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# THE INDIAN JOURNAL OF COMMERCE

Quarterly Publication of the Indian Commerce Association

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## **The Indian Journal of Commerce** **A Quarterly Refereed Journal**

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Papers based on application oriented research or field studies in the areas of industry, commerce, business studies and management are invited. The length of a paper including tables, diagrams, illustrations, etc., should not exceed 20 double space pages. Short communications (not more than 5 double spaced pages) relating to review articles, report of conferences, summary/views on various governments reports, debatable issues, etc., are also published. Book reviews and summary of Ph.D. dissertations not exceeding two double spaced pages, are welcome. Manuscripts sent for publication in this journal should not have been published or sent for publications elsewhere. All correspondence will be held with the senior (first) author only.

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## A Study of Relationship between MIBOR and Nifty 50

AMIT CHAUDHARY AND RAJKUMAR SHARMA

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*Abstract: The aim of the study is to examine relationship between MIBOR (Mumbai Inter-Bank Offer Rate) and Nifty50 by taking daily data from October 2015 to December 2019. For the purpose of this study, Vector Auto-Regression, Regression Analysis, Johansen Cointegration Test, Wald Test, Granger Causality Test have been used. Regression Analysis showed that there is no significant relation between MIBOR and Nifty50. Results of Johansen Test revealed that there is no relation between MIBOR and Nifty50 in long run. However, the results from Wald Test indicate short run relation between MIBOR and Nifty50. Inference from Granger Test shows neither any causality from MIBOR to Nifty50 nor any causality from Nifty50 to MIBOR. From the results, we conclude that rate of interest (MIBOR) is not significant macroeconomic variable to determine movement of Nifty50 during the period of this study.*

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**Keywords:** MIBOR, Nifty50, Johansen Cointegration Test, VAR, Granger Causality.

### Introduction

Stock market is very important for capital formation and economic progress of a country. Stock market provides a source to raise capital for various emerging businesses. It is also an avenue for investment to the investors who want to invest their money to gain maximum returns on their investment. In many countries several studies have been done on relationship between interest rates and stock prices (Kwon et al, (1997), Al-Sharkas (2004), Dritsaki (2005), Rufus (2007), Hussainey and Le Khanh (2009), Muhammed (2012), Peter (2014), Linck, and Frota (2016), Lawal et al. (2018). However, existing literature suggests contradictory findings regarding the relationship between rate of interest and stock prices. Moreover, majority of the research has been done in foreign countries and limited studies have been done in context of Indian stock market. Therefore, this paper is an effort in this direction. Understanding the relationship among interest rate and Indian stock market with recent data will provide some meaningful insights. For the purpose of the study we have taken MIBOR (Mumbai

Inter-Bank Offer Rate) as proxy for rate of interest and Nifty50 index for stock prices. Nifty50 is the benchmark index of National Stock Exchange of India (NSE).

### **Objectives**

The objectives are:

- to study the relation between interest rate (MIBOR) and Nifty50.
- to check long run and short run relations among them.
- to ascertain whether there is any causal relationship between MIBOR and Nifty50 during the period of study.

### **Review of Literature**

Kwon et al. (1997) concluded that rate of interest is not significant variable to stock market in Korea. Hondroyiannis et al. (2001) found that interest rate shocks cause stock returns to react negatively. Aktham (2003) using cointegration and VECM found that stock prices in Jordan were cointegrated with interest rates which conveys long-run relation between them. Al-Sharkas (2004) in his study on Athens Stock Exchange (Jordan) found long term relation among stock prices and interest rate. Gunasekarage et al. (2004) from their study in Sri Lanka concluded that market index had no impact on macro economic variables other than treasury bill rate. Dritsaki & Melina (2005) suggested the existence of cointegration between interest rates and stock market which shows that these variables tend to evolve together over time. Also they found causal relation running from rate of interest to market index.

Yutaka (2006) found rate of interest had no influence on stock market in Japan. Olowe (2007) study in stock market in Nigeria found positive relation among interest rate and stock prices. Adam and Tweneboah (2008) study in Ghana established presence of long run relation among stock prices and interest rate. They also concluded that FDI and rate of interest are important factors which impact stock market. Liu & Shrestha (2008) found negative association among stock market and interest rate. Kyereboah & Agyire (2008) observed that treasury bill rates have positive but weak impact on stock market. Rjoub et al. (2009) found that pricing relationship between rate of interest and stock returns was significant. However, the explanatory power of their results was found to be weak. Hussainey & Ngoc (2009) provided empirical evidence for statistically significant association between stock prices and money markets in Vietnam.

Pal and Mittal (2011) established considerable influence of rate of interest on Indian stock market (Nifty). Aurangzeb (2012) from his research on South-East Asia concluded that rate of interest have significant but negative influence over stock markets. Samveg (2012) found presence of long run relation among Indian

indices and interest rate. Naik (2012) revealed that treasury bill rates are cointegrated with Sensex in India which indicates a long-run relation. Quadir (2012) found that stock returns and interest rates of treasury bills had positive relation in Bangladesh stock market but the coefficients were found to be statistically insignificant. Kuwornu (2012) revealed considerable impact of treasury bill rates on the returns from stock market in short-run. Zukarnain (2012) in their study on Malaysian stock market observed less support for the argument that there exists relationship among interest rate and volatility of share market. Pramod (2013) observed that interest rate in the short run is not a significant factor to influence stock prices. Issahaku et al. (2013) revealed the existence of significant relation among rate of interest and returns from stocks in short run.

Muthukumaran and Somasundaram (2014) concluded that there is no relation among rate of interest and returns from stocks because these two variables are not affected by each other. Peter (2014) found that maximization of stock returns at the Zimbabwe stock exchange was impacted by treasury bill interest rates along with other macroeconomic factors. Trust (2015) concluded presence of a causal relationship among returns from stocks rate of interest. Apart from this, they also found that in the short run there is causal relation from market returns to interest rate. Barakat et al. (2015) found evidence for causality amongst rate of interest and stock market index in Egypt and Tunisia. Link & Frota (2016) found that stock returns are affected by rate of interest. Vanita and Arnav (2017) found that in BRICS countries there is negative correlation between rate of interest and returns from stocks. Abbas et al. (2018) concluded that except for Japan, volatility transmission impact for rate of interest is negative and not significant in all G-7 countries. Lawal et al. (2018) emphasized the need for integrating monetary as well as fiscal policy with policy on stock markets because they exercise significant impact on behavior of stock markets.

From the review of literature, we find that there is no consensus among various scholars on the issue of relation between interest rate and stock market. Some scholars have found significant relation between these variables (Gunasekarage et al (2004), Rjoub et al (2009), Hussainey & Khanh (2009), Peter (2014). There are scholars who believe that there is no significant relation between rate of interest and returns from stock market (Kwon, et al. (1997); Pramod (2013).

### **Research Methodology**

The nature of this research is descriptive and analytical. Time period of this study is from 1<sup>st</sup> Oct 2015 to 31<sup>st</sup> Dec-2019. Secondary sources were used for data collection. Data for MIBOR was taken from website of Financial Benchmarks India Private Limited (FBIL) and data for Nifty 50 was taken from website of National Stock Exchange (NSE) of India. As per the data collected from the website of NSE, there were 1045 observations for Nifty 50 during the period of study.

But data for MIBOR was found to be missing for 21 observations. So these 21 observations were removed from the sample. So, the final sample consists of 1024 observations for MIBOR and Nifty 50. In order to study the relation between MIBOR and Nifty 50, the following tests have been used:

- Augmented-Dickey-Fuller Test – It is done to check the stationarity of time series data.
- Regression Analysis – It is used to study relation between dependent and one or more independent variables.
- Johansen Cointegration test – This test is used to study cointegration among variables which determines the long run relation between them.
- Vector Auto-Regression – It is stochastic process which measures linear interdependence between multiple time series.
- Granger Causality Test – This test is done to check the presence of causality between two variables i.e. to check whether patterns in one series are being repeated in another series with some lag or not.

## Results

### ADF Test

Table 1: Results of ADF test

Variable	Level		First difference	
	p-value	Decision	p-value	Decision
Nifty Close Price	0.8526	Not Stationary	0.0000	Stationary
MIBOR Rate	0.8783	Not Stationary	0.0000	Stationary

ADF test on Nifty closing prices shows that series is not stationary at level (Figure 1).



Figure 1: Nifty closing price at level



ADF Test on Nifty closing price at first difference makes series stationary (Figure 2).

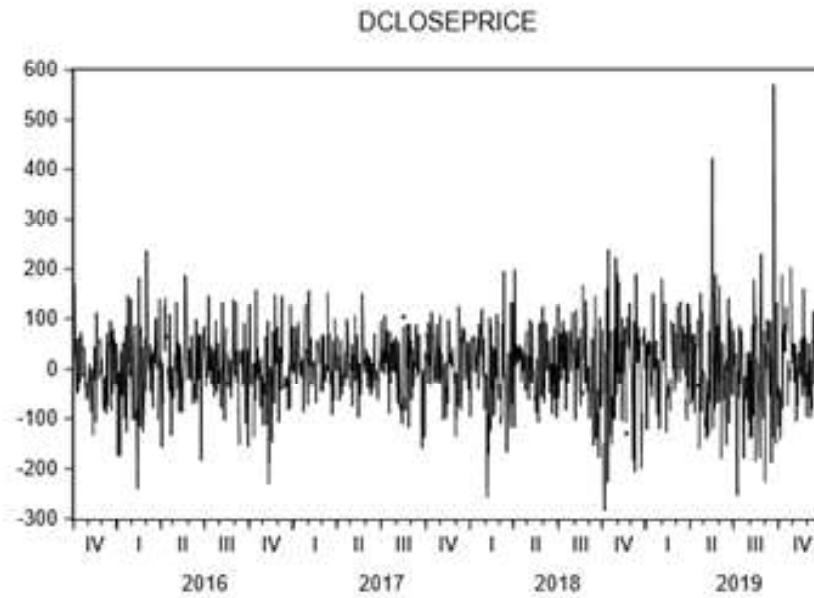


Figure 2: Nifty closing price at first difference

ADF Test on MIBOR at level shows the series is not stationary (Figure 3).

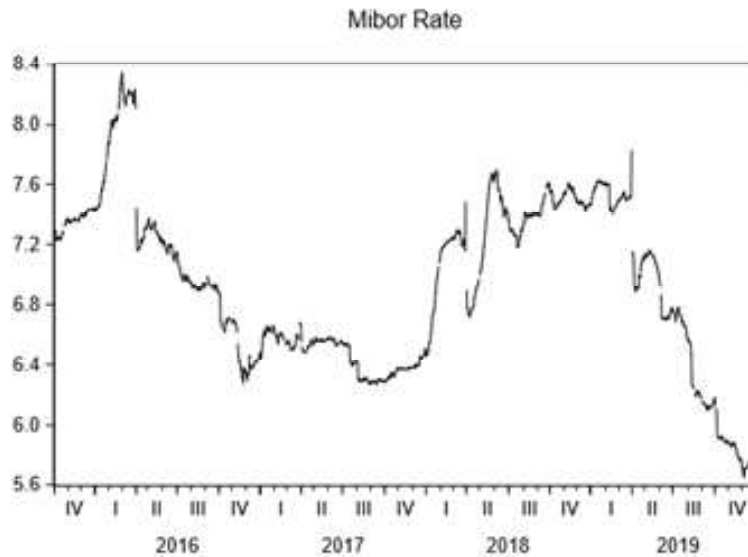


Figure 3: MIBOR at level

ADF Test on MIBOR at first difference makes series stationary (Figure 4).

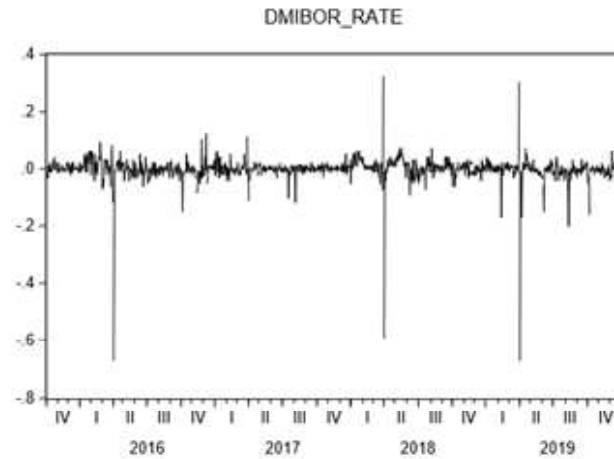


Figure 4: MIBOR at first difference

### Regression Analysis

From the p-values of regression output, we find that MIBOR is not a significant factor to explain Nifty closing price (Table 2).

