7.0563	0.3418	0.2468	0.0405
OBEROI REALTY LIMITED	-0.1153	0.1121	6.1080	3.0714	0.1511	0.0000
COMMERCIAL ENGINEERS & BODY BUILDERS CO LIMITED	-2.4437	0.0658	5.9163	0.4671	0.8239	0.0514
CANTABIL RETAIL INDIA LIMITED	-1.4573	-0.1235	5.0133	-0.1679	0.8637	0.0021
RAMKY INFRASTRUCTURE LIMITED	-2.2531	0.0482	7.9896	0.1937	0.7981	0.0377
EROS INTERNATIONAL MEDIA LIMITED	0.0383	0.1130	6.5620	0.2421	0.5465	0.0633
GUJARAT PIPAVAV PORT LIMITED	-0.2215	0.0639	6.0873	0.2301	0.2601	0.3405
BAJAJ CORP LIMITED	-1.0757	0.3042	6.1487	0.2287	0.9426	0.0000
HINDUSTAN MEDIA VENTURES LIMITED	-0.4073	0.1607	6.3467	0.7749	0.9848	0.0000
JAYPEE INFRATECH LIMITED	-1.0927	0.0944	7.4831	1.2094	0.1498	0.4750
PERSISTENT SYSTEMS LIMITED	0.1491	0.0983	5.0314	0.4459	0.7009	0.0585
OMKAR SPECIALITY CHEMICALS LIMITED	1.1024	0.1936	6.6719	0.2559	0.8091	0.0006

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THE INFLUENCE OF PRUDENCE, COGNITIVE ABILITY, AND PERSONALITY ON RISK AVERSION

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ABSTRACT

We conduct this experiment to observe the effect of prudence, cognitive ability, and personality correlating with risk-averse decision. In this experiment, we make binary choices between risky lotteries that distinguish prudent from imprudent individuals. We also gave them tasks to measure their cognitive ability and neuroticism personality. We find that a more positive neuroticism personality and lower cognitive ability correlate with greater risk-averse decision making while prudence has an insignificant effect on risk-averse.

KEYWORDS: *Prudence, Cognitive Ability, Personality, Risk Aversion, Psychological Factors.*

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Introduction

Humans can't separate themselves with making decisions. They are supposed to make decisive choices that affect further situations every day. These decisions always come with risks. (Woodford et al., 2017), however, people often feel reluctant to risks, especially in economic activities. They tend not to accept fair bets, even if they have that occasional chance to get more valuable prizes. They do all of that in order to avoid uncertain results in the future. According to empirical works, psychological factors often affect the degree of risk aversion. These factors may vary from individual to individual. However, it's clear that prudence takes a significant part in risk aversion. Therefore, (Breaban et al., 2016) said that higher order risk attitudes; *prudence* and *temperance,* complement the role of risk aversion in economic decision making.

A study that correlates imprudence with poor decision-making shows that careless people tend to get into financial problems (Noussair et al., 2014). Therefore, we need to know what aspects that could cause this imprudent decisions-making. For example, an investor is faced with a situation that forces them to choose some investment. There's always this most prudent and dominant psychological factor that influence their decisions. Elster (1998), Hermalin and Isen (2000) said that in any decision-making process, one will certainly involve one's emotions. Emotional involvement in decision-making process often makes them irrational, causing them to act only by instinct instead of in-depth analysis. This kind of decisions not only dangerous but also come with high risks. Investor irrational actions are usually driven by specific emotions such as fear, greed, and panic. Investors that belong to this risk averter group tend to avoid risks. Instead, they are more likely to invest in assets that provide fixed income such as deposits, bonds or shares that classified as blue chips. These investors are aware of not expecting an optimal investment return, fixing their profits in the stable and minimal state. There're also significant differences between people with higher cognitive abilities (IQ) and the lower one. The higher one usually lives longer, earns more, has more work experience, reacts faster and be more vulnerable to visual illusions (Jensen, 1998). However, although there is a various phenomenon associated with IQ, only a few are considered having the impact on decision-making and risk avoidance. Hence, in this research, we want to observe further regarding this matter and compare it with psychological aspects in the context of decision-making and risk aversion.

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Theoretical Background

Before making a decision, people generally think about the risks that come with the decision. Frequently, people are reluctant to risk. According to Breaban, et al (2016), empirical work has shown that risk aversion is often influenced by psychological factors such as prudence, cognitive ability, and personality. In the realm of saving behavior, prudence decides how savings behavior change as future income becomes riskier (precautionary saving, Kimball, 1990). Noussair et al., (2014), who study a large number of samples of demographically representative individuals, found that those who indicate more prudent decision-making also have greater savings, lower debt, more wealth and higher educational attainment. Breaban, et al (2016) observed that larger cognitive abilities, as measured by Raven test scores, can be associated with greater prudence. Cognitive ability here is distinguished between higher cognitive ability individuals and the lower cognitive ability individuals. These aspects create the different approach to risk-aversion in the scope of prudence. Personality also plays some important roles that could affect individual in making decisions, including risk aversion. Because each person has a different personality, against risks, their nature and actions may vary. This study will minimize the scope so that it will only discuss one kind of personality that is neuroticism, correlating with risk aversion. Hence, we can say that either prudence, cognitive ability, or personality are directly related to risk aversion. The following will describe their respective hypotheses regarding their impact on risk aversion.

- **Prudence**

In our scope, prudence is precaution acts that determine one decision towards a problem, including risks. The more prudent someone is, the more cautious he will be toward risks. This is supported by (Marilen, 2008) with her explanation regarding Kimball's theory of precautionary. It is said that absolute prudence is defined as the gradient of probability in two separate events yet contained in linear equations. The effect of prudence is hugely on precautious and hence having a very strong impact on risk aversion because risk only can be realized if someone is cautious. For example, a stock expert will have a natural sense of danger when a critical stock is going to drop. Though according to Dionne and Eeckhoudt (1985), a connection between prudence (precautious) and risk-aversion also has an ambiguous effect on optimum business levels. The intuition of this result is simple. For example, it is optimal for a risk-neutral agent not to make any effort so that the accident will happen with certainty. In this situation, a hard effort will cause a risk, since the probability of an accident will be less than one entity which makes it not desirable for risk-averse agents. So according to them, prudence only will strengthen the will of not averting risk. This can be true, if only if the situation is neutral. However, in a critical moment as we defined in the introduction, this logic can't be accepted because it missed some aspects of accounts such as options variety and psychological conditions at the time. We conclude that decision-makers' cautiousness, suggesting prudence, must have a significant effect in risk-aversion. A cautious decision will likely create a positive effect on risk aversion. With that logic, we can say the same to a cautious linear subject that is prudence. Hence, we can formulate the first hypothesis of this study as beneath:

H$_1$:   Prudence has a positive and significant effect on risk aversion

- **Cognitive Ability**

Cognitive ability is the ability to collect, present, interpret information, and understanding social sphere. This ability contains all efforts concerning brain activity to develop rational ability (intellect). People with higher cognitive ability tend to think rationally. A rational person would focus on reasons and tend to delay things when making a decision in order to reduce the uncertainty and avoid the risk to obtain a rational explanation in the framework of decision-making. For example, investors are assumed willing, able to receive and analyze all available information based on rationality thinking. A rational investor tries to control the factors that can influence the behavior of market participants in the future such as information and forecasting. This is done by gathering as much information as possible. The purpose of investment activity is not to gain a quick profit, but a steady increase in investment, in a relatively long period (long-term). These investors are willing to take risks if it is known that the investment is not profitable in the short term but safe for the long term. If the goal cannot be achieved with a certain level of risk (or even without risk), then at least the risk must be controlled (Natapura, 2009).

According to Frederick (2005), researchers can ignore cognitive abilities because they are more interested in the average effects of some experimental manipulations. On this view, individual differences (in intelligence or other things) are perceived as distractions - only as an unexplained "unexplained" source of variants. Second, most research is done on college students, who are widely considered to be

quite homogeneous. Third, characterizing performance differences in cognitive tasks requires terms ("IQ" and "talents" and such) that many fear because of their relationship to discriminatory policies. In short, researchers may be reluctant to learn something they do not find attractive, which is not felt much difference in the subject area obtained easily, and that will get them into trouble. But as expressed by Lubinski and Humphreys (1997), the abandoned aspects do not cease to operate because they are abandoned, and there is no good reason to ignore the possibility that general intelligence or more specific cognitive abilities are important decision-making factors in the face of risk aversion. Based on research of Dohmen et al. (2017), an individual with a higher cognitive ability is significantly more willing to take risks in the lottery experiments compared with an individual who has a lower cognitive ability who is more likely to be risk-averse. Someone with lower cognitive ability tends to retreat and do not want to get greater results if it has a big risk. He prefers to get moderate results with lesser risk. Therefore, the second hypothesis in this study can be formulated as follows:

H$_2$: Lower cognitive ability has a positive and significant effect on risk aversion.

- **Personality**

Decision-making in terms of risk-related is also influenced by psychological factors such as personality. According to Crysel et al. (2013) personality is an individual way of interacting, reacting, and acting with other individuals and is often shown through measurable characteristics. Personality is a dynamic and organized set of characteristics possessed by a person that uniquely influences their environment, cognitions, emotions, motivations, and behaviors in various situations. Based on research conducted by Goldberg, L. R. (1990), it is known that there is five personality that is extraversion, conscientiousness, and openness personalities to experience which tends to choose investment instrument with high-risk level, while personality with the character of agreeableness and neuroticism will tend to choose the instrument of low investment risk. But this study will not discuss deeply this five personalities. We will only discuss further the personality of neuroticism.

Neuroticism is a personality dimension that assesses one's ability to withstand stress. Positive characteristics of neuroticism are called Emotional Stability. Individuals with emotionally stable tenders calm when facing a problem, confident, have a firm stand. While the negative characteristics of Neuroticism are emotional instability associated with high anxiety and highly sensitive (John et al., 2008). These individuals tend to have a pessimistic outlook that may affect their willingness to assume investment risks (Joyce & L, 2013). And they experience nervousness that is "a little worse than normal" in a given situation or someone who is "a bit more cautious" before making a big deal. Not everyone that is jealous, anxious, or guilt-stricken can be regarded as a neurotic person, and many people that are neurotic do not show signs of anxiety. But there is some proof that those with the neuroticism personality type do seem to experience more anxiety than those without anxiety. According to Rammstedt& John (2007), neuroticism is a person who is easily anxious, angry, depressed, influenced by others, and carried away emotion. These individuals tend to have weak analytical and critical thinking skills, so this tends to make them take lower risks due to excessive anxiety when making high-risk decisions. Therefore, the third hypothesis in this study can be formulated as follows:

H$_3$: Neuroticism personality has a positive and significant effect on risk aversion.
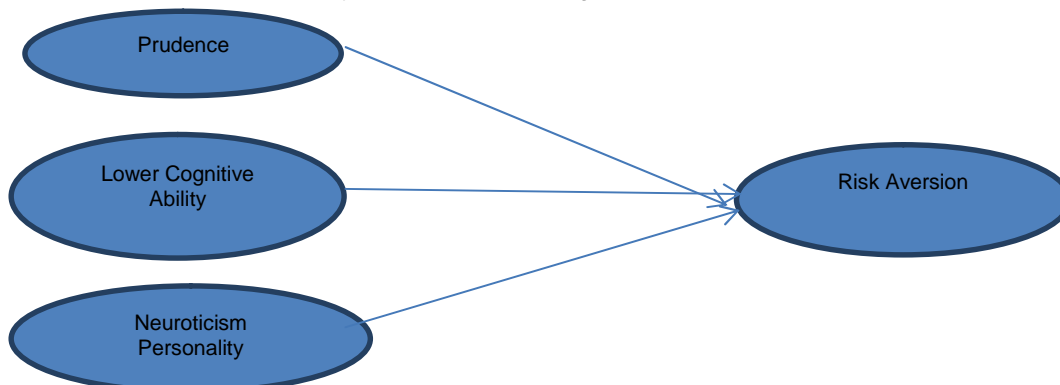

Figure 1: Research Model

Experimental Design and Procedure

- **The Participants and the Setting**

The participants of this study consisted of 100 students from Atma Jaya Catholic University in Jakarta. The average age was 21 years and at their last year in the university which 51% of the subjects were female. All of the participants studied Economics and business majority in accounting. The subjects were recruited among the students of two Management Accounting classes. The experiment consisted of 4 phases. At the start of each phase 1 to 4, separate instructions were read aloud.

- **Procedures and Data Gathered**

In the first phase of the experiment involves 9 direct pairwise choices. Each consists of a choice between one lottery that would be preferred by a prudent individual and an alternative that would be preferred by the imprudent decision maker in which both are related to risk aversion. An example of a choice as presented to participants can be found in **Figure 2**. In both stages, all subjects were presented with all the lotteries in the same order.
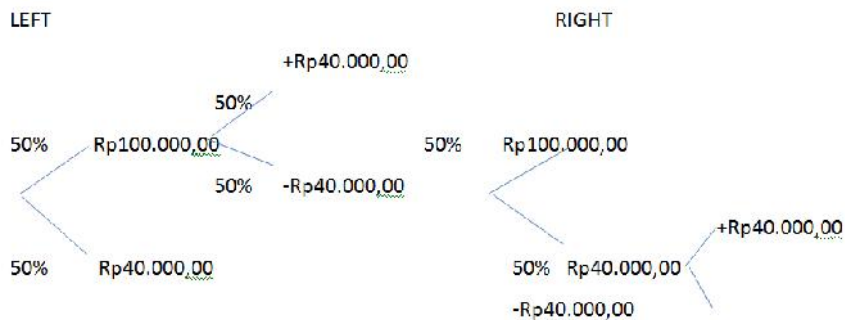
Figure 2: Example of a Choice from Phase 2 of the Experiment

In the example of a choice shown in the figure, with 50% probability Left yields Rp100.000,00 and an additional 50/50 lottery yielding either a further gain or loss of Rp40.000,00. Otherwise, Left yields Rp40.000,00. Similarly, Right yields either Rp100.000,00 or Rp40.000,00 and an additional 50/50 lottery yielding either a gain of Rp40.000,00 or a loss of Rp40.000,00, both with 50% probability. Thus, the choice between left and right amounts to whether the subject prefers to apportion a zero-mean Rp40.000,00 risk to a state with relatively high wealth (left), or to a state with relatively low wealth (right). A choice for left (right) indicates that the decision maker can better cope with the zero-mean Rp40.000,00 risk when she has relatively more (less) wealth, implying that she is prudent (imprudent). The precise lotteries that were used are given in Table 1. In line with the existing literature (Deck and Schlesinger, 2010, 2014; Noussair et al., 2014), we use the number of prudent choices that a subject makes as a measure of the individual strength of prudence. If an individual chooses the prudent option in 5 or more of the 9 decisions she takes, we classify the individual as prudent and positive decision-making related to risk aversion. Analogously, if she chooses the prudent option in 4 or fewer instances, the individual is said to be imprudent and not a decision maker related to risk aversion.

Table 1: Prudent Lotteries used and Choice Proportions

Choice #	Lottery displayed on left	Lottery displayed on right	% of instances in which prudent choice was made
1	(10+(4_-4)4)	(10_4+(4_−4))	88.0***
2	(6+(1_-1)1)	(6_1+(1_−1))	79.5***
3	(12+(2_-2)3)	(12_3+(2_−2))	79.5***
4	(9+(2_-2)3)	(9_3+(2_−2))	74.7***
5	(8+(4_−4)4)	(8_4+(4_−4))	83.1***
6	(6+(1_−1)3)	(6_3+(1_−1))	73.5***
7	(7+(2_−2)2)	(7_2+(2_−2))	85.5***
8	(11+(3_−3)3)	(11_3+(3_−3))	88.0***
9	(13+(4_−4)4)	(13_4+(4_−4))	85.5***

*(x_y) indicates a lottery with an equal probability of receiving either x or y; outcomes in tens of thousandsrupiah; *** indicates significant difference at 1% level from the random choice between left and right option, binomial test, two-sided.*

The second phase of the experiment, cognitive ability is measured using Raven's advanced progressive matrix test (Raven et al., 1998), a protocol commonly used to measure intelligence. The task involves choosing the correct selection of eight alternative possibilities to complement the 3-by-3 abstract matrix of abstract symbols in a consistent pattern. Because of the limited amount of time available in our experiment, we used the short form of the test proposed by Bors and Stokes (1998) that consists of 12 tasks. Each subject was given a total of 10 minutes to complete the 12 tasks and was allowed to revise the answers if time allowed.

In the third phase of the experiment consists of a questionnaire designed to obtain a classification of personality. More specifically, we use The Big Five Personality Test by TRUITY. But this study of its scope is narrowed by examining only the personality of neuroticism. Answers to the questionnaire about the subject personality were given a choice on a scale of 1 (inaccurate) to 5 (accurate) totaling 52 numbers within 15 minutes. In addition, background information on subjects regarding age and gender was also collected. There is some previous evidence that the dimensions of neuroticism are positively associated with risk aversion (Nicholson et al., 2005; Becker et al., 2012). We are unaware of any previous work that connects personality characteristics and prudence.

For the final phase of our experiment, we conducted a Risk-Taking Test to measure the score of risk-averse that was scientifically validated by PsychTests. This test consists of 58 questions in 30 minutes. From the test number 1 to 43 subjects can choose the answer between 1. Completely Agree; 2. Completely Agree- Somewhat Agree / Disagree; 3. Somewhat Agree / Disagree; 4. Somewhat Agree / Disagree- Completely Disagree; 5. Completely Disagree. While the test number 44 until the last number require all the participants to choose one statement that best describes the subject itself related to risk selection. Thus, for each participant, we observe as they perform the tests given as research data to measure the prudence (phase 1), cognitive ability (phase 2), personality dimension (phase 3), and the last test to measure risk aversion (phase 4). **Figure 3** below shows the timeline of the experiment.

	Phase 1	**Phase 2**	**Phase 3**	**Phase 4**
Measurement:	Prudence preference	Cognitive ability	Personality (Neuroticism)	Risk Averse
Task:	9 pairwise choices between lotteries	12Raven's progressive matrices tests	The Big Five personality tests	Risk Taking Test
Duration:	Variable	10 minutes	15 minutes	30 minutes

General and phase 1 instructions	Instruction phase 2	Instruction phase 3	Instruction phase 4
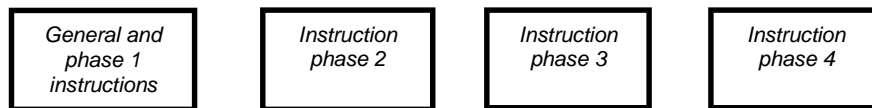
Figure 3: Timing of Experiment

The design we have selected is meant to document correlate with decision-making on risk aversion, rather than causal relationships. Identifying the correlation of risk aversion in decision-making is the purpose of this study.

Discussion

- **Hypothesis Testing Results**

Data analysis was obtained by using SPSS software linear regression analysis to know the influence of prudence, lower cognitive ability, and neuroticism personality to risk aversion. The analysis results of simple regression which includes R-square value, F-value, parameter coefficient and t-value of existing parameters can be seen in **Table 2.**

Table 2: Regression Results for the Model Under Test

Variable	Beta	t- value
Constant	43.614	2.259
Prudence	3.372	1.148
Lower Cognitive Ability	.286	2.902 ***
Neuroticism Personality	11.408	1.861 *
R- square	.262	
Adj R- square	.223	

F-test	6.671	
Dubir-Watson	1.670	
p-value	.000	

*** Significant level of 1%

**   Significant level of 5%

*   Significant level of 10%

A clear majority of individuals in the study were prudent. 26% (26 of 100) of subjects made a prudent decision at every opportunity. Another 50% (50 of 100) made a prudent choice between 5 and 9 times, indicating that they have a chance to do so. Thus, 76% of individuals are classified as prudent. 24% (24 of 100) of subjects made 4 or fewer prudent choices are classified as imprudent. Prudence is the first variable in this study. When viewed theoretically, prudence has an effect on risk-averse but this is not in line with the result. The results mean that prudence has an insignificant correlation to risk-averse and do not support research conducted by Kimball (1990) that the absolute prudence is a theory of precautionary saving that very similar to the theory of risk aversion based on the concept of prudence. Prudence defines the measures or how strong an investor's motive to demand a prevention premium that is equal to a small and actuarially neutral risk. If an investor more absolute prudent, it means the more equivalent precautionary premium he will demand a certain level of risk.

These experiment results are similar to those observed by Ebert and Wiesen (2011) for the correlation of prudence and risk-averse. Based on these results, there is a difference between theoretical and empirical literature on prudence and risk-averse relationships. There are various theories about the results of prudence research, but only a few of prudence studies that support the relevance and validity of the theory. Prudence is an effort undertaken to reduce the probability of occurrence of an adverse effect. In many cases, prudence is examined on the assumption of risk neutrality (Eeckhoudt and Gollier, 2005). Because prudence has a neutral assumption against risk (neither risk-averse nor risk seeking), prudence only sorts, predicts, and mapping problems that will happen by grouping any conditions that can occur and compare the results to be gained as well as the risks that accompany it. People who have high prudence skills will be able to map problems or risks better but remain neutral, not automatically making them take or avoid problems. An individual with risk neutral decision is not affected by the degree of uncertainty in a set of outcomes, so an individual who is risk neutral is indifferent between choices with equal expected payoffs even if one choice is riskier. The results show that individual prudence ability has no effect on risk aversion. The next variable in this study is cognitive ability. Cognitive ability theoretically correlates to risk-averse. These results do not support research conducted by Frederick (2005) indicating that cognitive ability has no significant effect on risk-averse. But the result of this study supports, the opinion of Lubinski and Humphreys (1997), the abandoned aspects do not cease to operate due to abandonment, and there is no good reason to ignore the possibility that general intelligence or more specific cognitive abilities are important decision-making factors in the face of risk aversion. Sowe cannot ignore cognitive abilities because, in this view, individual differences (in intelligence or otherwise) are not perceived as distractions- just as unexplained diversity.

The results of this study are consistent with the results of Dohmen et al. (2017) which says that individuals with higher cognitive ability are significantly more willing to take risks compared with those people who have a lower cognitive ability who are more likely to be risk-averse. We find a significant relationship between cognitive ability and the measure of risk aversion, which the results based on the experimental measures are not due to confusion. An individual who has higher cognitive ability tend to think everything in detail for every decision to be taken. Usually, before an individual makes a decision, he first thinks of alternatives to be taken. If the results to be obtained from the alternative will be greater than the result of the risk, then he will take the alternative. But if he finds some alternative that can produce something profitable he will compare some of these alternatives with the aim of getting the maximum profit. For example, if he is faced with two alternatives, the first alternative is more favorable than the second alternative, but both beneficial alternatives are directly proportional to the risks, so someone with higher cognitive ability will still choose the first alternative with more favorable outcomes and equal risks. Therefore, higher cognitive ability people are more likely to take risks in order to obtain a favorable outcome. While a person with lower cognitive ability, if he sees an opportunity to get great results but has a high risk, he tends to retreat and do not want to move forward to get that great result. He prefers to get moderate results with little risk. So people who have lower cognitive ability can be regarded as a risk-averse person.

The last variable to be discussed is the neuroticism personality. The results of the research proved the same as the theory that neuroticism personality has a significant correlation to risk-averse. Neuroticism personality is related to high levels of negative life occurrence, low levels of psychosocial functioning and with poor parenting, which in turn are associated with the children's level of psychosocial functioning and symptoms (Hodgins et al, 2002). These findings suggest that neuroticism is not a disorder but the influence of parental behavior that affects the mental health of their children. The trait of neuroticism may play a critical role in the development of depressive disorders, conferring an inherited vulnerability and leading to parental behavior associated with impaired functioning among the children.

Based on the research that has been done, the results show that those who have the tendency to high neurotic score show significant pressure when facing uncertainty because they tend to think only from the negative sides. Therefore, they choose to be silent or even retreat when faced with challenges or circumstances that make them uncomfortable. Those who exhibit a neurotic tendency seem to do something they can try to avoid negative consequences and events, and this causes them to become more cautious in life while simultaneously becoming much more productive, as it shows a significant boost to success and avoids negative issues.

Conclusions

The focus of the study here is to better understand the connection between prudence, cognitive ability, and personality correlate to risk-averse decisions. The results of statistic test show that prudence, cognitive ability, and personality simultaneously have no significant effect on risk-averse. Therefore, the first hypothesis in this study is unacceptable, meaning that prudence partially has no significant correlation to risk-averse. While the second, and the third hypothesis are accepted, that means, cognitive ability and neuroticism personality partially has a significant correlation to risk-averse.

Prudence can lead to insignificant correlation to risk-averse because there is a gap between theoretical and empirical literature on prudence. In line with Eeckhoudt and Gollier(2005) who say,in many cases, prudence is examined on the assumption of risk neutrality. Some behavioral implications of prudence have been shown, but there is very little empirical such as experimental and research on prudence to support the relevance and validity of these theories which say prudence has an influence on risk aversion. Therefore, in this paper, we propose, implement, and examine for robustness a method testing for prudence towards risk-averse and more research needed to identify the empirical link between prudence and risk-averse.

The limitations of this study are the variables are limited to prudence, cognitive ability, and personality, so it is advisable for researchers to further add other research variables such as emotional state and stress levels. According to Breaban et al. (2016), there is an important connection between emotional state and risk preference. Emotions and risk aversion have established a clear and important relationship because specific emotions such as fear, anger, and happiness associated with decision-making related to risk aversion.

While based on research from Robbins and Judge (2002), stress is a dynamic condition where an individual is faced with opportunities, limitations or demands in accordance with expectations of the results he wants to achieve in important or uncertain conditions. Therefore, stress assessed can play a role in influencing risk avoidance decision making. The number of limited respondents also become an obstacle in this research.

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PROFITABILITY ANALYSIS OF HINDUSTAN PETROLEUM CORPORATION LIMITED AND BHARAT PETROLEUM CORPORATION LIMITED: A COMPARATIVE STUDY

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ABSTRACT

The present study makes an attempt to study comparative analysis on profitability of above two public oil and natural gas companies Hindustan Petroleum Corporation of India and Bharat Petroleum Corporation Limited. The objective of the present study is to analyse the profitability of these two companies during the study period of five years from 2012-13 to 2016-17. It has employed statistical tools of non-parametic test i.e. Mann Whitney U test to draw inference on hypotheses framed to compare the profitability of two companies. The study has applied eight ratios to measure profitability of these companies. gross profit ratio, net profit ratio, operating profit ratio, return on gross capital employed ratio, interest coverage ratio, operating ratio, total assets turnover ratio and operating expense ratio, ratios of Bharat Petroleum Corporation Limited is higher as compared to Hindustan Petroleum Corporation Limited during the period of five years. Only the operating ratio of Hindustan Petroleum Corporation Limited is higher than Bharat Petroleum Corporation Limited during the same period.

KEYWORDS: *Operating Profit Ratio, Interest Coverage Ratio, Operating Ratio, Operating Expense Ratio.*

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Introduction

Profit is the absolute term which is needed for every business house. A business must earn profit for existence in society. No business can survive without earning adequate profit. Profitability means ability to earn return on investment through business activities of an organisation, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market. Profitability is the main indicator of the efficiency and effectiveness of a business enterprise in achieving its goal of earning profit (Khatik, S.K. and Thakur,V, 2017).

Brief Profile of the Company

Hindustan Petroleum Corporation Limited is a state owned oil and natural gas company having its headquarter located in Mumbai. The company has more than 18000 employees and a business turnover of 8 million dollar. It was founded in the year 1974. The Government of India owns 51.11 percent in the company and was listed in the Fortune Global 500 list of the world's biggest corporation as of 2016. M.K. Suvarna is the managing director and chairman of the company (www.linkedin.com.) Bharat Petroleum Corporation Limited belongs to category of a publicly-owned industry with its head office located in Mumbai, Maharashtra. With a turnover of 40 billion dollar the company has more than 15000 employees and is well known in the oil, gas and petroleum. The company has two major refineries situated in Mumbai and Cochin. The company was ranked in the Fortune 500 global list. S. Varadarajan is the managing director and chairman of the company (www.linkedin.com.).

Literature Review

Khatik, S.K. and Thakur,V.(2017) in their paper have calculated the profitability position of oil and natural gas corporation limited. It is found that operating profit is worthwhile for the company, management and stakeholders while return on capital employed is worthwhile for outsider's stakeholders.

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Bandinelli R. and Gamberi (2011) in their paper found that oil and gas industries do not use a methodology to develop new PSS. Moreover, a methodology for this specific sector seems not to be necessary, while the application of some tools of the existing methods could improve the servitization process performances of such companies.

Gupta, S. and Sharma, R.K.(2012) in their paper highlighted that the issue related to current practices used by ONGC to determine the prices of crude oil, natural gas and value added products and also the various types of direct and indirect taxes imposed and paid by the company.

The above literature review shows that these studies have been conducted with respect to particulars aspects. There are not many comparative studies on profitability of two public limited oil and natural companies in India. Hence, the present study has been undertaken to fill the research gap.

Statement of the Problem

The oil and natural gas companies produce the oil and natural gas and our country depends on them. There are two categories public sector and private oil and natural gas companies in India. These companies have been ranked based on their performance. Of them, public sector undertakings i.e. Hindustan Petroleum Corporation of India (HPCL) and Bharat Petroleum Corporation Limited (BPCL) are among top ten performers in India. The present study makes an attempt to study comparative analysis on profitability of above two public oil and natural gas companies.

Objectives of the Study

The objective of the present study is to analyse the profitability of Hindustan Petroleum Corporation Limited and Bharat Petroleum Corporation Limited during the study period of five years from 2012-13 to 2016-17.

Hypotheses Framed

H_{o1}: There is no significant difference of gross profit ratio of HPCL and BPCL during the study period of five years.

H_{o2}: There is no significant difference of net profit ratio of HPCL and BPCL during the study period of five years.

H_{o3}: There is no significant difference of operating profit ratio of HPCL and BPCL during the study period of five years.

H_{o4}: There is no significant difference of return on gross capital employed ratio of HPCL and BPCL during the study period of five years.

H_{o5}: There is no significant difference of interest coverage ratio of HPCL and BPCL during the study period of five years.

H_{o6}: There is no significant difference of operating ratio of HPCL and BPCL during the study period of five years.

H_{o7}: There is no significant difference of total assets turnover ratio of HPCL and BPCL during the study period of five years.

H_{o8}: There is no significant difference of operating expense ratio of HPCL and BPCL during the study period of five years.

Research Methodology

The research design in the present study is empirical in nature. The study pertains to secondary sources of data and these have been collected from various sources of annual report of two concerned companies, research article published in journal and article published website. The study is for the period of five years ranging from 2012-13 to 2016-17. It has employed statistical tools of non-parametic test i.e. kruskal wallis test to draw inference on hypotheses framed to compare the profitability of two oil and gas companies. The study has applied eight ratios to measure profitability which was used by Khatik, S.K. and Vandana, T. in their study entitled Profitability Analysis of Public Sector Undertaking: A Case Study of Oil and Natural Gas Corporation of India. The variables used for measuring profitability of the company in this study include gross profit ratio, net profit ratio, operating profit ratio, return on gross capital employed ratio, interest coverage ratio, operating ratio, total assets turnover ratio and operating expense ratio. The formula for calculating key profitability ratios

Gross Profit Ratio= Gross Profit/Net Profit x100

Operating Profit Ratio= Operating Profit/Net Profit x100

Net profit ratio= Net Profit/Net Sales x100

Return on Gross capital Employed Ratio=Profit before Interest and Tax/ Total Assets x100

Interest Coverage Ratio = Earnings before Interest and Tax (EBIT)/Interest Expense x 100

Operating Ratio = Cost of Goods sold + operating Expenses/Net Sales x100

Total Assets Turnover Ratio= Net Sales/Total Assets x100

Operating Expenses Ratio = Operating Expenses/Net Sales x100

Analysis and Result

The portion of study has analysed the profitability of Hindustan Petroleum Corporation Limited is higher than Bharat Petroleum Corporation Limited with the help of financial key ratios to yield result and then drawn inference based on these ratios by using the inferential statistics.

Table 1: Gross Profit Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Gross Profit	Net Sales	Ratio in pc	Gross Profit	Net Sales	Ratio in pc
2012-13	4821.78	215893.64	2.24	7787	229796	3.39
2013-14	6140.31	232275.82	2.64	9555	253492	3.93
2014-15	6831.86	217061.11	3.15	10515	247552	4.25
2015-16	9083.45	197437.53	4.60	12801	218072	5.87
2016-17	12091.77	213488.95	5.66	13430	243476	5.52

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Table1 shows that gross profit ratio of HPCL in the initial year 2012-13 is 2.24 percent which continues going up in each year during the whole study period. Whereas this ratio of BPCL is shown as 3.39 percent in 2012-13 and its upward trend is continuing during three succeeding years up to 2015-16, it decreases to 5.52 percent in last year 2016-17 during the period. It is observed that this ratio of BPCL is better as compared to HPCL during five years.

Table 2: Net Profit Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Net Profit	Net Sales	Ratio in pc	Net Profit	Net Sales	Ratio in pc
2012-13	904.71	215666.45	0.42	2643	229796	1.15
2013-14	1733.77	232275.82	0.75	4061	253492	1.60
2014-15	2733.26	217061.11	1.26	5085	247552	2.05
2015-16	3726.16	197437.53	1.89	7056	218072	3.24
2016-17	6208.80	213488.95	2.91	8039	243476	3.30

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Table 2 demonstrates that net profit ratio of HPCL is 0.42 percent in the year 2012-13 which is increasing in each year during the period of five years. On the other hand, this ratio of BPCL is 1.15 percent in 2012-13 which goes up in each year over the whole period. The comparative analysis of two companies shows that this ratio of BPCL is greater as compared to HPCL during five years.