Table 2: Least-squares method result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.086312	2.501598	1.633481	0.1027
D(MIBOR_RATE)	-24.03419	53.55481	-0.448777	0.6537
R-squared	0.000197			
F-statistic	0.201401			
Durbin-Watson	1.888677			

CUSUM Test confirms the stability of the regression model (Figure 5).

Dependent.Variable: D(CLOSE\_PRICE)

From Serial Correlation LM Test, p-values are greater than 0.05, so there is no serial correlation among residuals.

Table 3: Breusch-Godfrey test

F-statistic	1.443949	Prob.F(4,1017)	0.2174
Obs*R-squared	5.777062	Prob.Chi-Square(4)	0.2164

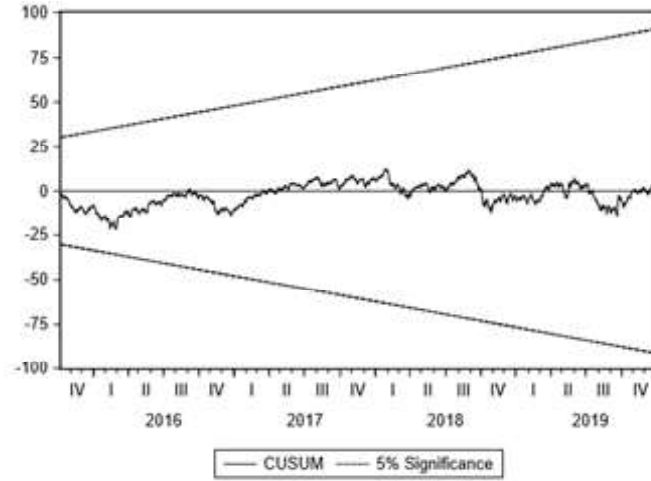


Figure 5: CUSUM test output on regression model

Breusch-Pagan-Godfrey Heteroscedasticity Test shows that regression model is homoscedastic as p-values are greater than 0.05 (Table 4).

Table 4: Breusch-Pagan-Godfrey-test

F-statistic	0.968619	Prob.F(1,1021)	0.3253
Obs*R-squared	0.969596	Prob.Chi-Square(1)	0.3248

**Johansen Cointegration Test**

The results from this test show that there is no cointegration between Nifty closing prices and MIBOR as p-values are more than 0.05. So we find these variables do not have long run relation (Table 5).

Table 5: Cointegration-Trace-test

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.003192	3.279119	15.49471	0.9528
At most 1	2.09E-05	0.021305	3.841466	0.8839
Cointegration-Maximum-Eigenvalue-Test				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.003192	3.257813	14.26460	0.9281
At most 1	2.09E-05	0.021305	3.841466	0.8839

Since no cointegration has been found between the variables, so Vector Auto-Regression Model (VAR) is used to study relation among these variables. In order to perform VAR test, first we need to get the optimal lag length. Optimal Lag Length as per Akaike Information Criteria was found to be 4.

Table 6: Lag-Order-Selection-criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-9615.322	NA	571478.7	18.93174	18.94143	18.93542
1	-4223.273	10752.26	14.14818	8.325340	8.354417*	8.336383*
2	-4217.092	12.30139	14.08757	8.321047	8.369507	8.339451
3	-4211.466	11.17412*	14.04256	8.317846	8.385691	8.343612
4	-4207.343	8.173226	14.03916*	8.317604*	8.404833	8.350732
5	-4206.977	0.723189	14.13997	8.324758	8.431372	8.365248
6	-4203.699	6.472435	14.16009	8.326179	8.452177	8.374030
7	-4202.226	2.901567	14.23074	8.331154	8.476537	8.386367
8	-4200.847	2.713739	14.30436	8.336312	8.501079	8.398887

We calculated the VAR model by using optimal lag length as 4 as per Akaike Information Criteria. Since the VAR output does not show p-values for the coefficients, we used system equation to get the p-values so that the impact of coefficients in the model can be interpreted (Table 7).

Table 7: Vector auto regression-(VAR) model

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1.052073	0.031442	33.46069	0.0000
C(2)	-0.034760	0.045612	-0.762069	0.4461
C(3)	-0.062279	0.045554	-1.367149	0.1717
C(4)	0.043314	0.031355	1.381416	0.1673
C(5)	120.2088	53.76001	2.236027	0.0255
C(6)	-158.2633	77.77557	-2.034871	0.0420
C(7)	64.22463	77.85386	0.824938	0.4095
C(8)	-31.94136	53.93720	-0.592195	0.5538
C(9)	60.22572	41.41851	1.454077	0.1461
C(10)	1.00E-05	1.83E-05	0.547179	0.5843
C(11)	-4.42E-05	2.66E-05	-1.659876	0.0971
C(12)	3.01E-05	2.66E-05	1.134446	0.2567

Contd...

C(13)	3.32E-06	1.83E-05	0.181526	0.8560
C(14)	1.039976	0.031361	33.16193	0.0000
C(15)	0.041174	0.045370	0.907519	0.3642
C(16)	-0.008128	0.045416	-0.178977	0.8580
C(17)	-0.076231	0.031464	-2.422808	0.0155
C(18)	0.027692	0.024161	1.146141	0.2519

Determinant residual covariance 13.46931

Equation: CLOSE\_PRICE=C(1)\*CLOSE\_PRICE(-1)+C(2)

\*CLOSE\_PRICE(-2) + C(3)\*CLOSE\_PRICE(-3) + C(4)\*CLOSE\_PRICE(-4) + C(5)\*MIBOR\_RATE(-1) + C(6)\*MIBOR\_RATE(-2) + C(7)\*MIBOR\_RATE(-3) + C(8)\*MIBOR\_RATE(-4) + C(9)

R-squared 0.996785

Durbin-Watson-stat 1.998908

Equation: MIBOR\_RATE = C(10)\*CLOSE\_PRICE(-1) + C(11)

\*CLOSE\_PRICE(-2) + C(12)\*CLOSE\_PRICE(-3) + C(13)\*CLOSE\_PRICE(-4) + C(14)\*MIBOR\_RATE(-1) + C(15)\*MIBOR\_RATE(-2) + C(16)\*MIBOR\_RATE(-3) + C(17)\*MIBOR\_RATE(-4) + C(18)

R-squared 0.993197

Durbin-Watson-stat 1.997058

Since the p-values for coefficients C(2), C(3), C(4), C(7), C(8), C(9), C(10), C(11), C(12), C(13), C(15), C(16) and C(18) are greater than 0.05, so we conduct Wald test to find out whether these coefficients are significant in the model or not. Results show that these coefficients are not significant because p-value for Wald test is greater than 0.05.

Table 8: Wald-test

Test-Statistic	Value	df	Probability
Chi-square	13.81216	13	0.3872

We make the VAR Model parsimonious by removing all the variables whose coefficients were found to be insignificant using Wald Test and retain only those with significant coefficients. From this model, we find that Nifty closing price is affected by first lagged values of nifty closing price, first lagged values of MIBOR and second lagged values of MIBOR (Table 9).

Table 9: VAR model output (significant coefficients)

	Coefficient	Std.Error	t-Statistic	Prob.
C(1)	1.000169	0.001395	716.9998	0.0000
C(5)	125.8936	53.36613	2.359054	0.0184
C(6)	-125.5663	53.40019	-2.351420	0.0188
C(14)	1.064333	0.016918	62.91001	0.0000
C(17)	-0.064521	0.016908	-3.815963	0.0001

Determinant residual covariance 13.63149

Equation:  $CLOSE\_PRICE = C(1)*CLOSE\_PRICE(-1) + C(5)*MIBOR\_RATE(-1) + C(6)*MIBOR\_RATE(-2)$

R-squared 0.996768

Durbin-Watson-stat 1.890948

Equation:  $MIBOR\_RATE = C(14)*MIBOR\_RATE(-1) + C(17)*MIBOR\_RATE(-4)$

R-squared 0.993157

Durbin-Watson stat 2.046182

We again performed Wald Test for coefficients C(1),C(5),C(6),C(14) and C(17) and found that these coefficients are significant as p-value for Wald test is less than 0.05. So we conclude that there is short run relation between Nifty closing prices and MIBOR (Table 10).

Table 10: Wald-Test

Test-Statistic	Value	Df	Probability
Chi-square	38762880	5	0.0000

Serial Correlation Test on VAR Model shows no serial correlation as p-values >0.05.

Table 11: VAR-residual-serial-correlation-LM-tests

Lags	LM-Stat	Prob
1	0.694044	0.9521
2	0.504250	0.9731
3	0.492455	0.9742
4	0.612077	0.9617

### Granger Causality Test

From Granger Causality Test, p-values are more than 0.05. So, neither there is any causality from MIBOR to Nifty nor from Nifty to MIBOR (Table 12).

Table 12: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
D(MIBOR_RATE) does not Granger Cause D(CLOSE_PRICE)	1019	1.52852	0.1917
D(CLOSE_PRICE) does not Granger Cause D(MIBOR_RATE)	0.92541	0.4483	

### Conclusions

From this study, we found no long run relation between MIBOR and Nifty50 during period of study. There is evidence for the presence of short run relation between these two variables. Also, we found no causal relation between Nifty50 and MIBOR. Thus the rate of interest (MIBOR) is not significant macroeconomic variable to determine movement of Nifty50 during the time-period taken for the study. So, investors should not rely only on interest rate in order to make investment in stock market rather they should consider other factors also. Conclusions from our study are in line with those of Kwon et al. (1997), Pramod (2013), HarunaIssahaku et al. (2013), Muthukumaran and Somasundaram (2014).

### Limitations and Scope for Further Research

This study has been undertaken by using secondary data for MIBOR and Nifty50 (from October 2015 to December 2019). So this study has not taken into account the relationship between MIBOR and Nifty50 before October 2015 and it may be possible that relation was different in earlier periods as dynamics of time series variables change over a period of time. Another limitation of this research is that it is limited to Indian context only.

Further research can be carried out by taking a much larger sample so as to study the relationship between MIBOR and Nifty50. Moreover, further research can be carried by considering other macroeconomic variables along with MIBOR so as to study their relation with Nifty50. Apart from this, few other countries can also be taken along with India for further study in this area.

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# Evaluating the Efficiency of Stand-Alone Health Insurance Companies in India

SHOAIB ALAM SIDDIQUI

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*Abstract: The purpose of this paper is to investigate the efficiency of the stand alone health insurance Indian companies using data envelopment analysis (DEA). Findings indicate that the Apollo Munich Health Insurance Company Ltd. and Cigna TTK Health Insurance Company Ltd. have been efficient throughout the study period (2014-17). Stand alone health insurance companies are comparatively new and are of different sizes therefore, exhibited variation in performance levels. Some stand alone health insurance companies are highly efficient while others are not. Two stand alone health insurers were using excessive capital while one was recurring excessive operating cost. This study holds important insights for policy makers, practitioners and for researchers.*

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**Keywords:** Data envelopment analysis, Efficiency analysis, Stand alone Indian health insurers, Non-parametric analysis.

## Introduction

Health insurance is a type of insurance that covers medical expenses. It is a contract whereby insurer has to pay the insured the promised benefits in the event of any specified disease if insured has paid the required premium (Insurance Regulatory and Development Authority's handbook of health insurance). Health insurance is not new in India and it is being sold since 1986. There are 68 registered insurers in India out of which 24 are registered as life insurers, 27 as non-life insurers and six as stand-alone health insurers. Health insurance plans in India were initially offered by the general insurance companies alone. At present, life insurance companies, general insurance companies and stand alone health insurance companies are offering health plans. Life insurance companies are offering health insurance in form of riders to the life policy. General insurance companies are selling various non-life insurance plans like fire, machine, health and marine etc. Health insurance is only a part of their total portfolio and hence they are unable to give their full focus on health insurance business. On the other hand, stand alone health insurers are only focussing on health insurance

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business. Stand alone health insurers have entered the health insurance sector in 2006 with the registration of Star Health & Allied Insurance Company Ltd. At present, there are six stand alone health insurers in India as given in the Table 1.

Table 1: Stand alone health private insurance companies

Sl. No	Insurers	Foreign Partners	Registration No.	Date of Registration	Year of Operation
1	Aditya Birla Health Insurance Co. Ltd.	MMI Strategic Investment (Pty) Limited, South Africa	153	11.07.2016	2016-17
2	Apollo Munich Health Insurance Company Ltd.	Munich Health Holding AG, Germany	131	03.08.2007	2007-08
3	Cigna TTK Health Insurance Company Ltd.	Cigna Holdings Overseas Inc. USA	151	13.11.2013	2013-14
4	Max BUPA Health Insurance Company Ltd.	BUPA Singapore Holdings Pte Ltd. UK	145	15.02.2010	2009-10
5	Religare Health Insurance Company Ltd.	-	148	26.04.2012	2012-13
6	Star Health & Allied Insurance Company Ltd.	Oman Insurance PSC, UAE, Alpha FDI Holding Pte Ltd & Alpha TC Holdings Pte Ltd. and NRIs	129	16.03.2006	2006-07

Health insurance sector is a very promising sector which has been growing. General insurers had total direct premium of Rs 41981 crores in 2017-18 under health insurance segment as against Rs. 34527 crores in 2016-17, registering a growth rate of 21.59%. Percentage share of health segment is continuously increasing in the total business of general insurers. On the other hand, Stand alone health insurers underwrote total direct premium of Rs 8,314 crores in 2017-18 as against Rs 5858 crores in 2016-17, registering a growth rate of 41.93% (Annual Reports, IRDA) 2017-18). Health insurance sector requires special attention as many demographic and socio-economic factors affect its growth (Siddiqui, 2019).

### Review of Literature

For an insurance firm, the concept of efficiency is the ability of the firm to produce a given set of outputs (i.e., premiums and/or investment income) using a set of inputs (Diacon, 2001). A technically efficient firm is a firm that cannot reduce its input usage without reducing its output, given its production technology. Modern

efficiency measurement started with Farrell's (1957) input-oriented technical efficiency measure which reflects the ability of a firm to obtain maximum output(s) from a given set of inputs or use minimum inputs to obtain a fixed set of outputs. Efficiency measurement using frontier efficiency methodology is fast expanding in the insurance literature. In frontier efficiency, the performance of a firm is relative to the 'best practice' frontier which is determined by the most efficient firms in the industry. The efficiency score being equal to 1 is the most efficient and 0 being the least efficient firm. Two alternative approaches are available to identify the 'best practice' frontier – the econometric approach (stochastic frontier approach, SFA) and the mathematical programming approach (DEA approach). Both approaches have their advantages and disadvantages. Studies that considered both approaches found higher correlated results when firms were ranked according to their efficiency scores (Berger and Humphrey, 1992; Cummins and Zi, 1998; Cummins and Weiss, 2001; Hussels and Ward, 2006). However, for the European banking sector, Weill (2004) found a significant difference in efficiency measurement between parametric (SFA) and non-parametric methods (DEA).

There have been many studies which evaluated the productivity and efficiency of life and general insurance companies in different countries including India. Studies have discovered the impact of deregulation (Hussels and Ward, 2007), business environment (Eling and Schaper, 2017), competition (Cummins et al., 2017), economies of scope (Cummins et al., 2010), mergers and acquisitions (Cummins and Xie, 2008), distribution channels (Brockett et al., 2005), organizational structure (Cummins et al., 2004; Berger et al., 2000), volatility (Eling et al., 2018) Size (Diacon et al., 2002) on the efficiency of the firm. Researchers have studied efficiency of insurance companies in both developed and underdeveloped countries (Chen et al., 2009; Hussels and Ward, 2007).

In Indian context, Studies have assessed the efficiency of the life insurance companies (Siddiqui, 2020; Sinha, 2015; Chakraborty et al., 2013; Chatterjee and Sinha, 2011; Dutta and Sengupta, 2011). Similarly, Studies have assessed the efficiency of the general insurance companies (Mandal and Dastidar, 2014). Studies investigated the efficiency of the Indian general and life insurance companies using data envelopment analysis (DEA) for various periods.

### **Objectives**

The objectives of the study are:

- To assess the technical efficiency of the Indian stand alone health insurance companies.
- To identify the reasons of inefficiency if any in the Indian stand alone health insurance companies.

## Research Methodology

### *Data Envelopment Analysis*

Different frontier models have been used for the evaluation. Parametric and non-parametric approach have been used for comparing performance by the researchers. Wise (2016) conducted a survey to explore the methods most commonly used in over 190 studies determining life insurance efficiency. He found that data envelope analysis (DEA) is the technique used most commonly followed by stochastic frontier analysis. Another main result is that output proxies (akin to) premiums and investment income were utilized most. Data envelopment analysis (DEA) is a linear programming based technique for measuring the relative performance of organizational units where the presence of multiple inputs and outputs makes comparisons difficult. This study has used radial measures of data envelopment analysis. The radial DEA models include Constant Return to Scale (CRS) model given by Charnes, et al.(1978) and Variable Return to Scale (VRS) model given by Banker, et al. (1984).

### CRS Input- oriented Model

In all variations of the DEA models, the DMU(s) with the best inherent efficiency in converting inputs  $X_1, X_2, \dots, X_n$ , into outputs  $Y_1, Y_2, \dots, Y_m$  is identified, and then all other DMUs are ranked relative to that most efficient DMU. For DMU 0, the basic CRS Input Oriented model (so-called CCR after Charnes, Cooper, and Rhodes) is calculated as follows:

$$\max h_o(u,v) = \frac{\sum_r u_r y_{ro}}{\sum_i v_i x_{io}}$$

subject to

$$\frac{\sum_r u_r y_{rj}}{\sum_i v_i x_{ij}} \leq 1 \text{ for } j = 1, 2, \dots, n,$$

$$u_r, v_i \geq 0 \text{ for all } i \text{ and } r.$$

The interpretation of  $u_r$  and  $w$  is that they are weights applied to outputs  $y_n$  and inputs  $x_{ij}$  and are chosen to maximize the efficiency score  $h_o$  for DMU<sub>0</sub>. The constraint forces the efficiency score to be no greater than 1 for any DMU. An efficiency frontier is calculated, enveloping all data points in a convex hull. The DMU(s) located on the frontier represent an efficiency level of 1.0, and those located inside the frontier are operating at a less than full efficiency level, i.e. less than 1.0.

The above fractional program is executed once for each participating DMU, resulting in the optimal weights being determined for each DMU. Before solving the problem, the denominator in the objective function is removed and instead an additional constraint is added. Also, the original constraint is manipulated in order to convert the fractional program to a linear program.

$$\max z = \sum_{r=1}^s \mu_r y_{r0}$$

subject to

$$\sum_{r=1}^s \mu_r y_{rj} - \sum_{i=1}^m v_i x_{ij} \leq 0$$

$$\sum_{i=1}^m v_i x_{i0} = 1$$

$$\mu_r, v_i \geq 0$$

for which the LP dual problem is

$$\theta^* = \min \theta$$

Subject to

$$\sum_{j=1}^n x_{ij} \varphi_j \leq x_{i0} \quad i = 1, 2, \dots, m;$$

$$\sum_{j=1}^n y_{rj} \varphi_j \geq y_{r0} \quad r = 1, 2, \dots, s;$$

$$\varphi_j \geq 0 \quad j = 1, 2, \dots, n.$$

In case of VRS, an extra constraint is added that weights must sum up to 1. The constraint is:

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

### ***Increasing Returns Scale (IRS) and Decreasing Returns Scale (DRS)***

Returns to scale refers to a technical property of production that examines changes in output subsequent to a proportional change in all inputs (where all inputs increase by a constant). The output increases by that same proportional change with input then there are constant returns to scale (CRTS), sometimes referred to simply as returns to scale. If output increases by less than that proportional change, there are decreasing returns to scale (DRS). If output increases by more than that proportion, there are increasing returns to scale (IRS).

This study has used three input variables: Equity capital, commission and operating expenses. Input measures in the insurance industry are more consistent

as compared to outputs because the units of measurement are more tangible and directly observable. The use of these three input variables has been consistent in earlier studies. Equity capital represents money invested by the owners through primary or secondary market in form of equity shares. Commission represents the expenses incurred by the insurance company in paying commission to its agents for selling the new policies and servicing the old ones. Operating expenses is the day to day expenses incurred by the insurers to run the company e.g. license fees, office expenses and other relevant items. Operating expenses has been used as an input variables in many previous studies (Diacon et al., 2002; Mahlberg and Url, 2003; Mandal and Dastidar, 2014; Siddiqui, 2020). Commission and Equity capital has also been used as input variables in many previous studies (Chatterjee and Sinha, 2009; Mandal and Dastidar, 2014; Siddiqui, 2020).

### **Data Sources**

The data for this study has been collected from the Annual Reports and Handbook of the Insurance Regulatory and Development Authority, Government of India for last four years i.e., 2014-2017. Currently, 27 non-life insurers and 6 stand alone health insurance companies are operating in India, our panel data consist of these 6 stand alone private health insurers which accounts for almost 20% of the market share in the health insurance industry but is increasing its share. leaps and bounds. Like most of the studies in the financial services, data availability for this study was restricted to the information submitted by the insurers in compliance with the regulatory authority. As data on direct measure for labor input were not available, this study used commission paid as a close proxy for labor input. Our inputs and outputs for this study are shown in the Table-2.

### **Results and Discussion**

Using the stated inputs and outputs, we have received the results for all the six stand alone health insurers for the period 2016-17 and for all the five the then operating stand alone health insurers for the period through 2013-14 to 2016-17 (Aditya Birla Health Insurance Co. Ltd. Started operating in 2016-17). The result shows that there is negligible variation in the efficiency of the Indian stand alone private health insurance companies during the study period as standard deviation values in both constant return to scale (CRS) and variable return to scale (VRS) (Table 3 & 4).

Table 2 : Descriptive analysis of input and output variables  
(Figures are in Rs Crores; 1 Crore = 1,00,00,000)

Year		Op. exp	Com. exp	Equity cap.	Premium earned	Claims processed
2016-17	Mean	282.6967	38.99333	435.9017	639.785	398.6733
	SD	176.1096	49.84257	258.6011	518.4039	387.0229
	Min	85.19	-43.03	100.44	13.48	14.92
	Max	635.77	95.29	926	1513.87	1156.71
2015-16	Mean	279.358	28.694	471.402	608.114	353.95
	SD	93.8506	31.25971	226.1698	507.0737	273.0392
	Min	179.63	-24.58	240.03	70.96	55.81
	Max	453.07	61.06	898	1513.87	814.55
2014-15	Mean	244.778	39.986	410.374	429.888	267.326
	SD	116.1547	33.75944	199.2301	364.7992	235.1895
	Min	122.38	1.49	200	6.67	4.29
	Max	455.83	101.01	790.5	1017.93	651.06
2013-14	Mean	185.574	28.238	336.768	307.622	203.21
	SD	96.50908	21.80031	186.5518	261.3196	173.5617
	Min	62.72	0.03	100	0.01	0.01
	Max	331.86	63.87	669	675.4	453.95

Note: Number of standalone private health insurers was five throughout the study period but in year 2016-17, its number increased to six.

Table 3: Average efficiency (CRS)

Health insurer	2016-17	2015-16	2014-15	2013-14	Average Eff.
Aditya Birla Health Insurance Co. Ltd.	1.000	-	-	-	1.000
Apollo Munich Health Insurance Company Ltd.	1.000	1.000	1.000	1.000	1.000
Cigna TTK Health Insurance Company Ltd.	1.000	1.000	1.000	1.000	1.000
Max BUPA Health Insurance Company Ltd.	0.902	1.000	1.000	1.000	0.9755
Religare Health Insurance Company Ltd.	0.933	0.934	0.934	0.934	0.9338
Star Health & Allied Insurance Company Ltd.	1.000	0.976	0.976	0.976	0.982
Average efficiency (over firms)	0.9725	0.982	0.982	0.982	0.9725
Median	1	1	1	1	0.991
SD	0.0399	0.0257	0.0257	0.0257	0.0239

Taking average efficiency into consideration, the CRS scale (Table 3) predicts that the Apollo Munich Health Insurance Company Ltd. and Cigna TTK Health Insurance Company Ltd. have been efficient throughout our study period 2013-14 to 2016-17. Stand alone health insurers like Max BUPA Health Insurance



Company Ltd. was efficient in three out of four years. Aditya Birla Health Insurance Co. Ltd. and Star Health & Allied Insurance Company Ltd were found efficient only in the year 2016-17. Religare Health Insurance Company Ltd. had minimum mean technical efficiency of 0.93 with almost no variation. Stand alone health insurance companies operated at an average efficiency of 97.25% during the study period with only slight variation of 2.4% in the efficiency levels.