Table 3: Operating Profit Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Operating Profit	Net Sales	Ratio in pc	Operating Profit	Net Sales	Ratio in pc
2012-13	2839.13	215666.45	1.32	9713	229796	4.23
2013-14	3922.21	232275.82	1.69	11802	253492	4.66
2014-15	4704.41	217061.11	2.17	13031	247552	5.26
2015-16	6379.37	197437.53	3.23	14646	218072	6.72
2016-17	8744.08	213488.95	4.10	15321	243476	6.29

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Table 3 shows that operating profit ratio of HPCL in 2012-13 is 1.32 percent which is going up in each year during the study period. On the other hand, this ratio of BPCL is 4.23 percent in 2012-13 its continuous upward trend is observed during three succeeding years up to 2015-16, it decreases to 6.29

percent in last year 2016-17 The comparative analysis of two companies shows that this ratio of BPCL is higher as compared to HPCL during five years.

Table 4: Return on Gross Capital Employed Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	EBIT	Total Assets	Ratio in pc	EBIT	Total Assets	Ratio in pc
2012-13	2839.13	76244.73	3.72	9713	43282	22.44
2013-14	3922.21	77993.17	5.03	11802	42360	27.86
2014-15	4704.41	67550.64	6.96	13031	38453	33.89
2015-16	6379.37	69579.29	9.17	14646	47090	31.10
2016-17	8744.08	78463.91	11.14	15321	57828	26.49

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Gross capital employed ratio of HPCL in 2012-13 shows 3.72 percent then is increasing in each year during the period up to 2016-17 (Table 4). This ratio of BPCL is calculated as 22.44 percent in 2012-13 its continuous upward trend is observed during three succeeding years up to 2015-16, it decreases to 26.49 percent in last year 2016-17. It is observed from comparative analysis of two companies that this ratio of BPCL is much higher as compared to HPCL during five years.

Table 5: Interest Coverage Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	EBIT	Interest Expenses	Ratio in pc	EBIT	Interest Expenses	Ratio in pc
2012-13	2839.13	1412.80	200.96	9713	1825	532.21
2013-14	3922.21	1336.36	293.50	11802	1359	868.43
2014-15	4704.41	706.59	665.79	13031	583	2235.16
2015-16	6379.37	653.60	976.04	14646	565	2592.21
2016-17	8744.08	535.65	1632.42	15321	496	3088.91

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Interest coverage ratio of HPCL shows that it is 200.96 percent in 2012-13 which is increasing in each year during the period up to 2016-17 (Table 5). This ratio of BPCL is calculated as 532.21 percent in 2012-13 and it continues rising up to the period 2016-17. The comparative analysis of two companies has been observed that this ratio of BPCL is much greater as compared to HPCL over the study period.

Table 6: Operating Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Expenses	Net Sales	Ratio	Expenses	Net Sales	Ratio
2012-13	215604.70	215666.45	99.97	227153	229796	98.85
2013-14	230542.00	232275.82	99.25	249431	253492	98.40
2014-15	214327.90	217061.11	98.74	242467	247552	97.95
2015-16	193711.40	197437.53	98.11	211016	218072	96.76
2016-17	207280.20	213488.95	97.09	235436	243476	96.70

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

The operating ratio of HPCL shows 99.97 percent in 2012-13 and it decreases in next year (Table 6). It rises to 98.74 percent in 2014-15 which goes down in the next two consecutive years. This ratio of BPCL is 98.85 percent in 2012-13 and it decreases to 98.40 percent in 2013-14. It goes up to 97.95 percent in 2014-15 and then declines in the consecutive two years.

Table 7: Total Assets Turnover Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Net Sales	Total Assets	Ratio in pc	Net Sales	Total Assets	Ratio in pc
2012-13	215666.45	76244.73	282.86	229796	43282	530.93
2013-14	232275.82	77993.17	297.82	253492	42360	598.42
2014-15	217061.11	67550.64	321.33	247552	38453	643.78
2015-16	197437.53	69579.29	283.76	218072	47090	463.10
2016-17	213488.95	78463.91	272.09	243476	57828	421.03

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Table 7 shows that total Assets turnover ratio of HPCL in 2012-13 is 282.86 percent and is going up three consecutive years. This ratio of BPCL is 530.93 percent in 2012-13 its continuous upward trend is observed during two succeeding years, it decreases to 463.10 percent in 2015-16 and 421.03 percent in the year 2016-17. The comparative analysis of two companies demonstrates that this ratio of BPCL is better as compared to HPCL during five years.

Table 8: Operating Expense Ratio of HPCL and BPCL (Rs. in crore)

Year	HPCL			BPCL		
	Operating Expenses	Net Sales	Ratio	Operating Expenses	Net Sales	Ratio
2012-13	4760.02	215666.45	2.207	5144	229796	2.24
2013-14	4406.54	232275.82	1.90	5494	253492	2.17
2014-15	4098.60	217061.11	1.89	5430	247552	2.19
2015-16	5357.29	197437.53	2.71	5745	218072	2.63
2016-17	5882.97	213488.95	2.76	5390	243476	2.213

Source: Annual Report of HPCL and BPCL for five years from 2012-13 to 2016-17

Operating expense ratio of HPCL in 2012-13 is 2.21 percent and is decreasing during two consecutive years. Then it increases to 2.71 percent in 2015-16 and 2.76 percent in 2016-17. This ratio of BPCL is 2.24 percent in 2012-13 and decreases to 2.17 percent in the next year. It increases in the next two consecutive years 2014-15 and 2015-16 which decreases to 2.213 percent in 2016-17.

Result of Inferential Statistics

H_{o1}:   There is no significant difference of gross profit ratio of HPCL and BPCL during the study period of five years.

Table 9: Gross Profit Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	2.24	01	3.39	04
2013-14	2.64	02	3.93	05
2014-15	3.15	03	4.25	06
2015-16	4.60	07	5.87	10
2016-17	5.66	09	5.52	08
Sum of rank holder		22		33
No. of Data		05		05
U-Value	18			
Z-Value	1.27			

Table 9 demonstrates that the computed value U 18 which is higher than critical value of U (1) at 5 percent significance level. The calculation of z-value further 1.27 is lower than 1.96. There is enough evidence to support the null hypothesis. So, there is no significant difference of gross profit ratio of HPCL and BPCL during the study period of five years under review is accepted.

H_o: There is no significant difference of net profit ratio of HPCL and BPCL during the study period of five years.

Table 10: Net Profit Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	0.42	01	1.15	03
2013-14	0.75	02	1.60	05
2014-15	1.26	04	2.05	07
2015-16	1.89	06	3.24	09
2016-17	2.91	08	3.30	10
Sum of rank holder		21		34
No. of Data		05	05	
U-Value	18			
Z-Value	1.50			

The computed value U18 which is higher than critical value of U (1) at 5 percent significance level (Table 10). The calculation of z-value 1.50 is less than 1.96. There is enough evidence to support the null hypothesis framed. So, null hypothesis that there is no significant difference of net profit ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H_o: There is no significant difference of operating profit ratio of HPCL and BPCL during the study period of five years.

Table 11: Operating Profit Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	1.32	01	4.23	06
2013-14	1.69	02	4.66	07
2014-15	2.17	03	5.26	08
2015-16	3.23	04	6.72	10
2016-17	4.10	05	6.29	09
Sum of rank holder		15		40
No. of Data		05		05
U-Value	0			
Z-Value	2.384			

The computed value U 0 which is equal to critical value of U (1) at 5 percent significance level (Table 11).The calculation of z-value 2.384 is higher than 1.96. So, null hypothesis can not be accepted and alternative hypothesis that there is significant difference of operating profit ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H$_o$:   There is no significant difference of return on capital employed ratio of HPCL and BPCL during the study period of five years

Table 12: Return on Capital Employed of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	03.72	01	22.44	06
2013-14	05.03	02	27.86	08
2014-15	06.96	03	33.89	10
2015-16	09.17	04	31.10	09
2016-17	11.14	05	26.49	07
Sum of rank holder		15		40
No. of Data		05		05
U-Value	0			
Z-Value	2.384			

The computed value U 0 which is equal to critical value of U (2) at 5 percent significance level (Table 12).The calculation of z-value 2.384 is higher than 1.96. So, null hypothesis can not be accepted and alternative hypothesis that there is significant difference of return on capital employed ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H$_o$:   There is no significant difference of interest coverage ratio of HPCL and BPCL during the study period of five years.

Table 13: Interest Coverage Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	200.96	01	532.21	03
2013-14	293.50	02	868.43	05
2014-15	665.79	04	2235.16	08
2015-16	976.04	06	2592.21	09
2016-17	1632.42	07	3088.91	10
Sum of rank holder		20		35
No. of Data		05		05
U-Value	20			
Z-Value	1.73			

The computed value U 20 which is higher than critical value of U (1) at 5 percent significance level (Table13).The calculation of z-value 1.73 is lower than 1.96. There is enough evidence to support the null hypothesis framed. So, null hypothesis that there is no significant difference of interest coverage ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H$_o$:   There is no significant difference of total asset turnover ratio of HPCL and BPCL during the study period of five years.

Table 14: Total Asset Turnover Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio in pc	Rank	Ratio in pc	Rank
2012-13	282.86	02	530.93	08
2013-14	297.82	04	598.42	09
2014-15	321.33	05	643.78	10
2015-16	283.76	03	463.10	07
2016-17	272.09	01	421.03	06
Sum of rank holder		15		40
No. of Data		05		05
U-Value	0			
Z-Value	2.384			

The computed value U 0 which is equal to critical value of U (1) at 5 percent significance level (Table 14).The calculation of z-value 2.384 is higher than 1.96. So, null hypothesis can not be accepted and alternative hypothesis that there is significant difference of total asset turnover ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H_o: There is no significant difference of operating ratio of HPCL and BPCL during the study period of five years.

Table 15: Operating Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio	Rank	Ratio	Rank
2012-13	99.97	10	98.85	08
2013-14	99.25	09	98.40	06
2014-15	98.74	07	97.95	04
2015-16	98.11	05	96.76	02
2016-17	97.09	03	96.70	01
Sum of rank holder		34		21
No. of Data		05		05
U-Value	06			
Z-Value	1.50			

The computed value U 2 which is less than critical value of U (1) at 5 percent significance level (Table 15).The calculation of z-value 1.50 is lower than 1.96. So, as per null hypothesis, there is no significant difference of operating ratio of HPCL and BPCL during the study period of five years under review can be accepted.

H_o: There is no significant difference of operating expense ratio of HPCL and BPCL during the study period of five years.

Table 16: Operating Expense Ratio of HPCL and BPCL

Year	HPCL		BPCL	
	Ratio	Rank	Ratio	Rank
2012-13	2.207	05	2.24	07
2013-14	1.90	02	2.17	03
2014-15	1.89	01	2.19	04
2015-16	2.71	09	2.63	08
2016-17	2.76	10	2.213	06
Sum of rank holder		27		28
No. of Data		05		05
U-Value	13			
Z-Value	0.35			

The computed value U which is equal to critical value of U (1) at 5 percent significance level (Table 16).The calculation of z-value 0.35 is lower than 1.96. So, as per null hypothesis, there is no significant difference of operating expense ratio of HPCL and BPCL during the study period of five years under review can be accepted.

Research Implication

The present study has managerial implication. It points out various profitability ratios of two public oil and natural companies about the future policy to be adopted based on the present financial performance. This study will give picture to the government about the sort of deficiency of its present strategy of two companies undertaken. It is also useful for the government for future approach that it will follow to run the other public sector oil and companies.

Conclusion

It is observed that in seven ratios i.e. gross profit ratio, net profit ratio, operating profit ratio, return on gross capital employed ratio, interest coverage ratio, operating ratio, total assets turnover ratio and operating expense ratios of BPCL is higher as compared to HPCL during the period under review in the present study. Only the operating ratio of HPCL is higher than BPCL during the same period. The null hypothesis of the present study shows that there is statistically significant difference of BCPL and HPCL with respect to operating profit ratio, return on capital employed and total asset turnover ratio the period of five years. On the other hand, there is no statistically significant difference of BCPL and HPCL with respect to gross profit ratio, net profit ratio, interest coverage ratio, operating ratio and operating expense ratio over the period of five years. The comparative profitability of two oil and gas companies analysis demonstrates that BPCL is performing better than HPCL during the period of five years in the present study.

Research Limitation

The present study has certain limitations. It is an empirical study between two oil and gas companies only. Secondly, the period of study is limited to five years from 2012-13 to 2016-17. The full dependence on reliability of secondary sources of data poses another limitation of the present study.

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⇒   www.linkedin.com

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GREEN ACCOUNTING PRACTICES

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ABSTRACT

Green accounting is also termed as environmental accounting and is associated with the environmental services and goods. It considers the costs as well benefits which arise through environmental protection and depletion of the existing capital. It integrates the economy, society and the environment. Incorporating green accounting system in the national economic accounts could facilitate to measure the sustainability. The study found that 20.6 percent of variation in measure the environmental performance was explained by the various parameters of green accounting and corporate sustainability was more favorable response towards the measure the environmental performance and it was followed by the other variables. It was identified that most preferred advantage by the respondents was calculation of performance of environment and it also identified that, preferred method of green accounting by the respondents was cost-benefit analysis followed by the managing environmental costs, life cycle costing, flow cost accounting, total quality environmental management and calculation of carbon credit. The results of the green accounting can disclose in terms of tools used for green accounting and it was followed by the disclosure in terms of quantitative, descriptive, qualitative, monetary and in terms of market capitalizations. It is required to integrate between radiation and environmental protection for combined data bases with risk harmonization and requires the legal regulations to report on some of the issues of the environmental performance on annual basis.

KEYWORDS: *Environmental Performance, Environmental Protection, Green Accounting, Sustainability.*

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Introduction

Green accounting is also termed as the environmental accounting and is associated with the environmental services and goods. It considers the costs as well the benefits which arise through the environmental protection and depletion of the existing capital. It integrates the economy, society and environment. Incorporation of green accounting in a national frame work economic accounts facilitates to measure the sustainability. In the year 1994, sciences of National Academy appraised the process of environmental accounts designed by the Bureau of Economic Analysis termed as the Integrated Satellite of Economic and Environmental Accounts but it was not widely spread. The Green accounting considers the accounts of the emissions, natural resource, value of non-marketed environmental services and goods, green gross domestic product and disaggregation of traditional national accounts. The management of supply chain is considered as a significant technique of green accounting. Environmental accounting refers to the recognition, valuation and apportionment of costs, and merges these costs into a business recognizing the environmental liabilities and transmits this information to stakeholders as a segment of the financial statement. This accounting reports the environmental particular cost, i.e., waste disposal costs and liability costs. The following items may be covered in the director's report, issues, policies and improvements of Green accounting. Schaltegger and Burritt (2000) this accounting

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represents the activities, analysis, systems and methods of recording and analysis .The Green Accounting consists of two sub systems, namely, environmental accounting and ecological accounting. The environmental accounting refers to the costs of financial nature which are arise by environmental protection. The ecological accounting studies how the environment influences the economic activities of a company. The environmental management accounting is relevant to the gather and interprets diversified information, obtained from the environmental costs along with the other related costs and also consideration of internal analysis and the rational decisions taken by the management. The green accounting focuses on the analysis of changes and the results of the various corporate activities, and it prepares to reach the external interested parties.

Review of Literature

Dr Manoj Goswami (2014) opined that environment is emerged one of the bottlenecks to achieve the economic growth and he concluded that, even though the companies project the environmental issues information but they are not projected of the financial aspects of the firm. YousifAbdelbagiAbdalla A K Siti-Nabiha and Amirul Shah MD Shahbudin (2014). Opined that accounting for environment as well as social is more important in developing countries to reach the economic efficiency of the organization and sensitize the issue of social and environmental consciousness. Shukla and Vyas (2013) opined that environmental practices do not possess the quantitative information. Rankin et al (2011), opined that process of management, financial aspects and the system of nation were strongly correlated for developing the frame work of environmental reporting. Hence, he focused on the environmental reporting with aggregated results of the national, management and the financial. Riccaboni, A. and Leone, E. L. (2010) stated that social reporting is not only meant for the maintaining the profiles of environmental and social but it must be a part of planning process, policy decisions etc. Schaltegger – Burritt (2010) stated that now a days companies recognize the importance of the environmental accounting and it can be ignored from the part of the accounts of the firm and he more emphasized that consider the financial outcomes of the social as well as the environmental accounting along with the existing traditional accounting to reflect the true and fair view of the business. Parker (2005) stated that there were several models were developed towards the consideration of the social aspects. These models are useful to review the performance of the social accounting and overcome the challenges to adopt the new assessment system. Neu et al. (1998) examined the annual reports of the forestry, gas, oil, chemical in Canada and he opined that there should be some interaction between environmental performance and environmental disclosures. The organizations should focus on the pressure from the external environment, strategies in disclosures and the characteristics of the environment. Verschoor (1998) identified the link between the ethics and the financial performance and he found that the financial performance of the ethical behavior corporations was better than that those of the financial performance of those non ethical behavior corporations. Walden and Schwartz (1997) found that significant difference in disclosure practices of the environment by the companies in terms of the quantity and quality. The disclosure practices of the environmental accounting was the either time or event. Lawrence and Khurana (1997) conducted a survey on the municipalities and he noticed that environmental liabilities major concern to the municipalities as a financial burden and also they were not discloses the clean up costs which were spent by them . Hence he focused on the liability for future costs in the name of clean-up costs. Wycherley (1997) collected a responses from the environmental managers of the UK and he concluded that accountants involvement more important to save the environmental cost for performing the environmental issues for that they should be trained through the environmental accounting processes. Kreuze et al (1996) found that most of the companies did not disclose the policy of environmental accounting and they did not mention about the issues regarding the environment but the companies like pulp, steel, chemical,energy and the utilities included in the disclosure practices of the environmental accounting. Frost and Wilmshurst (1996) concluded that half –of the respondents opined that disclosure of the environmental accounting was the mandatory for corporate annual reports and accountants should not ignore the concept of environmental accounting and they are the responsible for the maintaining the environmental reporting. Fekrat et al (1996) observed the data of 168 companies across the 18 countries and considered six industries from each country and found that there was a significant variation in disclosure practices of the environmental accounting and also found that there was no significant association between disclosure practices of accounting and performance of the environment. Deegan et al. (1996) reported the results of a study of the attitudes of Australian accountants towards environmental accounting. It was found that Australian accountants showed a distinct lack of consensus on many issues related to the environment, and did not

really agree with the view that environmental issues should be incorporated within financial statements. Gamble et al (1995) identified the reporting practices in the form of codes by the various organizations useful to disclosure the environmental practices and he concluded that there was increasing the environmental reporting practices by the various organizations. The companies which are relevant to the waste management and steel related industries discloses the high quality reporting practices of the environmental accounting. Further he stated that absence of the guidelines from the concern authority was also reason not to disclose the reporting practices of the environmental accounting by the some of the organizations. Milne(1991) emphasized that many of the researchers focused on the corporate social responsibility and they also supposed to concern on the issues of incurring of social cost and benefits realizes from them for assessment of the environmental accounting

Research Problem

After verification of the available literature on green accounting, no research was confined to the quantification of the results of green accounting.

Research Question

Identify the possible strategies to quantify the various environmental issues in an environmental accounting.

Objectives of the Study

The study has the following objectives

- To identify the possible strategies to quantify the various environmental issues in an environmental accounting system.
- To identify the core principles, methods and tools to create a successful environment accounting system.
- To identify the practices regarding Green accounting by the different Indian Organizations.
- To examine, how green accounting is helpful to develop the sustainable accounting systems and
- To offer suggestions to strengthen the practices of green accounting.

Methodology

- **Data Collection**

The data collected from the structured questionnaire from the 150 respondents and the secondary data obtained from the existing journals and magazines, and Websites of RINL, BHEL HPCL, etc.

- **Techniques**

The technique of multiple regression analysis applied to infer the results.

Research Model 1

MEP $= a += b_1*EP + b_2*SHE + b_3*CE + b_4*SR + b_5*ET + b_6*ECB + b_7*ERI + b_8*ALE + b_9*CS + b_{10}*EIS$

MEP $=$ Measure the Environmental Performance
EP $=$ Environmental Policy
SHE $=$ Safety of Health and Environment
CE $=$ Conservation of Energy
SR $=$ Sustainability Reporting
ET $=$ Environmental targets
ECB $=$ Environmental costs and benefits
ERI $=$ Environmental reporting indications
ALE $=$ Assets and Liabilities of an Environment
CS $=$ Corporate sustainability
EIS $=$ Environmental Information System

Advantages of Green Accounting

Green Accounting is useful as a link between the environment and the economy, and it explains the environmental costs, environmental liabilities and environmental performance. Its elements are environmental ecological accounting, environmental management accounting, environmental financial accounting and internal ecological accounting. The methodology of the environmental accounting is

confined to environmental performance evaluation, life cycle analysis and environment cost savings analysis. The units of it are financial and non-financial. The costs may be relevant to the technical research and development, development of software, analysis of financial information, process engineering, inventory controls and suppliers surveys. These may be fixed or marginal, one time or recurring, and the methodology concentrates only on the incremental costs of information.

Green Accounting Model

It is useful to appraise of the performance of environmental aspects of the organization. It comprises of the six steps.

- Identification of parameters of environmental reporting.
- Define the parameters of environmental reporting.
- Narrate the environmental targets to be achieved.
- Strive to develop the environmental performance indicators.
- Calculate the environmental performance indicators.
- Report the results of the environmental performance.

Schematic Representation of Eco-innovation or Business Model Types.
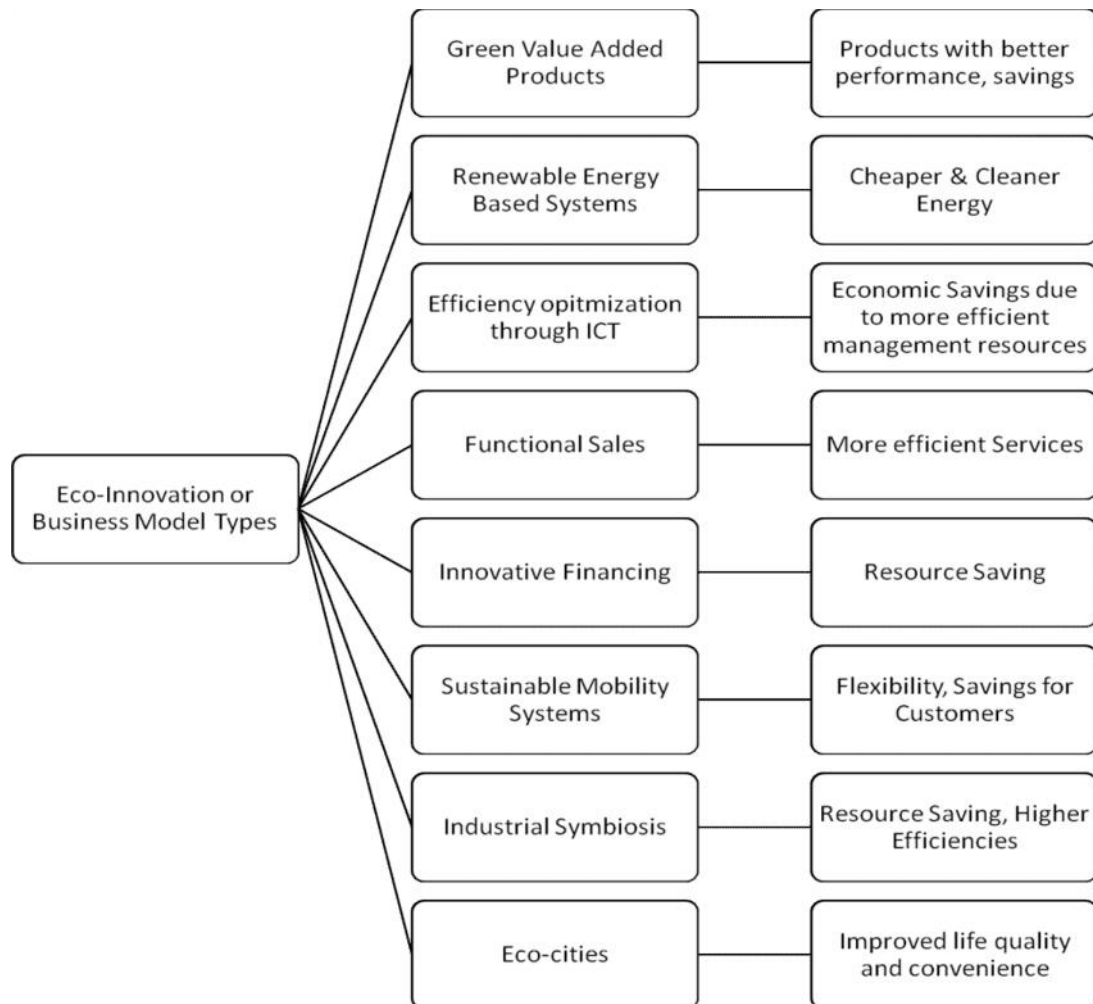
Source: Self :Available from Existing Literature

Schematic Representation of Environmental Accounting
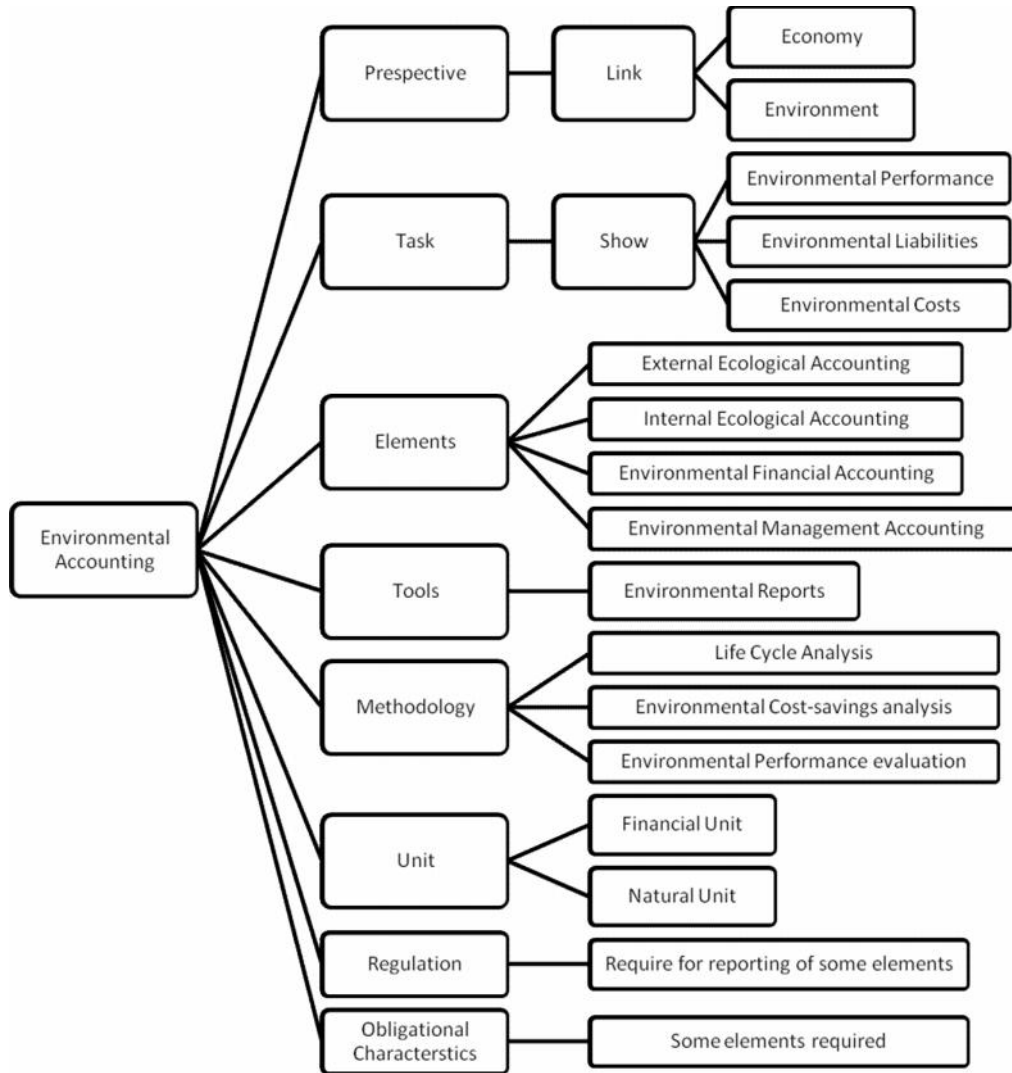
Source: Self: Available from Existing Literature

Possible Strategies to Measure the Environmental Costs and Adoption of Environmental Accounting

The guidelines of UN-IASR implies the environmental costs includes the environmental damage, restoration costs for future site as a part of asset, not meet the assets recognition criteria. The environmental liability includes incurring environmental costs, cost of damage of an environment, and costs for the exerts the long lived assets. The technique of NPV (Net Present Value) is used to estimate certain liabilities, and these must be disclosed in   financial statements.

Environmental Accounting Practices in India

In India the Ministry of Corporate Affairs issued a guidelines as a National voluntary on economic responsibility and social environmental aspects of the business in the year 2011 as a matter of fact the business should report proportion of material converted into a recycled material as an input material, consumption of total energy, energy saving processe, consumption of renewable energy, consumption of water, report on emission of greenhouse gases, discharge of the water and effluents and renovation of biodiversity. The themes of the information includes the create and conserve the green belt

and biodiversity, efforts to reduction of emission level as their environmental initiative, waste management and management of it, water management by reduction, recycling and reuse of water, create and conserve the green belt and biodiversity reduction, recycling and reuse of water and deforestation. In India, the companies discloses the green accounting reports in specific places in the report which include analysis and discussion area of management. The companies discloses the information in the form of non-quantitative (1) percentage of reduction of carbon foot print and (2) emission of green house gasses however these organizations do not disclose the information regarding recognition of environmental expenses and liabilities.

Parameters to be Covered – Reporting of Green Accounting by Indian Corporates

Environmental policy, safety of health and environment corporate sustainability, conservation of energy, sustainability reporting, water management, waste management, wind or renewable energy sources, environmental information system, environmental disclosure practices, environmental targets, environmental costs and benefits, environmental reporting indications, assets and liabilities of an environment

Table 1: Test of Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Information of Environment, Policy of Environment, Sustainability of Corporates, Benefits and Costs of Environment , Reporting indicators, health, liabilities and assets of environment, Energy conservation and targets of the environmental accounting.	.	Enter

a. Dependent Variable: Measure the environmental performance
b. Tolerance = .000 limits reached.

Table 1: This table shows the variable entered / removed with dependent variable was measure the environmental performance. The variables environmental information system, environment policy, corporate sustainability, environmental costs and benefits, environmental reporting indications sustainability reporting, safety of health and environmental, assets and liabilities of an environment, conservation of energy and the environmental targets considered as an independent variables

Table 2: Test of Variation in Measure the Environmental Performance through the Various Parameters of Green Accounting

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.454[a]	.206	.149	.96610

a. Predictors: (Constant), Environmental information System, Environmental Policy, Corporate sustainability, Environmental costs and benefits, Environmental reporting indications, Sustainability Reporting, Safety of Health and Environment, Assets and Liabilities of an Environment, Conservation of Energy, Environmental targets
b. Dependent variable : Environmental performance.

Table 2: This table explains the variation in measure the environmental performance through the various parameters of green accounting. This table tells us that 20.6 percent of variation in measure the environmental performance was explained through the various parameters of green accounting. The adjusted R Square and std. error of the estimate was less indicated that proposed regression model was fit for analysis.

Table 3: Test of the Fit of the Proposed Regression Model

Model	Particulars	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.598	10	3.360	3.600	.000[b]
	Residual	129.735	139	.933		
	Total	163.333	149			

a. Dependent Variable: Measure the environmental performance

b. Predictors: (Constant), Environmental information System, Environmental Policy, Corporate sustainability, Environmental costs and benefits, Environmental reporting indications, Sustainability Reporting, Safety of Health and Environment, Assets and Liabilities of an Environment, Conservation of Energy, Environmental targets

Table 3: This table narrates the test of fit of the regression model. It indicates that sum of squares of the residual value was much more than that of the sum of squares of the regression value at degrees of freedom 149, F value was 3.600 and P value was 0.000. Hence, it can be concluded that the proposed model was fit for the regression analysis.

Table 4: Test of More Favorable Response towards the Measure the Environmental Performance

Model	Particulars	Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	5.185	1.648		3.146	.002
	Environmental Policy	.204	.205	.083	.992	.323
	Safety of Health and Environment	-.487	.188	-.220	-2.588	.011
	Conservation of Energy	.034	.164	.020	.208	.836
	Sustainability Reporting	-.129	.096	-.116	-1.344	.181
	Environmental targets	-.628	.378	-.285	-1.661	.099
	Environmental costs and benefits	.263	.139	.156	1.894	.060
	Environmental reporting indications	-.003	.113	-.002	-.028	.977
	Assets and Liabilities of an Environment	.171	.168	.101	1.018	.310
	Corporate sustainability	.297	.085	.276	3.482	.001
	Environmental information System	.046	.229	.027	.199	.843

a. Dependent Variable: Measure the environmental performance

MEP = a+b1*EP+b2*SHE+b3*CE+b4*SR+ b5*ET+b6*ECB+b7*ERI+b8*ALE+b9*CS+b10*EIS

MEP = Measure the Environmental Performance

EP = Environmental Policy

SHE = Safety of Health and Environment

CE = Conservation of Energy

SR = Sustainability Reporting

ET = Environmental targets

ECB = Environmental costs and benefits

ERI = Environmental reporting indications

ALE = Assets and Liabilities of an Environment

CS = Corporate sustainability

EIS = Environmental Information System

Table 4: This table shows that the more favorable parameters to measure the environmental performance. It shows that the corporate sustainability was more favorable parameter to measure the environmental performance and it was followed by the environmental costs and benefits, environmental information system, environmental policy, conservation of energy, assets and liabilities of an environment, environmental reporting indications, sustainability reporting, safety of health and environment, and the environmental targets.