Table 4: Average efficiency (VRS)

Health insurer	2016-17	2015-16	2014-15	2013-14	Average Eff.
Aditya Birla Health Insurance Co. Ltd.	1.000	-	-	-	1.000
Apollo Munich Health Insurance Company Ltd.	1.000	1.000	1.000	1.000	1.000
Cigna TTK Health Insurance Company Ltd.	1.000	1.000	1.000	1.000	1.000
Max BUPA Health Insurance Company Ltd.	0.958	1.000	1.000	1.000	0.9895
Religare Health Insurance Company Ltd.	0.976	0.987	0.987	0.987	0.9843
Star Health & Allied Insurance Company Ltd.	1.000	0.981	0.981	0.981	0.9858
Average efficiency (over firms)	0.989	0.9936	0.9936	0.9936	0.9933
Median	1	1	1	1	0.9948
SD	0.0164	0.0081	0.0081	0.0081	0.0069

Using the same inputs and outputs, we have also received the efficiency results under VRS for all the health insurers for the period 2013-14 to 2016-17 as shown in Table-4. As VRS takes into consideration the scale economies therefore many of the inefficient firms on CRS changes into efficient in VRS. On this scale, Apollo Munich Health Insurance Company Ltd. and Cigna TTK Health Insurance Company Ltd. were found efficient throughout the study period 2013-17. Stand alone health insurers like Max BUPA Health Insurance Company Ltd. was efficient in three out of four years. Aditya Birla Health Insurance Co. Ltd. and Star Health & Allied Insurance Company Ltd were found efficient only in the year 2016-17. Religare Health Insurance Company Ltd. had minimum mean technical efficiency of 0.9842. On VRS scale, stand alone health insurance companies operated at an average efficiency of 99.33% during the study period with only 0.69% variation in efficiency levels.

This study has also calculated scale efficiency (Table 5) of all the operating stand alone health insurance companies. If scale efficiency is 1, the firm is scale efficient. If scale efficiency is less than 1 then the firm is scale inefficient (DRS/IRS). Firms that are producing inefficiently small outputs in the phase of increasing returns to scale are denoted IRS. On the contrary, firms that are producing inefficiently large outputs in the phase of decreasing returns to scale are denoted as DRS. Table-5 shows that Apollo Munich Health Insurance Company Ltd. and Cigna TTK Health Insurance Company Ltd. were scale efficient throughout our study

period. Max BUPA Health Insurance Company Ltd. was found scale efficient in three out of four years. Aditya Birla Health Insurance Co. Ltd. and Star Health & Allied Insurance Company Ltd were scale efficient in the year 2016-17. Religare Health Insurance Company Ltd. was found scale inefficient throughout the study period.

Table 5: Scale efficiencies

Insurer	2016-17	2015-16	2014-15	2013-14
Aditya Birla Health Insurance Co. Ltd.	1.000 -	-	-	-
Apollo Munich Health Insurance Company Ltd.	1.000 -	1.000 -	1.000 -	1.000 -
Cigna TTK Health Insurance Company Ltd.	1.000 -	1.000 -	1.000 -	1.000 -
Max BUPA Health Insurance Company Ltd.	0.942 irs	1.000 -	1.000 -	1.000 -
Religare Health Insurance Company Ltd.	0.956 drs	0.947 irs	0.947 irs	0.947 irs
Star Health & Allied Insurance Company Ltd.	1.000 -	0.995 drs	0.995 drs	0.995 drs

Table 6: Source of inefficiencies

Insurer	2016-17	2015-16	2014-15	2013-14
Aditya Birla Health Insurance Co. Ltd.	-	-	-	-
Apollo Munich Health Insurance Company Ltd.	-	-	-	-
Cigna TTK Health Insurance Company Ltd.	-	-	-	-
Max BUPA Health Insurance Company Ltd.	OE/EC	-	-	-
Religare Health Insurance Company Ltd.	EC/PE	OE/EC/PE	OE/EC/PE	OE/EC/PE
Star Health & Allied Insurance Company Ltd.	-	EC/PE	EC/PE	EC/PE

Table-6 shows the possible sources of inefficiencies. CCR output has been only considered for this purpose. The following abbreviations are used: commission expenses as CE, operating expenses as OE, claims processed as CP, premium earned as PE and equity capital as EC. Equity capital and premium earned are found to be main reasons of inefficiency followed by operating expenses.

Stand alone health insurance companies that are using excessive inputs compared with their peers are further analyzed in terms of 'peer counts' and input 'slacks' and are shown in Table-7. It reports on the number of counts a firm appears as peers for another firm (bottom row) and its weights, which forms the efficient frontier for the inefficient firms. Firms that appear more frequently as peer for other firms are called robustly efficient. They are robustly efficient because their production practices are such that these firms are frequently used to form the efficient frontier for the inefficient firms in the data. Apollo Munich Health Insurance Company Ltd. and Cigna TTK Health Insurance Company Ltd. and Star Health & Allied Insurance Company Ltd are robustly efficient because they

appeared one, one and two times, respectively, as peers for other firms. The interpretation for the weights assigned to the peer firms is that Max BUPA Health Insurance Company Ltd. should follow the production practices of Apollo Munich Health Insurance Company Ltd. more closely than other firms in the peer group because of the highest assigned weight (21.4%).

Table 7: Peers, weights, and summary of input slacks based on technical efficiency under VRS (2016-17)

Sl. No.	Insurer	Weights for firms appeared as peer for other firms			Input Slacks (%)	
		Apollo Munich Health Insurance Company Ltd.	Cigna TTK Health Insurance Company Ltd.	Star Health & Allied Insurance Company Ltd.	OP. Exp	Equity Cap
1	Aditya Birla Health Insurance Co. Ltd.	-	-	-	-	-
2	Apollo Munich Health Insurance Company Ltd	-	-	-	-	-
3	Cigna TTK Health Insurance Company Ltd	-	-	-	-	-
4	Max BUPA Health Insurance Company Ltd.	0.214	-	0.155	78.646	79.906
5	Religare Health Insurance Company Ltd.	-	1.951	0.316	-	29.292
6	Star Health & Allied Insurance Company Ltd.	-	-	-	-	-
	Peer Counts	1	1	2	-	-

Note: Firms that are using excessive inputs compared with their peers are further analyzed in terms of 'Peer Counts' and 'Input Slacks'.

Similarly, Religare Health Insurance Company Ltd. should follow the production practice of Star Health & Allied Insurance Company Ltd more closely than other firms in the peer group because the weight assigned is 31.6% which is the highest in its the peer group. Columns 6 and 7 of Table-7 present input slacks for 'equity capital' and 'operating expenditure' for the inefficient firms in the sample. A slack variable represents the amount of excess expenditure on an input in the production process. In other words, it is the amount (in Rupees) by which the expenditure on a particular input could be reduced without altering the production of outputs. It is evident that Max BUPA Health Insurance Company Ltd. and Religare Health Insurance Company Ltd. could reduce its use of 'equity capital' by 79.90% and 29.29%, respectively, without reducing their current level of outputs. Max BUPA Health Insurance Company Ltd. could reduce its excess

usage of 'operating expenditure' by 78.65% without reducing their current level of outputs and still can remain on the same production frontier.

### **Conclusion**

This study has investigated the efficiency of all the stand alone health insurance companies and assessed how these companies have performed during our study period (2013-14 to 2016-17). This is the new study which has explored the efficiency of the stand alone health insurance Indian companies. This study has observed that stand alone health insurance companies operated on an impressive average efficiency of 97.25% (CRS) during the study period. On VRS scale, average efficiency increased to 99.33% during the same period. Two companies; Max BUPA Health Insurance Company Ltd. and Religare Health Insurance Company Ltd. were found to have invested excessive capital and they can increase their efficiency by reducing their invested capital. Similarly, Max BUPA Health Insurance Company Ltd. used excessive operating expenses and it should decrease its operating expenses to become efficient. Private standalone health insurance companies like Apollo Munich Health Insurance Company Ltd., Cigna TTK Health Insurance Company Ltd. and Star Health & Allied Insurance Company Ltd were acting as leaders on different parameters of efficiency during the study period. Stand alone health insurance companies experienced overall stability during the study period.

### **Implications and Limitations of the Study**

This study will be helpful to identify the reasons of inefficiency in the inefficient stand alone health insurance companies. The decision makers of these companies can improve their efficiency after knowing these reasons. The important limitation of this study is that it could not assess efficiency of the whole health insurance sector due to non availability of the required data. Further research may be conducted to assess the efficiency of the health insurance business done by life and non-life insurance companies.

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## Do Board Attributes Influence Firm Performance? Evidence from Indian Public Sector Banks

DEBABRATA SHARMA AND SANJEEB KUMAR DEY

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*Abstract: History evidenced that failure in corporate governance may lead to economic turmoil. The governance of banks is important for a country like India which is on the path of economic development. In this paper, we analysed the impact of corporate governance characteristics (board attributes) on performance of selected Indian public sector banks. Based on the diagnostic tests, we applied fixed effects generalised least square (GLS) regression. Our results showed that financial performance (ROA and ROE) relates negatively with board size, board meetings and board committees. On the contrary, we found a positive relationship between the number of executive and non-executive directors, board independence and banks' performance measures.*

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**Keywords:** Bank, Corporate governance, Performance, ROA, ROE.

### Introduction

Over the last three decades, the Indian economy as well as the global economy have been in turmoil because of the unforeseen catastrophes of big corporate houses. It is because of the misconduct or frauds of some people at the top level that some of the prominent companies have met with sudden downfall. These failures have raised a question "who will guard the guards?" During the said period, there has been a number of governance scandals which displayed lack of ethical corporate behaviour. In India, some of the reputed companies like Satyam, Kingfisher Airlines, PNB, and Sahara India etc. have failed shockingly only because of their corporate misconduct and fraudulent practices. The global economy have also seen tragic failures of the renowned companies like Enron, WorldCom, Bank of Credit and Commerce International (BCCI) etc. Because of these corporate failures, corporate governance has been successful in captivating economic deliberations and global concern. Among all the industries, governance of the banking industry is of paramount importance as governance failures of banks not only hampers economic growth, it also forces economic slowdown. Banks

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collect deposits from inaccessible stakeholders and utilises them for economic growth. The presence of dispersed stakeholders in enormous numbers make the banks different from other corporates.

Corporate governance has attracted the attention of not only economists and governments but also academicians and researchers as well. There has been a growing number of research on the impact of corporate governance on the performance of companies. In India, however, the surge in corporate governance research have come only during the last decade. The mandatory regulations, listing agreements, improving governance norms have contributed in the growth of governance research in India. Corporate governance has been defined as *“a process by which suppliers of capital assure themselves about getting some return on their investment”*. The need for corporate governance will always be there till ownership and management are segregated. Shareholders are the owners who delegate the authority of managing the business to the managers. The basic objective of managers is to protect the interest of shareholders and corporate governance brings alignment between the interests of owners and managers. Protecting the interests of all stakeholders is the basic objective of corporate governance. Corporate governance deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected (John and Senbet, 1998).

A growing number of empirical research have focused on the impact of corporate governance on firm performance. Prior research also indicates that corporate financial performance is immediately affected if there is a decrease in the effectiveness of corporate governance. Board of directors and CEO are one of the important mechanisms of the corporate governance structure. The performance of the company is, to a large extent, affected by the prevalent board culture in the corporation (Kathuria and Dash, 1999). Corporate governance relies much on internal structures rather than external ones for enhancing the firm value (Kumar and Singh, 2013).

### **Theoretical Background and Hypotheses Development**

Before going to the analysis stage, we briefly review the prior research conducted for examining the impact of corporate governance characteristics on firm performance. As per the agency theory, board of directors are the first corporate governance mechanism which represent and protects owners' interests. It is the duty of the board of directors to ensure that managers achieve organisational goals. An established board with sufficient number of directors should be able to monitor the management effectively (Bhimani, 2009). Therefore, board size is an important attribute that affects performance of firms (Kumar and Singh, 2013). Apart from board size, there are some other corporate governance mechanisms



which may also affect firm performance like board meeting frequency, number of board committees, presence of woman director on the board, number of independent directors, executive and non-executive directors on the board, board independence, and board composition, etc.