Table 5: Advantages of the Green Accounting

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Increase in GDP	150	1.00	5.00	3.7933	.67850
Costly Management decisions	150	1.00	5.00	3.0067	.37536
Earn the profits irrespective of their size, because of economic use of materials	150	1.00	5.00	3.2600	.62852
Tool for various externalities, govt and stake holders	150	1.00	5.00	3.7400	.75467
Measure the environmental performance	150	1.00	5.00	4.2667	1.04699
Sustainable Development	150	1.00	5.00	4.1333	1.14497
Linked with the human rights	150	3.00	4.00	3.6600	.47530
Influence the practices of the companies	150	3.00	4.00	3.3400	.47530
Valid N (listwise)	150				

Table 5: This table explains the advantages of the green accounting. It shows that it was useful to measure the environmental performance and it was followed by the sustainable development, increase in gross domestic production, tool for various externalities, govt. and stake holders, linked with the human rights, influence the practices of the companies, earn the profits irrespective of their size, because of the use of the materials economically and also used for costly management decisions.

Table 6: Methods of Green Accounting

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Cost benefit Analysis	150	4.00	5.00	4.3400	.47530
Managing Environmental costs	150	3.00	4.00	3.6600	.47530
Flow cost accounting	150	1.00	4.00	3.5000	.68297
Life cycle costing	150	3.00	4.00	3.6600	.47530
Total quality environmental management	150	3.00	4.00	3.3400	.47530
Measurement of carbon credit	150	3.00	4.00	3.3400	.47530
Valid N (listwise)	150				

Table 6: This table shows about the various methods of the green accounting. It was evident that respondents more favorable towards the cost benefit analysis (mean 4.34) and it was followed by the managing environmental costs, life cycle costing, flow cost accounting, total quality environmental management and they gave least priority to the measurement of credit.

Table 7: Disclosure Practices of Green Accounting

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Market Capitalization Method	150	1.00	5.00	3.2600	.67981
Practices in terms of Qualitative	150	2.00	5.00	3.3000	.57638
Practices in the nature of Descriptive	150	3.00	5.00	3.3667	.53616
Practices in the nature of quantitative	150	1.00	4.00	3.7867	.66137
Practices in the nature of monetary	150	1.00	4.00	3.2600	.63911
Focus on methods and tools of green accounting	150	1.00	4.00	3.8400	.59166
Valid N (listwise)	150				

Table 7: This table shows the disclosure practices of green accounting. The respondents wanted to disclose the results of the green accounting are as follows tools of the green accounting and it was followed by the practices of disclosure in terms of quantitative, descriptive, qualitative and in monetary followed by the market capitalization method.

Table 8: Various Criticisms of Green Accounting

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Particulars	N	Min	max	Mean	Std Deviation
Difficult to measure the environmental issues in terms of rupees	150	5.00	5.00	5.0000	.00000
Difficult to identification of environmental expenses	150	1.00	5.00	4.1267	.80516
Difficult to identification of environmental benefits (or) incomes	150	1.00	4.00	3.2600	.63911
Difficult to identification of environmental liabilities	150	1.00	5.00	4.1800	.82795
Difficult to identification of environmental assets	150	1.00	5.00	4.1333	.85661
Valid N (listwise)	150				

Table-8: This table describes the various criticisms of the green accounting. The respondents opined that results of the environmental issues difficult to measure in terms of rupees and followed by identification of environmental expenses, environmental liabilities, and environmental assets and difficult to identification of environmental benefits or incomes.

Findings of the Study

- The study found that 20.6 percent of variation in measure the environmental performance was explained by the various parameters of green accounting.
- Corporate sustainability was more favorable response towards the measure the environmental performance and it was followed by the environmental costs and benefits, environmental information system, environmental policy, conservation of energy, assets and liabilities of an environmental, environmental reporting indications, sustainability reporting and the safety of health and environment.
- The most preferred advantage by the respondents was calculation of performance of environment and it was followed by the sustainable development, growth in GDP, useful for stakeholders, government and the externalities and useful for management decisions.
- The study identified that, preferred method of green accounting by the respondents was cost-benefit analysis followed by the managing environmental costs, life cycle costing, flow cost accounting, total quality environmental management and calculation of carbon credit.
- Regarding disclosure practices of green accounting indicates that results of the green accounting can disclose in terms of tools used for green accounting and it was followed by the disclosure in terms of quantitative, descriptive, qualitative, monetary and in terms of market capitalizations.
- The respondents opined that measure the environmental issues in terms of rupees difficult and also they opined that difficulty was emerged in terms of calculation of environmental expenses, environmental benefits (or) incomes, environmental liabilities and the environmental assets.
- The HPCL initiated the introduction of the electronic mode form instead of physical form regarding sending of the shareholder documents and benefits of the company including dividend through the e-mail.
- The BHEL has implemented several strategies regarding green accounting, i.e., reduction and/or capturing of the Co2 via combustion through the oxy-fuel, biomass and ammonia related Co2 sequestration systems. It is also striving to reduce the foot prints of the internal carbon through the various measures like establishing of solar power plants at Bhopal, Bangalore, Trichy, and Hyderabad. This organization also established a Grid Interactive Solar Power Plant of 5MWP Capacity at BAP, Ranipet, and it produces about 7.5 million units of clean energy per annum and reduce the carbon emission to the extent of more than 6500 Co2-e per annum along with a high number of projects for conservation of water and energy in its manufacturing units. The BHEL also developed the Advanced Ultra Super Critical Technology congruent with the green energy initiative.
- The RINL Strategy integrated with the company strategy with an investment of Rs 468 cr at 3mt stage accounts for 5.5 per cent of the total project cost, and incurred Rs 2002 cr for various energy and environmental projects, and it is amajor drive for profitability and operational efficiency through higher yields and usage of the material, utilization of the waste and its recycling. This organization is the first plant to start a 20.6MW waste heat recovery system on sinter –straight line cooler in sinter machine. In Visakhapatnam steel plant, Coke Dry cooling plant was established. It is   used for   reduction in Co2 emission by 6,89,586 tons per year, coal by 408668tons and So2 by 2917 tons per year.

Suggestions

- There should be some legal regulations to report on some of the issues of the environmental performance on annual basis.
- There should be integration between radiation and environmental protection by having the guiding actions combined data bases with risk harmonization.

Conclusion

Practices of environmental accounting in India have not been widespread and there is no clarity and transparency regarding policy frame work for national, state and even at company reporting level due to increase in the awareness of stakeholders and other practices, it is to be a segment of financial reporting in India. The majority of the companies publish the environmental initiative in their annual reports, but such a practice is only nominal does not disclose the information regarding financial implications and the policy of costs of environment, due to its inability to calculate the environmental

liabilities as well as the assets, in terms of monetary value as it may not be possible to integrate all environmental information with the existing accounting system at micro level, effort should be made to present internal costs of environment to a firm which have a considerable impact on the financial results of the business along with possible integration with existing accounting information. Finally, it can be concluded that the only 1/5th of performance of environment was explained by the various green accounting parameters, it means there was other parameters also influence the performance of the environment, but amongst the parameters of the green accounting corporate sustainability was more favorable parameter to measure the environmental performance.

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EMPIRICAL ANALYSIS OF FINANCIAL HEALTH OF
SCHEDULED COMMERCIAL BANKS IN INDIA

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ABSTRACT

Banks play an important role in any economy whether it is a developed or an emerging economy. To maintain the sustainability in the market, financial health of banks should be monitored. Liberalization in Indian economy has brought competition among banks, at domestic level as well as foreign level. Indian banking industry also has to compete with non banking financial corporations, mutual funds and other financial institution. As consequence to this profitability of banking sector is squeezed and Indian banking industry is compulsorily required to work efficiently. As banking industry plays an important role in financial market it is important to find out whether banks are working efficiently or not. With the aim to measure efficiency of commercial banks in India, DEA has been applied. In the study, with a total of four inputs and three outputs variables, 70 banks have selected. As the key findings of the study that out of 70 banks, 33 banks reported as efficient banks and remaining 37 banks are considered as inefficient banks. Results indicate that schedule commercial banks in India are utilizing their 96% of resources to produce desired outputs. On the basis of peer count and efficiency scores, Bank 32, (Jammu & Kashmir Bank Limited) referred to table 1 ranked first with peer for 15 inefficient banks. Bank 69 (SBER Bank) referred to table 1 ranked last with lowest efficiency score 0.672.

KEYWORDS: *Financial Health, Data Envelopment Analysis, Efficiency Scores, Input-Output Variables.*

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Introduction

Banks play an important role in any economy whether it is a developed or an emerging economy. To maintain the sustainability in the market, financial health of banks should be monitored. Earlier the banking business in India of accepting deposits and lending at administered rates was considered comfortable but after deregulation of interest rates and liberalization has changed the banking scenario in India. Liberalization in Indian economy has brought competition among banks, at domestic level as well as foreign level. Indian banking industry also has to compete with non banking financial corporations, mutual funds and other financial institution. As consequence to this profitability of banking sector is squeezed and Indian banking industry is compulsorily required to work efficiently. As banking industry plays an important role in financial market it is important to find out whether banks are working efficiently or not (Dash & Charles, 2009)[1].

The evolution of a fast-paced dynamic environment in the financial services sector has highlighted the significance of competition and efficiency. Due to intense competition both among domestic and foreign banks, rapid speed of innovations and introduction of new financial instruments, changing consumer's demands have changed the way a bank does business and services its customers. In cut throat competitive environment the only firm could survive that works on efficiency level (Akhtar,

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2002)[2]. Indian economy is one of the fastest developing economies of the world. Indian economy is based on the performance of Indian financial system and therefore the performance of financial system of a nation determines its economic growth indicators (Chandrasekaran & Madhanagopal, 2013)[3]. As banking sector is an integral part of Indian economy therefore it is important to measure performance of banking sector. The Indian banking system is still dominated by the public sector banks, and there is an emerging need to develop a comprehensive framework for measuring their efficiency in transforming their resources for better performance. Such type of performance benchmarking has become extremely relevant for their success.

Earlier many studies have been done in performance analysis of financial institution around the world. Mostly studies dealt with financial ratios, Regression analysis and other parametric analysis. Although previous studies also have suggested that data envelopment analysis is well suited framework for performance analysis and it offers advantages over other traditional methods. Data Envelopment Analysis is a linear programming-based technique for evaluating the performance efficiency of a set of peer units. These peer units are called Decision-Making Units (DMUs). The technique measures that how efficiently a DMU used its available resources or termed inputs to generate desired outputs (Ramanathan, 2003)[4]. "DEA does not require any underlying assumption of a functional form relating to inputs and outputs. Given the set of inputs and outputs of different firms, it constructs its own functional form" (Kumar & Vincent, 2011)[5]. In DEA, the performance of DMUs is determined by using the concept of efficiency or productivity. Efficiency is equal to ratio of total sum of 'Weighted Outputs' to total sum of 'Weighted Inputs'.

Efficiency = Weighted Sum of Outputs/ Weighted Sum of Inputs

On the basis of the DMUs' input–output vectors, a production frontier is established that can be considered as best practice. Hence, the DMUs on this production frontier are considered as efficient and the remaining DMUs as inefficient. The limit of inefficiency is measured as the distance from the best practice production frontier (Homburg 2001)[6].

Efficiencies estimated using DEA are relative, that is, relative to the best performing DMU (or DMUs if there is more than one best-performing DMUs). The best-performing DMU is assigned an efficiency score of 1 or 100%, and the performance of other DMUs vary, between 0 and 1 or 100% relative to this best performance (Ramanathan, 2003)[4]. DMU, whose efficiency score is 1 or 100 % is considered as efficient unit; whereas, DMU, whose efficiency score is less than 1 or 100% is considered as inefficient unit. On the basis of efficiency score using DEA, here DMUs can be segregated into two groups that are efficient DMUs and inefficient DMUs. The bank that attains the efficiency scores of 1 lie in the efficient frontier and the bank that does not achieve the efficiency score of 1 lie below the efficient frontier (Shree *et al.* 2015)[7]. The present study aims to measure the efficiency of schedule commercial banks in India and rank them on the basis of the DEA.

Review of Literature

In the aftermath of liberalization, deregulation and vital changes in financial institution around the world, there is a recent boom in activities related to evaluate efficiency of financial institutions. Numerous studies have been done in this arena. To evaluate efficiency of financial institutions, researchers have applied parametric (SFA, DFA and TFA) and non parametric (DEA and FDH) techniques for their studies. Especially Data Envelopment Analysis and Stochastic Frontier Analysis techniques are widely popular for these kinds of studies. Several studies have been done in well developed economies; in contrast to that fewer studies have been done in developing economies like India.

Berger & Humphrey (1997)[8], surveyed 130 studies that apply frontier efficiency analysis to financial institutions in 21 countries. With the aim to summarize and critically review empirical estimates of financial institution efficiency, researchers have outlined the results of selected studies that apply five different frontier approaches including both parametric and non parametric. Results found that the various efficiency methods do not necessarily yield consistent results.

Sathye (2003)[9], examined the efficiency of banks in developing country i.e. India by using DEA. The efficiency scores measured for three group of banks, public, private and foreign banks in India. The study reveald that the mean efficiency score of Indian banks compared well with the world mean efficiency score and the efficiency of private sector commercial banks was lower than public sector banks and foreign banks in India.

Mohan & Ray (2004)[10], attempted a comparision among public, private and foreign banks operating in India and also compared the revenue maximisation efficiency of banks during 1992-2000. For the computation, 58 banks selected for the study which includes 27 public sector banks, 20 private sector banks and 11 foreign banks. Loans, investments and other income are chosen as outputs and deposits and operating costs as inputs. The finding showed that public banks significantly performed better than private banks on revenue maximizing efficiency but there is no difference between public banks and foreign banks.

Brissimis et al. (2008)[11], examined the relationship between banking sector reform and bank performance of 10 European Union countries. Bank performance measured in terms of efficiency, total factor productivity growth and net interest margin. Researchers developed an empirical model of bank performance by using recent econometric techniques. The model is applied to bank panel data. The results indicated that both banking sector reform and competition had positive impact on bank efficiency

Gupta et al. (2008)[12], analyzed the performance of Indian banking sector. The performance has been measured and compared in two stages, productive efficiency through the DEA technique and finding the dterminants of productive efficiency through TOBIT model. The study showed that SBI and its group have the highest efficiency, followed by private banks, and the other nationalized banks.

Kumar & Gulati (2008)[13], evaluated the technical efficiency of 27 pubic sector banks operating in India and provided ranking to these banks on the basis of outcomes of DEA. The cross-section data for the financial year 2004/2005 were used for obtaining technical efficiency scores. Findings revealed that only 7 banks out of 27 found as efficient bank and thus gives efficiency frontier. Andhra bank observed as the most efficient bank followed by Corporation bank. Addition to the results SBI group found more efficient than nationalized banks.

Fethi & Pasiouras (2010)[14], presented a comprehensive review of 196 studies containing operational research (O.R.) and artificial intelligence (A.I.) techniques in the assessment of bank performance. They concluded that most of the studies applied data envelopment analysis in the estimation of bank efficiency and productivity growth.

Hsiao et al. (2010)[15], investigated the effect of the first financial restructuring (FFR) on the operating efficiency of commercial banks in Taiwan. For the analysis they applied data envelopment analysis (DEA) to operations data for 40 commercial banks for the study period of 6 years, 2000–2005. Results were found that the banks had lower operating efficiency on average during the reform period (2002–2003) compared to the pre-reform period (2000–2001), improved operating efficiency was reflected in the post-reform period (2004–2005).

Karimzadeh (2012)[16], examined the eficiency of Indian commercial banks during 2000-2010 with using DEA. Researcher has computed cost efficiency, technical efficiency and allocative efficiency on the sample of 8 schedule commercial banks. Both the VRS and CRS model applied for the study and results found that Bank of India and ICICI bank were more efficient as compare to other banks in India and result confirmed that selected Public Sector Banks were more efficient than Private sector banks during the study period in India.

Roy (2014)[17], analyzed the efficiency of Indian banking sector by using Data Envelopment Analysis. The study has been done across three economic eras (Pre Basel, Basel I and Basel II) and across the different ownership structure (Nationalized banks, Private sector banks, foreign banks and SBI & Its Associates banks). Variables for the study were selected on the basis of intermediation approach. Researcher tried to identifiy whether inefficiency arises ought to managerial incompetence or improper size of and resource allocation. Results found that the main reason for inefficiency in Indian Banking sector is improper size allocation.

Sinha (2016)[18], presented a paper on benchmarking the performance of Indian banking sector through dynamic-slacks based DEA model. The study benchmarkes the performance of public sector banks, private sector banks and foreign banks operating in India for the study period 2006-07 to 2010-11. The study included 62 commercial banks and for the selection of input output variables intermediation approach considered. The results indicate that mean technical efficiency of the 62 commercial banks had a n increasing tendency between 2006-07 and 2009-10 but declined in 2010-11. The group-wise analysis showed that in terms of efficiency, the foreign banks performed better, followed by public and private sector banks.

Objectives of the Study

- To identify input and output variables through review of literature.

- To check validity of chosen input and output variables for DEA through isotonicity test.
- To evaluate the financial health in terms of DEA scores of schedule commercial banks in India and provide ranking to them on the basis of DEA model.

Methodology

Selection of Input-Output variable: Selection of input – output variables in application of DEA is a subjective matter. There are no specific rules have determined for the selection. There are mainly two approaches used for selecting the inputs – outputs variables for banking industry, popularly known as production approach and intermediation approach (Berger & Humphrey 1997)[8].

As per **Berger & Humphrey, (1997)[8]**, the production approach is more suitable for evaluating efficieny of banks branches and the intermediation approach is more appropriate in evaluating efficiency at bank level.

As suggested in previous studies, we have selected intermediation approach for the study. According to this approach banks have treated as financial intermediateries who used certain set of inputs to generate certain set of outputs. Considering this approach input and output variables have been chosen at restricted level. For DEA, choice of input- output varaibles should be kept at reasonable level because inclusion of more number of variables decreases the discriminatory power of DEA model. As a consequences some inefficient units may become efficient **(Smith, 1997)[19]**. Considering this the choice of variables have kept at reasonable level and the following variable are used for the study in table 1:

Table 1: Input Output Variables

S.No.	Input Variables	Output Variables
1.	Net Worth	Net Profit
2.	Interest Expenses	Interest Income
3.	Operating Expenses	Loans & Advances
4.	No. of Branches	

Statistical Tool

To evaluate the financial health of Indian banking industry, Data Envelopment Analysis has been applied in the study. The orientation of DEA is on the basis of two approaches- Input orientation and Output orientation. Input oriented DEA model aims to produce observed outputs with minimum level or reducing inputs. In this approach there are no changes have been made in output level. Here, the inputs are multiplied by efficiency, as of this characteristics it is called input oriented model. Output oriented model, on the other hand produce maximum outputs at a given level of inputs. In this approach changes have been made to output level and resources level or inputs remain constant. This approach is called output oriented model (Ramanathan 2003[4], Roya, 2014)[20]. An input oriented Charnes, Cooper and Rhodes (CCR) constant return to scale (CRS) model has been applied for the study. Detail description of the model has been given at the end notes of the paper.

Period of the Study

The data were collected for the study period of 2011-12 to 2015-16. Further average of five years of variables has been calculated for the analysis. Here average of five years seems more appropriate for the study rather than one year data as average gives more clarity regarding the data.

Sample Design

The data for input- output variables are gathered from the electronic database, PROWESS provided by Centre for Monitoring Indian Economy (CMIE). Indian banking industry is segregated into schedule commercial banks and unscheduled commercial banks. For the study, sample consist public sector banks, private sector banks and foreign sector banks as part of schedule commercial banks in India. There are 27 public sector banks in India that segregated into 21 nationalized banks and 6 SBI and its associate banks. Private sector banks in India are also divided into 12 old private sector banks and 9 new private sector banks and 44 banks are there as foreign banks.

There is a rule of thumb exists to determine the minimum size of DMUs. **Homburg (2001)[6]** have suggested in their study that the number of DMU should be atleast twice of the number of inputs plus outputs. **Nunamaker (1985)[21] and Raab & Litchy (2002)[22]** suggested a rule of thumb to ascertain the minimum size of sample DMUs in DEA study. As per the researchers the sample size should be at least three times larger than the sum of the number of inputs and outputs.

In our study, with a total of four inputs and three outputs, we ended up with a reasonably good sample size of 70 banks. For the sample size, we have selected 23 banks from public sector, 18 banks from private sector and 29 banks from foreign sector. Table 2 displays the descriptive statistics for inputs outputs variables.

Table 2: Descriptive Statistics for Inputs and Outputs of Sample Banks

	Variables	Minimum	Maximum	Average	SD
Inputs	Net Worth	560.98	1152599.60	102813.00	178278.07
	Interest Exp.	2.30	859620.24	74277.23	125314.63
	Operating Exp.	111.88	1191993.02	97368.81	169250.38
	No. of Branches	1.00	15767.40	1264.98	2270.12
Outputs	Net Profit	0.10	119511.32	10743.40	21234.98
	Interest Income	71.98	1357219.46	111315.43	192817.49
	Loans and Advances	46.92	11868323.48	887492.90	1658526.97

Source: Own Calculation

Isotonicity Test

In order to check the validity of input output variables of DEA model, **Avkiran (1999)[23]** has suggested an isotonicity test. The test involves calculations of inter-correlation between inputs and outputs variable whether increasing amount of inputs lead to greater output. As per the DEA isotonicity test, only those variables should select for the study whose inter-correlation values are statistically significant **(Chandrasekaran & Gopal, 2013)[24].** Following table 3 displays Pearson correlation coefficients for inputs- outputs variable of DEA.

Table 3: Pearson Correlation Coefficients for Inputs and Outputs Variables of DEA

	Net Worth	Interest Exp.	Operating Exp.	No. of Branches	Net Profit	Interest Income	Loans & Advances
Net Worth	1						
Interest Exp	.914	1					
Operating Exp	.932	.997	1				
No of Branches	.850	.976	.973	1			
Net Profit	.945	.773	.806	**.696**	1		
Interest Income	.940	.995	.999	.970	.821	1	
Loans and Advances	.932	.992	.997	.971	.805	.997	1

Source: Own Computation

As per the table, it is observed that all the correlation values between inputs- outputs variable are positive and statistically significant at the 0.01 level (2 tailed). Here it is observed that between input-output variables Pearson correlation is .80. Although between no. of branches and net profit, correlation value is .696 but it is shown statistically significant in the output results of SPSS 21. Thus these variables are also considered for the analysis. Hence, all the present input and output variables passed the test and included for the analysis.

Analysis & Discussion

The present study employed an input oriented DEA model with constant return to scale (CRS). The efficiency scores of DEA and benchmarking are summarized in the following table 4.

Table 4: Efficiency Scores and Benchmarking of Commercial Banks based on DEA Model

Bank No.	Bank Name	Efficiency Score	Reference Set					Peer Count	Rank
B1	State Bank of India	1	B1					(0)	27
B 2	State Bank of Bikaner & Jaipur	1	B2					13	2
B 3	State Bank of Hyderabad	0.994	B11	B41	B23	B2		0	38
B 4	State Bank of Mysore	0.975	B6	B11	B2			0	43
B 5	State Bank Patiala	0.974	B15	B2	B6	B11	B21	0	45
B 6	State Bank of Travancore	1	B6					5	11
B 7	Allahabad Bank	0.975	B11	B32	B21			0	43
B 8	Andhra Bank	0.995	B2	B21	B32			0	36
B 9	Bank Of Baroda	1	B9					5	11

B 10	Bank of India	1	B10					1	21
B 11	Bank of Maharashtra	1	B11					6	9
B 12	Canara Bank	0.963	B15	B2	B21	B13	B6	B41	0	47
B 13	Corporation Bank	1	B13					2	18
B 14	Dena Bank	0.934	B20	B11	B21	B32			0	54
B 15	IDBI	1	B15					8	6
B 16	Indian Bank	1	B16					(0)	27
B 17	Oriental Bank of Commerce	0.995	B6	B41	B21	B15			0	36
B 18	Punjab & Sind Bank	0.994	B11	B21	B23				0	38
B 19	Punjab National Bank	1	B19					(0)	27
B 20	Syndicate Bank	1	B20					3	16
B 21	UCO Bank	1	B21					9	5
B 22	Union Bank of India	0.996	B41	B13	B10	B2	B6	B20	0	35
B 23	Vijaya Bank	1	B23					4	15
B 24	Axis Bank	1	B24					(0)	27
B 25	Catholic Syrian Bank Ltd	1	B25					(0)	27
B 26	City Union Bank Ltd	0.985	B41	B32	B2	B29			0	42
B 27	DCB Bank Ltd	0.904	B2	B41	B29				0	61
B 28	Federal Bank	0.905	B32	B60	B9	B54			0	59
B 29	HDFC Bank	1	B29					7	8
B 30	ICICI Bank	0.915	B9	B54	B47	B32	B29		0	57
B 31	Indusind Bank	0.926	B32	B29	B51	B41			0	55
B 32	J&K Bank Ltd	1	B32					15	1
B 33	Karnataka Bank Ltd	0.905	B21	B32	B41	B2			0	59
B 34	Karur Vysya Bank	0.953	B2	B32	B21	B41			0	50
B 35	Kotak Mahindra Bank Ltd	0.924	B29	B51	B32	B41			0	56
B 36	Laxmi Vilas Bank	0.936	B20	B23	B2				0	53
B 37	Nainital Bank	0.939	B29	B51	B32				0	52
B 38	RBL	0.829	B29	B15	B51	B9	B32		0	68
B 39	South Indian Bank	0.987	B41	B23	B2				0	41
B 40	Tamilnad Mercantile Bank	0.99	B2	B32	B41				0	40
B 41	Yes Bank Ltd	1	B41					13	2
B 42	AB Bank Ltd	0.952	B56	B59	B51				0	51
B 43	Abu Dhabi Commercial Bank	0.885	B15	B51	B50	B47	B53		0	64
B 44	Bank of America	1	B44					2	18
B 45	Bank of Bahrain & Kuwait	0.891	B60	B51	B54	B32			0	63
B 46	Bank of Ceylon	1	B46					(0)	27
B 47	Bank of Nova Scotia	1	B47					5	11
B 48	Bank of Tokyo-Mitsubishi	1	B48					(0)	27
B 49	Barclays Bank	0.963	B53	B54	B44				0	47
B 50	BNP Paribas	1	B50					3	16
B 51	Citibank	1	B51					13	2
B 52	Credit Agricole	0.833	B51	B47	B60	B57			0	66
B 53	DBS Bank Ltd	1	B53					5	11
B 54	Deutsche bank	1	B54					8	6
B 55	Hongkong & Shangai banking Corporation	0.904	B53	B51	B41				0	61
B 56	HSBC Bank Oman	1	B56					1	21
B 57	JP Morgan Chase Bank	1	B57					2	18

B 58	KrungThai Bank	1	B58					1	21
B 59	Mashreq Bank	1	B59					1	21
B 60	Mizuho Bank Ltd	1	B60					6	9
B 61	Royal Bank of Scotland	0.997	B15	B51	B50	B53		0	34
B 62	Shinhan Bank	0.957	B32	B60	B58	B51		0	49
B 63	Societe Generale	0.821	B15	B50	B54	B47	B9	0	69
B 64	Standard Chartered Bank	0.969	B47	B54	B15	B51	B9	0	46
B 65	JSC VTB Bank	1	B65					1	21
B 66	United Overseas Bank	0.878	B70	B60				0	65
B 67	Australia & Newzealand Banking Group	0.831	B54	B44				0	67
B 68	Credit Suisse AG	0.914	B57	B51	B53			0	58
B 69	SBER Bank	0.672	B60	B65	B54			0	70
B 70	National Australia Bank	1	B70					1	21
	Efficient Firms	**33**							
	% of Efficient Firms	**47.14**							
	Average efficiency Score	**0.962285**							

Source: Calculations in DEAP 2.1 version software

Efficient but not peer to inefficient banks

The above table demonstrates that the average efficiency score of commercial banks in India is 96% (0.9623). It indicates that commercial sector banks in India use 96% of the resources to produce the given output. Inefficient banks can improve their efficiency if they utilize their unused resources properly. In DEA, a bank is considered an efficient if its efficiency score is 1 otherwise it is considered as inefficient bank. The table reveals that out of 70 banks, 33 banks reported efficiency score equal to 1, thus these banks may consider as efficient banks. Remaining 37 banks are considered as inefficient banks.

The above table also demonstrates the reference set of the inefficient banks. A set of corresponding efficient banks act as reference banks or peer for inefficient banks. Inefficient banks can improve their performance following their reference banks. For example, B3 is an inefficient bank and it has four reference banks as B11, B41, B23 and B2. B3 can follow any of these four banks for improvement. Ranking for efficient banks given on the basis of their peer count that is, first rank is given to that efficient bank which act as a peer for maximum number of inefficient banks. For inefficient banks ranking are done on the basis of their efficiency score. As per he above table, B32 (J&K Bank Ltd) is given first rank as it is peer for 15 inefficient banks , B2, B41 and B51 (State Bank of Bikaner & Jaipur, Yes Bank Ltd and   Citibank) ranked second with 13 peers. B1, B16, B19, B24, B25, B46 and B48 (State Bank of India, Indian Bank, Punjab National Bank, Axis Bank, Catholic Syrian Bank Ltd, Bank of Ceylon and   Bank of Tokyo-Mitsubishi) are efficient banks but they are not reference or peer banks for any inefficient banks so they have given twenty seventh rank. B69 (SBER Bank) stands last rank i.e. 70th rank with the least efficiency score of 0.672.

Conclusion

The present study has been carried out with the purpose to measure performance or efficieny of schedule commercial banks in India for the study period of 2011-12 to 2015-16. For the computation of efficiency 70 banks from different ownership (Public, private and Foreign) has been selected . Following previous studies, Data Envelopment Analysis is chosen for the analysis as this non-parametric technique is widely popular for efficiency analysis and it is easy to calculate. For the study input oriented CCR DEA model is applied. Although DEA has some limitation regarding the selection of input-output variables, when the number of input- output variables increased the discriminatory power of DEA to segregate DMUs in efficient and inefficient decreased. As the key findings of the study that out of 70 banks, 33 banks reported as efficient banks and remaining 37 banks are considered as inefficient banks. Results indicate that schedule commercial banks in India are utilizing their 96% of resources to produce desired outputs. On the basis of peer count and efficiency scores, Bank 32, (Jammu & Kashmir Bank Limited) referred to table 1 ranked first with peer for 15 inefficient banks. Bank 69 (SBER Bank) referred to table 1 ranked last with lowest efficiency score 0.672.

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End Notes

CCR Model: This model is named after the researchers. They introduced a measure of efficiency for each DMU as a maximum of a ratio of weighted outputs to weighted inputs. Say we have a population of productive units DMU_1, DMU_2, …….., DMU_n. Assumes each unit produces s outputs while consuming m inputs. Here an input matrix can be formed like this: X= [xij, i= 1,2,3,…, m, j= 1,2,3,…., n] and an output matrix Y= [yij, i= 1,2,….,s, j=1,2,….,n]. The q-th line i.e. X_q and Y_q of these matrixes thus shows quantified inputs/outputs of unit DMUq. This is expressed as:

Weighted Sum of Outputs/ Weighted Sum of Inputs = $\sum_{i=1}^{s} u_i y_{iq} / \sum_{j=1}^{m} v_j x_{jq}$

Where:

v_j = Weights assigned to inputs,

u_i = Weights assigned to outputs.

The essences of DEA models in measuring the efficiency of productive unit DMU_q lies in maximizing its efficiency rate with subject to the condition that the efficiency rate of any other units in the population must not be greater than 1 and the weights of all inputs and outputs must be greater than zero **(Vincova, 2005)**[25]. It is formally expressed by mathematical programming model:

maximize $\sum_i u_i y_{iq} / \sum_j v_j x_{jq}$

Subject to $\sum_i u_i y_{ik} / \sum_j v_j x_{jk} \leq 1$ k=1,2,…..n

u_i ≥ 0   i= 1, 2,….,s

v_j ≥ 0   j= 1,2,…,m

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MANAGEMENT OF NON-PERFORMING ASSETS OF DISTRICT CENTRAL CO-OPERATIVE BANK

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ABSTRACT

Banking sector in India especially District Central Co-operative Banks (DCCBs) have been facing the challenge of Non-Performing Assets (NPAs). NPAs are those assets which are not been yielding revenue for a long period of time. In recent years failures of Co-operative Banks have been relatively high due to mounting of NPAs. To solve the problem of existing NPAs, quality of appraisal, supervision and follow up should be improved. A strong and viable District Central Co-operative Bank (DCCB) leads to the success of rural financing within the district. The Burdwan District Central Co-operative Bank Ltd. (BDCCBL) plays a pivotal role in financing of the Burdwan district but these DCCBs are not free from this problem. In this context, it is the need of the hour/honour to present this study to reveal the trend, causes and impact of NPAs in rural credit structure, in general, and the BDCCBL, in particular. In achieving this, both mathematical and statistical tools have been adopted in order to arrive at meaningful inferences. The overall picture of NPA management is not satisfactory of the bank under the study. Last but not least, measures required to be taken to reduce NPA, either partially or fully, are suggested in order to put BDCCBL on sound footing.