In this regard, Merendino and Melville (2019) found a positive effect of small board size on firm performance and vice-versa. They have reported similar results in case of board independence as a lower board independence has shown a positive impact on performance of firms. In another study, Borlea et al. (2017) found no statistically significant association between board characteristics and firm performance. While some studies have found positive association between board size and financial performance (Kathuria and Dash, 1999; Dwivedi and Jain, 2005), other authors have also reported a negative association (Kumar and Singh, 2013; Kota and Tomar, 2010; Ghosh, 2006). In another study, Abdul et al. (2018) found that board size has significant relationship with performance of banks and board independence has a significant positive relationship with bank performance. Board size and board independence have also been used in a number of studies in relation to banks' performance (Sarkar and Sarkar, 2018; Faleye and Krishnan, 2017; Liang et al., 2013; Aebi et al., 2012; Erkens et al., 2012; Adams and Mehran, 2012; Andres and Vallelado, 2008;).

$H_1$  : Board size negatively affects bank performance.

$H_2$  : Board independence positively affects bank performance.

Number of board meetings is another important mechanism found in corporate governance literature. Board meetings are the reason for all directors to be together and for making suitable decisions for the organisation. In this context, Ajanthan et al. (2013) pointed out that board meeting frequency has a positive relationship with performance of state banks in Sri Lanka. Active participation in board meetings helps the directors on board in efficiently discharging their responsibilities of monitoring and providing resource linkages (Mishra and Kapil, 2018). Board of directors show their commitment towards the organisation by actively participating in board meetings. Mishra and Kapil (2018) have found that the number of board meetings is significantly and positively related to firm performance measured with the help of Tobin's Q.

$H_3$  : Bank performance is positively affected by number of board meetings.

Companies form different types of committees as per the regulatory requirements and to deal with specific matters effectively and efficiently. Banks, on the other hand, form more number of board level committees as they have to deal with a variety of matters. It is generally perceived that forming different committees for specific matters will improve banks' performance and value. In this context,

Kiranmai and Mishra (2019) reported that board committees have no significant impact on performance of state owned enterprises.

*H<sub>4</sub>*: Number of board committees positively affects bank performance.

There has been a growing debate regarding inclusion of woman directors on the board. In India, the rules also mandated to have a woman director on the board. It is perceived that woman directors create firm value. In a recent study, Kiranmai and Mishra (2019) found that woman directors have a negative and significant impact on firm performance (net profit) of state-owned enterprises in India. But, there has not been many studies on the direct effect of woman directors on firm performance. Executive directors (EDs) take part in the day to day business affairs of the organisation. On the other hand, Non-executive directors (NEDs) are not engaged in the routine management process but they are involved in planning and policy making. One of the important responsibilities of NEDs is that they monitor the activities of EDs and acts in the best interest of stakeholders. In case of a financial institution, the presence and role of NEDs are crucial as banks possess diverse and geographically dispersed stakeholders. Non-executive directors can no longer be used for window dressing purposes only and are considered as a safeguard and a significant source of economic and competitive advantage (Kakabadse et al., 2001).

*H<sub>5</sub>* : Number of woman directors is positively related with banks' performance.

*H<sub>6</sub>* : Number of executive directors and banks' performance are positively related.

*H<sub>7</sub>*: Number of non-executive directors is positively related with banks' performance.

### **Research Methodology**

We use ten Indian public sector banks as our sample size in this study. The banks have been chosen on the basis of their total asset size as on 31<sup>st</sup> March, 2019. The sample period is seven years from 2013 to 2019. Data relating to corporate governance variables have been collected from the annual reports of the respective banks and the data representing the financial performance of banks have been collected from CMIE Prowess database. We have also used some control variables in the regression model referring to previous studies.

#### *Variable Measurement*

##### *Performance variables*

The existing literature on corporate governance suggests different measures for firm performance. In this paper, we selected two accounting-based measures ROA (Return on Assets) and ROE (Return on Equity) as performance parameters

on the basis of prior studies (Sarkar and Sarkar, 2018; Abdul Gafoor et al. 2018; Borlea et al. 2017).

### *Governance variables (Board Attributes)*

In the present paper, we used the corporate governance measures board size (BS), board meetings (BM), board committees (BC), woman director (WD), executive director (ED), non-executive director (NED) and board independence (BIND) as board attributes. These attributes have been used as predictor variables in the regression to find out the impact on performance of selected banks.

### *Control variables*

Control variables have been a part of analysis in many previous corporate governance studies. These variables have also shown relation with firm performance in prior literatures (Merendino and Melville, 2019; Kumar and Singh, 2013). Based on the literature surveyed, we used firm age and firm size as control variables in our study (Abdul et al. 2018; Sarkar and Sarkar, 2018; Kumar and Singh, 2013).

### *Regression Model*

The model used in our study is expressed with the help of the following equation:

$$\text{Performance} = \hat{\alpha}_0 + \hat{\alpha}_1\text{BS} + \hat{\alpha}_2\text{BM} + \hat{\alpha}_3\text{BC} + \hat{\alpha}_4\text{WD} + \hat{\alpha}_5\text{ED} + \hat{\alpha}_6\text{NED} + \hat{\alpha}_7\text{BIND} + \hat{\alpha}_8\text{Age} + \hat{\alpha}_9\text{Size} + \hat{\alpha}_{10}$$

## **Results and Discussions**

Table 1: Definition and measurement of variables

Variable	Type	Definition and Measurement
ROA	Dependent – Performance	Ratio of net profit to total assets.
ROE	Dependent – Performance	Ratio of net profit to shareholders' equity.
BS	Independent – Predictor	Total number of directors on the board.
BM	Independent – Predictor	Number of board meetings conducted.
BC	Independent – Predictor	Number of board level committees.
WD	Independent – Predictor	Number of woman directors on the board.
ED	Independent – Predictor	Number of executive directors on the board.
NED	Independent – Predictor	Number of non-executive directors on the board.
BIND	Independent – Predictor	Ratio of independent directors to total directors.
Age	Independent – Control	Natural logarithm of current age of a bank.
Size	Independent – Control	Natural logarithm of bank's total assets

### Summary statistics

Our analysis begins with the calculation of descriptive statistics of the variables. Table 2 shows the descriptive statistics of variables used in the study. Board size of top ten Indian public sector banks ranges from 7 to 17 directors with 11.21 (11) being mean (median). The present sample appears to be having a larger board size than the prescribed limit for Indian banks. The average number woman directors, executive directors and non-executive directors sitting on the boards is 1, 3 and 6 respectively. The independent directors represent 35% of the board on an average.

Table 2: Summary statistics

	Minimum	Maximum	Mean	Median	Std. Deviation
BS	7	17	11.21	11	2.28
BM	5	21	14.43	14.50	2.89
BC	4	22	15.21	15	4.60
WD	0	3	1.07	1	0.75
ED	1	5	3.06	3	1.01
NED	0	12	6.00	6.50	3.10
BIND	0.00	0.79	0.35	0.28	0.21
ROA	-4.68	1.01	-0.11	0.21	0.99
ROE	-66.73	23.48	-7.39	0.67	22.22
Age	2.20	4.83	4.31	4.58	0.66
Size	21.42	24.33	22.33	22.26	0.65

(Source: Authors' Calculation)

### Correlation Analysis

Table 3 shows the bivariate Pearson correlation between all the variables used in the study. The correlation analysis shows that ROA is significantly and positively related with board size (at 5%) and number of non-executive directors (at 1%). It also shows a significant but negative correlation with board committees at 5% level of significance. This implies that increase in board size and the number of non-executive directors on the board enables the banks to get more return on assets. ROE, on the other hand, showed significant and positive relation with board size and non-executive directors at 1% level of significance. ROE also showed the same results in case of board committees.

Table 3: Pearson correlation matrix

	BS	BM	BC	WD	ED	NED	BIND	ROA	ROE	Age	Size
BS	1										
BM	0.03	1									
BC	-0.21	0.19	1								
WD	0.19	-0.02	-0.19	1							
ED	0.49**	0.02	-0.20	0.13	1						
NED	0.68**	0.01	0.15	-0.05	0.23	1					
BIND	0.01	-0.34**	-0.14	0.04	-0.12	0.07	1				
ROA	0.27*	-0.21	-0.30*	0.01	0.11	0.38**	0.06	1			
ROE	0.31**	-0.22	-0.34**	-0.01	0.09	0.40**	0.18	0.92**	1		
Age	0.19	0.23	0.06	0.09	0.10	0.28*	-0.20	0.24*	0.13	1	
Size	0.34**	0.03	-0.31*	0.22	0.82**	0.21	-0.19	0.15	0.10	0.12	1

(Source: Authors' Calculation)

Note: \*\*significant at 1% level (Two-tailed test), \*significant at 5% level (Two-tailed test)

### Regression Analysis

To achieve the objectives of our study, we implemented ordinary least square (OLS) estimators. But, OLS estimator is suitable only when its assumptions are fulfilled. To check whether OLS model will be used or not, we accounted for serial correlation among the data by applying Wooldridge test for auto correlation and heteroscedasticity by using the Breusch-Pagan test. The results presented in Table 4 reveals that the *p-value* of both the models are not significant which confirms that there is no serial correlation in the models. The results of Breusch-Pagan test rejected the null hypothesis in case of both dependent variables suggesting the presence of heteroskedasticity in our panel data. We also accounted for multicollinearity in our data. Multicollinearity problem is said to exist when there is high correlation between two or more independent variables and in that case it becomes difficult to establish the effect of each on the performance variables. To check for multicollinearity, we calculated variance inflation factor (VIF). The results, as shown in Table 5, shows that there is no problem of multicollinearity in our data as the mean VIF is 2.39.

Table 4: Diagnostic tests

Model with Dependent Variable	Wooldridge test for autocorrelation		Breusch-Pagan/Cook-Weisberg test for heteroscedasticity	
	F-statistics	p-value	Chi-square statistics	p-value
ROA	0.196	0.6686	19.08	0.0000***
ROE	0.001	0.9763	7.86	0.0051***

(Source: Authors' calculation)

Note: \*\*\*statistically significant at 1% level.

Table 5: Collinearity statistics

Variable	VIF	Tolerance (1/VIF)
BS	3.46	0.29
BM	1.20	0.83
BC	1.63	0.62
WD	1.24	0.81
ED	4.26	0.24
NED	3.02	0.33
BIND	1.31	0.76
Age	1.21	0.83
Size	4.18	0.24
Mean VIF	2.39	

(Source: Authors' calculation)

Both diagnostic tests resulted against applying the OLS model. Therefore, we decided to use GLS panel data regression models which includes fixed effects and random effects model. GLS model is preferable when there is a chance of certain degree of correlation among the variables and there are unequal variances in the observations (Gujarati, 2004). We used Hausman test to select the better model among fixed effects and random effects. The null hypothesis for Hausman test is that the random effects model is more appropriate than the fixed effects model in explaining the effect of corporate governance variables on banks' financial performance. As reported in Table 6, the Hausman test revealed a significant p-value rejecting the null hypothesis for both dependent variables. Therefore, we applied the fixed effects model in our study.

Table 6: Hausman test

Model with Dependent Variable	Chi-square statistics	Degree of Freedom	p-value
ROA	71.07	9	0.0000***
ROE	24.12	9	0.0041***

(Source: Authors' calculation)

Note: \*\*\*statistically significant at 1% level.

As suggested by the Hausman test, we applied the fixed effects model for both performance variables. Table 7 depicts the results of fixed effects regression with coefficients and t-values. In our study, we hypothesized a negative impact of board size on firm performance. Consistent with many past studies, we also found a negative association between board size ( $H_1$ ) and financial performance measures ROA and ROE (though not statistically significant) as reflected by the negative coefficients in both the models. In relation to  $H_2$ ,  $H_6$  and  $H_7$ , the results of the regression model failed to reject the null hypothesis. Therefore, we conclude that, consistent with our predictions, board independence ( $H_2$ ), executive directors ( $H_6$ ) and non-executive directors ( $H_7$ ) positively affects financial performance of public sector banks as all these variables are attached with a positive coefficient value. On the other hand, our results showed that number of woman directors ( $H_5$ ) is positively associated with ROA and it has a negative association with ROE although none of the associations were statistically significant. However, the results relating to  $H_3$  and  $H_4$  contradicted our prediction. Both board meetings and board committees are attached with negative coefficients in both models suggesting a negative relation with both performance indicators ROA and ROE. While the effect of board committees was significant at 10% level on ROA, board meetings did not show any significant relationship with any performance variable. The R-squared value (ROA = 75.6% and ROE = 66.1%) showed a good model fit for both regression models.

Among the two control variables used in the study, age of the banks found to be statistically significant at 1% level for both ROA and ROE. We found negative coefficients of age and size of the banks in both models, suggesting that with the increase in age and total assets of public sector banks during the last seven years (2013-2019) did not contributed to the growth of their returns on assets and equity.

Table 7: Model summary (GLS fixed effects regression)

Variables	ROA		ROE	
	Coefficients	t-value	Coefficients	t-value
BS	-0.0725 (0.0678)	-1.07	-0.846 (1.788)	-0.47
BM	-0.0252 (0.0303)	-0.83	-0.536 (0.799)	-0.67
BC	-0.0686 (0.0403)	-1.70*	-1.457 (1.064)	-1.37
WD	0.0534 (0.126)	0.42	-0.385 (3.323)	-0.12
ED	0.202 (0.180)	1.13	4.000 (4.740)	0.84
NED	0.0506 (0.0555)	0.91	1.589 (1.464)	1.09
BIND	0.798 (0.676)	1.18	11.37 (17.84)	0.64
Age	-9.325 (1.419)	-6.57***	-169.0 (37.45)	-4.51***
Size	-0.711 (0.702)	-1.01	-25.66 (18.51)	-1.39
Constant	56.12 (16.05)	3.50***	1309.81 (423.4)	3.09***
Observations	70		70	
R-squared	0.756		0.661	
Adjusted R-squared	0.670		0.542	

(Source: Authors' calculation) Standard errors in parentheses.

\*\*\*statistically significant at 1% level, \*\*statistically significant at 5% level, \*statistically significant at 10% level.

## Conclusion

The study assessed the impact of corporate governance on financial performance of selected Indian public sector banks. Board size found to be negatively associated with both performance variables ROA and ROE which is in line with the findings of previous studies (Ghosh, 2006; Kota and Tomar, 2010; Kumar and Singh, 2013). Board independence, number of executive and non-executive directors found to be positively associated with both ROA and ROE though not statistically significant. Woman directors did show a positive relation with ROA and negative relation with ROE and both relations were not significant. Our findings showed



a statistically significant and negative association between banks' age and performance.

We conclude that since most of the sample banks have a large board size, banks may not be able to take significant business decisions. There may be lack of coordination and communication among the directors which is affecting their banks' profitability. Few sample banks did not have the minimum number of independent directors which may be affecting their performance in the long-run and the overall results of the study. Our paper contributes to the existing literature on corporate governance relating to seven board characteristics.

### **Limitations and Directions for Further Research**

Our research and its conclusions are subject to few limitations. The first being use of a small sample of 10 Indian public sector banks. Second, we could not include other board related corporate governance measures which may have some effect on banks' performance like directors' ownership, directors' busyness, promoters' ownership etc.

The current study also provides some directions for future research. We suggest a longitudinal analysis including other governance parameters like ratio of non-executive directors, share ownership of directors' and promoters' etc. which may have an effect on board structure. Lastly, future studies can also be conducted using primary data which can provide better understanding about the relationship between corporate governance and firm performance.

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# Relationship between Product and Consumer Disclosure and Company Characteristics in Indian Companies

SANJAY KUMAR SINHA, SANDEEP KUMAR AND RACHNA SRIVASTAVA

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*Abstract: This study examines the extent of product and consumer disclosure information of the private listed companies in the Dollex-200 through annual reports and analysed whether any association exist among the amount of Product and Consumer Disclosure Index (PCDI) and company attributes such as industry type, age size, profitability, liquidity and leverage. A sample of 90 Indian private listed companies of Dollex-200 as of March 31, 2014 through purposive sampling method has been used. The study indicates that 55% companies have product and consumer disclosure of 20 to 50%, in their yearly reports. This study also found that company characteristics are not affected by the extent of product and consumer information disclosure in annual reports.*

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**Keywords:** Product and consumer disclosure Index, Size, Profitability.

## Introduction

Corporate social reporting is defined as reporting of some important, definable area of a business enterprise's performance that has social impact. The areas covered in social reporting are environmental information, community involvement, product, consumer, and human resources. An organization's annual report usually includes a Chairman's Report, Director's Report, Financial Statements, Management and Discussion Analysis Reports and Auditors Report with Notes to Accounts. Not too long ago, Corporate Social Responsibility Reporting (CSRR) information was seen as a distress and was often seen as an irregular move by some companies. Also, the gathering of individuals who read the reports was limited to hard-line campaigners or business experts. However, it has changed and increased over the years.

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The CSRR announcement has gone in the course of three stages of coverage. The former phases of CSRR practices (1970s and 1980s) were poor, not related to business execution, yet mostly public relations not including basic angles. The reports at that moment were made of promotions and annual reports section. These were considered exceptionally individual and not too related to CSRR.

The second phase (late 1990s) is the launch phase, paving the way for today's CSRR. During this period, CSRR focused on the actual classification of stakeholders: groups (philanthropic donations, ecological responses and international awareness), suppliers (creditors), workers, clients and investors. In CSRR, reports regularly incorporate the auditor's findings on organizational concerns in the field of social responsibility for stakeholder meetings.

The third phase of CSRR is undoubtedly the largely exciting based on the external report presenting the report as well as confirmation from the competent authority to ensure social or environmental standards. Standards are now determined ahead of the auditor enters, as well as the strategy is determined. While an infringement is detected, the agency is authorized to take remedial action. The evaluator returns to ensure that necessary remedial action has been taken. Real problems must not remain for an indefinite period.

In light of these measures and accreditation of organizations, it is crucial to take the name of the brand into consideration so that the organizations' moods towards Corporate Social Responsibility (CSR) reporting have proved more proactive and organizations have attempted to increase the estimate of what they report. The global pioneers and pioneers of the new period of CSR reporting have been International Social Accountability (ISA), which has improved the working principles, and natural pioneers have been the Global Reporting Initiative and the worldwide Social and Environmental Accreditation and Labeling Alliance. However, there are also numerous associations that make up and characterize the models and codes for CSR. A review of the world-wide reports in 2004 by the Association of Certified Accountants found that the number of natural and manageable social relationships has increased from less than 100 in 1993 to more than 1,500 in 2003. Therefore, a survey of the 2003 out of the world's 100 the largest companies of the CSR network advisory groups found that half of them (49) published a natural, social or manageable relationship. The result of any company is dependent not only on its financial performance, but also on its competence to discharge its responsibilities towards its product quality, product safety and consumer complaints. The performance of a business organization is a function of the total impact of its activities on the various segments of the society and financial profits are only a part of it.

Singh and Ahuja (1983) conducted a study for the year 1975-76 of 40 annual reports of public sector companies in India. They found that there was a significant difference between companies and social disclosure. The study found that 40%

of companies surveyed showed more than 30% of social disclosure items. This study also shows that disclosure is highly related to the nature of the industry. Teoh and Thong (1984) found that companies reporting more in the areas of human resources, products, community involvement and physical environment. Andrew *et al.* (1989) examined that bigger companies disclosed more social disclosure than smaller companies. Guthrie and Parker (1990) found that due to economic, political, social, geographical, environmental, regulatory and cultural changes it would not be appropriate to simplify the result of studies of developed nations to new developed countries. Gray *et al.* (1995) analyzed that there was increase in the amount of companies disclosing some information. Adams *et al.* (1998) found that German companies disclose higher social information than companies from other countries. Naser and Baker (1999) found that due to voluntary social disclosure Jordan companies made some sort of disclosed corporate social reporting information. Imam (2000) concluded that the majority of companies in 1996-97 were not disclosed any information regarding social disclosure in their annual reports.

Belal (2001) found that maximum of the companies discloses mainly information on employees followed by the environmental information and the quantity of information was very less on ethical information. Ayadi (2004) concluded that stakeholder theory is an appropriate basis for the empirical analysis of corporate social disclosure. Douglas *et al.* (2004) found that a company of more developed country has disclosed more social information than less developed countries. Ratanajongkol *et al.* (2006) found that although the level of reporting on social disclosure increased year to year, but mainly focused on human resources. Raman (2006) analyzed the main annual reports of the 50 companies in India and found that the companies provide extensive reports on products and services and community involvement, but it is only contained in the messages and letters of the chairmen to the sections of shareholders in the annual reports. Fauzi *et al.* (2007) found that company size had a positive effect on the relationship between corporate social performance and corporate financial performance. Gupta (2007) found that trends in socially responsible initiatives are increasing and crucial in India. Reverte (2009) analyzed that the most influential variable are media presentation, size and industry. Guidry and Patten (2010) analyzed the distinction between market responses with the nature of the sustainability report and found that there is no significant relationship between them. Galani *et al.* (2011) found that firm size is connected with the level of disclosures. Kabir and Akinnusi (2012) found that there is a tendency to increase corporate social responsibility information from 2007 to 2008. Pahuja and Juneja (2013) found that most popular place of disclose information related to corporate social responsibility is the directors' report. Alkababji (2014) found that there is no association between profitability and social disclosure. Juhmani (2014) examined that the leverage

and firm size had a significant association with the level of social disclosure. Hasan and Hossain (2015) examined that firm size regarding all resources and status of the organization influence the degree level of voluntary disclosures in the yearly report of Bangladeshi organizations. Talha *et al.* (2016) analysed that corporate social reporting of Indian companies is affected by size, ownership, nationality, industry type and leverage. Syed and Butt (2017) analyzed that family possession, type of industry and size of a firm have a positive relationship but also found that a negative relationship between risk and CSR. Garg and Kumar (2018) found a significant relationship between environmental disclosure with size of companies and industry type.

Product and consumer disclosure is the part of the social disclosure. During the review of the literature, it has been observed that most of studies have been conducted in abroad, but very few studies have been conducted in India on social disclosure. So, the present study is a modest attempt in this direction.

### **Objective**

The major objective of the study is to find out the relationship between Product and Consumer Disclosure Index (PCDI) and company attributes in the Indian private listed companies.

### **Hypotheses**

Product and consumer disclosure practice is a voluntary exercise adopted by companies. On the basis of above objective, the following hypotheses have been framed for the present study:

H<sub>1</sub> = There is a positive association between industry type and PCDI.

H<sub>2</sub> = There is a positive association between age and PCDI.

H<sub>3</sub> = There is a positive association between company size and PCDI.

H<sub>4</sub> = There is a positive association between profitability and PCDI.

H<sub>5</sub> = There is a positive association between company liquidity and PCDI.

H<sub>6</sub> = There is a positive association between leverage and PCDI.

### **Research Methodology**

Secondary data have been used for this study. The data for the PCDI has been taken from the websites of 90 private sector companies' annual reports. The sample has been chosen by purposive sampling method. Table I represents definitions of variables. The base of definitions of variables have been taken from previous studies (Garg and Divya 2009., Garg and Verma 2010., and Garg and Kumar 2018).

In this study the sample taken is only for one year on all the companies which were a part of Dollex-200 Index as on March 31, 2014. To determine the type and extent of product and consumer information disclosure by sample companies a worksheet referred to as PCDI has been prepared.

Table I: Definition of variables

Variable	Description
<b>Size</b>	
Market Capitalisation	Market worth of companies as considered by total capitalization of a company ( results as on 31 <sup>st</sup> March, 2014 )
Total Assets	Total assets (Average) ( results as on 31 <sup>st</sup> March, 2014 )
Post Tax Profit	Profit after dividend and taxes ( results as on 31 <sup>st</sup> March, 2014 )
Net sales	Sales after return of sales ( results as on 31 <sup>st</sup> March, 2014 )
<b>Profitability</b>	
Return on Total Assets (ROTA)	Profit after tax/ Total assets* 100 ( data on 31 <sup>st</sup> March, 2014 )
Return on Equity (ROE)	Profit after taxes and dividend of preference* 100 / Equity shareholders ( data as on 31 <sup>st</sup> March, 2014 )
Return on Sales (ROS)	Profit after tax as percentage of sales ( data as on 31 <sup>st</sup> March, 2014 )
<b>Liquidity</b>	
Current Ratio	Current assets/Current liabilities ( data as on 31 <sup>st</sup> March, 2014 )
<b>Leverage</b>	
Debt to Equity ratio	Total debt/Total equity ( data as on 31 <sup>st</sup> March, 2014 )

**Note:** The variables are taken as of 31<sup>st</sup> March 2014.

The information has been collected on a worksheet comprising six items (Product Safety, Product Quality, Reducing Pollution from Product Use, Consumers Complaints/Satisfaction, Provision for Disabled, Age and Difficult-to-Reach Consumers and Research & Development) on various dimensions of product and consumer disclosure. These items have been taken on the basis of prior studies (Gunawan *et al.*, 2009., and Hackston and Milne 1996). In our study, we assigned the score in the range of 0-2 depending upon the quality of disclosure. If item was disclosed in quantity form, a score of 2 was given, if an item was disclosed in qualitative terms, a score of 1 was assigned to it and Zero score was assigned if the item was not disclosed in the annual reports of a company. This methodology of scoring the indicators of PCDI has been based on the various studies like Garg and Verma 2010, and Garg and Kumar 2018. So, the maximum score of PCDI came to 12.