KEYWORDS: *DCCBs, BDCCBL, NPAs Trend, Management, Performance.*

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Introduction

In recent times failures of Cooperative Bank have been relatively high. While failure of each bank is a somewhat a unique experience; recent studies have identified a few factors that most of the failing banks seem to have in common features. Most of the banks that failed seem to do so because of problems in their loan portfolio. Non-performing loans grow to such an extent that revenues fall off and loan loss expenses as well as operating costs, absorb all the retained earnings. The bad loan situation usually arises from a combination of factors. Failing banks often have inadequate systems of early spotting of the problem of loan. When troubles of the banks become evident to depositor, then it usually/must pay higher interest rates to secure funding; further increasing its operating costs. Eventually expenses may erode what limited earnings are available and bank capital begins to fall. Finally, failing banks have frequent problems of cost/expense control. NPA is an important parameter in the analysis of the financial performance of the banks. The biggest weakness and problems they faced was huge NPAs in their portfolio of assets. This study aims to check what is the position and level of NPAs of Co-operative Banks which is core and heart of rural development in India and which handles the major portion of banking business in India (Ahmad and Jegadeeshwaran, 2013). Proper management of NPAs is necessary to improve profitability of the banks and comply with capital adequacy norms. Growth of NPAs on the balance sheet of banks erodes the solvency, profitability and financial health of banks (Samir and Kamra 2013). To solve the problem of existing NPAs either fully or partially, quality of appraisal, supervision and follow up should be improved.

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In order to help the banking sector to assess the quality of their credit portfolio, Reserve Bank of India (RBI) introduced the 'Health Code System' (HCS) of classification of loan accounts in 1985. Such classification, however, had nothing to do with the assessment of provisioning requirements against bad and doubtful loan accounts, which are being assessed on the basis of shortfall in realizable value of securities charged to the banks when compared to the amount of loan outstanding. In this background, the Committee on the Financial System suggested that the loan accounts/assets may be classified under the four categories, viz. [The Committee Report on the Financial System, GOI (1991), p.55].

- Standard Assets(SA)
- Sub-standard Assets(SSA)
- Doubtful Assets and(DA)
- Loss Assets(LA)

Non-Performing Assets (NPAs)

The Non-Performing Assets (NPAs) is the sum total of last three categories of assets, i. e., NPAs = Sub-standard Assets + Doubtful Assets + Loss Assets. In general when, loans and advances given by banks to its customers are asset to the bank. But, when repayment of interest and principal is overdue, such asset is classified as NPA in the financial reports of banks. As per norms of RBI on NPAs of Co-operative Bank, with effect from March 31, 2004 year-end, all banks will have to classify a loan as NPA if interest and/or installment of principal remain overdue for a period of more than 90 days as against 180 days permitted previously.

Types of NPA

There are two types of NPA, viz.

- Gross NPA (GNPA)
- Net NPA (NNPA)
- **Gross NPA (GNPA)**

Gross NPAs are the sum total of all loan assets that are classified as NPAs as per RBI guidelines as on balance sheet date. Gross NPA reflects the quality of the loans made by banks. The Gross NPA is a better indicator than Net NPA of the quality of the loan portfolio (Rajaraman and Vasishtha 2002). A high GNPA ratio indicates low quality of credit portfolio. It consists of all the non-standard assets like as sub-standard, doubtful, and loss assets. It can be calculated with the help of following:

Gross NPA (GNPA) = Sub-standard Assets + Doubtful Assets + Loss Assets

Gross NPA Ratio = (Gross NPA) / (Gross Advances) × 100

- **Net NPA (NNPA)**

Net NPAs are those type of NPAs in which the bank has deducted the provision regarding NPAs. Net NPA shows the actual burden of banks**.** It can be calculated by following:

Net NPA = Gross NPA – Provision against NPA

Net NPA Ratio = (Gross NPA – Provisions) / (Gross Advances – Provisions) × 100

Objectives

The main objective of this study is to analysis the trend of NPAs of BDCCBL operating in the district of Burdwan, West Bengal in terms of physical and financial indicators.

The other specific objectives of the study are as follows:

- To study the conceptual framework of NPAs in banking sector.
- To examine trends of GNPA and NNPA of BDCCBL for the period from 2006-07 to 2014-15, i.e., for a period of 9 years.
- To suggest preventive measures for efficient and effective management of NPA level by the bank.

Methodology

The present study is analytical in nature. The study adopted the use of secondary data obtained from the annual accounts and reports of 'The Burdwan District Central Co-operative Bank Ltd. (BDCCBL)', a District Central Co-operative Bank functioning in the district of Burdwan, West Bengal for the period from 2006-07 to 2014-15. To analyze and interpret the collected data, among others, trend

value has been calculated with the help of least square method of time series analysis and t-test as statistical tool has been used to test hypothesis.

NPA Trend Analysis

Trend analysis has been made through the trend value of the indicators of NPA management. The trend value has been calculated with the help of least square method of time series analysis (Gavade-Khompi, 2013**)**. Four major indicators has been used to analyze the trend of NPA management, viz. (1) Percentage of GNPA to Gross Loans & Advances, (2) Percentage of GNPA to Total Assets, (3) Percentage of NNPA to Net Loans & Advances and (4) Percentage of NNPA to Total Assets (Mahajan, 2014). Trend analysis has immense advantages that it can be used to predict the future values. This is possible by forecasting the future NPA based on the data available of the past. With the help of trend analysis, we can predict the future and track the variances.

Trend Analysis of Percentage GNPA on Gross Loans & Advances

Time series analysis has been used for analyzing the trend of NPAs of BDCCBL. The percentage of GNPA to Gross Loans & Advances of BDCCBL has been calculated to measure the trend of the percentage of GNPA to Gross Loans & Advances growth and to predict the future pattern. Table and Line diagram have been used to make comparative analysis of the study.

Trend Analysis of Percentage GNPA on Gross Loans & Advances of BDCCBL

Percentage of GNPA, GNPA indices and trend values of GNPA of BDCCBL are presented in Table 1.

Table 1: Percentage of GNPA on Gross Loans & Advances, GNPA Indices and Trend Values of GNPA of BDCCBL

Year	Percentage of GNPA to Gross Loans & Advances	Indices	Trend Values (Y_i)	Deviation
2006-07	16.20	100	16.30	-0.10
2007-08	16.27	100.43	16.29	-0.02
2008-09	15.93	98.33	16.28	-0.35
2009-10	18.34	113.21	16.27	2.07
2010-11	15.33	94.63	16.26	-0.93
2011-12	14.49	89.44	16.25	-1.76
2012-13	16.59	102.41	16.24	0.35
2013-14	17.11	105.62	16.23	0.88
2014-15	16.06	99.14	16.22	-0.16

Source: Results computed from Annual Reports of BDCCBL, 2006-07 to 2014-15.

($Y_i = 16.30 - 0.0095 * X_i$ r = 0.024119   t = 0.06383142)

Y_i stands for computed values of percentage of GNPA based on the least squares equation in the form of $Y_i = a + bX_i$, where the equation comes to $Y_i = 16.30 - 0.0095 * X_i$ with origin at the year 2006-07; X unit = 1 year and Y unit = Percentage of GNPA to Gross Loans & Advances.

From 2006-07 to 2014-15. The indices of GNPA of BDCCBL are in comparison to 100 in the base year 2006-07 as given in the Table-1. Exceptional increase in percentage on GNPA of BDCCBL is observed in the year 2009-10 and 2013-14. This is, perhaps, due to lapse of NPA management, i.e., decrease the recovery rate and or increase in addition to NPA in any reasons.

The linear least squares trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL are shown in Table-1. The yearly decrease in percentage of GNPA on Gross Loans & Advances comes to 0.0095 percent, very slow. The trend values of percentage of GNPA on Gross Loans & Advances were more than the actual values throughout the study period except the 2009-10, 2012-13 and 2013-14. The negative deviations were shown during the study period significantly except 2009-10, 2012-13 and 2013-14.

Actual and trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL are shown in Fig. 1 below.

Fig. 1: Actual and trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL

The deviations are positive in the years except 2009-10, 2012-13 and 2013-14 and while these are negative in the rest of the years. The negative deviations during the periods were significant because increase recovery and decrease in addition to NPAs. *Test of significance of observed correlation coefficient (r) between the actual values and trend values of the percentage of GNPA on Gross Loans & Advances of BDCCBL*

H₀: There is no significant correlation between the actual values and trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL.

H₁: There is a significant correlation between the actual values and trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL.

To test the significance of correlation between the actual values and trend values of percentage of GNPA on Gross Loans & Advances of BDCCBL, correlation and t-test has also been followed with (n-2), i.e., 7 degrees of freedom, the test is two-tailed. It can be observed that there exist a positive correlation between actual values and trend values of GNPA. It is also observed that the tabulated value of 't' is 2.37 at 5% level of significance (n-2), i.e., 7 degrees of freedom while the calculated value is 0.06383142. As the calculated value is less than the tabulated value of 't' it is observed that the H_0 is accepted at 5% level of significance and we can conclude that the actual and trend values are not correlated.

Trend Analysis of the Percentage of GNPA on Total Assets

Time series analysis has been used for analyzing the trend of NPAs of BDCCBL. The percentage of GNPA to Total Assets of BDCCBL has been calculated to measure the trend of the percentage of GNPA to Total Assets growth and to predict the future pattern. Table and Line diagram have been used to make comparative analysis of the study.

Trend Analysis of Percentage of GNPA on Total Assets of BD**CCBL**

Percentage of GNPA, GNPA indices and trend values of GNPA of B**D**CCBL are presented in Table-2.

Table 2: Percentage of GNPA on Total Assets of BD**CCBL**

Year	Percentage of GNPA to Total Assets	Indices	Trend Values (Y_i)	Deviation
2006-07	5.77	100	5.59	0.17
2007-08	5.87	101.73	5.50	0.37
2008-09	5.38	93.24	5.40	-0.02
2009-10	5.00	86.65	5.31	-0.30
2010-11	4.69	81.28	5.21	-0.52
2011-12	4.81	83.36	5.11	-0.31
2012-13	5.24	90.81	5.02	0.22
2013-14	5.26	91.16	4.92	0.33
2014-15	4.90	84.92	4.83	0.07

Source: Results computed from Annual Reports of BDCCBL, 2006-07 to 2014-15.

$$Y = 5.597 - 0.096*X \qquad r = 0.642747 \qquad t = 2.21393373$$

The percentage of GNPA on Total Assets of BDCCBL shows slowly decreasing trend throughout the study period from 2006-07 to 2014-15. The indices of GNPA of BDCCBL are in comparison to 100 in the base year 2006-07 as given in the Table-2. Exceptional increase in percentage on GNPA of BDCCBL is observed in the year 2012-13 and 2013-14. This is, perhaps, due to lapse of NPA management, i.e., decrease in the recovery rate and or increase in addition to NPA in any reasons.

The linear least squares trend values of percentage of GNPA on Total Assets of BDCCBL are shown in Table-2. The yearly decrease in percentage of GNPA on Total Assets comes to 0.096 percent, very slow. The trend values of percentage of GNPA on Total Assets were more than the actual values during the study period except the 2012-13, 2013-14 and 2014-15. The negative deviations were shown during the study period significantly except 2012-13, 2013-14 and 2014-15.

Actual and trend values of GNPA on Total Assets of BDCCBL are shown in Fig. 2.

Fig. 2: Actual and trend values of GNPA on Total Assets of BDCCBL

The deviations are positive in the years except 2008-09 to 2011-12 and while these are negative in the rest of the years. The negative deviations during the periods were significant because increase recovery and decrease in addition to NPAs.

Test of significance of observed correlation coefficient (r) between the actual values and trend values of percentage of GNPA on Total Assets of BDCCBL

H_0:   There is no significant correlation between the actual values and trend values of percentage of GNPA on Total Assets of BDCCBL.

H_1:   There is a significant correlation between the actual values and trend values of percentage of GNPA on Total Assets of BDCCBL.

To test the significance of correlation between the actual values and trend values of percentage of GNPA on Total Assets of BDCCBL, correlation and 't' test has also been followed; the test is two-tailed. It can be observed that there exist a positive correlation between actual values and trend values of GNPA. It is also observed that the tabulated value of t is 2.37 at 5% level of significance (n-2), i.e., 7 degrees of freedom while the calculated value is 2.21393373. As the calculated value is less than the tabulated value of 't' it is observed that the H_0 is accepted at 5% level of significance and we can conclude that the actual and trend values are not correlated.

Trend Analysis of the Percentage of NNPA on Net Loans & Advances

Time series analysis has been used for analyzing the trend of the percentage of NPAs of BDCCBL. The percentage of NNPA on Net Loans & Advances of BDCCBL has been calculated to measure the trend of the percentage of NNPA on Net Loans & Advances growth and to predict the future pattern. Table and Line diagram has been used to make comparative analysis of the study.

Trend Analysis of the Percentage of NNPA on Net Loans & Advances of BDCCBL

Percentage of NNPA, NNPA indices and trend values of NNPA of BDCCBL are presented in Table 3.

Table 3: Percentage of NNPA on Net Loans & Advances of BDCCBL

Year	Percentage of NNPA to Net Loans & Advances	Indices	Trend Values (Y_i)	Deviation
2006-07	5.16	100	4.18	0.98
2007-08	4.61	89.34	4.53	0.08
2008-09	4.29	83.14	4.88	-0.59
2009-10	5.08	98.45	5.24	-0.16
2010-11	4.65	90.12	5.59	-0.94
2011-12	4.89	94.77	5.94	-1.05
2012-13	7.19	139.34	6.29	0.89
2013-14	7.65	148.25	6.64	1.01
2014-15	6.76	131.01	6.99	-0.24

Source: Results computed from Annual Reports of BDCCBL, 2006-07 to 2014-15.

$$Y = 4.18 + 0.352*X \qquad r = 0.767231 \qquad t = 3.16494166$$

The percentage of NNPA on Net Loans & Advances of BDCCBL shows fluctuating trend throughout the study period from 2006-07 to 2014-15. The indices of NNPA of BDCCBL are in comparison to 100 in the base year 2006-07 as given in the Table-3. Exceptional increase in percentage on NNPA of BDCCBL is observed in the year 2013-14. This is, perhaps, due to lapse of NPA management, i.e., decrease in the recovery rate and or increase in addition to NPA in any reasons.

The linear least squares trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL are shown in Table-3. The yearly increase in percentage of NNPA on Net Loans & Advances comes to 0.352 percent, very slow. The trend values of the percentage of NNPA on Net Loans & Advances were more than the actual values during the study period except 2006-07, 2007-08, 2012-13 and 2013-14. The negative deviations were shown during the study period significantly except 2006-07, 2007-08, 2012-13 and 2013-14.

Actual and trend values of NNPA on Net Loans & Advances of BDCCBL are shown in Fig. 3 below.

Fig. 3: Actual and trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL

The deviations are negative in the years except 2006-7, 2007-08, 2012-13 and 2013-14 and while these are positive in the rest of the years. The negative deviations during the periods were significant because increase recovery and decrease in addition to NPAs.

Test of significance of observed correlation coefficient (r) between the actual values and trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL.

H₀: There is no significant correlation between the actual values and trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL.

H₁: There is a significant correlation between the actual values and trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL.

To test the significance of correlation between the actual values and trend values of the percentage of NNPA on Net Loans & Advances of BDCCBL, correlation and 't' test has also been followed; the test is two-tailed. It can be observed that there exist a high positive correlation between actual values and trend

values of the NNPA. It is also observed that the tabulated value of t is 2.37 at 5% level of significance (n-2), i.e., 7 degrees of freedom while the calculated value is 3.16494166. As the calculated value is more than the tabulated value of 't', it observed that the H_0 is rejected at 5% level of significance and we can conclude that the actual and trend values are correlated.

Trend Analysis of the percentage of NNPA on Total Assets

Time series analysis has been used for analyzing the trend of NPAs of BDCCBL. The percentage of NNPA on Total Assets of BDCCBL has been calculated to measure the trend of the percentage of NNPA on Total Assets growth and to predict the future pattern. Table and Line diagram has been used to make comparative analysis of the study.

Trend Analysis of the Percentage of NNPA on Total Assets of BDCCBL

Percentage of NNPA, NNPA indices and trend values of NNPA of BDCCBL are presented in Table 4.

Table 4: Percentage of NNPA to Total Assets of BDCCBL Trend

Year	Percentage of NNPA to Total Assets	Indices	Trend Values (Y_i)	Deviation
2006-07	1.62	100	1.30	0.31
2007-08	1.46	90.12	1.38	0.08
2008-09	1.27	78.39	1.45	-0.19
2009-10	1.38	85.18	1.53	-0.15
2010-11	1.26	77.78	1.61	-0.35
2011-12	1.46	90.12	1.68	-0.22
2012-13	2.04	125.93	1.76	0.28
2013-14	2.11	130.25	1.83	0.28
2014-15	1.86	114.81	1.91	-0.05

Source: Results computed from Annual Reports of BDCCBL, 2006-07 to 2014-15.

$$Y = 1.3047 + 0.0755*X \qquad r = 0.640613 \qquad t = 2.20729456$$

The percentage of NNPA on Total Assets of BDCCBL is shown fluctuating trend throughout the study period from 2006-07 to 2014-15. The indices of NNPA of BDCCBL are in comparison to 100 in the base year 2006-07 as given in the Table-4. Exceptional increase in percentage on NNPA of BDCCBL is observed in the year 2013-14. This is, perhaps, due to lapse of NPA management, i.e., decrease in the recovery rate and or increase in addition to NPA in any reasons.

The linear least squares trend values of the percentage of NNPA on Total Assets of BDCCBL are shown in Table-4. The yearly increase in percentage of NNPA on Total Assets comes to 0.0755 percent. The trend values of the percentage of NNPA on Total Assets were more than the actual values during the study period except the 2006-07, 2007-08, 2012-13 and 2013-14. The negative deviations were shown during the study period significantly except 2006-07, 2007-08, 2012-13 and 2013-14.

Actual and trend values of NNPA to Total Assets of BDCCBL is shown in Fig. 4 below.

Fig. 4: Actual and trend values of NNPA to Total Assets of BDCCBL

The deviations are negative in the years except 2006-07, 2007-08, 2012-13 and 2013-14 and while these are positive in the rest of the years. The negative deviations during the periods were significant because increase recovery and decrease in addition to NPAs.

Test of significance of observed correlation coefficient (r) between the actual values and trend values of the percentage of NNPA on Total Assets of BDCCBL.

H₀: There is no significant correlation between the actual values and trend values of the percentage of NNPA on Total Assets of BDCCBL.

H₁: There is a significant correlation between the actual values and trend values of the percentage of NNPA on Total Assets of BDCCBL.

To test the significance of correlation between the actual values and trend values of the percentage of NNPA on Total Assets of BDCCBL, correlation and 't' test has also been followed; the test is two-tailed. It can be observed that there exist a high positive correlation between actual values and trend values of NNPA. It also be observed that the tabulated value of 't' is 2.37 at 5% level of significance (n-2) , i.e., 7 degrees of freedom while the calculated value is 2.20729456. As the calculated value is less than the tabulated value of 't', it is observed that the H₀ is accepted at 5% level of significance and we can conclude that the actual and trend values are not correlated.

Findings of the Study

- The percentage of GNPA on Loans & Advances shows a fluctuating trend throughout the study period but exceptional increase in the year 2009-10 and 2013-14. The trend values of percentage of GNPA on Gross Loans & Advances were more than the actual values throughout the study period except the 2009-10, 2012-13 and 2013-14. It is observed that there exist a positive correlation between actual values and trend values of GNPA to Loans & Advances. It is also observed that the actual and trend values are not correlated.

- The percentage of GNPA on Total Assets of BDCCBL shows slowly decreasing trend during the study period but exceptional increase in the year 2012-13 and 2013-14. The trend values of percentage of GNPA on Total Assets were more than the actual values during the study period except the 2012-13, 2013-14 and 2014-15. It is observed that there exist a positive correlation between actual values and trend values of GNPA to Total Assets. It is also observed that the actual and trend values are not correlated.

- The percentage of NNPA on Net Loans & Advances of BDCCBL shows fluctuating trend all through the study period but exceptional increase in the year 2013-14. The trend values of percentage of NNPA on Net Loans & Advances were more than the actual values during the study period except the 2006-07, 2007-08, 2012-13 and 2013-14. It is observed that there exist a high positive correlation between actual values and trend values of NNPA to Net Loans & Advances. It is also observed that the actual and trend values are correlated.

- The percentage of NNPA on Total Assets of BDCCBL is shown fluctuating trend throughout the study period but exceptional increase in percentage on NNPA of BDCCBL is observed particularly in the year 2013-14. The trend values of percentage of NNPA on Total Assets were more than the actual values during the study period except the 2006-07, 2007-08, 2012-13 and 2013-14.

  It is observed that there exist a high positive correlation between actual values and trend values of NNPA to Total Assets. It is also observed that the actual and trend values are not correlated.

The overall picture of NPA management is not satisfactory of the bank under the study. This is, perhaps, due to improper management of NPAs, i.e., decrease in the recovery rate and or increase in addition to NPA in any reasons.

Suggestions

The scenario of NPAs and its management is quite serious in BDCCBL. So, the bank has to take some preventive measures to manage NPAs properly. To manage the NPAs properly some prolific suggestions are made below:

- Loans provided by the bank need to be done pre-sanctioning evaluation and post-disbursement monitoring so that NPA would remain under control. Close follow-up will generally ensure success.

- Once accounts become NPA, then banks should take appropriate steps to with an eye to recovery entire over dues.
- Bank may file suits promptly against willful defaulters. The bank should vigorously follow-up the legal cases.
- Wherever feasible, in case of never-ending NPAs, bank can consider entering into compromise settlements with the borrowers.
- Management of NPAs is to be made more effective with help of introduction of professional expertise in view of keeping the level of NPAs under control and to improve profitability as well as liquidity of the bank.

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FINANCIAL PERFORMANCE OF SUGAR MILLS IN PUNJAB: A COMPARATIVE STUDY

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ABSTRACT

The Punjab sugar industry comprises of co-operative and private sugar mills. The private sugar mills are operating better than the co-operative sugar mills with respect to sugar production, number of working days, recovery percentage, cane crushed and daily crushing capacity (Statistical Abstract of Punjab, 2016). But the performance of these sugar mills from financial perspective is a matter of concern for all the stakeholders of sugar industry of Punjab. In the present study, the financial performance (profitability, liquidity, solvency and activity status) of the private and co-operative sugar mills situated in the Doaba region of Punjab state has been examined and compared by applying ratio analysis. The results of the study demonstrate that profitability and the solvency of the private sugar mills is better than the co-operative sugar mills as these co-operative sugar mills are suffering from huge losses. The liquidity and activity of both the types of mills found to be in good statue. Further, the results of ANOVA have depicted that, there is a significant difference among the sugar mills both the sectors for most of the liquidity and solvency ratios. By applying PANEL DATA ANALYSIS the study has also provided empirical evidence about the financial ratios which affect the profitability of the sugar mills in both the sectors. As the study shows the present financial status of the sugar mills, hence these results of the study can provide valuable information to the Sugarfed, state government and the private managements who are incorporating the policies for the revival and growth of Punjab sugar industry.

KEYWORDS: *Sugar Mills, Punjab, Profitability, Liquidity, Solvency, ANOVA.*

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Introduction

India is the second major sugar producing country in the world after Brazil. The Indian share of sugar production was 15 percent of the total world's sugar production for the year 2015-16 (United State Department of Agriculture, 2017). For the year 2015-2016, the top three Indian sugar producing states were Maharashtra (33.29 percent), Uttar Pradesh (27.32 percent) and Karnataka (16.63 percent). But as far as the production of Punjab sugar industry is concerned, it contributed only 2.4 percent toward the total indian sugar production (Global Agricultural Information Nerwork, 2017). It indicates that though Indian sugar industry is performing well but the Sugar mills of the Punjab state are not able to provide significant contribution toward the sugar production of India. The state of Punjab consist of three regions i.e., Malwa, Majha and Doaba (NIDM, 2012). There are two types of sugar mills i.e. co-operative and private sugar mills situated in these different regions of Punjab (Randhawa and Gupta, 2014). In the Malwa region, out of total eleven sugar mills, six mills are under liquidation. In case of Majha rgion, out of total six mills, one sugar mill is under liquidation. But, as far as Doaba region is concerned there are three mills both in the co-operative and private sector and all these mills are operative (Statistical Abstract of Punjab, 2016). In this region, private sugar mills are performing better than the co-operative sugar mills with respect to different components of the sugar mills. The following table shows the components co-operative and private sugar mills in Doaba region of Punjab for the year 2016.

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Table 1 : Components of Operative Co-operative and private Sugar Mills in Doaba Region of Punjab for the Year 2016

Type of Mills	Co-operative sugar mills	Year of starting	Cane crushed (000 Tons)	Sugar production (000 Tons)	Recovery %	No of working days in a year
Co-operative sugar mills	Bhogpur Co-operative Sugar Mill Limited	1956	1542	171	11.09	127
	Nakodar Co-operative Sugar Mill Limited	1988	1777	167	9.40	123
	Nawanshahr Co-operative Sugar Mill Limited	1996	3615	342	9.46	155
Average			2311	226	9.983	135
Type of Mills	Private sugar mills	Year of starting	Cane crushed (000 Tons)	Sugar production (000 Tons)	Recovery %	No of working days in a year
Private sugar mills	AB Sugars Limited	1992	8806	900	10.22	148
	Indian Sucrose Limited	1990	10253	1078	10.52	160
	Wahid Sandhar Sugars Limited	2000	4479	449	10.03	121
Average			7846	809	10.25	143

Source: Statistical Abstract of Punjab, 2016.

As depicted under table 1, private sugar mills of the Doaba region have preformed better than the co-operative sugar mills. The average cane crushed and sugar production is almost thrice in case of private sugar mills in comparison to co-operative sugar mills. These private sugar mills have performed better than the co-operative sugar mills with respect to recovery of sugar from sugar cane (10.25 percent private, 9.98 percent co-operative). The number of working days is more in case of private sugar mills than the co-operative sugar mills (143 days private, 135 days co-operative). Apart from this, for the year 2014-15 the state government had given ` 332.56 crores for the financial assistance and revival of the co-operative sugar mills[1]. It indicates that the financial status of these co-operative sugar mills is not sound. On, the other hand no such assistance is provided by the state government to the private sugar mills. In context of the above discussions, current paper is an attempt to examine and compare the financial performance of the co-operative and private sugar mills in Doaba region of Punjab.

Examining the financial performance is not only a matter of concern for the stakeholders of these sugar mills but for the researchers also. So, research efforts in this direction have been initiated where the researchers have examined the financial status of sugar mills across India. Some of the significant studies which have provided the insight for the selection of variables and to conduct the present research are discussed below:

Previous Research Evidence

Chellaswamy and Revathi (2009) through profitability, solvency and activity ratios found poor financial status of ten Indian listed sugar mills. In the state of Tamil Nadu, profitability of the private sugar mills to be better than the co-operative sugar mills and most of the sugar mills fall in the healthy financial zone (Prabha 2010; Rajendran, 2013). Thakor (2014) revealed that for seventeen sugar manufacturing units in the state of Gujarat, liquidity was low but operating profit showed better results than net profit ratio. Hence, all the above studies have shown the relevance of profitability, liquidity, solvency and the activity for examining the financial performance in different states of India.

Further, as far as the factors affecting profitability are concerned, it is affected by categorical and non categorical variables. In this regard, profits are positively affected by growth of revenue, export and innovation (Fennyy and Rogers, 1999). The liquidity ratios, activity ratios, past performance, financial leverage, size of assets and size of sales had positive impact on the profitability with special reference to return on capital employed (Chander and Aggarwal, 2008; Rehman 2013; Banerjee and De 2015). On the contrary, Kaen and Baumann (2003) observed that the profitability becomes less as the company grows and there was no relationship between the profitability and size of the firm. In another study, Devi (2012) found that in the state of Haryana, sugar mills work for very few days which have affected the financial performance of the sugar mills industry in a negative way. Sivathaasan et al. (2013) found the significant impact of capital structure and non tax debt shield on the profitability including return on assets and return on equity.

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[1] Sugarfed Punjab. http://punjabsugarfed.in

All the above studies have highlighted the financial status of the sugar mills in some of Indian states and abroad as well. However, none of the studies have thrown light on the financial status of the sugar mills situated in the state of Punjab. Hence the present study is an effort in this direction.

Objectives of the Study

The present study aims at examining and comparing the financial performance (profitability, liquidity, solvency and activity) of the operative co-operative and private sugar mills situated in the Doaba region of Punjab state of India. Based upon the comparative financial results as depicted by the financial ratios, implications for the different stakeholders can be drawn. Further the study has explored the factors (financial ratios) which affect the profitability of the co-operative and private sugar mills in Punjab.

Rationale of the Study

In light of the above stated discussion it is reflected that sugar mills of Doaba region are functioning healthy amongst all other regions of Punjab. In this particular region, none of the sugar mills has been closed in co-operative as well as in private sector. Sector wise, private sugar mills are performing better than the co-operative sugar mills with respect to cane crushed, sugar production, recovery percentage and number of days worked (Statistical Abstract of Punjab, 2016). But as far as the financial health is considered, the situation is not delightful as the state govt has provided financial assistance for the revival of the co-operative sugar mills in the state. It can put a question mark on the financial performance of sugar mills of this region. In context of financial performance, it is considered as an integral part of survival and growth of business in the current competitive environment (Joshi, 2008). Hence, the present study is an endeavour to examine and compare the financial status of co-operative and private sugar mills situated in Doaba region of Punjab. Moreover, study can provide a direction to the state government, central government, management of these mills, Sugarfed and other stakeholders in framing and executing policies for the betterment of the financial status of the sugar industry in Punjab.

Research Methodology

- **Data**

The paper is based on the secondary sources of data for the eleven years (2003-04 to 2013-14) i.e., upto the year of decontrol of sugar industry from levy sugar and monthly release mechanism. For analyzing the financial status of the co-operative sugar mills, the data has been extracted from the annual balance sheets and audit reports of the sugar mills. These balance sheet and audit reports have been collected from Sugarfed and the accounts department of the respective sugar mills. Afterwards, the various financial ratios have been calculated for conducting the study. In case of private sugar mills the data has been extracted from Capitaline.

- **Sample**

All the operative sugar mills situated in the Doaba region of Punjab constitute the sample of the study. In total there are six operative sugar mills i.e., three in the co-operative sector (Bhogpur, Nakodar and Nawanshahr co-operative sugar mills) and three in the private sector (AB Sugars Limited, Indian Sucrose Limited and Wahid Sandhar Sugars Limited) situated in the Doaba region of Punjab.

- **Research Tools**

The variables considered for examining the profitability are gross profit ratio, operating profit ratio, net profit ratio and return on capital employed. The liquidity of the co-operative and private sugar mills has been examined and compared by calculating current ratio and quick ratio. The solvency of these sugar mills has been analysed on the basis of debt equity ratio, fixed asset net worth ratio and proprietary ratio. In the last, for examining the activity, total asset turnover ratio, working capital turnover ratio, fixed asset turnover ratio and inventory turnover ratio has been considered. Compound Annual Growth Rate (CAGR) has been computed for the liquidity and the activity ratios. However, CAGR has not been calculated for examining the profitability and solvency ratios due to negative profits/losses and negative shareholders fund. The formula applied for calculating CAGR is

$$CAGR = \left(\frac{Ending \quad Value}{Beginning \quad Value} \right)^{\left(\frac{1}{Number \quad of \quad years} \right)} - 1$$

Hypotheses testing have been done to examine the difference of profitability, liquidity and solvency within the co-operative and private sugar mills. For this purpose, ANOVA test have been applied on different ratios by using SPSS software.

The effect of various financial ratios on the profitability has been examined by conducting PANEL DATA ANALYSIS. The panel data has been applied by considering ROCE as a measure of profitability and the other financial ratios have been considered as independent variables. Panel data analysis has been done by applying STATA software. For conducting the current study Hausman test has been applied for the viability of the fixed or random effect model. The following models have been considered as fixed or random effect.

- Fixed Effect Model: $Yit=B1+yi$ $DummyYi+ B2X2it+ B3X3it,$_____$+BnXnit+ Uit.$

- Random Effect Model: $Yit=B1i+B2X2it+ B3X3it,$_____$+BnXnit.$

B1= Constant across firms, Yi= Heterogeneity across firms, i= 1, 2…..,N (Number of mills), t= 1,2…..,N (Time series), X= Variables, B1i= Bi+ i

Results and Discussion

The **a**nalysis of the data is categorised into two sections. The first section (Section-A) is further divided into four parts. The first part (Part I) assesses the profitability of the selected sugar mills. The second part (Part II) analyses the liquidity and the third part (Part III) examines the solvency of these mills. In the last part (Part IV), the activity of the selected sugar mills has been analysed.

The second section (Section-B) elaborates the effect of various financial ratios (other than profitability ratios) on the profitability of the co-operative (part I) and private sugar mills (part II).

Section- A

Part - I

Analysis of Profitability: Profit is the mainstay of business and every investor is keen to know about the profitability of the concerned business (Joshi, 2010).

Table2: Profitability Ratios of Co-operative and Private Sugar Mills

Profitability ratios		Co-operative Sugar Mills*			Private Sugar Mills**		
		Bhogpur	Nakodar	Nawanshahr	AB Sugars	Indian Sucrose	Wahid Sandhar
Gross Profit Ratio	Mean	-9.31	-13.37	4.92	27.39	21.77	23.64
	SD	24.88	30.09	14.68	4.85	6.31	5.34
ANOVA		F Value = 1.750, P Value =.191			F Value =2.952, P Value =.068		
Operating Profit Ratio	Mean	-15.70	-32.37	-1.49	15.21	17.06	15.56
	SD	28.32	42.33	15.83	5.09	5.49	5.73
ANOVA		F Value = 2.773, P Value = .079			F Value =.359 , P Value =.701		
Net Profit Ratio	Mean	-23.33	-31.07	-2.91	4.17	3.51	3.03
	SD	31.61	44.11	15.92	3.84	3.95	1.60
ANOVA		F Value = 2.184, P value =.130			F Value =.328, P Value =.723		
Return on Capital Employed	Mean	-6.78	-36.35	3.64	9.45	14.04	7.73
	SD	35.40	57.97	25.22	5.62	8.38	2.00
ANOVA		F Value =2.706, P Value =.083			F Value =3.312, P Value =.050		

Source: *Annual Balance Sheets of the Co-operative Sugar Mills; **Captaline.