## Result and Discussion

The PCDI score of 90 Indian private listed companies has been collected and its relationship with company characteristics was examined. This section covers the

results of PCDI and analysis of relationship between PCDI and various Company Characteristics.

#### *Classification of Companies as per Product and Consumer Disclosure Index*

Table 2 represents the classification of companies on the basis of Product PCDI percentage. It can be seen that in case of 90 private sector companies, 18.89% companies have PCDI score between 30 and 40%, and 24.45% companies have PCDI score 20 to 30 per cent. 12.22 per cent private sector companies have PCDI score between 40 and 50%. Only 4.44% of companies have PCDI of above 50 per cent. On the basis of this, it can be concluded that on an average, 55% of the companies have PCDI between 20 and 50%, which shows that annual reports of majority of Indian private companies are relatively better in terms of content, quality and product and consumer disclosure aspects.

#### **Relationship between Company Characteristics and Product and Consumer Disclosure Index**

For the purpose of this study, a number of company characteristics have been taken. It has been assumed that the type and quality of disclosure depends upon the company characteristics like industry sector, size, profitability, liquidity, age and leverage. Various statistical tools test such as ANOVA, Regression, Kruskal-Wallis H Test and Chi Square Test have been applied to test the hypotheses.

One-way ANOVA results (Table 3) show that at 1 percent level of significance there is an insignificant association between PCDI and industry type. Hence, hypothesis ( $H_1$ ) is rejected and analyzed that industry type has not significant relationship with PCDI score of a company. This shows that industry sector, to which a company belongs, does not leave an impact on the product and consumer disclosure practices of those companies.

Table 2: Distribution of companies according to PCDI

Product and Consumer Disclosure Index (in %)	No. of Private Sector Companies
Less than 20	36 (40.00)
20-30	22 (24.45)
30-40	17 (18.89)
40-50	11 (12.22)
50 and above	4 (4.44)
Total	90

**Note:** Figures in bracket represents percentages



Table 3: ANOVA on PCDI and Industry sector

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52.021	15	3.468	1.495	0.129
Within Groups	171.634	74	2.319		
Total	223.356	89			

Regression test has been used to statistically test the association between PCDI and age of a company. The outcome (Table 4) shows that age is less significantly explaining the variations in PCDI. The value of adjusted  $R^2$  is also small which shows that age is less explaining the value changes of PCDI. Hence,  $H_2$  hypothesis is rejected and it can be analyzed that there is not significant association of information disclosed in annual reports with age.

Table 4: Regression results of PCDI and age of company

	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
Constant	2.756	0.290		9.517
Age of the Company	0.003	0.005	0.055	0.608
F	0.265			
Sig.	0.608			
$R^2$	0.003			
Adjusted $R^2$	0.008			

Note: Dependent Variable: Product and Consumer Disclosure Index

To measure the size of a company such as market capitalization, net sales, total assets and profit after tax were considered as the variables. To find out the relationship between size and PCDI, Kruskal-Wallis Test is used and the results are represented in Table 5.

Table 5 : Kruskal-Wallis H test for PCDI and size

	Market Capitalization	Total Assets	Profit After Tax	Net Sales
Chi-Square	4.288	3.436	6.270	3.422
Degree of Freedom	4	4	4	4
Asymptotic Significance	0.368	0.488	0.180	0.490

At 5% level of significance the outcome are insignificant. Hence, it can be concluded that size of a company has non-significant association with PCDI. So, the hypothesis  $H_3$  is rejected for size.

The Kruskal-Wallis (H) test has also been used for the test of relationship between each variable of profitability (i.e., ROE, ROS and ROTA) and product and consumer disclosure in the annual reports.

Table 6: Kruskal-Wallis H test for PCDI and profitability

	ROE	ROTA	ROS
Chi-Square	3.439	2.464	1.799
Degree of Freedom	4	4	4
Asymptotic Significance	0.487	0.651	0.773

Table 6 reveals that at 5% level of significance the results of H test are insignificant. The outcomes represent that there is an insignificant association between profitability and PCDI. So, the hypothesis  $H_4$  is rejected.

To test the relationship between liquidity and PCDI of a company, chi-square test has been used (Table 7).

Table 7 : Chi-Square test on PCDI and liquidity

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.484	18	0.490
Likelihood Ratio	19.666	18	0.352
Correlation	0.032		0.765

The outcomes represents that there is an insignificant relationship of liquidity with PCDI because the value of chi-square are not significant at 5% level of significance. The same have also confirmed by correlation values, which show extremely less degree of positive association and are also not significant at 5% level of significance. So, hypothesis  $H_5$  is rejected and it can be analyzed that there is no association of liquidity with PCDI of a company.

Table 8 represents chi-square testing the relationship between leverage (debt-equity ratio) and PCDI.

Table 8: Chi-Square test on leverage and PCDI

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.229	24	0.625
Likelihood Ratio	23.328	24	0.500
Correlation	0.063		0.557

The outcomes are not significant at significance level 5%. This outcome is reinforced by correlation between leverage and PCDI (0.063), which is very low and also insignificant. So, it can be said that there is not significant relationship of leverage with PCDI. Hence  $H_6$  hypothesis is rejected.

## Conclusion

This study examined the relationship between the company characteristics and PCDI of 90 Indian private sector companies as on March 31, 2014. This covers 16 sectors of the Dollex-200. On the basis of previous studies, six company characteristics (industry type, age, size, profitability, liquidity and leverage) are measured as the independent variables that may influence the extent PCDI of sample companies. The study found that 55% of Indian private companies have PCDI between 20% and 50%, in the annual companies' reports. These disclosures were voluntary in nature and largely qualitative. The results of the study indicate that various characteristics have not affected by the number of disclosure of information. Overall disclosure practices of all Indian companies are fairly good.

This study is subject to many limitations. Although this study provides the results of good understanding relationship of company characteristics and PCDI, but further research is also needed. In our study data is only taken for one-year disclosure and needs to take more annual data to generalize the results. A corresponding social disclosure index can be assessed for large samples in Indian frameworks. A longitudinal analysis could explore how companies change their product and consumer disclosure over time. At last, other company characteristics could be examined such as environmental, human and community disclosure. A comparison of developed and developing countries could be examined to exploring the differentiate in product and consumer disclosure strategies and policies. Future researchers can see alternative disclosure media in addition to annual reports like print media, (for example, daily papers and announcements), electronic media, (for example, TV and radio) and web, (for example, a corporate website). Geographical and industry can also compare about. In the review, the example size can be extended through increment.

Despite the above limitations, this study is not only relevant for adopting as practice but also useful for the Indian companies to recognize the performance parts that are important for enhancing their product and consumer disclosure practices.

It is suggested that further studies may be undertaken to investigate the product and consumer disclosure of Indian listed companies such as corporate websites and separate product and consumer reports. The management of companies, the Government, The Securities and Exchange Board of India (SEBI), The Institute of Chartered Accountant of India (ICAI) and The Ministry of Corporate Affairs

(MCA) and other associated parties can play a major role in this regard such as Ministry of Corporate Affairs may be able to enact legislations to look up the reporting of corporate social disclosure related information. (SEBI) and ICAI will be in a position to take steps to constitute a committee for setting standards for product and consumer disclosure reporting. Accounting bodies and relevant Governmental agencies may stand benefitted as they will be able to develop an accounting practice which would accommodate product and consumer disclosure aspects of the performance of companies. Companies will be able to know where they stand as far as product and consumer disclosure reporting and how best they can improve their reporting. Furthermore, through using longitudinal data, the trend of product and consumer disclosure in annual reports should be studied.

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## Evaluation of Quality of Financial Report with Special Reference to Breweries & Distilleries Industry

S.K.KHATIK AND MILIND PATIL

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*Abstract: This research paper focuses on detecting early warning signals of accounting manipulation through the Beneish's M-score model and Altman Z-score model. The study also demonstrates the process to evaluate the quality of financial report. Both models are applied on randomly selected Breweries and Distilleries companies of India. The Altman Z-score model predict bankruptcy of the company the Z-score in the case of Radico Khaitan and United Spirit was 1.17 and 1.54 respectively are high whereas in the case of United Breweries it is 2.64 and IFB Agro it is 2.64 the Altman Z-score was unclear to give any decision. The probability of earning manipulation as per Beneish's M-score model is high in the case of GM Breweries (54.64%).*

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**Keywords:** AltmanZ-score, Beneish's M-score, Financial Quality

### Introduction

Reporting quality pertains to the information disclosed in financial reports. High-quality reporting provides decision-useful information – information that is relevant and faithfully represents the economic reality of the company's activities during the reporting period and the company's financial condition at the end of the period. A separate, but interrelated, attribute of quality is results or earnings quality, which pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition relative to expectations of current and future financial performance. Note that the term "earnings quality" is more commonly used in practice than "results quality," so throughout this reading, earnings quality is used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items.

High-quality earnings reflect an adequate level of return on investment and are derived from activities that a company will likely be able to sustain in the future. Thus, high-quality earnings increase the value of a company more than low-quality earnings. When reported earnings are described as being high quality, it

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means that the company's underlying economic performance was good (i.e., value enhancing), and it also implies that the company had high reporting quality (i.e., that the information that the company calculated and disclosed was a good reflection of the economic reality).

Earnings can be termed "low quality" either because the reported information properly represents genuinely bad performance or because the reported information misrepresents economic reality. In theory, a company could have low-quality earnings while simultaneously having high reporting quality. Consider a company with low-quality earnings—for example, one whose only source of earnings in a period is a one-off settlement of a lawsuit without which the company would have reported huge losses. The company could nonetheless have high reporting quality if it calculated its results properly and provided decision-useful information. Although it is theoretically possible that a company could have low-quality earnings while simultaneously having high reporting quality, experiencing poor financial performance can motivate the company's management to misreport.

An example of early recognition of an ultimate financial disaster is James Chanos's short position in Enron in November 2000 (Chinos, 2002)—more than a year before Enron filed for bankruptcy protection (December, 2001). Despite Enron's high profile and reputation,<sup>1</sup> Chinos had a negative view of Enron based on both quantitative and qualitative factors. Chanos noted that Enron's return on capital was both lower than comparable companies' return on capital and lower than the company's own cost of capital. Qualitative factors contributing to Chanos's view included the company's aggressive revenue recognition policy, its complex and difficult-to-understand disclosures on related-party transactions, and one-time earnings-boosting gains. Later events that substantiated Chanos's perspective included sales of the company's stock by insiders and the resignation of senior executives.

### **Objectives of Study**

Following are the objectives of study.

- To analyse the misreporting of top five selected Indian Breweries & Distilleries companies.
- To evaluate the Bankruptcy prediction of top five selected Indian Breweries & Distilleries companies.

### **Research Methodology**

This research paper is based on secondary data. Some selected secondary data have been obtained from company websites, money control website, annual

report and other publically available publications. On the basis of these secondary sources and few cases of Indian as well as non-Indian company's studied the earning quality of financial reports. The research paper uses two quantitative tools to evaluate the earning quality. The Altman Z-score model is used to predict the bankruptcy and Beneish's M-score model is used to know the probability of manipulation. The companies on which the model is applied are randomly selected. The study period is financial years 2018 and 2017.

The limitations of the study are: To calculate probability of manipulation under Beneish model is assumed normally distributed with a mean of 0 and a standard deviation of 1.0. Non availability of sufficient data and literature. The research paper is based on standalone Profit and Loss A/C and Balance Sheet.

### **Review of Literature**

The M-score model was first used by Beneish (1999) in detecting earning management and that was how Beneish was named after the M-score model. Mehta and Bhavani (2017) have used the forensic tools to detect fraud in financial statements of Toshiba Corporation of Japan during 2008 till 2014. This study compared the results of three tools; the Beneish Model, the Altman Z-score model and Benford's Law. They concluded that although all three tools are useful for indicating red flags of fraud, none of them could pin point the exact area or location of the fraud. In fact, many researches have been conducted regarding fraud detection which indicates the importance of fraud and its discovery in financial statements. But in Iran, the model of Beneish and the ability of this model to detect fraud have not been considered. Therefore, in order to investigate the ability of this model to detect fraud in the financial statements of listed companies on Tehran Stock Exchange.