Table 2 reveals that out of the three co-operative sugar mills situated in Doaba region of Punjab, the average gross profit and return on capital employed is positive only in case of Nawanshahr co-operative sugar mill. The operating and net profit ratio is found negative for all the co-operative sugar mills. On the other hand, all the private sugar mills have shown positive results with respect to gross profits, operating profits and net profits. Among these mills, the highest mean for gross profit is found in case of AB Sugars Limited (See Table 2). As far as the difference among the profitability among of the co-operative sugar mills is concerned the results of the ANOVA could not find any significant difference among co-operative sugar mills for gross profit (p=.191), operating profits (p= .079), net profits (p=.130) and return on capital employed (p=.083). Similarly, insignificant difference is found among private sugar mills for gross profit (p=.068), operating profits (p=.701) and net profits (p=.723) and operating profits (p=.050).

Implications

- The better gross profit ratio represents high efficiency of the management or less cost of production with effective utilization of the machinery (Joshi, 2010). Hence, private sugar mills are run by better with respect to these parameters in comparison to the co-operative sugar mills.

- The managements of the co-operative sugar mills should put more efforts for the better business operations as operating losses reflect the poor business operations (Ravi, 2005).

- Private sugar mills are doing better than the co-operative sugar mills with respect to manufacturing, administering, selling and financing as net profits shows the better efficiency with respect to these parameters (Manickavasugi, 2011)..

- Higher return on capital employed represents the better utilization of capital to generate more revenue and high satisfaction of the shareholders (Pitchaimani, 2013). So, in this regard the shareholders of the private sugar mills are more satisfied than that of the co-operative sugar mills.

Part - II

Analysis of Liquidity: Liquidity ratios measure the ability of a firm to meet its short-term financial obligations (Joshi, 2008).

Table 3: Liquidity Ratios of Co-operative and Private Sugar Mills

Liquidity ratios		Co-operative Sugar Mills*			Private Sugar Mills**		
		Bhogpur	Nakodar	Nawanshahr	AB Sugars	Indian Sucrose	Wahid Sandhar
Current Ratio	CAGR	-2.00	-6.37	-4.98	-2.00	12.75	-11.14
	Mean	2.89	2.76	8.65	3.20	2.09	3.78
	SD	1.17	1.76	4.64	1.13	0.72	1.76
ANOVA		F Value =14.369, P Value =.000			F Value =4.998, P Value =.013		
Quick Ratio	CAGR	-1.03	-6.20	49.46	-0.64	18.91	-3.33
	Mean	0.49	0.09	0.23	1.36	0.86	0.87
	SD	0.45	0.12	0.29	0.42	0.36	0.30
ANOVA		F Value =4.998, P Value =.013			F Value =6.657, P Value =.004		

Source: *Annual Balance Sheets of the Co-operative Sugar Mills; **Captaline.

Table 3 reveals that the current ratio is healthy for all the co-operative and private sugar mills. But as far as the quick ratio is concerned, it is found better for the private sugar mills than the co-operative sugar mills. The mean for the current ratio is found to be highest for the Nawanshahr co-operative sugar mill. In case of private sugar mills, the mean current ratio is highest for Wahid Sandhar Sugars Limited. As far as, growth of the current ratio is concerned; it is negative for all the private sugar mills and positive only in case of Indian Sucrose Limited. Further, results of the ANOVA found that co-operative sugar mills significantly differ from each other with regard to current ratio (p=.000) and quick ratio (0.013). Similarly, private sugar mills significantly differ from each other with regard to current ratio (p= .013) and quick ratio (p=0.04).

Implications

- The healthy current ratio represents a firm's ability to meet the short term liabilities (Vyas, 2012). Most of the co-operative and private sugar mills of Doaba region of Punjab have possessed good current ratio. Overall, both the types of mills are in a comfortable position to meet their short term liabilities.

- The data in the table 3 reveals that as the private sugar mills are having better liquidity in comparison to the co-operative sugar mills.

Part – III

Analysis of Solvency: "Solvency of a company refers to its ability to meet the long term liabilities" (Subramanian, 2009).

Table 4: Solvency Ratios of Co-operative and Private Sugar Mills

Solvency ratios		Co-operative Sugar Mills*			Private Sugar Mills**		
		Bhogpur	Nakodar	Nawanshahr	AB Sugars	Indian Sucrose	Wahid Sandhar
Debt Equity Ratio	Mean	-1.61	4.12	2.10	1.51	2.64	2.27
	SD	1.43	18.89	2.31	0.55	0.68	0.59
ANOVA		F Value: .767 P Value .473			F Value: 9.725 P value: 0.001		
Fixed Asset Net Worth Ratio	Mean	0.21	0.29	1.46	1.36	1.98	2.09
	SD	0.84	1.18	4.48	0.41	0.96	0.38
ANOVA		F Value: .726, P Value .492			F Value: 4.199, P value: 0.025		
Proprietary Ratio	Mean	-0.60	-0.61	0.44	0.38	0.20	0.26
	SD	0.36	0.55	0.25	0.16	0.05	0.04
ANOVA		F Value: 24.170. P Value .0.000			F Value: 9.225 P value: 0.001		

Source: *Annual Balance Sheets of the Co-operative Sugar Mills; **Captaline.

Table 4 reveals that the solvency ratios in the form of debt equity ratio, fixed asset net worth ratio and proprietary ratio are positive for all the private sugar mills. On the other hand, the co-operative sugar mills have shown negative debt equity ratio (Bhogpur) and proprietary ratio (Bhogpur and Nakodar). It represents the negative shareholders' fund. Overall, the sugar mills in both the sectors have utilized more outsiders fund than the own funds. The private sugar mills have used more funds for acquiring the fixed assets and total assets. On the difference part, co-operative sugar mills are found significantly different from each other only for proprietary ratio (p=0.000). But, private sugar mills are found statistically different from each other for debt equity ratio (p=0.001) fixed asset net worth ratio (0.025) and proprietary ratio (0.001).

Implications

- The debt equity ratio is very important from the creditor's point of view as it measures the extent to which their interest in the business is covered by owned funds (Ravi, 2005). Hence from the creditor's point of view, private sector sugar mills are performing much better than the co-operative sugar mills.

- The private sugar mills have shown better fixed asset net worth ratio and proprietary ratio. It symbolizes that shareholders of the private sugar mills have invested more toward the fixed as well as in total assets rather than the outsiders.

Part – IV

Analysis of Activities: "Activity ratios examines that the assets of the organization are utilized properly or not" (Manickavasugi, 2011).

Table 5: Activity Ratios of Co-operative and Private Sugar Mills

Activity Ratios		Co-operative Sugar Mills*			Private Sugar Mills**		
		Bhogpur	Nakodar	Nawanshahr	AB Sugars	Indian Sucrose	Wahid Sandhar
Total Assets Turnover Ratio	CAGR	-8.94	-7.52	16.76	8.44	-5.44	0.06
	Mean	1.07	1.11	1.07	0.78	0.70	0.60
	SD	0.83	0.72	0.52	0.24	0.30	0.09
ANOVA		F Value: .014, P Value .986			F Value 1.772: P value: 0.187		
Working Capital Turnover Ratio	CAGR	1.15	7.57	5.15	-0.75	NA	5.84
	Mean	1.82	2.43	1.38	1.86	0.20	1.95
	SD	1.15	1.46	0.50	0.39	7.12	0.46
ANOVA		F Value: 2.506, P Value .99			F Value: .625 P value: 0.542		
Fixed Assets Turnover Ratio	CAGR	-31.40	6.40	66.47	7.00	2.80	-2.25
	Mean	35.33	13.91	27.44	1.72	1.99	1.17
	SD	22.77	6.46	13.40	0.54	0.89	0.31
ANOVA		F Value: 5.236 P Value .011			F Value: 4.806 P value: 0.015		
Inventory Turnover Ratio	CAGR	1.28	5.04	8.01	0.19	-5.35	2.74
	Mean	1.23	1.23	1.07	1.73	1.71	1.45
	SD	0.33	0.37	0.25	0.47	0.74	0.33
ANOVA		F Value: .885, P Value .423			F Value: .881 P value: 0.425		

Source: *Annual Balance Sheets of the Co-operative Sugar Mills; **Captaline.

Table 5 reveals that the most of the activity ratios in the form of total assets turnover ratio, working capital turnover ratio and fixed asset turnover ratio are better in co-operative sugar mills in comparison to the private sugar mills. The inventory turnover ratio is found better in private sugar mills which show that these mills are holding fewer inventories in comparison to the co-operative sugar mills. In the co-operative sector, highest growth of total asset turnover ratio, fixed asset turnover ratio and inventory turnover ratio is found for Nawanshahr co-operative sugar mill. Among the private sugar mills, AB sugars has shown maximum growth for total asset turnover ratio and fixed asset turnover ratio whereas the Wahid Sandhar sugar mill has shown the highest growth for working capital and inventory turnover ratio. The results of the ANOVA found a significant difference among the co-operative sugar mills for the fixed asset turnover ratio (p=0.011). Likewise, significant difference among the private sugar mills for the fixed asset turnover ratio is found (p=0.015).

Implications

- Overall, the co-operative sugar mills are able to generate more sales with moderate value of total assets, fixed assets and working capital. It represents better utility of fixed and net current assets by the co-operative sugar mills in comparison to the private sugar mills (Vyas, 2012).

- The higher value of inventory turnover ratio reflects that the finished stock is sold in the market in the shorter period of time (Aravamudhan, 2009). Hence, for most of the co-operative and private sugar mills finished stock is sold in market in a shorter span of time.

Section-B

Panel Data Analysis

In the present study, cross sectional heterogeneity across the mills is probable due to omitted variables (age of the mills, board composition, availability of the resources etc.) affecting financial performance. Hence, separate intercept models in the form of fixed affect model and random effect model have been considered. In the present section, balanced panel data has been applied as t (time period) is same for all number of mills. Based upon the literature, the relationship between financial performance and self explanatory variables has been studied as follows.

Profitability = F (liquidity, solvency and activity ratios)

Return on capital has been regarded as the dependent variable for measuring the financial performance as it is one of the best indicators of profitability from the point of view of different stakeholders (Chander and Aggarwal, 2008 and Sivathaasan et al., 2013). The independent variables considered are current ratio, quick ratio, debt equity ratio, fixed asset net worth ratio, proprietary ratio, total asset turnover ratio, working capital turnover ratio, fixed asset turnover ratio and inventory turnover ratio. This section is divided into two parts. The first part deals with the panel for the co-operative sugar mills and the second part deals with the panel data analysis for the private sugar mills.

Part I
Panel Data Analysis for the Co-operative Sugar Mills
Table: 6 Panel Data Analysis of Co-operative Sugar Mills

Variable	Coef.	Std. Err	t	P>|t|
Current ratio	-0.8315	0.991115	-0.84	0.411
Quick ratio	12.4363	9.939414	1.25	0.225
Debt equity ratio	-0.0994	0.261486	-0.38	0.708
Fixed asset net worth ratio	3.04037	1.203904	2.53	0.020
Proprietary ratio	32.0033	7.708634	4.15	0.000
Total asset turnover ratio	75.8907	7.883166	9.63	0.000
Working capital turnover ratio	-12.416	5.572062	-2.23	0.037
Fixed asset turnover ratio	0.15466	0.19532	0.79	0.437
Inventory turnover ratio	-81.619	16.35229	-4.99	0.000
Constant	27.1801	14.64271	1.86	0.078
N	33			
Prob>F	0.00			
R squared	0.8497			

Source: Calculated from secondary Data

In case of co-operative sugar mills, fixed effect model has been applied as the value depicted by the Hausman test is significant (0.000). The fixed effect model calculated the explained variation to be 84.9 percent. Table 6 explains that solvency ratios (fixed assets net worth ratio) have positive effect on the profitability. In addition, all the activity ratios (total assets turnover ratio, working capital turnover ratio and inventory turnover ratio) have negative impact on the profitability except for the total asset turnover ratio. Hence, the management of the co-operative sugar mills should take care of the solvency and the activity ratios of these sugar mills.

Part II
Panel Data Analysis for Private Sugar Mills
Table: 7 Panel Data Analysis of Private Sugar Mills

Variable	Coef.	Std. Err	t	P>|t|
Current ratio	-.1650435	0.991115	-0.84	0.411
Quick ratio	1.928835	3.295349	0.59	0.558
Debt equity ratio	-4.089107	2.648238	-1.54	0.123
Fixed asset net worth ratio	8.003082	6.201236	1.29	0.197

Proprietary ratio	-9.104218	29.19833	-0.31	0.755
Total asset turnover ratio	2.270052	20.54061	0.11	0.912
Working capital turnover ratio	.5149947	.4158076	1.24	0.216
Fixed asset turnover ratio	9.191607	6.992651	1.31	0.189
Inventory turnover ratio	-4.012801	3.806192	-1.05	0.292
Constant	-4.962662	17.46939	-0.28	0.776
N	33			
Prob>F	0.20			
R squared	0.5306			

Source: Calculated from secondary Data

For the private sugar mills, the insignificant value of Hausman test (0.688) ensures the applicability of random effect model which explains 53 percent of the total variation. Since the study is based upon the differentiating the co-operative and the private sugar mills, the same dependent and independent variables have been selected in case of the private sugar as considered in case of the co-operative sugar mills. As depicted by the table 7, current ratio, debt equity ratio, proprietary ratio and inventory turnover ratio is negatively related to the profitability. The other ratios are positively related the profitability though there is no significant effect is observed (p>0.005).

Conclusion

To conclude, study shows that the co-operative sugar mills of Doaba region of Punjab are not financially sound. All these co-operative sugar mills are suffering from huge losses as depicted by profitability ratios. The profitability of these co-operative sugar mills is affected by solvency and activity ratios. In contrast, profitability of the private sugar mills is much better as compared to co-operative sugar mills. As far as liquidity is concerned, it is found satisfactory for both types of mills. Hence, both the co-operative and private sugar mills are able to meet the short term financial obligations. The long term solvency of the co-operative sugar mills is unhealthy as most of these co-operative sugar mills are suffering from negative shareholders' fund. On the other hand, all the private sugar mills are having healthy solvency ratios. All these private sugar mills are possessing positive shareholders' fund. Regarding their activity, instead of possessing modest value of assets and working capital, co-operative sugar mills are able to generate healthy level of activities in the form of sales. However, the private sugar mills are also able to generate vigorous sales volume with adequate level of assets and working capital. Hence, the activities in case of both types of sugar mills are healthy. Overall from the point of view of the shareholders, owners, bankers and government the private sugar mills are performing much better than the co-operative sugar mills.

Managerial Implications

As most of the sugar mills especially in the co-operative sector are not financially sound, Sugarfed (an apex organisation for controlling the co-operative sugar mills in Punjab state) and all the other stakeholders of the co-operative sugar mills should take necessary steps for the revival of co-operative sugar mills immediately. These steps includes rationalising of minimum support price of sugar cane for controlling the cost of production, writing off accumulated losses of the co-operative sugar mills, controlling administering, selling and financing expenses, and modernization of machinery for better recovery percentage/better output etc.

Limitations of the Study

- Although the co-operative sugar mills are governed by the Sugarfed, but still there is a lack of uniformity among the mills with regard to the items of the balance sheets. As a result, accountants of the respective mills have been approached personally for the inclusion of items for analysis purpose.

- The findings of this study can't be generalized to the sugar mills situated in the other states of India, as the study is confined only to the state of Punjab.

- For the profitability and solvency ratios the CAGR has not been calculated due to the negative values for these ratios.

Scope for Future Research

Future studies might explore in depth the financial performance and strength of co-operative and private sugar mills of Punjab by considering capital structure ratios of these mills. Since the current

study is confined only to the Doaba region of Punjab, the other studies can be extended to the other regions of Punjab and India as well. Such studies can also be conducted in the other manufacturing industries like steel, cement, textile etc. In addition, future studies might be able to exclusively explore the factors including categorical variables responsible for such financial position and can direct for the betterment of the sugar industry.

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PRICE DISCOVERY AND VOLATILITY SPILLOVER IN METAL COMMODITY MARKET IN INDIA

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ABSTRACT

This study examines the price discovery and volatility spillovers between futures and spot prices of ten metal commodities viz., Aluminium, Copper, Iron Ore, Lead, Nickel, Sponge Iron, Steel Flat, Thermal Coal, Tin and Zinc, traded on Multi Commodity Exchange (MCX) Ltd., Mumbai. The study uses the daily data from 15th January 2004 to 31st March 2015. The empirical results confirm the price discovery between futures and spot prices, indicating strong information transmission from futures markets to spot markets in the case of majority of metal commodities. The feedback spillover effect exists between spot and futures market prices in majority of the underlying commodities that belongs to Metals. Besides, the study results suggest that the volatility spillover effects are found to be quite strong between spot and futures markets in the case of majority Metal commodities. The present study concludes that India's agriculture commodity derivatives market is evolving in the right direction as futures market has started playing crucial role in the information transmission process.

KEYWORDS: *Price Discovery, Volatility Spillover, Metal Commodities, VECM, Bivariate EGARCH.*

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Introduction

The concept of trading in commodities is not new to India, as trading in commodities was very much in existence even during ancient times. It is well documented as one the most efficient forms of markets until the early 1970s. However, due to the numerous restrictions on trading, growth of commodity markets remained underdeveloped. Recently several of these crippling restrictions have been done away with, and this has led to novel developments and vibrant growth of the Indian commodity markets. Commodities play a noteworthy role in the economic development of our country. After liberalization of the Indian economy in the year 1991, a series of measures were taken to open-up the commodity derivatives market. A very noteworthy step being the setting up of multi commodity exchanges at the national level, as per the proposal made by the then market regulator, the Forwards Market Commission (FMC).

The issue of price discovery and the volatility spillover is of great interest to traders, financial economists and analysts. Although futures and spot markets react to same information, the major question is which market reacts first and from which market volatility spills over to other markets. The process of price discovery facilitates the inter-temporal inventory allocation function by which market participants are able to compare the current and futures prices and decide the optimal allocation of their stocks between immediate sale and storage for futures sale. Unlike the physical market a futures market facilitates offsetting the traders without exchanging physical goods until the expiry of a contract. As a result, futures market attracts hedgers for risk management and encourages considerable external competition from those who possess market information and price judgment to trade as traders in these commodities. While hedgers have long-term perspective of the market, the traders or arbitragers prefer an immediate view of the market.

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Moreover, understanding information flow across markets is important for hedge funds, portfolio managers and hedgers for hedging and devising cross-market investment strategies. Specifically, the investigation of price discovery and volatility spillover will throw light on the possibility of acting spot or future prices as an efficient price discovery vehicle, and this will be immensely useful for the traders to hedge their market risk. Besides, it provides useful insights to the arbitrageurs, who are formulating their trading strategies based on market imperfections. Further, the subject is immensely helpful for the investors and portfolio managers to develop effective trading and hedging strategies in the Indian commodity futures market. Keeping in view the above, the present study examines the price discovery in Indian metal commodity futures and spot market and to investigate whether the volatility spills over from futures to spot market or vice versa. The remainder of the paper is organised as follows: Section 2 provides the review of literature. Section 3 describes the methodology and data used for empirical analysis. Section 4 offers empirical results and discussion of the study. Conclusions are presented in section 5.

Review of Literature

Thomas and Karande (2001) analyzed price discovery in India's castor seed market in Ahmedabad and Mumbai, by using daily closing data on futures and spot prices, which span from May 1985 to December 1999. They found that out of four, three seasonal contracts in Mumbai futures prices lead the Ahmedabad futures prices, while the March contract in Ahmedabad futures prices lead the former one. Hamaoetal (1990) found volatility spillover exists from the United States and United Kingdom stock markets to the Japanese stock markets. Susmel and Engle(1994) examined the spillover effect for London and NewYork stock exchanges and suggested that there is no evidence of spillovereffect. Theodossiouand Lee (1993) observed statistically significant mean and volatility spillovers between some of the markets in the United States, United Kingdom, Canada, Germany and Japan. Koutmos and Booth (1995) found linkages between the developed markets and concluded that the volatility transmission process was asymmetric. Booth et al.(1997) examined the price and volatility spillovers in Scandinavian stock markets, viz. Danish, Norwegian, Swedish, and Finnish stock markets by employing the EGARCH model. They found that volatility transmission was asymmetric, significant price and volatility spillovers exist among some of the markets. Moosa (2002) examined the price discovery function and risk transfer in crude oil market by using Garbade and Silber (1983) model. The study uses the daily data of spot and one-month future prices of WTI crude oil covering from 2 January 1985 to July 1996. He found that price discovery function was performed in futures market. Kumar and Sunil (2004) investigated the price discovery in six Indian commodity exchanges for five commodities. They found that inability of futures market to fully incorporate information and confirmed inefficiency of futures market.

Zhong et al.(2004) investigated whether Mexican stock index futures markets effectively served the price discovery function, and that the introduction of futures trading led to volatility in the underlying spot market. By using VECM and EGARCH models, the empirical evidence showed that the futures price index acts as a useful price discovery vehicle and futures trading had also been a source of instability for the spot market. Zapata et al.(2005) examined the relationship between eleven futures contract prices traded in New York and the World cash prices for exported sugar. They found that the futures market for sugar leads the cash market in price discovery mechanism. Fu and Qing (2006) examined the price discovery process and volatility spillovers in Chinese spot-futures markets through Johansen cointegration, VECM and EGARCH model. The empirical results indicate significant bidirectional information flows between spot and futures markets in China, with futures being dominant. Besides, the volatility spillovers from futures to spot were more significant than the other way round. Praveen and Sudhakar (2006) analyzed price discoveryprocess in stock market and the commodity futures market, respectively. They have taken Nifty futures traded on National Stock Exchange (NSE) and gold futures on Multi Commodity of India (MCX). The result showed that the Nifty futures had no influence on the spot Nifty. Besides, the analysis of commodity market showed that gold futures price influenced the spot gold price, but not the other way round. Srinivasan (2009) examined the price discovery mechanism in the Nifty spot and futures market of India. The results reveal that there exists a long-run relationship between Nifty spot and Nifty futuresprices.

Further, the results confirm the presence of a bidirectional relationship between the Nifty spot and Nifty futures market prices in India. It can, therefore, be concluded that both the spot and futures markets play the leading role through price discovery process in India and said to be informationally efficient and react more quickly to each other. Iyer and Pillai(2010) had examined whether futures

markets play a dominant role in the price discovery process. They found that commodity futures market prices play the vital role in the price discovery process. Besides, Shihabudheen and Padhi (2010) examined the price discovery mechanism and volatility spillovers effect for six Indian commodity markets, *viz.*, Gold, Silver, Crude oil, Castor seed, Jeera and Sugar. The study result supported that futures price acts as an efficient price discovery vehicle except in the case of sugar. In case of sugar, the volatility spillover exists from spot to futures. Moreover, Pavabutr and Chaihetphon (2010) examined the price discovery process of the nascent gold futures contracts in the Multi Commodity Exchange of India (MCX) though vector error correction model. They found that futures prices of both standard and mini contracts lead spot price. Recently, Kumarand Shollapur (2015) analyzed the price behavior in terms of returns as well as volatility between the spot and futures markets for four commodities, *viz.* soya oil, soya bean, mustard seed and channa. They found existence of long-term equilibrium relationship between the futures and spot prices, with the futures leading the spot prices. In the short run, futures returns seem to have a stronger impact on the spot returns in most of thecommodities.

It can seen be from the existing literatures on price discovery and volatility spillover that even though spot and futures markets react to the same information, the major question is which market reacts first. Considerable volume of research has been conducted on the subject, but still there exist conflicting evidences in the literature regarding the price discovery mechanism and volatility spillover effects. Besides, only a few notable studies have made an attempt on Indian commodity market with reference to individual metal commodity futures. This paper seeks to contribute to the literature on price discovery and volatility spillovers by focusing on the selected ten metal commodities viz., Aluminium, Copper, Iron Ore, Lead, Nickel, Sponge Iron, Steel Flat, Thermal Coal, Tin and Zinc, traded on Multi Commodity Exchange (MCX) Ltd., Mumbai.

Methodology

Johansen's (1988) cointegration approach and Vector Error Correction Model (VECM) have been employed to investigate the price discovery process in spot and futures market of metal commodities in India. Before doing cointegration analysis, it is necessary to test the stationary of the series. The Augmented Dickey-Fuller (1979) and Phillips-Perron (1988) tests were employed to infer the stationary of the series. If the series are non-stationary in levels and stationary in differences, then there is a chance of cointegration relationship between them which reveals the long-run relationship between the series. Johansen's cointegration test has been employed to investigate the long-run relationship between two variables. Besides, the causal relationship between spot and futures prices investigated by estimating the following Vector Error Correction Model (VECM). As volatility responds to good and bad news, EGARCH specification popularized by Nelson (1991) is applied. Besides the EGARCH representation was employed to capture the leverage effect found in the returns series, and to avoid imposing non-negativity restrictions on the values of the GARCH parameters to be estimated. In this study, the Bivariate EGARCH (1,1) model is used to test for volatility spillovers between two markets,

- from spot to futures market and
- from futures to spot market.

The sample used in the study consists of ten metal commodities viz., Aluminium, Copper, Iron Ore, Lead, Nickel, Sponge Iron, Steel Flat, Thermal Coal, Tin and Zinc, traded on Multi Commodity Exchange (MCX) Ltd., Mumbai. The period of study is from 15th January 2004 to 31st March 2015. However the data period varies across commodities owing to their late introduction on trading exchanges and the fact that some metal commodities were banned from trading for a certain period to curb speculative impacts which according to policy makers could have triggered high inflation. The data comprises daily closing spot and futures prices of the selected ten metal commodities viz., Aluminium, Copper, Iron Ore, Lead, Nickel, Sponge Iron, Steel Flat, Thermal Coal, Tin and Zinc. All the required data information for the study has been retrieved from the website of Multi Commodity Exchange (MCX) Ltd., Mumbai. The list of sample commodities as well as their data period is given in the following Table 1.

Table 1: List of Sample Metal Commodities Selected for the Study

S. No.	Name of the Metal Commodity	Study Period
1.	Aluminium	1st February 2007 to 31st March 2015
2.	Copper	23rd December 2006 to 31st March 2015
3.	Iron Ore	29th January 2011 to 31st December 2012
4.	Lead	1st February 2007 to 31st March 2015
5.	Nickel	8th February 2007 to 31st March 2015

6.	Sponge Iron	16th January 2007 to 15th June 2009
7.	Steel Flat	16th February 2007 to 15th June 2009
8.	Thermal Coal	9th January 2009 to 6th December 2012
9.	Tin	1st January 2007 to 29th June 2012
10.	Zinc	1st January 2007 to 31st March 2015

Empirical Findings

As a preliminary step, Table 2 presents the results of descriptive statistics of spot and futures market returns of each individual commodity that belongs to metal sector of commodities market. The table result depicts that the futures markets provides relatively high returns than the spot markets in the case of majority of the underlying metal commodities. The values of standard deviation indicate that the volatility nature of all underlying metal commodities was found to be higher. Further, the table results reveal that the skewness statistics of futures and spot market returns of all metal commodities are significantly different from zero *i.e.* they are skewed either to the right or to the left. Also, the excess kurtosis values of all futures and spot return series of selected metal commodities are fat-tailed or leptokurtic compared to the normal distribution. In addition, the Jarque-Bera test statistics indicate that the null hypothesis of normality of return series of all selected metal commodities had been rejected at one per cent significance level. Hence, it can be concluded that the futures and spot market return series of all selected metal commodities were significantly departed from normality.

Table 2: Descriptive Statistics for Metal Commodity Spot and Future Markets

Statistics	Aluminium		Copper		Iron ORE		Lead	
	Spot Returns	Futures Returns	Spot Returns	Futures Returns	Spot Returns	Futures Returns	Spot Returns	Futures Returns
Mean	-5.29E-05	-4.00E-05	0.000129	0.000107	-2.84E-05	-0.000409	0.000165	0.000159
Median	0.000000	0.000000	0.000000	0.000124	0.000000	0.000000	0.000000	0.000000
Maximum	0.122538	0.080417	0.100096	0.089850	0.127389	0.078435	0.240596	0.106160
Minimum	-0.318960	-0.332048	-0.135687	-0.108812	-0.107258	-0.075707	-0.114564	-0.128827
Std. Dev.	0.014229	0.016308	0.018247	0.015659	0.015091	0.014469	0.022294	0.018945
Skewness	-4.820240	-3.288362	-0.251598	-0.300630	1.338497	-0.407355	0.347140	-0.377652
Kurtosis	116.9211	78.01704	7.996697	8.961293	21.41105	10.58368	11.77955	9.412074
Jarque-Bera Statistics	1260803* (0.0000)	546996.9* (0.0000)	2388.562* (0.0000)	3399.890* (0.0000)	7946.635* (0.0000)	1335.624* (0.0000)	7358.750* (0.0000)	3954.881* (0.0000)
Statistics	NICKEL		SPONGE IRON		STEEL FLAT		THERMAL COAL	
	Spot Returns	Futures Returns	Spot Returns	Futures Returns	Spot Returns	Futures Returns	Spot Returns	Futures Returns
Mean	-0.000283	-0.000324	2.63E-05	7.18E-05	0.000123	0.000130	0.000446	0.000480
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.281468	0.172761	0.172930	0.185633	0.039701	0.050867	0.198092	0.181886
Minimum	-0.158959	-0.146850	-0.103684	-0.158437	-0.045715	-0.079203	-0.212587	-0.172371
Std. Dev.	0.021450	0.019150	0.016836	0.017874	0.008109	0.010122	0.047294	0.041804
Skewness	0.444465	-0.061068	1.101847	-1.060048	0.257799	-1.600397	0.002041	0.175142
Kurtosis	21.57245	11.58356	26.30547	48.11952	9.517591	18.22217	7.414678	6.946093
Jarque-Bera Statistics	36387.67* (0.0000)	7756.126* (0.0000)	14065.36* (0.0000)	52366.83* (0.0000)	1072.183* (0.0000)	6069.151* (0.0000)	681.3168* (0.0000)	548.6481* (0.0000)
Statistics	TIN		ZINC					
	Spot Returns	Futures Returns	Spot Returns	Futures Returns				
Mean	0.000475	0.000472	-0.000162	-0.000197				
Median	0.000000	0.000000	0.000000	0.000000				
Maximum	0.285798	0.116782	0.129644	0.157603				
Minimum	-0.131652	-0.136142	-0.156335	-0.120429				
Std. Dev.	0.022239	0.015182	0.018257	0.017702				
Skewness	0.994868	0.100871	-0.301530	0.128353				
Kurtosis	24.02675	13.32082	8.797312	8.575944				
Jarque-Bera Statistics	28289.10* (0.0000)	6757.679* (0.0000)	3564.282* (0.0000)	3268.894* (0.0000)				

The unit root property of the data series is crucial for the cointegration and causality analyses. The standard Augmented Dickey–Fuller (ADF) and Phillips–Perron(PP) tests are employed to examine stationary property of the selected data series. Table 3 depicts the results of Augmented Dickey-Fuller and Phillips-Perron tests for the spot and futures markets price series of the each underlying metal commodities. Both the unit root test results shows that the price series of the respective underlying commodities are stationary at their first difference, indicating that the spot and futures price series of each respective commodities are integrated at order one, *i.e.*, *I*(1).

Table 3: Results of Unit Root Test

Name of the Commodity	Market	Augmented Dickey-Fuller Test Statistics		Phillips-Perron Test Statistics	
		Level	First Difference	Level	First Difference
Aluminium	Spot	-1.90	-43.21*	-1.04	-43.37*
	Futures	-1.23	-42.63*	-1.19	-46.70*
Copper	Spot	-1.73	-51.92*	-1.77	-51.87*
	Futures	-1.62	-47.17*	-1.71	-47.85*
Iron ORE	Spot	-1.58	-31.84*	0.21	-31.54*
	Futures	-1.48	-31.72*	0.25	-31.56*
Lead	Spot	-2.06	-32.10*	0.42	-32.09*
	Futures	-2.10	-22.14*	0.40	-22.14*
Nickle	Spot	-0.94	-22.32*	-0.58	-21.01*
	Futures	-1.02	-42.45*	-0.52	-41.04*
Sponge iron	Spot	-2.40	-41.40*	0.60	-42.52*
	Futures	-2.38	-41.54*	0.50	-42.50*
Steel flat	Spot	-21.81	-3.08*	-0.30	-21.87*
	Futures	-21.96	-3.07*	-0.29	-21.75*
Thermal coal	Spot	-0.66	-41.71*	-0.68	-40.77*
	Futures	-0.64	-41.66*	-0.69	-40.76*
Tin	Spot	-2.05	-32.21*	-0.35	-32.08*
	Futures	-2.10	-22.26*	-0.36	-22.13*
Zinc	Spot	-1.52	-53.27*	-0.45	-51.50*
	Futures	-1.40	-53.10*	-0.43	-51.27*

Notes:* indicates significance at one per cent level. Optimal lag length is determined by the Schwarz Information Criterion (SIC) and Newey-West Criterion for the Augmented Dickey-Fuller Test and Phillips-Perron Test respectively.

Johansen's Cointegration test is done to examine the presence of long-run relationship between spot and futures market prices of underlying commodities of metal sector and its results are presented in Table 4.

Table 4: Results of Johansen's Co-integration Test

Name of the Stocks	vector (r)	Trace Statistics (λ_{trace})	5 % critical value for λ_{trace} test	Max-EigenStatistics (λ_{max})	5 % critical value for λ_{max} test	Remarks
Aluminium	H_0: r = 0**	22.40712	25.87211	19.9024	19.38704	*Co-integrated*
	H_1: r ≤ 1	11.10065	12.51798	15.10406	12.51798	
Copper	H_0: r = 0**	28.10406	25.87211	31.16574	19.38704	*Co-integrated*
	H_1: r ≤ 1	10.0134	12.51798	6.36882	12.51798	
Iron ORE	H_0: r = 0**	26.05457	25.87211	41.24788	19.38704	*Co-integrated*
	H_1: r ≤ 1	12.25790	12.51798	6.48892	12.51798	
Lead	H_0: r = 0**	28.34039	25.87211	40.24765	19.38704	*Co-integrated*
	H_1: r ≤ 1	10.34173	12.51798	7.36787	12.51798	
Nickle	H_0: r = 0**	27.54033	25.87211	31.25673	19.38704	*Co-integrated*
	H_1: r ≤ 1	10.12105	12.51798	10.4378	12.51798	
Sponge iron	H_0: r = 0**	28.56808	25.87211	25.2487	19.38704	*Co-integrated*
	H_1: r ≤ 1	6.78715	12.51798	11.247882	12.51798	
Steel flat	H_0: r = 0**	28.5443	25.87211	21.27892	19.38704	*Co-integrated*
	H_1: r ≤ 1	11.83214	12.51798	7.27543	12.51798	
Thermal coal	H_0: r = 0**	28.3406	25.87211	19.4957	19.38704	*Co-integrated*
	H_1: r ≤ 1	4.84486	12.51798	4.84486	12.51798	
Tin	H_0: r = 0**	29.3286	25.87211	21.86543	19.38704	*Co-integrated*
	H_1: r ≤ 1	9.32997	12.51798	11.1368	12.51798	
Zinc	H_0: r = 0**	35.9497	25.87211	20.5525	19.38704	*Co-integrated*
	H_1: r ≤ 1	10.39727	12.51798	10.39727	12.51798	

Notes:** indicates significance at five per cent level. The significant of the statistics is based on 5 per cent critical values obtained from Johansen and Juselius (1990). r is the number of cointegrating vectors. H_0 represents the null hypothesis of presence of no cointegrating vector and H_1 represents the alternative hypothesis of presence of cointegrating vector.

The table result of Johansen's maximum Eigen and Trace statistics indicates the presence of one cointegrating vector between the futures and spot market prices at 5% level in case of each selected individual commodities of metal sector, respectively. The Johansen's cointegration test confirms the existence of long-run relationship between the spot and futures prices of each underlying metal commodities in India.

Existence of long-run relationship between two markets has very important implications for the traders in futures market. Existence of cointegration suggests that although both markets may be in disequilibrium during the short-run but such deviations are very quickly corrected through arbitrage process and the hedgers may take long-run positions to hedge market risk to the maximum extent. In order to check whether short-run disequilibrium exists, Vector Auto regression (VAR) based on VECM has been applied. Kroner and Sultan (1993) shows that if the spot and futures prices are cointegrated, there must be an error correction representation that includes both the short term dynamics and long term information. For the purpose, the causality between spot and futures prices for respective agriculture commodities was estimated by using the Vector Error Correction Model (VECM) and its result are depicted in Table5.

Table 5: Results of Vector Error Correction Model

	Aluminium		Copper		Iron ORE		Lead	
	S_t	F_t	S_t	F_t	S_t	F_t	S_t	F_t
ECT	-0.162764* (0.01939) [-8.39216]	0.098189* (0.02151) [4.56501]	-0.237239* (0.01521) [-15.5970]	0.041819*** (0.02263) [1.84815]	0.039809 (0.03285) [1.21182]	0.214783* (0.02870) [7.48283]	-0.268082* (0.02609) [-10.2735]	0.150307* (0.02464) [6.09990]
S_{t-1}	-0.135979* (0.02423) [-5.61271]	0.185504* (0.02687) [6.90426]	-0.106235* (0.01270) [-8.36702]	0.017942 (0.01889) [0.94994]	0.167933* (0.05761) [2.91476]	0.178193* (0.05034) [3.53973]	-0.179697* (0.02603) [-6.90413]	-0.045177*** (0.02458) [-1.83812]
S_{t-2}	---	---	---	---	0.078067 (0.05736) [1.36097]	0.008532 (0.05012) [0.17023]	---	---
F_{t-1}	0.108149* (0.02246) [4.81496]	-0.354320* (0.02491) [-14.2242]	0.720796* (0.01934) [37.2648]	0.029339 (0.02877) [1.01962]	0.084530 (0.05586) [1.51322]	0.045540 (0.04881) [0.93303]	0.452265* (0.03104) [14.5702]	0.175217* (0.02931) [5.97777]
F_{t-2}	---	---	---	---	-0.014262 (0.05247) [-0.27181]	0.041268 (0.04584) [0.90018]	---	---
c	-4.78E-05 (0.00028) [-0.16821]	-4.01E-05 (0.00032) [-0.12717]	5.67E-05 (0.00022) [0.25681]	9.47E-05 (0.00033) [0.28829]	1.30E-05 (0.00062) [0.02091]	-0.000321 (0.00054) [-0.59169]	0.000124 (0.00042) [0.29936]	0.000135 (0.00039) [0.34494]
Inference	F S (LR) F S (SR)		F S (LR) F S (SR)		S F (LR) S F (SR)		F S (LR) F S (SR)	

	Nickel		Sponge iron		Steel Flat		Thermal coal	
	S_t	F_t	S_t	F_t	S_t	F_t	S_t	F_t
ECT	-0.172307* (0.02372) [-7.26382]	0.073571* (0.02335) [3.15014]	0.001526 (0.00970) [0.15729]	0.050493* (0.01009) [5.00545]	0.031678* (0.01136) [2.78772]	0.093990* (0.01360) [6.91143]	-0.570173* (0.10604) [-5.37672]	0.003528 (0.09615) [0.03670]
S_{t-1}	-0.318463* (0.03013) [-10.5706]	-0.029546 (0.02966) [-0.99611]	0.110889* (0.04203) [2.63835]	0.070125*** (0.04370) [1.67457]	0.004736 (0.04377) [0.10819]	0.097273*** (0.05238) [1.85697]	-0.117164 (0.09183) [-1.27590]	0.028205 (0.08326) [0.33877]
S_{t-2}	-0.170177* (0.02627) [-6.47796]	-0.032750 (0.02586) [-1.26621]	---	---	---	---	---	---
F_{t-1}	0.492065* (0.03233) [15.2200]	0.105450* (0.03183) [3.31285]	0.040561 (0.03873) [1.04734]	0.065511*** (0.04027) [1.67682]	0.080036* (0.03336) [2.39899]	0.060578 (0.03993) [1.51725]	-0.105533*** (0.09874) [-1.66883]	-0.276493* (0.08952) [-3.08863]
F_{t-2}	0.242394* (0.03113) [7.78753]	0.015813 (0.03064) [0.51601]	---	---	---	---	---	---
c	-0.000184 (0.00039) [-0.47549]	-0.000304 (0.00038) [-0.79573]	2.08E-05 (0.00068) [0.03077]	6.65E-05 (0.00070) [0.09463]	9.79E-05 (0.00033) [0.29895]	0.000110 (0.00039) [0.28067]	0.000551 (0.00155) [0.35590]	0.000620 (0.00140) [0.44231]
Inference	F S (LR) F S (SR)		S F (LR) S F (SR)		F S (LR) F S (SR)		F S (LR) F S (SR)	

	TIN		ZINC		
	S_t	F_t	S_t	F_t	
ECT	-0.025960	0.224894*	-0.172563*	0.107783*	
	(0.02272)	(0.01402)	(0.02322)	(0.02462)	
	[-1.14234]	[16.0394]	[-7.43049]	[4.37846]	
S_{t-1}	-0.015371	0.004125***	-0.300951*	0.028386	
	(0.03192)	(0.01970)	(0.02862)	(0.03034)	
	[-0.48151]	[1.70945]	[-10.5145]	[0.93562]	
S_{t-2}			-0.202237*	-0.108632*	
	---	---	(0.02394)	(0.02538)	
			[-8.44705]	[-4.28059]	
F_{t-1}	0.005360	-0.007378	0.442519*	-0.056315***	
	(0.04179)	(0.02578)	(0.02976)	(0.03155)	
	[0.12827]	[-0.28615]	[14.8678]	[-1.78502]	
F_{t-2}			0.306490*	0.182429*	
			(0.02712)	(0.02874)	
	---	---	[11.3029]	[6.34696]	
c	0.000501	0.000475	-3.84E-05	-0.000148	
	(0.00057)	(0.00035)	(0.00033)	(0.00035)	
	[0.87699]	[1.34704]	[-0.11799]	[-0.42851]	
Inference	S F (LR)		F S (LR)		
	S F (SR)				
Notes:	Optimal lag length is determined by the Schwarz Information Criterion (SC), F_t and S_t are the Futures and Spot market prices respectively, *, ** and *** denote the significance at the one, five and ten per cent level, respectively. [ ] & ( ) - Parenthesis shows t-statistics and standard error, respectively.				

The estimates of Vector Error Correction Model show the mixed evidence. The findings of underlying commodities of metals reveals long-run bidirectional causation between futures and spot market prices for the Aluminium, Copper, Lead, Nickel, Steel Flat and Zinc, long-run unilateral causation from futures to spot price and reverse in case of Thermal Coal and Iron Ore, Sponge Iron and Tin, respectively. Besides the VECM table result shows the short-run bidirectional relationship between spot and futures markets in the case of five metal stocks, viz. Aluminium, Nickel, Lead Steel Flat and Zinc. This shows that both the spot and future markets is efficient with regard to the information and is able to react immediately with each other. The analysis also confirms that spot leads to futures price and futures leads to spot market price in the case of Iron Ore, Sponge Iron and Tin and Copper and Thermal Coal, respectively. Regarding the examination of Volatility Spillover effects in the Indian metal commodity markets, Engle (1982) ARCH-LM test statistics was conducted in order to test the null hypothesis of no ARCH effects and its results are reported in the Table-6. The test statistics are highly significant at one percent levels, confirming the existence of significant ARCH effects on the futures and spot return data series of all selected underlying commodities of metal sector. The spot and futures return series of all selected underlying commodities of metal appear to be best described by an unconditional leptokurtic distribution and possesses significant ARCH effects which is confirmed by ARCHLM test statistics, *i.e.* volatility clustering. This suggests that the Bivariate EGARCH model is capable with generalised error distribution (GED) is deemed fit for modeling the spot and futures return volatility of these commodities, as it sufficiently captures the volatility clustering and heteroscedastic effects. Table 7 shows the estimates of Bivariate EGARCH model to determine the volatility spillover mechanism takes place between spot and futures commodity markets of respective commodities that belongs to metal sector.

Table 6: ARCH LM Test Results for Spot and Futures Agricultural Commodity Markets

Name of the Commodity	ARCH LM Statistics			
	Spot Returns	Prob. Value	Futures Returns	Prob. Value
Agriculture				
Aluminium	99.636	0.000	679.99	0.000
Copper	45.324	0.000	53.975	0.000
Iron ORE	630.67	0.000	46.567	0.000
Lead	664.65	0.000	119.20	0.000
Nickel	99.636	0.000	679.99	0.000
Sponge Iron	45.324	0.000	53.975	0.000
Steel Flat	630.67	0.000	46.567	0.000
Thermal coal	664.65	0.000	119.20	0.000
Tin	99.636	0.000	679.99	0.000
Zinc	45.324	0.000	53.975	0.000

Note: ARCH-LM is a Lagrange multiplier test for ARCH effects in the residuals (Engle, 1982).

The empirical evidence from Table 7 reveals that the GARCH effects for all the commodities are statistically significant, implying the degree of volatility persistence exists in the case of both futures and spot market returns of respective commodities that belongs to metals. This result suggests that once a shock has occurred, volatility tends to persist for long periods in both the spot and futures markets of respective metal commodity. The leverage effect parameters are statistically significant for both futures and spot market returns of respective metal commodities, indicating existence of leverage effect. This indicates that negative shocks have a greater impact on conditional volatility than positive shocks of equal magnitude in the case of respective commodities of metals. This means that volatility is higher after negative shocks (bad news) rather than after positive shocks (good news) of the same magnitude.

Table 7: Results of Bivariate EGARCH Model

Name of the Stocks	Market	i	i	i	i	i	ARCH-LM Statistics	Inference
Aluminium	Spot	-0.01362 (-0.9080)	-0.3735* (-7.2996)	0.9620* (50.34)	0.1463* (10.460)	-0.0026** (-2.3199)	0.9520 [0.3292]	
	Futures	0.0301 (1.5911)	-2.4621* (-13.072)	0.8653* (26.836)	0.3990* (14.377)	-0.0171** (-1.9650)	0.4491 [0.8141]	F S
Copper	Spot	-0.058** (-1.978)	-0.094* (-7.452)	0.988* (39.80)	0.1753** (2.451)	-0.048* (-3.309)	0.2176 [0.4730]	
	Futures	0.084* (3.509)	-1.974* (-17.73)	0.866* (52.08)	0.0609 (1.120)	-0.192* (-11.17)	0.1141 [0.7355]	F S
Iron ORE	Spot	0.018** (2.112)	-6.514* (-18.19)	0.207* (7.374)	0.0556 (1.560)	-0.148* (-7.472)	0.0114 [0.9249]	
	Futures	0.018** (2.170)	-0.534* (-8.419)	0.951* (12.94)	0.2237* (4.257)	-0.053* (-6.233)	1.6015 [0.1692]	S F
Lead	Spot	-0.127* (-7.681)	-9.826* (-36.26)	-0.060* (-4.224)	1.405* (40.06)	-0.215* (-8.436)	0.0584 [0.7090]	
	Futures	0.194* (11.18)	-4.854* (-30.98)	0.301* (11.95)	1.031* (22.09)	-0.421* (-24.28)	0.0291 [0.9431]	F S
Nickle	Spot	0.0451* (2.5105)	-1.0294* (-8.188)	0.8687* (15.882)	0.2083* (8.5179)	-0.0092 (-0.5239)	0.4083 [0.6228]	
	Futures	-0.0047 (-0.9636)	-1.1366* (-6.2355)	0.8164* (17.487)	-0.0418* (-3.5764)	-0.1261* (-9.2455)	0.0136 [0.8593]	F S
Sponge Iron	Spot	0.0154 (1.0647)	-0.5839* (-10.316)	0.9329* (132.36)	0.1375 (1.222)	-0.0136 (-0.4607)	0.0288 [0.3988]	
	Futures	0.0203 (0.4254)	-0.4871* (-10.121)	0.8552* (19.24)	0.4230* (4.616)	-0.0366* (-4.8831)	0.5890 [0.2075]	S F
Steel Flat	Spot	0.0237** (2.3986)	-0.5418* (-7.8585)	0.8610* (15.09)	0.2156* (13.458)	-0.0202* (-2.8977)	0.7736 [0.1313]	
	Futures	0.0510** (2.1905)	-1.722* (-8.4187)	0.5642* (16.913)	0.4398* (10.952)	-0.0396** (-1.9706)	0.0134 [0.9924]	F S
Thermal Coal	Spot	0.0587** (2.3277)	-0.4007* (-7.1087)	0.9695* (13.51)	0.3743** (1.981)	-0.0541* (-5.9461)	0.0124 [0.9349]	
	Futures	0.0005 (0.0445)	-0.1219* (-4.9842)	0.9424* (12.72)	0.0987 (1.583)	-0.04981* (-7.6069)	0.0348 [0.8520]	F S
Tin	Spot	0.0408* (2.6526)	-0.4202* (-10.797)	0.9475* (14.23)	0.0192 (1.073)	-0.0252* (-2.9337)	1.2330 [0.1965]	
	Futures	0.0364 (0.2973)	-0.9459* (-9.3724)	0.8921* (17.522)	0.2469* (4.484)	-0.02315* (-2.8363)	0.4351 [0.8242]	S F
Zinc	Spot	-0.01362 (-0.9080)	-0.3735* (-7.2996)	0.9620* (15.34)	0.1463* (10.560)	-0.0126** (-2.3199)	0.9520 [0.3292]	
	Futures	0.0301 (1.5911)	-2.4621* (-13.072)	0.8753* (17.836)	0.3790* (15.377)	-0.0371* (-2.9750)	0.9198 [0.8141]	F S

Notes: Figures in ( ) parentheses are z-statistics. * (**) denote the significance at the one and five per cent level, respectively. Figures in [ ] indicates the probability value of ARCH LM test. ARCH-LM is the Lagrange Multiplier test for ARCH effects (Engle, 1982).

Most importantly, Table 7 result shows the mixed evidence in the case of spillover effect. The findings of underlying commodities of metals Bivariate EGARCH model depicts that the bidirectional spillover exists between spot and futures markets in the case of five Metal commodities, viz. Aluminium, Nickel, Lead, Steel Flat and Zinc. The analysis also confirms the unidirectional spillover from spot market price to futures market price and futures market price to spot market price in the case of Iron Ore, Sponge Iron and Tin and Copper and Thermal Coal, respectively. To check the robustness of Bivariate EGARCH estimates for the respective commodities of metal sector, the ARCH-LM (Engle, 1982) test was employed to test the absence of any further ARCH effects. As can be seen

in Table 7, the ARCH-LM statistics indicate that no serial dependence persists left in squared residuals. Hence, the results suggest that Bivariate EGARCH model was reasonably well specified and most appropriate model to capture the ARCH (time-varying volatility) effects in the time series analyzed for respective commodities that belong to metal.

Conclusion

Since 2002 the commodities futures market in India has experienced an unexpected boom in terms of modern exchanges, number of commodities allowed for derivatives trading as well as the value of futures trading. The true potential and usefulness of commodity derivatives market is yet to be achieved in further developing the commodity market in India. Commodity derivatives markets play an important role in the efficient price discovery process. The Indian commodity derivative market can play a crucial role provided regulatory policies are flexible and market participants are aware about their existence. With SEBI as the new independent regulator with experience of successfully regulating the financial market in India, the commodity derivatives market is expected to achieve greater heights in the years to come. Commodity Futures Market plays an important role in price discovery, the information on which helps the producers to plan their activities on production, processing, storage, and marketing of commodities. The research study is limited for commodity markets, especially on metal sector and India in particular. The empirical results confirm the price discovery between futures and spot prices, indicating strong information transmission from futures markets to spot markets in the case of majority of metal commodities. The feedback spillover effect exists between spot and futures market prices in majority of the underlying commodities that belongs to Metals. Besides, the study results suggest that the volatility spillover effects are found to be quite strong between spot and futures markets in the case of majority Metal commodities.

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DEMONETIZATION: A SHORT TERM CHALLENGE AND LONG TERM EDGE TO UPLIFT INDIAN ECONOMY

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ABSTRACT

The motive behind the Government step that 500 and 1000 currency notes will no longer be a legal tender from 8th November 2016 midnight in a helicopter how over manner was mainly to curb black money with other objectives like to tackle corruption, terror finance, counterfeiting and others. The question which was raised after this step among most of us was that what will have been gained from this step, and at what cost and mostly borne by whom. The present study is conducted to access that how well the implementation process would open out to the economy. The objective of the present study is to analyze the impact of demonetization and to study whether it has shown success in reducing black money and other problems facing by Indian economy at present. The research methodology used in the present study is based on primary and secondary data. A well designed questionnaire was prepared for the study. The paper concludes that demonetization proved to be a successful measure initiated by government and also it will prove to be a game changer in long term as it helped to curb black money and disclosing hidden income. The results shows that it is also a truly daring step in the best interests of India and its people. The step of demonetization also promoted the economy to shift towards cashless or going digitization which further have many benefits.

KEYWORDS: *Black Money, Cashless, Demonetization, Economy.*

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Introduction

India is not a first country which has taken steps like demonetization to tackle problems like black money, terror finance, corruption etc. Other countries like Singapore in 1945, Fiji in 1969, Ghana, Nigeria in 1984 and Myanmar in 2015 too have also taken these measures to fight against the similar problems and found execution. In India too earlier government have taken the steps of demonetization in the year of 1946 and 1978 respectively. So overall the exercise which has been took place on 8th Nov. 2016 to declare Rs. 500 and 1000 note not to be a legal tender was not a step which was never has been taken place. The different here was that earlier when this was done in other countries they have given a time period to the public to close or declare the old currency of no use. This time the new thing is that without earlier notice government has suddenly declare the demonetization of Rs. 500 and Rs. 1000 note. The idea which Indian government was making that with this step nearby 40% of the currency will not come back to the system was came to wrong as the report states that nearly 97% of the currency came back. But again it's not like that it proved to be a wrong exercise as this step leads to a short term challenge but will prove to be a long term benefits to the economy in lifting towards upward. There are many reasons how 97% of the money came back to the system as many of misleading and wrong steps would have been took place and to tackle or stop those ways government decisions would prove to be late. Some of them will be discussed in this paper further. But through this exercise our government would also be able to solve many problems that will help further to boom our economy. With add-on to the step of demonetization others steps too has been taken by the government in order like creation of

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the Special Investigative Team to probe Black money; Passage of legislation such as Black Money and Imposition of Tax Act 2015 and Benami Transactions Act 2016; Information exchange agreement with Switzerland; Changes in tax treaties with Tax haven countries such as Mauritius, Cyprus and Singapore to prevent money laundering and income disclosure scheme to give one time opportunity to hoarder of Black money to disclose his income which is not taxed. to tackle the problem of black money. So in this way it can be said that all these measures may be bring a short term pain like declining in GDP in short run but will definitively leads to a economy where successfully measures like cashless economy, etc will be working and leading towards success and we will be able to compete other economies like USA, UK and other countries and will become a competing developed economy.

Rationales of Demonetization

The supply of currency notes of all denominations has seen an increase by about 40% during the period between 2011 and 2016, the Rs. 500 and Rs. 1,000 denomination notes has increased by 76% and 109% respectively during this period due to forgery. This forged cash is usually used to fund various terrorist activities against India like:

- To curtail corruption
- To prevent Counterfeiting of notes, where high denomination notes are used for terrorist activities
- To curb accumulation of "black money" which is generated by income that has not been declared to the tax authorities.
- The extent of cash usage:

Cash accounts for 78 percent of all cash payments in India according to the Wattal committee. According to PWC (2015), India has a very high predominance of consumer transactions carried out in cash relative to other countries (accounting for 68 percent of total transactions by value and 98 percent by volume). By announcing the larger denomination notes to be useless, the individuals and various black money launderers with huge collection of black money generated from the parallel black cash systems were affected and made to convert the cash money through a banking system which requires tax information from the entity.

Literature Review

PM Modi's Surprise Move of Demonetization Shock the world. Opposition Parties created huge turmoil in parliament. Even our ex-prime minister Shri Manmohan Singh broke his long awaited silence and said it is a case of "Organized Loot and Legalized Plunder." He also gave a supporting statement it is a bold step and should be implemented in well managed manner. Act of Demonetization happened in other countries as well where public refuses to accept the decision resulting a big failure for government who implemented in their rule **(quora, 2016).**

Rahul (2017) in his paper titled " Black Money and Demonetization" stated that demonetization was one of the step to tackle the problem of black money. The paper also discussed the various strategies that will help in tackling black money issue. Further it has been found in this study that demonetization was a somehow successful step taken by the government but it has not resulted a magical windfall gain to the economy. The paper discusses that how reducing the use of cash will help in reducing the chances of black money. The paper concludes by exploring that there exist other ways too to create black money and what other actions government should take to handle this problem.

Syamsundar (2017) has done a research on "Demonetization: A comparative study". In his research he has explored the need and importance of demonetization in India. The paper also explained the effect of demonetization on Indian economy. It is found in the study that demonetization seems to be a bitter pill but this steps shows success in replenishing the economy from being ruined by black money, corruption and others. The paper concludes that in short run this step will definitely effect GDP and create unemployment but it has promoted to use cashless transactions and in the long run it will improve the efficient way and show success.

JR Financial (2017) carried out the study on demonetization. In this study they have analyzed the impact of demonetization on various sectors with different intensities and across various time zones. The study found that by this step the demand in various sector has fallen like reduce in demand of car, gems and jewellery, retail demand and others. The paper further states that this action will increase the demand for receipt based business and bring the dabba trading, satta bazar and other alike activities to the end.

Muthulakshmi (2017) in her paper titled Impact of demonetization on Indian Economy has found that demonetization has created a situation of liquidity crunch in the short run and has created a welfare loss to that part of the society who was using or dependent on cash. The study stated that only a small portion of black money is generally stored in cash as rather it is stored in other mediums like gold, real state etc. But this move has definitely created awareness among people and motivated them to fight against corruption and black money.

Tax Research Team (2016) in their working paper stated in favor of demonetization. Its main objective was to analyze the impact of demonetization on Indian economy. This paper shows the impact of such a move on the availability of credit, spending, level of activity and government finances.

Objectives of the Study

- To study the short term challenges and long term benefits of Demonetization.
- To explore the impact of demonetization.
- To find out the how digitization help to bring changes to our Economy.

Research Methodology

- **Research Design**

  This research study is descriptive in nature.

- **Data Collection Instrument**

  Both the primary and secondary data collection methods were considered. The primary data was collected through a questionnaire designed for the study. Secondary data was taken from various Research papers, Journals, Magazines and Websites.

- **Sampling Plan**
  - Targeted population: Individuals
  - Sampling method: Convenience sampling
  - Sample size: 60

- **Tools of Data Analysis**

  The data and information collected is classified, tabulated and processed and its findings are presented in a systematic manner.

Short term Impact on Economy, Business, Wealth

In spite of its long-standing potential, demonetization will bring about some short-range costs on the economy:

- **Impact on Business Mostly Depends on Cash**

  The step would front to a shortfall in cash in circulation for a temporary basis and have impacted business house which mainly was depend on cash but things would have been came on track very shortly and the impact was much smaller than what was perceived. While the new Rs. 2000 notes that replaced the demonetized currency were not as liquid as the demonetized currency but the shortfall is narrowing rapidly. Many business houses those were totally dependent on cash suffered and people working there either lost their job during that period or got their money delayed.

- **Impact on GDP**

  The impact of demonetization on GDP and economy was adverse as the GDP of March end quarter was 6%. But it is believed that soon economy will come back to track and In the medium term, with the implementation of this step and others like implementation of GST and other structural reforms, growth is expected to get back to the 8-10 percent range.

- **Impact on Wealth and Aggregate Supply, and Uncertainty effects**:

  While the wealth, supply side and uncertainty effects are impossible to predict in quantitative terms, but some qualitative assessment is possible. For example:
  - **Uncertainty Effects**: Uncertainty caused consumers to postpone purchases and firms to put off investments in the third quarter. But as the economy is remonetised and conditions normalise, the uncertainty should dissipate and spending might well rebound towards the end of the fiscal year.
  - **Impact on wealth**: Similarly, there was clearly a wealth shock in the initial months, as cash assets were turned into the banks (from where they were difficult to withdraw), but as restrictions are lifted this effect should disappear as well.

▪ **Supply-side effects**: Demonetization could also affect supplies of certain agricultural products, especially: milk (where procurement has been low), sugar (where cane availability and drought in the Southern states will restrict production), and potatoes and onions (where sowings have been low).

For the effects of demonetization to prove non-permanent in nature, decisive policy actions need to be taken to clear away the uncertainty and dispel fears of an overzealous tax administration.

- **Redistribution to the Government**:

Demonetization will also redistribute resources. For example, the black money holders have reportedly laundered their money by employing people to stand in queues. It could be a positive wealth effect because cash would go from agents with a low propensity to spend to those with a greater propensity to spend.

▪ At the same time, however, there could be some negative effects too, e.g.

▪ Costs of printing new notes over and above normal replacement.

▪ The costs of sterilizing the surge in liquidity into the banking system via issuance of Market Stabilization Scheme bonds.

▪ If nominal GDP growth declines, corporate and indirect tax revenues of the centre could decline.

- **Advantages from the step of demonetization**

▪ The whole money was not received back to RBI and the remained unreturned currency will create some gains to RBI as its liabilities would have been reduced.

▪ The second benefit which government would have from this step is that as many people who in the heat of the moment deposited a large sum of money in their account which is unexplanatory would come under income tax inspection and income taxes could go up.

▪ Whatever black money is being declared under various schemes will help in transfer of wealth from holders of illit black money to the public sector and government will able to use this money in various productive ways that will help our economy in upliftment.

▪ It will definitely increase the tax payer number as tax evaders may not be able to continue further and because of fear of penalty and other strict regulations they would more be interested now to move with tax compliance.

▪ One of the advantage after this demonetization step is that shift of people from use of cash to cashless transactions which too have many advantages to our government , public and to financial system.
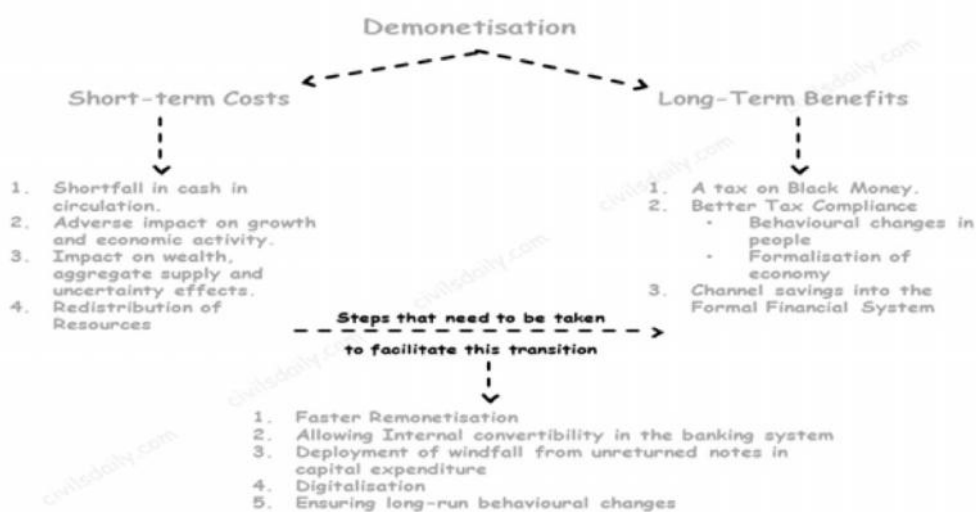
Government Initiative

In the wake of the demonetization, the government has taken a number of steps to facilitate and incentivize the move to a digital economy. These include:

- Launch of the **BHIM (Bharat Interface for Money) app** for smart-phones based on the new Unified Payments Interface (UPI) which has created inter-operability of digital transactions.
- Launch of **BHIM USSD 2.0,** a product that allows the 350 million feature phone users to take advantage of the UPI.
- Launch of **Aadhar Merchant Pay,** aimed at the 350 million who do not have phones. This enables anyone with just an Aadhar number and a bank account to make a merchant payment using his biometric identification.
- Reductions in fees (Merchant Discount Rate) paid on digital transactions and transactions that use the UPI.
- There have also been relaxations of limits on the use of payment wallets.
- Tax benefits have also been provided for to incentivize digital transactions.
- Encouraging the adoption of POS devices beyond the current 1.5 million, through tariff reductions.

As a result of all these number of digital transactions has increased considerably. Data from the National Payments Corporation of India (NPCI) show that RuPay-based electronic transactions increased by about Rs. 13,000 crore in case of POS transactions and about Rs. 2,000 crore in e-commerce, an increase of over 300-400 percent.Same has been the case with debit card, credit card and AEPS (Aadhar-Enabled Payments System) transactions.

Data Analysis and Interpretation

Table1: Frequency Distribution of Respondents on the basis of Age

S. No.	Age	No. of Respondents	% of Respondents
1	0 -25 Years	4	7
2	25-45 Yrs.	21	35
3	45-65 Yrs.	22	36
4	65 Yrs. and Above	13	22
	Total	60	

Source: Researcher's Survey

Table 2: Frequency Distribution of Respondents on the basis of Education

S. No.	Education	No. of Respondents	% of Respondents
1	Upto12th	3	5
2	Graduate	15	25
3	Post Graduate	23	38
4	Professional Qualification	19	32
	Total	60	

Source: Researcher's Survey

Table 3: Frequency Distribution of Respondents on the basis of Occupation

S. No	Occupation	No. of Respondents	% of Respondents
1	Service	32	53
2	Business or Profession	22	37
3	Others	6	10
	Total	60	

Source: Researcher's Survey

Table 4: Frequency Distribution of Respondents on the basis of Annual Income

S. No.	Monthly Income	No. of Respondents	% of Respondents
1	UptoRs. 25000	7	12
2	Rs. 25001- Rs.50000	25	42
3	Rs. 50001- Rs.75000	17	28
4	Rs. 75001 and above	11	18
	Total	60	

Source: Researcher's Survey

Table 5: Do you think that black money exists in India?

Particulars	No. of Respondents	% of Respondents
Yes	60	100
No	0	0
Total	60	

Source: Researcher's Survey

Table 6: Do you think the evil of corruption and black money needs to be fought and eliminated?

Particulars	No. of Respondents	% of Respondents
Yes	60	100
No	0	0
Total	60	

Source: Researcher's Survey

Table 7: What do you think of the Modi Government's efforts against corruption so far?

Particulars	No. of Respondents	% of Respondents
Very High	18	30
High	26	43
Neutral	5	8
Low	8	14
Very Low	3	5
Total	60	

Source: Researcher's Survey

Table 8: What do you think of the Modi Government's move of banning old Rs. 500 & Rs. 1000 notes

Particulars	No. of Respondents	% of Respondents
Outstanding	13	22
Very Good	29	48
Neutral	3	5
Not Good	9	15
Useless	6	10
Total	60	

Source: Researcher's Survey

Table 9: Do you think demonetization will help in curbing black money, corruption & terrorism?

Particulars	No. of Respondents	% of Respondents
Immediate impact	6	10
Impact in medium to long term	32	53
Minimal impact	7	12
No Impact	15	25
Don't know	0	0
Total	60	

Source: Researcher's Survey

Table 10: Demonetization will bring real estate, higher education, healthcare in the common man's reach.

Particulars	No. of Respondents	% of Respondents
Completely Agree	25	42
Partially Agree	19	31
Disagree	16	27
Total	60	

Source: Researcher's Survey

Table 11: Economic Impact of Demonstration

Particulars	No. of Respondents	% of Respondents
Positive	46	77
Negative	14	23
Total	60	

Source: Researcher's Survey

Table 12: Did you mind the inconvenience faced in our fight to curb corruption, black money, terrorism and counterfeiting of currency?

Particulars	No. of Respondents	% of Respondents
Not at all	29	48
Somewhat, but it was worth it	11	19
Yes	20	33
Total	60	

Source: Researcher's Survey

Table 13: . Do you feel that Demonetization motivate people to shift towards Cashless methods

Particulars	No. of Respondents	% of Respondents
Yes	52	87
No	8	13
Total	60	

Source: Researcher's Survey

Table 14: Overall, what do you think about the Government's moves to tackle black money?

Particulars	No. of Respondents	% of Respondents
Outstanding	17	28
Very Good	29	48
Neutral	3	5
Not Good	7	12
Useless	4	7

Source: Researcher's Survey

Findings

- Almost everyone feels that black money exist in India and it needs to be eliminated by taking some initiatives by the government.

- More than 70% of the respondents feel that Modi Government has taken good initiative to fight corruption and demonetization was right decision of the government towards tackling black money and corruption.

- Majority of the people feel that demonetization help the country in reducing the cost of the services and will make it possible to reach them to common people.

- 50% of the respondents states that they faced problem during demonetization but majority of out of them also feels that this step is having a positive impact on the economy.

- More than 86% of the respondents accept that the government step of demonetization will induce people to shift towards cashless transactions from using cash and this will help our economy to move towards a successful cashless economy.

- Overall the step of demonetization was right and will help to grow our economy.

Future Markers of Success: The Way Ahead

In the further stage the emphasis of the government must be to reduce or minimise the cost of demonetization and to maximize the demonetization benefits. To that extent government should focus on following area:

Employment of windfall money in capital expenditure: Meanwhile, the government windfall arising from unreturned notes should be deployed toward capital-type expenditures rather than current ones. And since the windfall will be one-off its use should be one-off and not lead to entitlements that create permanently higher expenditures.

Digitalization: In the medium term, the impetus provided to digitalization must continue.

Ensuring Long-Run Behavioural Changes:

In order to ensure that demonetization proves a catalyst for long-run changes in behavior, measures to complement demonetization with other non-punitive, incentive compatible measures that reduce the incentives for tax evasion must be introduced.

Conclusion

Findings of this study suggested that people support the decision of demonetization irrespective of their age, gender and income. They do not feel that demonetization would affect the growth of the country and strongly feel that this step will help the economy in upliftment. However some of them feel about poor implementation of the decision but with other initiatives too which the government is working on we will we succeed in tackling the problem of black money.

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IMPACT OF DEMONETIZATION ON SELECTED BSE INDICES

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Ms. Hetal Tank[**]

ABSTRACT

This research paper gives an impact of demonetization on various BSE - Indices. Because in past, many countries have endeavored demonetization, some effectively and some unsuccessfully, yet every one of them were done when their economies were having significant issues like hyper - expansion in Germany in the 1920s. This is the first occasion when that a fit as a fiddle economy has endeavored it and that too to target dark cash. Since this is an in the first place, there are shifted conclusions among financial experts on what the effect will be later on. The prompt effect of expelling such a great amount of cash from dissemination is obviously the effect it can have on a few segments that are driven by the dark cash like land, development and so on., however more so additionally the divisions that are more determined with money, since they are influenced when so much cash is abruptly expelled from course.

KEYWORDS: *Demonetization, BSE-Indices, Digital India, GDP, Indian Economy, Dark Cash.*

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Introduction

Demonetization of currency means irregularity of the specific cash from flow and supplanting it with another currency. In the present setting, it is the prohibiting of the 500 and 1000 section cash notes as a lawful delicate. The destinations behind this demonetization strategy are as per the following; in the first place, it is an endeavour to make India defilement free. Second, it is done to check dark cash, third to control heightening value rise, fourth to stop stores stream to unlawful action, fifth to make individuals responsible for each rupee they have and pay salary expense form. At last, it is an endeavour to make a cashless society and make a Digital India. On 8th November, 2016, PM Narendra Modi announced the cancellation of Rs.500 and Rs.1000 currency notes which results in 86% of the circulated money being removed from the economy overnight. This was primarily bone to curb the black money, make all the counterfeit currency worthless and attack terrorism at its root.

Review of Literature

CMA Jai Bansal (2017): The objective of this research work was to analyze the impact of Demonetization on GDP, to analyze the impact of Demonetization on different sectors of economy and to analyze the future impact of Demonetization on Indian Economy. Finally, he found that GDP of Country slightly decreases as compare with the previous year but we cannot say it will be same in future also. This intervention is a one-time draining of this current stock of black money but unless the root causes of corruption are removed, corruption will continue. It is sort of like a dialysis, more of a short term cleaning up than a solution of the problem. It needs to be repeated periodically.

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S. Radhakrishnan, Dr. K. G. Selvan, Dr. S. Senthil Kumar (2017): The objective of this study was to analyze the impact of demonetization on construction sector. They finally conclude that the demonetization has caused a huge shock inthe realty sector as it is eminently a cash involvedone. Not only in secondary sector, but also in thePrimary sector, most of the buyers and sellers preferto have a major chunk in cash, restricting to only alesser amount on transparent payments – by way ofcheques and DDs. As such, this is the sector wherehoarded money finds its place.

Dr. Partap Singh, Virender Singh (2016): The present paper highlighted the probable consequences of demonetization on various economic variables and entities. Finally, they conclude that if the money disappears, as some hoarders would not like to be seen with their cash pile, the economy will not benefit. On the other-hand if the money finds its way in the economy it could have a meaningful impact. However, experiences from different countries shows that the move was one of the series that failed to fix a debt-burdened and inflation-ridden economy.

Tax Research Team (2016): This paper elucidated the impact of demonetization on the availability of credit, spending, level of activity and government finances.

Anil I Ramdurg & Dr. Basavaraj CS (2016): This article has made an attempt to assess how the tool of Demonetization can be used to eradicate parallel economy.

Objectives of the Study

The objectives of this research work can be summarized as follows:

- To analyze the trend of selected sector-wise indices after demonetization.
- To examine the impact of demonetization on selected sector-wise indices by using T-test.

Research Design

- **Sources of Data:**

The present study is based on the secondary data and the data is collected from the official website of Bombay Stock Exchange www.bseindia.com. For the purpose of this study various articles and research papers are also reviewed.

- **Period of the Study**

The study covers the period from 23rd September to 21st December 2016.

- **Sample of the Study**

Here, for this research work 10 sector-wise indices are selected. They are

  - S&P BSE AUTO
  - S&P BSE BANKEX
  - S&P BSE FMCG
  - S&P BSE Healthcare
  - S&P BSE IT
  - S&P BSE METAL
  - S&P BSE Oil & Gas
  - S&P BSE POWER
  - S&P BSE REALTY
  - S&P BSE Telecom

Hypothesis Formulation

H_0:   There is no significant difference between the selected sector-wise indices before and after demonetization.

Framework of Analysis

In the first part, the trend analysis is used for analyzing the trend of the selected sector-wise indices after demonetization. A trend analysis is an aspect of technical analysis that tries to predict the future movement of a stock based on past data.

In the next part, T-test: paired two sample for means is used to examine the impact of demonetization on selected sector-wise indices before and after demonetization.

Trend Analysis of Various Indices

- **S&P BSE AUTO**

The S&P BSE AUTO index comprises constituents of the S&P BSE 500 that are classified as members of the transportation equipment sector as defined by the BSE industry classification system. From the following graph we can see that there is a fall of 750 points on the next day of demonetization. Till 30th November the S&P BSE AUTO was continuously declining. After that it has started raising but it is at a very low rate.
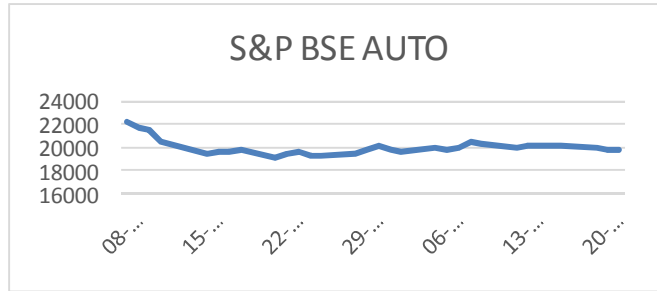
- **S&P BSE BANKEX**

The S&P BSE BANEX index comprises constituents of the S&P BSE 500 that are classified as members of the banks sector as defined by the BSE industry classification system. From the following graph we can see that S&P BSE BAKEX is raising at a very lower rate for 2-3 days after demonetization. After that it started falling. It declined by 581 points on 10th November.
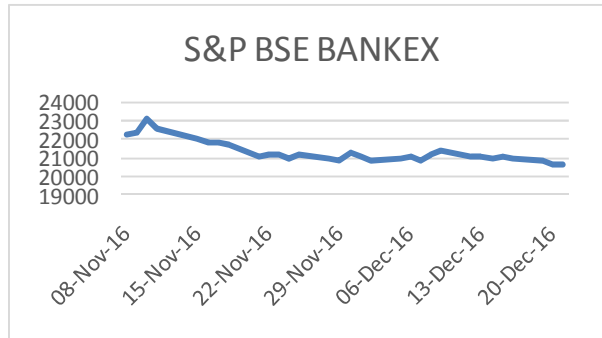
- **S&P BSE FMCG**

The S&P BSE FMCG is designed to provide investors with a benchmark reflecting companies included in the S&P BSE All-Cap that are classified as members of the FMCG sector. S&P BSE FMCG was continuously falling from 8th November to 24th November and it decline nearly 753.88 points during that period. After that there wasa very little fluctuations in S&P BSE FMCG.
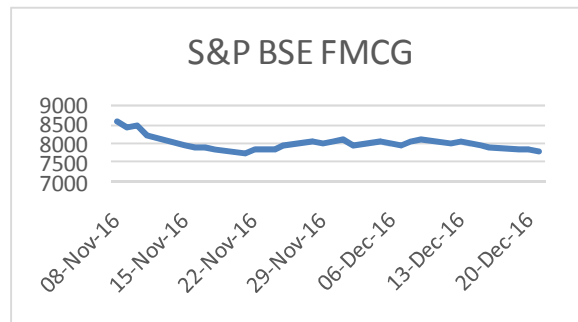
- **S&P BSE Healthcare**

The S&P BSE Healthcare is designed to provide investors with a benchmark reflecting companies included in the S&P BSE All-Cap that are classified as members of the Healthcare sector. The S&P BSE Healthcare index declined by 703 points from 10th November to 16th November. After that it started increasing.

- **S&P BSE IT**

The S&P BSE IT is designed to provide investors with a benchmark reflecting companies included in the S&P BSE All-Cap that are classified as members of the information technology sector. The S&P BSE IT index declined by 566 points in 4 days after demonetization. After that again it reached to 9876.62 points on 25th November and then after there was a very little fluctuations in S&P BSE IT index.
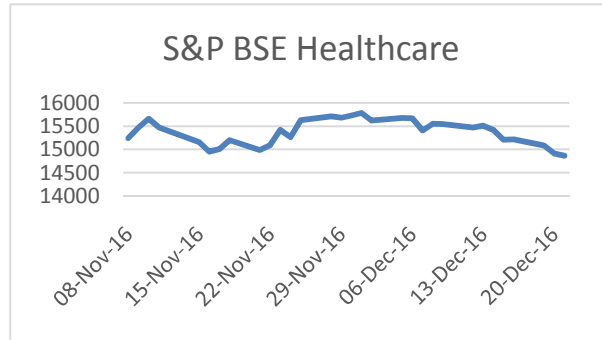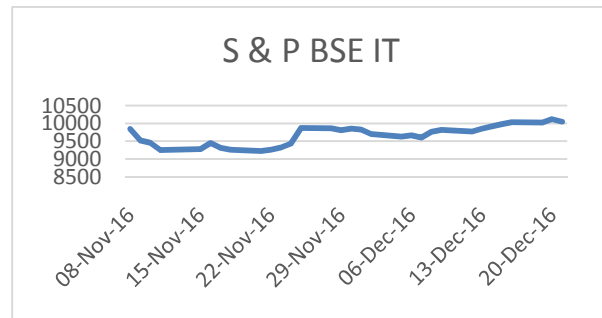

- **S&P BSE METAL**

The S&P BSE METAL index comprises constituents of the S&P BSE 500 that are classified as members of metal, metal products and mining sector as defined by the BSE industry classification. After demonetization S&P BSE METAL Index fall by 1261.01 points till the 21st November. It was the all-time lowest point during November 2016.
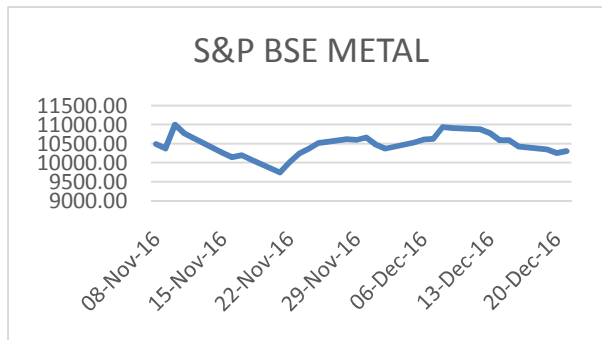
- **S&P BSE Oil and Gas**

The S&P BSE Oil and Gas index comprises constituents of the S&P BSE 500 that are classified as members of oil and gas sector as defined by the BSE industry classification. From the following graph, we can see that the S&P BSE oil and Gas index was continuously fluctuating during the study period. It declined to 11545.89 points on 16th November and it was the lowest point during the study period.
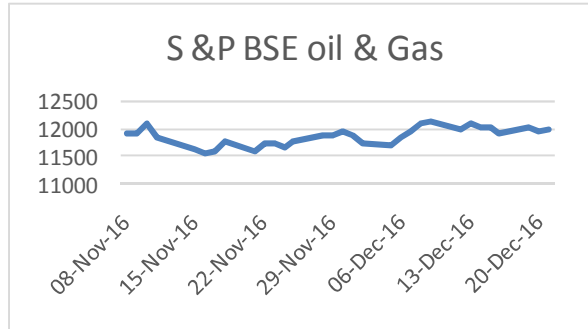
- **S&P BSE Power**

The S&P BSE Power index comprises constituents of the S&P BSE 500 that are classified as members of heavy electrical equipment and electric utility sector as defined by the BSE industry classification. Form the following graph, we can see that the S&P BSE Power index was fluctuating in both the directions after demonetization. It suggests that the demonetization has not affected a lot to the S&P BSE Power index.
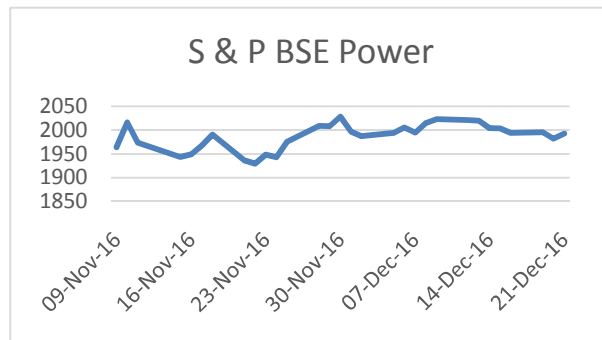
- **S&P BSE REALTY**

The S&P BSE Realty index comprises constituents of the S&P BSE 500 that are classified as members of real estate sector as defined by the BSE industry classification. After demonetization, S&PBSE Realty fall by 295 points till 21st November and after it started raising and eventually it became less fluctuating.
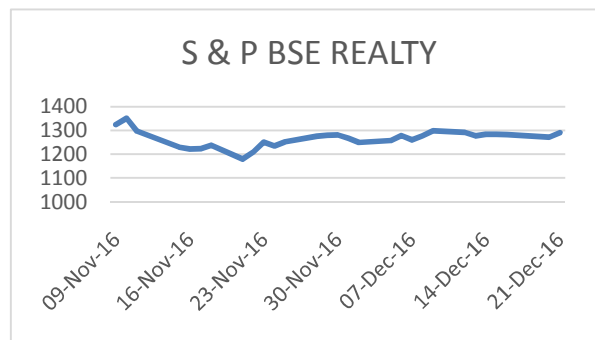
- **S&P BSE Telecom**

The S&P BSE Telecom is designed to provide investors with a benchmark reflecting companies included in the S&P BSE All-Cap that are classified as members of the telecom sector. From the following trend-analysis we can see that after demonetization there is a very flat decline in the S&P BSE Telecom index. Within a very few days it reached to the high level again. So it suggests that demonetization has no or little impact on the S&P BSE Telecom index.
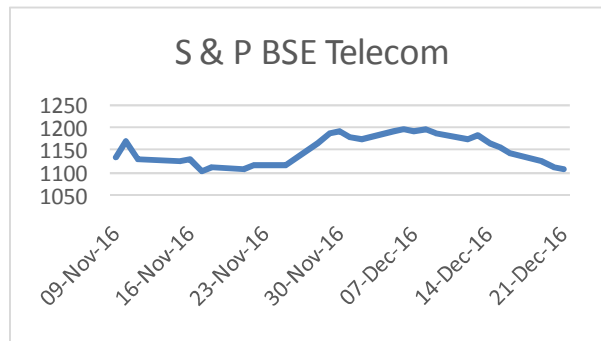
The table given below shows the average of 30 days of selected sector-wise indices before and after demonetization.

Averageof Selected Sector-wise Indices Before and After 30 days of Demonetization		
Indices	Before	After
S & P BSE AUTO	22330.01	20036.60
S & P BANKEX	22246.37	21318.94
S & P BSE FMCG	8514.61	7988.77
S & P BSE Healthcare	16246.90	15382.75
S & P BSE IT	10137.15	9665.40
S & P BSE METAL	10179.25	10477.03
S & P BSE Oil and Gas	11944.05	11858.97
S & P BSE POWER	2012.48	1987.27
S & P BSE REALTY	1536.94	1266.93
S & P BSE Telecom	1182.18	1153.10

T-test: paired Two Sample Means

Particulars	Before	After
Mean	10632.9928	10113.57527
Variance	61803795.54	53808334.86
Observations	10	10
Pearson Correlation	0.99773916	
Hypothesized Mean Difference	0	
Df	9	
t Stat	2.24028502	
P(T<=t) one-tail	0.025909565	
t Critical one-tail	1.833112933	
P(T<=t) two-tail	0.051819131	
t Critical two-tail	2.262157163	

From the above table, we can see that the P-value is less than 0.5. That's why the null hypothesis is accepted. So, it suggests that there is no significant difference between the selected sector-wise indices before and after demonetization.

Findings and Conclusion

- **S&P BSE AUTO:** Demonetization hits the automobile industry very hard. S&P BSE AUTO decline by 2734 points after demonetization because the monthly automobile sales growth rate in India slipped a 16-year-low in December with total vehicles sales declining by 18.66%. As per SIMA (Society of Indian Automobile Manufacturers, "This is the highest decline across all categories since December 2000.

- **S&P BSE BANKEX:** The banking sector took a hit after the demonetization but recovered on 21st November. However, this is one sector which is expected to benefit in the long term because a lot of black money is deposited in banking system will also help to address the non-performing assets problem that many of the banks are facing due to bad loans.
- **S&P BSE FMCG:** S&P BSE FMCG was continuously falling from 8th November to 24th November and it decline nearly 753.88 points during that period.The FMCG industry has been hit because it is largely dependent on cash. The traditional trade has been hit hard, especially wholesalers and kirana stores where transactions are largely in cash.
- **S&P BSE Healthcare:** The S&P BSE Healthcare index declined by 703 points from 10th November to 16th November. Demonetization has not impacted a lot the Indian pharma market and the demand is also not impacted in a big way. However, luxury hospitals has seen some impact due to spending cuts. That's why the S&P BSE Healthcare fall for a very temporary period.
- **S&P BSE IT:** The IT sector has been largely unaffected by the demonetization as it is export oriented hence relatively better positioned to handle shocks in the Indian economy. Moreover, it is probably also largely a cashless sector and hence also not affected due to the cash being taking out of economy.
- **S&P BSE METAL:** Real estate slowdown has hit steel, and may hit further. Aluminium, copper, zinc also hit since they are raw materials in building industry products. If auto sales are hit badly, metals business will do worse.
- **S&P BSE Oil and Gas:** The demonetization of high denomination currency should only have a marginal impact on the Indian oil & gas sector, the brokerage house says. It sees a marginally adverse medium-term impact on sales of petroleum products. It reiteractedits preference for refiners (HPCL, BPCL, and IOC) in the oil sector and Petronet LNG among the gas utilities.
- **S&P BSE POWER:** Demonetization has prompted liquidity mash in the economy influencing modern creation. This will prompt constriction in power request and may make little misfortunes the influence plants designers and the conveyance organizations because of unutilized limit.
- **S&P BSE REALTY:** The realty sector has been affected by the demonetization exercise, as it has traditionally seen a very high involvement of black money and cash transactions. The resale properties segment has been taken a big hit.
- **S&P BSE Telecom:** There is temporary impact of demonetization on Indian telecom sector. There is no material impact as average transaction size is very small. However, slowdown in smartphone sales has potentially slower adoption of mobile broadband subscriber penetration.

Overall Analysis

The result of T-test says that there is no significant difference between the selected sector wise indices before and after demonetization. It shows that the impact of demonetization on stock market was temporary. Sure, the BSE Sensex is a bit lower now since 8th November, but then there are many other besides demonetization that have affected the markets, which has been Donald Trump's election as president of the US and subsequent rise US bond yields and the strengthening of the dollar. That has led to funds flowing out from emerging markets and India too has been affected.

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GREEN REPORTING PRACTICES & PROFITABILITY
FOR CORPORATE SUSTAINABILITY

Jyoti Vidhani[*]
Prof. Anita Shukla[**]

ABSTRACT

Green reporting is an umbrella term that describes the various means by which companies disclose information on their environmental activities. Many developing countries have implemented policies and taken actions to implement various elements of the green growth framework discussed above, at the national and local level, in the public and private sector. In present paper an attempt has been made to analyze the relationship between the environmental disclosure and corporate profitability. It can be inferred from the results that better the environmental reporting and disclosure by the company, higher the profitability of firm.

KEYWORDS: *Green Reporting, Profitability, Corporate Sustainability.*

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Introduction

"Environmental Reporting covers the preparation and provisions of information, by management, for the use of multiple stakeholders groups (internal or external) on the environmental status and performance of their company or organization. This information is most often provided in separate environmental report, but it may (either as well or alternatively) be included in other forms of reporting such as financial and social/ethical reporting (Pahuja, S., 2009). Environmental reporting is defined by the Financial Accounting Standards Board (FASB) as "the information that is required to be disclosed by regulatory rule or because management considers it useful to those outside the enterprise and discloses it voluntarily." It is also defined as "the set of information items that relate to a firm's past, current and future environmental management activities and performance" and "information about the past, current and future financial implications resulting from a firm's environmental management decisions or actions."(Chouhan et.al, 2014; Chouhan et.al,2013; Khan et.al, 2014)

Environmental reporting is "an umbrella term that describes the various means by which companies disclose information on their environmental activities." It is also defined as "a process through which companies often disclose environmental information to their stakeholders to provide evidence that they are accountable for their activities and the resultant impact on the environment," and "a set of information items that relate to a firm's past, current, and future environmental management activities and performance," or as "any written passage about company's environmental issue and activity." Green Accounting is an important tool for modern accounting system which played an important role to understand the natural environment of the economy. Green accounting is also referred as Environmental accounting, Natural capital Accounting, Resource accounting and integrated economic and Environmental accounting. Green accounting calculate the cost and revenue of environment activities and also helpful for decision making of environment resources to economic well-being. Many developing countries have implemented policies and taken actions to implement various elements of the green growth framework discussed above, at the national and local level, in the public and private sector.

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Objective

The objectives of the paper are as under:

- To find out environmental disclosure score in five selected continents.
- To analyse the relationship between profitability and environmental disclosure score.

Hypothesis

H_1:   There is no difference in disclosure practices in five continents.

H_2:   There is no association between profitability and disclosure practices of companies of 5 continents.

Literature Review

Gerged, Cowton, and Beddewela (2017) presented the first comprehensive analysis of corporate environmental disclosure in the Arab Middle East and North Africa region. Bui, B., Chapple, L. and Truong, T. P. (2017) examined the drivers of tight budgetary control in carbon management in the context of climate change regulation. Using the setting of New Zealand Emissions Trading Scheme (ETS), study explored how firms manage their carbon performance using carbon-focused budgetary control. Wegener, M. and Labelle, R. (2017) compared the value relevance of environmental provisions as recorded under Canadian/U.S. GAAP and IFRS accounting frameworks with consideration of the impact of voluntarily issuing stand-alone sustainability reports.

Debnath and Dhalla (2014) conducted an exploratory study with the aim of understanding and emerging trends of environmental performance. They also want to know about the level of environmental performance and develop eco-efficiency to connect micro to macro level. Amico, Coluccia, Fontana & Solimene (2014) studied the factors that influence the environmental disclosures of Italian listed companies. He also aimed to verify the effects produced by the introduction of specific legislation on environment disclosures. Makori and Jagongo (2013) investigated that there is significant relationship between Environmental Accounting versus Return on Capital Employed (ROCE), Net Profit Margin (NPM), Dividend per Share (DPS) & Earning per Share (EPS). In this study data were collected from annual reports of 14 randomly selected companies from Bombay Stock Exchange in India. The study had both dependant and independent variables. The dependant variables were amount spent on environmental protection and independent variables were ROCE, NPM, DPS, and EPS. These data and variables were analyzed by using multiple regression analysis through the use of econometric model.

Stankovic and Suzana (2012) studied designing or development of Corporate Sustainability Performance Measurement System. In this study authors analyze the current state and the contents of the reports of relevant organization and institution in which they presented indicators used to evaluate the performance of business sustainability. Harazain and Horvath (2011) explore their article 'Relation between Environmental Accounting and Pillars of sustainability'. They explain four challenges related to sustainable development. The main aim of the study is to provide an appropriate solution for the question- Is it true that social and integration point of view is outside o f the concept of environmental accounting. With the help of review of literature and primary research, they conclude that the environment accounting is not beyond the social and integration challenges of the sustainability.

Lansiluto & Jarvenpaa (2010) investigated the importance of performance management system with the help of balanced score cards of environmental management. They discussed in their article that the important factors and incorporate metrics can support and ensure the performance of management system will identified and come into better environmental measures. Tagesson, Blank, Brobergand Collin (2009) examined the extent and context of social and environmental reporting in Swedish Listed Corporation. They study 267 Swedish Listed Companies websites for environmental disclosures and they found a positive relationship between environmental disclosures and size and profitability with government companies disclosing more environmental information than private companies. The Present Paper is divided into three parts, Part I discusses Environmental Disclosure Score{EDS} for all the continents, Part II deals with profitability of sample units and Part III tests the relationship between EDS & Profitability. The methodology followed to find out EDS and the profitability variables used to find out its relationship with EDS are described in methodology.

Research Methodology

- **Scope of Study**

The period of study is limited to five year (2012-2016). This study has been conducted on 180 all the reports were downloaded from the website of the selected companies from the five continents namely Asia, Africa, South America, Europe and Oceania.

- **Universe and Sample**

     The secondary data of the sample units reported data about their accounting practices were taken from GRI and Companies website. A sample of 400 self declared companies with a score of 3/3.1 companies were selected for this purpose. Later on 180 company's reports were selected who were found disclosing the relevant data regarding the green accounting practices in their Sustainability Reports and Annual Reports.

- **Global Reporting Initiative (GRI)**

     GRI is an independent international organization that helps companies, governments and other organizations to understand and communicate the impact of critical sustainability issues such as climate change, human rights and corruption on their core business. The latest valid recognized version of the GRI is SIX Exchange Regulation. The GRI has presented a Standard disclosure which is commonly adopted by various companies across the world. The Global Reporting Initiative (known as GRI) is an international independent standards organization that helps businesses, governments and other organizations understand and communicate their impacts on issues such as climate change, human rights and corruption. Founded in 1997, GRI is a non-profit organization with its Secretariat in Amsterdam, the Netherlands. GRI produces one of the world's most widely used standards for sustainability reporting; also known as ecological footprint reporting, environmental social governance (ESG) reporting, triple bottom line (TBL) reporting, and corporate social responsibility (CSR) reporting.

- **Environmental Disclosure Score**

     To analyse non-monetary disclosure practices the scoring is divided into two categories from 0-5 depending upon the disclosure of data shown for the number of years i.e., if the company has disclosed the data for all five years, a score of 5 has been given, if it is for four years, score of 4 is given and so on.

     For non monetary disclosure, assuming that monetary disclosure is more important than non monetary disclosure, for monetary disclosure of environmental cost and saving for sample units the scores of 5 to 9 are in increasing order for disclosure of the financial data for 1 year and above, which mean that a score of 5 is given for monetary disclosure of cost and saving if the data shown is only for one year, score of 6 for data shown for two year and so on. The total environmental score has been awarded out of 60 marks.

- **Profitability Variables**

     For this study EBIT, EAT, EPS, Market capitalization was used to find out relationship between EDS & Profitability.

- **Analysis of Data**

     The data for the current study is analysed by using Pearson's correlation amongst the disclosure scores of the various continents with the help of SPSS-19 software.

- **Tools for the Study**

     The tool used for gathering of the data is detailed study of the sustainable/annual report of the company for the selected period of the study.

Results

H₁: There is no difference in disclosure practices in five continents.

     The total EDS score of the various continents are together calculate for identifying better practices. The total and average scores are given in following table:

Table 1: Environmental Disclosure Ranking

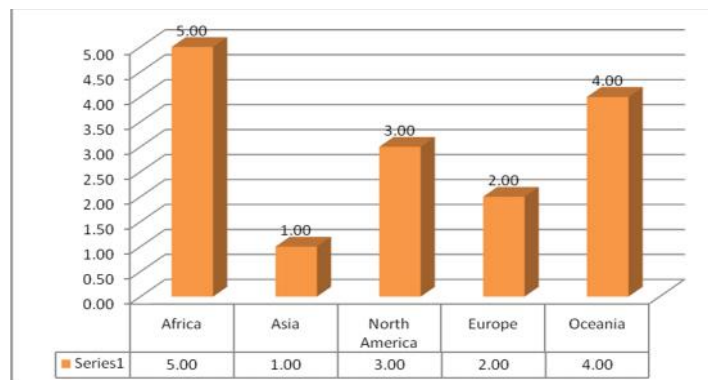| Continent	Companies	Score	Mean	Rank
Asia	28	935	33.39	I
Europe	28	907	32.39	II
North America	56	1595	28.48	III
Oceania	11	236	21.45	IV
Africa	57	1068	18.73	V
Average	**180**	**4741**	**26.33**	

Figure 1: Ranking of continents based on disclosure scores

The above table revealed that the EDS score of the Asian companies are better than other continents as it is provided I rank, followed by Europe with closely related score and II rank. The other continents rank are lower and for Africa and Oceania is below the average of the other continents.

Relationship between EDS and Profitability

Following hypothesis is formulated to test the relation between environment disclosure and profitability.

Hypothesis 2: There is no association between profitability and disclosure practices of companies of 5 continents.

To analyze the relationship between the environmental disclosure and company profitability, bi-variate correlation has been employed. The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases. Company profitability has been measured from different factors like EBIT, EAT, Market Capitalization and EPS. Following section describe the continent wise description of the relation between environmental disclosures and selected company profitability. To analyze the above hypothesis the statistical method of correlation is being used. Further the correlation is calculated between the environmental performance and the financial measures like Earning per share (EPS), Market Capitalization (MCAP) and Earnings before interest and taxes (EBIT). To analyze the data with the environmental performance the data with the huge figures were converted into normal data by using the logarithm method. This can be valuable both for making patterns in the data more interpretable and for helping to meet the assumptions of inferential statistics. The results of the pearson correlation is shown below:

- **Africa**

Table 2: Co-Relation Table- Africa

(N=57)

Correlations		EBIT	EAT	EPS	MRC	EDS
EBIT	Pearson Correlation	1	.935**	.366**	.338*	.490**
	Sig. (2-tailed)		.000	.005	.010	.000
EAT	Pearson Correlation	.935**	1	.398**	.371**	.466**
	Sig. (2-tailed)	.000		.002	.004	.000
EPS	Pearson Correlation	.366**	.398**	1	.258	-.046
	Sig. (2-tailed)	.005	.002		.052	.735
MRC	Pearson Correlation	.338*	.371**	.258	1	.083
	Sig. (2-tailed)	.010	.004	.052		.542
EDS	Pearson Correlation	.490**	.466**	-.046	.083	1
	Sig. (2-tailed)	.000	.000	.735	.542	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						
EPS=Earnings per share (EPS), MRC=Market Capitalization, EBIT=Earnings before interest and taxes, EAT=Earnings After Tax						

From the above table it can be concluded that there is a significant positive relation between environmental disclosures by African companies and their profitability performance indicators. Results confirmed a positive relation between companies EBIT (r=0.490, p<0.05) and EAT (r=0.466, p<0.05) with Environment disclosure score. It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Results also indicate a favourable correlation between EAT, MRC, EPS and EBIT of sample African companies.

- **Asia**

Table 3: Co-Relation Table- Asia

(N=28)

Correlations						
		EBIT	**EAT**	**EPS**	**MRC**	**EDS**
EBIT	Pearson Correlation	1	.885**	.491**	.585**	.576**
	Sig. (2-tailed)		.000	.008	.001	.017
EAT	Pearson Correlation	.885**	1	.453*	.447*	-.024
	Sig. (2-tailed)	.000		.016	.017	.905
EPS	Pearson Correlation	.491**	.453*	1	.301	.007
	Sig. (2-tailed)	.008	.016		.120	.972
MRC	Pearson Correlation	.585**	.447*	.301	1	.005
	Sig. (2-tailed)	.001	.017	.120		.978
EDS	Pearson Correlation	.576**	-.024	.007	.005	1
	Sig. (2-tailed)	.017	.905	.972	.978	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						
EPS=Earnings per share (EPS), MRC=Market Capitalization, EBIT=Earnings before interest and taxes, EAT=Earnings After Tax						

From the above table it can be concluded that there is a significant positive relation between environmental disclosures by Asian companies and their profitability performance indicators. Results confirmed a positive relation between companies EBIT with Environment disclosure score (r=0.576, p<0.05). It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Results also indicate a favourable correlation between EAT, EPS, MRC and EBIT of sample Asian companies.

- **Europe**

Table 4: Co-Relation Table- Europe

(N=28)

Correlations						
		EBIT	**EAT**	**EPS**	**MRC**	**EDS**
EBIT	Pearson Correlation	1	.910**	.031	.320	.031
	Sig. (2-tailed)		.000	.874	.097	.874
EAT	Pearson Correlation	.910**	1	.060	.275	.005
	Sig. (2-tailed)	.000		.760	.157	.979
EPS	Pearson Correlation	.031	.060	1	.098	.182
	Sig. (2-tailed)	.874	.760		.620	.354
MRC	Pearson Correlation	.320	.275	.098	1	.534**
	Sig. (2-tailed)	.097	.157	.620		.022
EDS	Pearson Correlation	.031	.005	.182	.534**	1
	Sig. (2-tailed)	.874	.979	.354	.022	
**. Correlation is significant at the 0.01 level (2-tailed).						
EPS=Earnings per share (EPS), MRC=Market Capitalization, EBIT=Earnings before interest and taxes, EAT=Earnings After Tax						

From the above table it can be concluded that there is a significant positive relation between environmental disclosures by European companies and their profitability performance indicators. Results confirmed a positive relation between companies market capitalization with Environment disclosure score (r=0.534, p<0.05). It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Results also indicate a favourable correlation between EAT and EBIT of sample European companies (r=0.910, p<0.05).

- **North America**

Table 5: Co-Relation Table- North America

Correlations						
		EBIT	**EAT**	**EPS**	**MRC**	**EDS**
EBIT	Pearson Correlation	1	.668[**]	.326[*]	.268[*]	.329[*]
	Sig. (2-tailed)		.000	.014	.046	.013
EAT	Pearson Correlation	.668[**]	1	.180	.292[*]	.276[*]
	Sig. (2-tailed)	.000		.184	.029	.039
EPS	Pearson Correlation	.326[*]	.180	1	.050	.061
	Sig. (2-tailed)	.014	.184		.713	.653
MRC	Pearson Correlation	.268[*]	.292[*]	.050	1	.136
	Sig. (2-tailed)	.046	.029	.713		.318
EDS	Pearson Correlation	.329[*]	.276[*]	.061	.136	1
	Sig. (2-tailed)	.013	.039	.653	.318	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						
EPS=Earnings per share (EPS), MRC=Market Capitalization, EBIT=Earnings before interest and taxes, EAT=Earnings After Tax						

From the above table it can be concluded that there is a significant positive relation between environmental disclosures by North American companies and their profitability performance indicators. Results confirmed a lower positive relation between companies EBIT with Environment disclosure score (r=0.329, p<0.05). Results also confirmed a positive relation between companies EAT with Environment disclosure score (r=0.276, p<0.05). It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Moreover, results also indicate a favorable correlation between EAT and EBIT of sample North American companies (r=0.668, p<0.05).

- **Oceania**

Table 6: Co-Relation Table- Oceania

(N=11)

Correlations						
		EBIT	**EAT**	**EPS**	**MRC**	**EDS**
EBIT	Pearson Correlation	1	.993[**]	.447	.008	.556**
	Sig. (2-tailed)		.000	.168	.981	.031
EAT	Pearson Correlation	.993[**]	1	.366	.015	.046
	Sig. (2-tailed)	.000		.269	.964	.892
EPS	Pearson Correlation	.447	.366	1	.063	.433
	Sig. (2-tailed)	.168	.269		.855	.184
MRC	Pearson Correlation	.008	.015	.063	1	.410
	Sig. (2-tailed)	.981	.964	.855		.211
EDS	Pearson Correlation	.556**	.046	.433	.410	1
	Sig. (2-tailed)	.031	.892	.184	.211	
**. Correlation is significant at the 0.01 level (2-tailed).						
EPS=Earnings per share (EPS), MRC=Market Capitalization, EBIT=Earnings before interest and taxes, EAT=Earnings After Tax						

From the above table it can be concluded that there is a significant positive relation between environmental disclosures by Oceania companies and their profitability performance indicators. Results confirmed a positive relation between companies EBIT with Environment disclosure score (r=0.556, p<0.05). It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Moreover, results also indicate a favourable correlation between EAT and EBIT of sample Oceania companies (r=0.994, p<0.05).

Primary Data Analysis

As per the objective of the study to analyze the current practices of green accounting and reporting practices for corporate sustainability the perception of Top managers, Financial Managers, Financial Consultants, Finance executives, Professional including CA, CS & ICWAI were taken and to measure the respondents perceptions regarding Environmental Disclosure and its relationship between Profitability are as follows:

Respondents Perceptions

On asking preference based question from the above persons on importance of the Disclosure priority in annual reports i.e. Economic/Environment/Social. The majority of respondents choose the combination in which this sequence of disclosure gives I priority to Environment, II to Economic and III to Social. Disclosure as can be seen from the following table:

Table-7: Sequence of Disclosure activity Important for respondents

	Rank	Frequency	Percent
Valid	1. Economic 2. Environmental 3. Social	31	17.3
	1. Economic 2. Social 3. Environmental	53	29.6
	1. Environmental 2. Social 3. Economic	31	17.3
	1. Environmental 2. Economic 3. Social	57	31.8
	1. Social 2. Economic 3. Environmental	7	3.9
	Total	179	100.0

It is clear from the Table 7.1 that the maximum respondents (31.8%) wish to report for Environmental reporting at top most priority followed to Economic and Social.

Most important activity to be reported in the opinion of respondents is presented as under

Table 8: most important activity for respondents

		Frequency	Percent
Valid	Energy	10	5.6
	Emissions	56	31.3
	Biodiversity	19	10.6
	Water	70	39.1
	Effluents & Waste	24	13.4
	Total	179	100.0

It is clear from the Table 5.8 that the maximum respondents (39.1%) wish to report for water emission followed by Air Emissions (31.3%). Further question on environmental disclosure is required or not is being called upon and respondents' views are presented as under:

Table 9: Necessity of Environment Disclosure

		Frequency	Percent
Valid	No	86	48.1
	Yes	93	51.9
	Total	179	100.0

It is clear from the Table 9 that the maximum respondents (51.9%) revealed environmental disclosure as important activity of the company. To find out that whether the Environment Disclosure activity has any relationship with profitability, views of respondents are presented as under:

Table 10: Respondents Opinion on Relationship between EDS & Profitability

		Frequency	Percent
Valid	By increasing Market Share	100	55.9
	By increasing Goodwill	19	10.6
	By increasing Profit Margin	13	7.3
	All of above	32	17.9
	By increasing Earning per Share (EPS)	15	8.4
	Total	179	100.0

It is clear from the Table 10 that the maximum respondents (55.9%) revealed that the activity is related with increasing the market share of the company.

Conclusion

The environment disclosure is an important part of the representation of the company's performance each year. The paper presented the total EDS score of the various continents are together calculate for identifying better practices. The total and average EDS score of the Asian companies were found to be better than other continents, followed by Europe with closely related score. The other continents rank are lower and for Africa and Oceania is below the average of the other continents.

Further the research has highlighted that the relationship between the environmental disclosure and company profitability (from different factors like EBIT, EAT, Market Capitalization and EPS) with bi-variate correlation. It can be inferred that higher the environmental reporting and disclosure by the company, higher the profitability of firm. Results also indicate a favourable correlation between EAT, MRC, EPS and EBIT of sample African companies and favourable correlation between EAT, EPS, MRC and EBIT of sample Asian, European companies. Moreover, results also indicate a favourable correlation between EAT and EBIT of sample Oceania companies. Overall, there is a positive relation between company profitability measures and environmental disclosures.

Primary data analysis also revealed that the respondents have exhibited a fair amount of agreement for the environment disclosure first rather than economic and social disclosure. Further they gave importance to the Energy Minimization (Chouhan & Verma, 2014:a; Chouhan. & Verma2014:b; Chouhan, 2013), they revealed environmental disclosure as important activity of the company and Environmental disclosure can be an activity is related with increasing the market share of the company. It further reveals that the responses are in favour that there is a need of focusing the Energy Minimization as a green accounting and reporting practice of companies.

The most significant problem of Green Accounting (GA) lies in the absence of a clear definition of environmental costs (Khanet.al, 2012; Chandra et.al, 2012; Chandraet.al, 2012). This means it is likely that organisations are not monitoring and reporting such costs. The increase in environmental costs is likely to continue, which will result in the increased information needs of managers and provide the stimulus for the agreement of a clear definition. If a generally applicable meaning of environmental costs is established, the use of GA will probably increase with positive effects for both organisations and the environment in which they operate. In the future it will not only be large companies which can afford to implement GA but also small and medium-sized enterprises which have fewer available financial resources.

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STUDENTS' PREFERENCES FOR ACTIVITY BASED LEARNING IN ACCOUNTANCY SUBJECT: A STUDY OF ANAND DISTRICT

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ABSTRACT

Higher education in recent years has undergone important paradigm shifts; especially shift from the teacher-centric to a learner-centric system. Teaching of various subjects and engaging students meaningfully in the classroom have become truly challenging. It has been observed that students retain more information when active learning methods are used in the classroom. Of Course, Lecturing method has its own merits, but it's not always the best way to teach certain concepts of accountancy. Often, students learn better through hands-on activities. In higher education, teacher has to apply different learning strategy, such as fun learning activities for students, active learning games and lesson plans etc. Generally, chalk and talk method is very popular in teaching accountancy subject but to make learning interesting, we have developed an Activity for cost accounting. The activity was performed in undergraduate classes and thereafter an assessment was made about retention of information. The results were encouraging so the researchers were further interested in knowing their preferences towards activity based learning in Accountancy subject. This research is focused on: Does students prefer Activity based learning in Accountancy subject? Is it an effective way to learn Accountancy? etc. The study reveals that Activity based learning is better than chalk and talk method, retention ratio will increase, attendance in class and confidence level of the students will improve. Learning becomes fun and the subject can be leant without burden. It also develops other skills like creative and communication skill, teamwork etc. among students.

KEYWORDS: Activity Based Learning, Active Learning Methodology, Learning Games, Lesson Plans.

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Introduction

If we would like to know whether "significant learning" is taking place in the classroom, one must be capable of recognizing it when it occurs. If you look up the definition of "learn" in a dictionary, you will likely find the following: to acquire knowledge of a subject or skill through education or experience, to gain information about somebody or something, or to memorize something, for example, facts, a poem, a piece of music, or a dance. This definition is not particularly insightful, although it reminds us that the word can be used to describe the acquisition of both knowledge and skill, and that acquisition can be by a variety of means, including education, experience or memorization.

Conceptual Framework

According to Dr. Damodharan Learning is a light that shows the mankind the right direction to surge. The purpose of education is not just making a student literate but adds rationale thinking, knowledge ability and self-sufficiency. When there is a willingness to change there is hope for progress in any field. Creativity can be developed and innovation benefits both students and teachers.

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"Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates in an individual's attempt to overcome obstacles or to adjust to new situations. It represents progressive changes in behaviour….. It enables him to satisfy interests to attain goals". **Crow and Crow** (1973)

This activity is important because of a majority of instructors use the lecture method at least part of the teaching. The lecture is one of the most efficient teaching methods for presenting many facts or ideas in a relatively short time. Material that has been logically organized can be presented concisely in rapid sequence. The lecture is particularly suitable for introducing a subject. To ensure that all students have the necessary background to learn a subject, we can present basic information in a lecture. We can offer students with varied backgrounds a common understanding by using the lecture in this manner. A brief introductory lecture can give direction and purpose to a demonstration or prepare students for a discussion. The lecture is a convenient method for instructing large groups. It allows a large number of students to receive information from real experts in a subject. In general, a person who can speak from actual experience or a scholar who has carefully analyzed the results of research will have great credibility with students. The lecture is often the most effective way of communicating the energy and enthusiasm of a person who has actual experience in a field for motivating students.

Many concepts are a challenge to learn, and are learned slowly as more examples and rules are integrated and information is sorted into more straightforward units. All students learn concepts at different rates, and a student who demonstrates mastery of one concept very quickly may find another particularly challenging. Students with problems in learning such concepts may benefit from additional educational strategies to help prevent the student falling behind as additional information and concepts are built upon concepts that were not completely mastered. Many children have preconceived notions of concepts before being exposed to them in a classroom setting. When mastering a concept in the classroom involves conceptual change, that is replacing a previously held concept with a new one, students can encounter unexpected difficulties. Activity-based learning (ABL) describes a range of pedagogical approaches to teaching. Its core premises include the requirement that learning should be based on doing some hands-on experiments and activities. The idea of activity-based learning is rooted in the common notion that children are active learners rather than passive recipients of information. If child is provided the opportunity to explore on their own and provided an optimum learning environment then the learning becomes joyful and long-lasting.

Teachers should make their teaching activity-based and interesting. Hence we know that "Education means all round development of the child". So we have to arrange several activities to develop the student's personality in many ways. Activity Based Learning Methodology (A.B.L.) is a very interesting methodology. Now it is being introduced in primary schools in many states of India. Tamilnadu is the best example, where lots of work has been done on Activity Based learning (A.B.L.) and Active Learning Methodology (A.L.M.). Active learning is more effective than other methodologies. It is useful in college education programs. Learning through games and other related activities are very useful in college education. Teachers have to understand the relationship between learning and games. They have to discover new learning games in teaching. Now a day's varieties of teaching methodologies are being discovered. Teachers have to choose the most effective methodology for their students. Actually the teaching should be an interesting thing for the teachers and the students also. Now several researchers have been working on "Teacher's active role in smart and active teaching learning methodologies". An educational institution should be an interesting place for teaching-learning experiences. So teachers have to discover the new and interesting methodologies according to the students learning level and their interests.

The Roles of Educational Websites in Activity Based Learning

In smart college learning and smart class learning where education is provided by computers, internet and multimedia, there are several educational websites providing the interactive learning environment for learners. These educational websites designed in a manner where learning is a fun. Once students learn to operate the website, they enable to learn individually. In such an environment, the teachers' role is to facilitate learning. The teacher has to make a different teaching strategy in such type of activity based learning. In college education, teacher has to make a different learning strategy, such as fun learning activities for students, active learning games, active learning lesson plans etc. Teacher has to manage his active and smart classroom with innovative teaching learning resources and active

methods of learning. He has to plan active learning lesson plans, activity based learning materials, active learning examples and also activity based educational games.

Benefits of Work-Based Learning for Students

Students benefit from work-based learning through:

- Application of classroom learning (both academic and technical) in real-world setting
- Establishment of a clear connection between school and work
- Assessment of their interests, aptitudes and abilities while learning about the career possibilities available to them
- Improvement of their post-graduation employment opportunities
- Development and practice of positive work-related habits and attitudes including the ability to think critically, solve problems, work in teams and resolve issues
- Assessment and understanding of the expectations of the workplace
- Establishment of professional contacts for future employment
- Expansion and refinement of their technical skills
- Participation in authentic job-related tasks
- Observation of the demeanor and procedures of workplace professionals
- Increased motivation/appreciation for staying in school

Literature Review

Elvis Munyaradzi Ganyaupfu (2013) The objective of this study was to investigate the differential effectiveness of teaching methods on students' academic performance. A sample of 109 undergraduate students from the College's Department of Economic and Business Sciences was used for the study. Using the inferential statistics course, students' assessment test scores were derived from the internal class test prepared by the lecturer. The differential effectiveness of the three teaching methods on student academic performance was analyzed using the General Linear Model based univariate ANOVA technique. Dutch teachers tend to give fewer lectures in front of the class and instead choose for a more personal approach, because it is believed that this positively affects student performance. However, the downside of a more personal approach is that it is time intensive and possibly eliminates the complementary and scale effects of giving lectures in front of the class. This study examines whether the share of time that teachers spend on lecturing style teaching influences the cognitive performance of Dutch students. They find no relationship between lecturing style teaching and student performance. Hence, our results do not support the idea that lecturing style teaching is old fashioned or that a more personal teaching style would be beneficial for the cognitive performance of students.

Chilwant K.S. (2012) In the present project structured interactive lectures with conventional lectures as a teaching method have been compared. Students were divided into two groups, interactive lecture group and conventional lecture group. The two groups were similar in all aspects except the teaching method adopted for two groups. The groups were exposed to structured interactive lectures and conventional lectures separately. Same topics from pharmacology were taught to both the groups by using these teaching methods. Effect of these two teaching methods on students was evaluated by giving questionnaire and a MCQ test conducted on the topics covered. There was no significant difference in average MCQ marks of two groups. But the outcome of questionnaire was in favor of structured interactive lecture method. Structured interactive lectures may be better than conventional lectures as a teaching method.

Jennifer Williams, Megna Mcclure, MAL (2010) Finding an effective teaching methodology for leadership educators is daunting. In this experimental study undergraduate leadership students' retention of knowledge was tested after receiving leadership instruction via lecture, experiential learning and public pedagogy. Results show lecture is an inferior method of teaching leadership while public pedagogy had effective and consistent results.

Dr. Damodharan V. S. ACCA, AICWA and Mr. Rengarajan.V AICWA (2002) The purpose of this paper was to evaluate the traditional methods of teaching as well as multimedia teaching and to suggest other useful teaching methods that can be attempted in imparting knowledge to the students. Basically teaching must include two major components sending and receiving information. Ultimately, a teacher tries his best to impart knowledge as the way he understood it. So, any communication methods

that serve this purpose without destroying the objective could be considered as innovative methods of teaching. The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for the country.

Thus, Very few studies conducted to measure the effectiveness of non lecture or activity based learning in Indian context but for the subject like Accountancy where only chalk and talk method is popular, this study would be first in Anand District to measure Students' Preferences for Activity-Based Learning in the Accountancy Subject.

Significance of the Study

Educational institutions and universities need to respond to the innovations in terms of instruction models in some of the world best HEIs and adapt their pedagogies to serve increasingly heterogeneous student profiles and improve the teaching and learning of a variety of innovative skills. The focus of the HEIs should be on instructional and pedagogical aspects and how skills for innovation (i.e. subject-based skills; skills in thinking and creativity; social and behavioural skills) are nurtured in the students' community in higher education sector in India. This study contributes to the dire needs, for Govt., MHRD, AICTE, NAAC, NBA, to understand the introduction of variety of activity based teaching methods requiring active involvement of the students during the class and reducing one way discussion in the traditional lecture method which make students passive listener having less retention ratio of subject inputs. If the HEIs insist on physical presence of the students in the class then understanding and introducing their needs for learning the subjects better, the Activity-based learning is the need of the hour.

Research Methodology

- **Research Problem**

In accountancy subject majority teachers use chalk and talk method but given a chance to learn through various activities; Does students prefer to learn Accountancy subject through Activity based Learning?

- **Scope of the Research Study**

Activity Based Learning is an innovative mode of teaching. It can be used to attract students to the class room in the field of commerce. The scope of this study is limited to 195 students who are undergraduate students of Anand District.

- **Objective of the Study**

To understand the students' preferences about activity based learning methods in accountancy subject for the better understanding of the subject.

- **Formulation of Hypothesis**

H_o: There is no significant difference in the perception of respondents about Activity based Learning as per their class and their Social and Economic Background.

- **Sample Selection**

To collect the sample pre activity test & post activity test were conducted among the students of S.Y.B.Com., T.Y.B.Com. and TYBBA, as they were aware about cost accounting which was the main activity that was being conducted to measure the changes in learning of students. Five colleges selected for the study are as follows:

- Bhikhabhai Jivabhai Vanijaya Mahavidayalaya (BJVM)
- Anand Institute of Business Studies (AIBS)
- Anand Mercantile College of Science & Technology (AMCOST)
- St. Stiffen College (SSC)
- C.P.Patel & F.H.Shah Commerce College (CPC)

The sample has been selected multi stage on the basis of convenience.

- **Types of Data**

The study is based on Primary data only.

- **Sources of Data**

Students who have studied accountancy concepts using our activity are the respondents of this study.

- **Data Collection**

The data is collected through structured questionnaire which were distributed after activity.

The Activity

We visited different colleges like BJVM, AMCOST, CP, AIBS, St. Stiffen. The faculty members and non-teaching staff also helped us in the Activity based learning; an initiative taken by us. These activities were for the students of FY B.Com., SY B.Com., TY B. Com. as well as SYBBA and TY BBA students in which we conducted a survey explaining the purpose of this type of activities done.

First of all the students were divided into various groups; each group consisting of 6 members viz.

- Quality Control Manager (One Student)
- Supervisor (One Student)
- Branch Manager (One Student)
- Accountant (One Student)
- Workers (Two Students)

The activity was manufacturing and marketing Paper Boat. Whole class was divided in different group. Each Group has six students. 2 Students acting as workers were made responsible for making Boats in large number. They could make less Boats but it was of good quality. The Quality Control was performed by a one student acting as Quality Control manager and one student acting as supervisor did the supervision of the activity. The manager was responsible for overall control of the whole departmental activity. And the accountant was responsible for writing their books of account. The time given for Boat making was approximately 5 minutes. The group who could sell more Boats won the activity. After activity teacher ask to prepare a cost sheet to each group and needs to understand how to prepare cost sheet. Each group have different data so each group prepared their cost sheet separately. Accountant prepared such cost data and whole group learnt through discussion. This activity explained the structure of cost sheet to the students in an edutainment method. After pre and post activity, their preferences were collected.

Data Analysis & Interpretation

For the purpose of analysis of data and to test hypotheses, statistical techniques like t-test, ANOVA have been used. First part of the analysis deals with demographic profile of respondents & Second part measure impact of Activity based Teaching results of accountancy students.

Table 1: Demographic Profile of Respondents

		Frequency	%
Gender	Male	99	50.80
	Female	96	49.20
Age	18 years	14	7.20
	19 years	61	31.30
	20 years	88	45.10
	21 years	25	12.80
	22 years	4	2.10
	23 years	3	1.50
Area	Rural	100	51.30
	Urban	95	48.70
Nature of college	Grant-in-Aid	95	48.7%
	Self-Finance	100	51.3%
College	CPFHS	61	31.30
	St. Stiffen	18	9.20
	AMCOST	18	9.20
	AIBS	62	31.80
	BJVM	36	18.50
Class of Students	SYB.Com	57	29.20
	TYB.Com	88	45.10
	FYBBA	1	.50
	SYBBA	32	16.40
	TYBBA	17	8.70

The Table 1 shows that out of total 195 respondents, there were 99 (50.8%) male and 96 (49.2%) female respondents. It means that both are having almost equal representation in the research study. The age of the respondents was between 18 to 23 years. As majority of the students complete Graduation before the age of 23, maximum respondents were between 19-20 years in the study. The proportion of rural and urban respondents was almost equal students of rural area were slightly higher in the sample. Two Grant-in-Aid and Three Self-financing colleges have been considered for the study.

Table 2: Preference of Teaching Method

Criteria	Preference	%
Activity Based Learning	137	70.26%
Lecture Method	58	29.74%
	195	100

The above Table 2 shows the opinion of respondents regarding Activity Based Learning in comparison to lecture method. 137 students agreed with the activity based learning. According to these students, activity based learning was interactive and interesting and 58 students were in favour of the lecture method. It means it is not advizable to completely do away with lecture method.

Table 3: Opinion of Respondents Regarding Activity Based Learning

	Statements	Strongly Disagree	Disagree	Natural	Agree	Strongly Agree
1	Activity Based learning is best compare to lecture method.	18 (9.2%)	12 (6.2%)	0	28 (14.4%)	137 (70.3%)
2	Apart from subject you develop other skills also.	7 (3.6%)	12 (6.2%)	15 (7.7%)	70 (35.9%)	91 (46.7%)
3	If teacher teach through activity based teaching then I will attend my class regularly.	3 (1.5%)	6 (3.1%)	27 (13.8%)	100 (51.3%)	59 (30.3%)
4	I can remember my learning for a Long time.	7 (3.6%)	17 (8.7%)	26 (13.3%)	69 (35.4%)	76 (39.0%)
5	Results come 100% if this is the method of teaching.	12 (6.2%)	15 (7.7%)	31 (15.9 %)	81 (41.5 %)	52 (26.5%)
6	Learning become fast with this method of teaching.	8 (4.1%)	20 (10.3%)	39 (20.0%)	60 (30.8%)	67 (34.4%)
7	No mental burden in this type of learning.	10 (5.1%)	18 (9.2%)	41 (21.0 %)	68 (34.9 %)	51 (26.2%)
8	Lecture method is boring in learning accounting.	16 (8.2%)	24 (12.3 %)	35 (17.9 %)	59 (30.3 %)	48 (24.6%)
9	My communication and presentation skill improves.	30 (15.04%)	44 (22.6%)	41 (21.0%)	44 (22.6%)	36 (18.5%)
10	Activity Based method Places students in an active role, which creates learning.	2 (1.0%)	9 (4.6%)	26 (13.3%)	78 (40.0%)	80 (41.0%)
11	Encourages Two-way communication, teacher becomes aware of students' problems and students' understanding of content without verbal feedback.	8 (4.1%)	18 (9.2%)	41 (21.0%)	77 (39.5%)	51 (26.2%)
12	Activity based methods allow the teacher to influence students when they are actively working with the material.	9 (4.6%)	9 (4.6%)	48 (25.1%)	75 (38.5%)	53 (27.2%)

13	Requires the instructor to have or to learn effective writing and speaking skills.	5 (2.6%)	11 (5.6%)	44 (22.6%)	91 (46.7%)	44 (22.6%)
14	Through Activity Based method, one can learn even difficult topic in an easy way.	10 (5.1%)	12 (6.2%)	41 (21.0%)	80 (41.0%)	52 (26.7%)
15	Activity Based methods can be implemented in a large class also.	6 (3.1%)	13 (6.7%)	40 (20.5%)	59 (30.3%)	71 (36.4%)
16	Creative and communicative skills are bound to groom in this way of learning.	7 (3.6%)	26 (13.3%)	37 (19.0%)	70 (35.9%)	55 (28.2%)
17	It facilitates learning in groups as well as mutual learning	5 (2.6%)	11 (5.6%)	42 (21.5%)	97 (49.7%)	40 (20.5%)
18	On completing the activity, there is a sense of accomplishment which boosts our confidence	7 (3.6%)	12 (6.7%)	31 (15.9%)	94 (48.2%)	50 (25.6%)

Figures in the parenthesis indicates %

Table No. 3 shows that opinion of respodents regarding comparison of lecture method with Activity based learning . We can observe that majority (70.3%) students are strongly agree that ABL is the best in comparison to lecture method in learning accountancy. Only 15% of students were disargee and strongly disagree, we can conclude that Activity based learning method have greater scope in teaching accountancy subject. 91% students believed that they can improve other skills apart from subject also. If the teacher will teach through different activities, 51% students agreed & 30.3% strongly agreed to attend the regular classes. Thus it shows the positive effect of Activity based lecture. Even more than 35% students agree & 39% students strongly agree that they can easily remember for long time the concepts taught through activity base lectures. 65.2% students believe that learning becomes more faster with the help this method of teaching and according to them, activity base lectures does not give any type of burden. 54.9% students confess that the lecture method is boring to study accountancy. 41% students opine that they can improve their communication as well as presentation skills through activity based learning . Though approximately 9% students do not agree but 65.7% believe that Activity based methods allow the teacher to influence students more and helps to improve their results. Of course, it requires instructor with good speaking and writing skills. Even the size of the class will not be an obstacle for its effectiveness. 64.1% students feel that their creative and communicative skill will be improved if Activity base lectures will be conducted. The 49.7% students agreed that activity base lectures can increase the group study and mutual learning also. However, 2.6% students strongly disagree so we can conclude that ABL method have good scope in commerce discipline. Successful completion of activity increases confidence level of the majority (73.8%) of the students. Thus, they are encouraged to introduce more activities in classroom teaching.

Overall Analysis of Activity Based Learning (ABL)
Table 4: Gender wise Perception towards Activity Based Learning

Gender			Disagree	Neutral	Agree	Strongly Agree	Total
Gender	Male	Count	0	5	60	26	91
		%	0.0%	5.5%	65.9%	28.6%	100.0%
	Female	Count	1	6	55	16	78
		%	1.3%	7.7%	70.5%	20.5%	100.0%
Total		Count	1	11	115	42	169
		%	0.6%	6.5%	68.0%	24.9%	100.0%

Activity Based Learning is high so teacher must try to teach students with the help of activities so students grasping as well as learn in a better way and college can have good results.

Table 5: Class wise Perception towards Activity Based Learning

Class		Avg. Perception towards Activity Based Learning				Total
		Disagree	Neutral	Agree	Strongly Agree	
FYB.Com	Count	0	0	1	0	1
	%	0.0%	0.0%	100.0%	0.0%	100.0%
SYB.Com	Count	1	4	33	11	49
	%	2.0%	8.2%	67.3%	22.4%	100.0%
TYB.Com	Count	0	3	53	18	74
	%	0.0%	4.1%	71.6%	24.3%	100.0%
FYBBA	Count	0	0	0	1	1
	%	0.0%	0.0%	0.0%	100.0%	100.0%
SYBBA	Count	0	4	20	6	30
	%	0.0%	13.3%	66.7%	20.0%	100.0%
TYBBA	Count	0	0	8	6	14
	%	0.0%	0.0%	57.1%	42.9%	100.0%
Total	Count	1	11	115	42	169
	%	0.6%	6.5%	68.0%	24.9%	100.0%

We can observe from the above Table 5 that Class wise Perception towards Activity Based Learning have very positive perception about Activity based Learning. However, 71% students of TY B.com agree with the activity based learning is the best compare to lecture method. Almost all the students have very positive attitude about activity based learning. It indicates students' liking for Activity based Learning.

Table 6: Area wise Perception towards Activity Based Learning

AREA		Avg. Perception towards Activity Based Learning				Total
		Disagree	Neutral	Agree	Strongly Agree	
Rural	Count	0	5	60	22	87
	%	0.0%	5.7%	69.0%	25.3%	100.0%
Urban	Count	1	6	55	20	82
	%	1.2%	7.3%	67.1%	24.4%	100.0%
Total	Count	1	11	115	42	169
	%	0.6%	6.5%	68.0%	24.9%	100.0%

The Table 6 shows the Area wise Perception towards Activity-based Learning. It is noteworthy to see that even students from Rural area understanding importance of education and prefers ABL (94.3%) whereas 91.5% students comes from Urban area, If we combine agree and strongly agree.

Table 7: Type of College wise Perception towards Activity Based Learning

TYPE OF COLLEGE		Avg. Perception towards Activity Based Learning				Total
		Disagree	Neutral	Agree	Strongly Agree	
Grant in Aid	Count	0	2	60	20	82
	%	0.0%	2.4%	73.2%	24.4%	100.0%
Self-Finance	Count	1	9	55	22	87
	%	1.1%	10.3%	63.2%	25.3%	100.0%
Total	Count	1	11	115	42	169
	%	0.6%	6.5%	68.0%	24.9%	100.0%

The Table 7 replicates the types of college wise Perception towards Activity Based learning students getting more towards privatization as there are more number of students agree for the activity based method learning .Activity based learning is best compare to lecture method in learning accounting.

Hypothesis and Its Testing

The researcher has framed following hypothesis and tested it with appropriate statistical tests:

H$_o$: There is no significant difference in the perception of respondents about Activity based Learning as per their class and their Social and Economic Background.

H$_1$: There is a significant difference in the perception of respondents about Activity based Learning as per their class and their Social and Economic Background.

To test the above hypothesis, ANOVA test has been applied.

One way Class
ANOVA
Avg. Perception
Class
Table 8

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.338	5	.268	1.187	.318
Within Groups	36.767	163	.226		
Total	38.105	168			

We can see that f value is 1.187 and p value is .318. As p value is greater than 0.05, we accept the null hypothesis. It means that there is no significant difference in the perception of respondents about Activity based Learning as per their class.

One way section
ANOVA
Avg. Perception
Social and Economic Background
Table 9

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.594	3	.198	.871	.457
Within Groups	37.511	165	.227		
Total	38.105	168			

We can see that f value is .871 and p value is .457. As p value is greater than 0.05, we accept the null hypothesis. It means there is no significant difference in the perception of respondents about Activity based Learning as per their socio-economic background.

Limitations of the Study

- There are numerous activities, but we have selected only one activity for the study.
- There are various colleges, but only five colleges are selected as sample.
- In BJVM College we performed the activity in Gujarati, because the class we selected was T.Y.B.Com, Gujarati Medium so we had to translate the questionnaire in Gujarati. So bias may have come in.
- The research has been conducted at district level; the scope can be increased as per the requirement of the researcher.

Conclusion

The activity base learning is advanced teaching method which can be used to meaningfully engage students, unlike chalk & talk method. We can infer from the research that there is a significant impact of Activity Based Learning Method on students' performance. The perceptions of majority of the students found it interesting and useful. It means a teacher of accountancy can safely use Activity Based Learning in the classroom and can expect positive results and better understanding of various concept of Accounting.

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