Marinakos, (2011) studied Beneish-M-score model in order to propose earning manipulation. The outcome suggests that the improved model identifies potential manipulators. Dechow et al. (2011) added Beneish M-score model to other models developed to access earning management, then came up with Z-score model. The study concluded that the Z-score proved supplementary and complementary measure to researchers for discretionary accruals for identification of low quality earning firms. Omar et al. (2014) investigated a detection technique involved when committed in a local case. This study suggest that the company involved in manipulation of financial statements.

Mahama, 2015 applied the Beneish M-score and Altma's Z score models to evaluate regulators, stakeholders and investors can detect a financial stress in a company early. The models showed that Enron was a financial recession since 1997 and for that reason there was a manipulation of earnings. Anh and Linh, 2016 applied the model of Beneish-M-score in detection of earning management



of non-financial listed companies of Vietnamese. The study concludes that the model is a useful technique to detect behaviour of earning manipulators from the companies and this can be applied to improve the quality of financial reporting and a better protection for investors. Aghghaleh and Rahmar, 2016, investigated the capacities of two-finance based models namely: Dechow's F-score and Beneish M-model to predict and detect FSF for companies in Malaysian listed companies et al. used a matched pair between 2001 and 2014. The result showed that both models are effective when it has to predict fraudulent and non-fraudulent companies

Kamal, et al. (2016) used the Beneish model as a tool of forensic to measure the potential earning manipulation in the statement of the finance of the firms. One of tools was said to have detected financial statement fraud triggered by earning manipulation. The model is said to be effective to detect 76 per cent of the firms in earning manipulation while passing through the actions of accounting enforcement agency by the United State Securities and Exchange Commission (U.S. SEC). The model of earning manipulation was successful in the discovery of 71 per cent of the most prominent and fraudulent financial reporting scandals in the United States prior to public announcement. Therefore, this study assessed the Beneish M-score's model's reliability in detecting fraud in financial statement and earning manipulations committed by public companies in Iraq.

Khanna, (2013) investigated that all the sectors under study were engaged in earnings management. It was only coffee industry which was considered safe and that was only according to modified Jones Model, but even this may not be precise due to the small data sample. This raises serious questions on the effectiveness of corporate governance measures. India is a growing avenue for foreign investment where IT & Biotech are rising sectors. The incidence of earnings management prominently in these sectors with giant names falling in the criteria of manipulator is a matter of serious concern. The reason why these giant companies are falling in the criteria of earning manipulator is a matter which can be further studied.

Wan Ismail et al. (2015) examined the practices of 508 Malaysian companies before the 2008 financial crisis and found that Shariah-compliant companies have high earnings quality. According to Wan et al. (2015), Shariah-compliant companies have the tendency to report high earnings quality because they are subjected to greater scrutiny from their regulators. In other words, these companies have the duty of maintaining their reputation which promotes and practices of Islamic ethical values. Drawing from Lo (2008), Weil (2009), Dechow et al. (2010), and Li and Ma (2011), companies with high-quality earnings are less involved in earnings management behaviour.

## Data Analysis

This section applies two quantitative tools for assessing the likelihood of misreporting and bankruptcy prediction. If the likelihood of misreporting and bankruptcy appears high, then in that case the researcher should take special care in analyzing the financial reports of the company. In this research study five randomly selected companies from Breweries & Distilleries Industry has been taken to check their earning quality and bankruptcy prediction.

### Radico Khaitan

Table 1 reveals the line items of P&L A/C and Balance Sheet of Radico Khaitan for the period of 2017 and 2018. The market value of Radico company in the year 2017 was Rs 3902.70 crore, increased to Rs 4845.71 crore, registered the growth rate of 24%. The sales of Radico Khaitan was Rs 1679.90 crores, increased to Rs 1822.77 cores.

Years	2018	2017
Sales	1822.77	1679.9
Receivable	630.01	624.01
Gross profit	801.42	707.17
CA	963.22	931.11
PPE	685.49	703.82
Total Assets	1664.32	1684.09
Depreciation	106.29	75
SGA	87.32	80.53
Income before extraordinary	185.76	108.07
Cash from operations	N.A.	N.A.
Accruals	185.76	108.07
Debts	522.2	654.21
Net Working Capital	487.76	443.62
Retained Earnings	1115.46	1003.28
EBIT	254	188.45
Market Value of Equity	4845.71	3902.7

Source: Money Control

Table 1 shows the application of Beneish's M Score model for Radico Khaitan. Days Sales Receivable Index (0.9304), Gross margin Index (0.8824), Assets Quality Index (0.404), Sales Growth Index (1.085), Depreciation Index (0.7174), Sales, General & Administrative exp. Index (0.99), Accruals Index (0.111) and Leverage Index (0.8077). M-score according to Beneish model was calculated around -2.25 indicate that the probability of earnings manipulation is 1.22%.

Table 2: Beneish's M-score for Radico Khaitan

Particular	2018	2017	Index	Coefficient from Beneish Model	Calculation
Days Sales Receivable index	0.34563	0.37146	0.93048	0.92	0.856042
Gross Margin Index	0.8824		0.8824	0.528	0.465905
Assets Quality Index	0.00938	0.02919	0.32131	0.404	0.129808
Sales Growth Index			1.08505	0.892	0.967862
Depreciation Index	0.13424	0.0963	0.71736	0.115	0.082496
Sales, General & Administration expenses Index	0.04791	0.04794	0.99933	-0.172	-0.17188
Accruals	0.11161	0.06417	0.11161	4.679	0.522238
Leverage Index	0.31376	0.38846	0.8077	-0.327	-0.26412
Inercept					-4.84
M-score					-2.25165
Probability of Manipulation					1.22%

Table 3 shows the Altman Z Score Model for Radico Khaitan. According to Z score model the short-term liquidity risk(29.31%), accumulated profitability (67.02%), return on assets(15.26%), leverage ratio(927.94%) and company's ability to generate sales is 1.09. The Z-score of less than 1.81 indicated a high probability of bankruptcy.

Table 3: Altman Z-score model for Radico Khaitan

Particular	2018	Coefficient from alman's model	Calculation
Net working capital/Total Assets	29%	0.012	0.0035168
Retained Earnings/Total Assets	67%	0.014	0.0093831
EBIT/Total Assets	15%	0.033	0.0050363
Market value of equity/Book value of Debts	928%	0.006	0.0556765
Sales/Total Assets	1.0952	0.999	1.0941088
Altman Z-score model			1.17

### United Spirit

Table 4 reveals the line items of P&L A/C and Balance Sheet of United Spirite for the period of 2017 and 2018. The market value of United Spirits in the year 2017 was Rs 53352.10 crore, decreased to Rs 7797.57 crore in 2018, registered the negative growth rate of 85.38%. The sales of Radico Khaitan was Rs 8547.60

crores, decreased to Rs 8170.10 crore registered the negative growth rate of 4.42%.

Table 4: United spirits		(Rs in crores)
Years	2018	2017
Sales	1822.77	1679.9
Years	2018	2017
Sales	8170.1	8547.6
Receivable	2699.8	2960.5
Gross profit	3817.4	3659.7
CA	4689	4866.6
PPE	1351.8	1407.3
Total Assets	5400	5621.9
Depreciation	349.7	220.1
SGA	788.2	666.7
Income before extraordinary	848.6	302.7
Cash from operations	N.A.	N.A.
Accruals	848.6	302.7
Debts	2896.2	3684.1
Net Working Capital	1761.7	1995.7
Retained Earnings	2358.5	1792.5
EBIT	1109.7	671.7
Market Value of Equity	7797.57	53352.1

Source: Money Control

Table 4 shows the application of Beneish's M Score model for United Spirits. Days Sales Receivable Index (0.954), Gross Margin Index (0.958), Assets Quality Index (1.02), Sales Growth Index (0.956), Depreciation Index (0.658), Sales, General & Administrative exp. Index (1.23), Accruals Index (0.15) and Leverage Index (0.818). M-score according to Beneish model was calculated around -1.86 indicate that the probability of earnings manipulation is 3.15%.

Table 5 shows the Altman Z Score Model for United Spirit. According to Z score model the short-term liquidity risk (32.62%), accumulated profitability (43.68%), return on assets (20.55%), leverage ratio (269.32%) and company's ability to generate sales is 1.51. The Z-score of less than 1.81 indicated a high probability of bankruptcy.

Table 5: Beneish's M-score for United Spirits

Particular	2018	2017	Index	Coefficient from Beneish Model	Calculation
Days Sales Receivable index	0.26675	0.27362	0.9749	0.92	0.896905
Gross Margin Index	0.83651		0.83651	0.528	0.441675
Assets Quality Index	-1.0494	-1.0408	1.00828	0.404	0.407347
Sales Growth Index			1.1865	0.892	1.058357
Depreciation Index	0.35098	0.33649	0.95871	0.115	0.110252
Sales, General & Administration expenses Index	0.05534	0.0759	0.72915	-0.172	-0.12541
Accruals	0.20493	0.12631	0.20493	4.679	0.958882
Leverage Index	0.08749	0.14511	0.60295	-0.327	-0.19716
Inercept					-4.84
M-score					-1.28916
Probability of Manipulation					9.87%

### United Breweries

Table 6 reveals the line items of P&L A/C and Balance Sheet of United Breweries for the period of 2017 and 2018. The market value of United Breweries in the year 2017 was Rs 28596.7 crore, increased to Rs 30544.10 crore in 2018, registered the growth rate of 6.81%. The sales of United Breweries was Rs 4734.12 crores, increased to Rs 5617.03 crore registered the growth rate of 18.65%.

Table 6: Altman z-score model for united spirit

Particular	2018	Coefficient from alman's model	Calculation
Net working capital/Total Assets	32.62%	0.012	0.00
Retained Earnings/Total Assets	43.68%	0.014	0.01
EBIT/Total Assets	20.55%	0.033	0.01
Market value of equity/Book value of Debts	269.23%	0.006	0.02
Sales/Total Assets	1.51298148	0.999	1.51
Altman Z-score model			1.54

Table 8 shows the application of Beneish's M Score model for United Breweries. Days Sales Receivable Index (0.974), Gross Margin Index (0.8365), Assets Quality Index (1.00), Sales Growth Index (1.18), Depreciation Index (0.958), Sales, General & Administrative exp. Index (0.72), Accruals Index (0.20) and Leverage Index

(0.606). M-score according to Beneish model was calculated around -1.29 indicate that the probability of earnings manipulation is 9.87%.

Years	2018	2017
Sales	5617.03	4734.12
Receivable	1498.35	1295.35
Gross profit	2743.02	2294.55
CA	2324.95	2067.04
PPE	3713.02	3501.09
Total Assets	2946.23	2728.45
Depreciation	2007.97	1775.54
SGA	310.86	359.32
Income before extraordinary	603.78	344.64
Cash from operations	N.A.	N.A.
Accruals	603.78	344.64
Debts	257.78	395.93
Net Working Capital	633.69	400.49
Retained Earnings	2662.01	2306.08
EBIT	651.43	403.29
Market Value of Equity	30544.1	28596.7

Source: Money Control

Particular	2018	2017	Index	Coefficient from Beneish Model	Calculation
Days Sales Receivable index	0.26675	0.27362	0.9749	0.92	0.896905
Gross Margin Index	0.83651		0.83651	0.528	0.441675
Assets Quality Index	-1.0494	-1.0408	1.00828	0.404	0.407347
Sales Growth Index			1.1865	0.892	1.058357
Depreciation Index	0.35098	0.33649	0.95871	0.115	0.110252
Sales, General & Administration expenses Index	0.05534	0.0759	0.72915	-0.172	-0.12541
Accruals	0.20493	0.12631	0.20493	4.679	0.958882

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Leverage Index	0.08749	0.14511	0.60295	-0.327	-0.19716
Inercept					-4.84
M-score					-1.28916
Probability of Manipulation					9.87%

Table 9 shows the Altman Z Score Model for United Breweries. According to Z score model the short-term liquidity risk(21.51%), accumulated profitability (90.35%), return on assets (22.11%), leverage ratio (11848.89%) and company's ability to generate sales is 1.90. The Z-score of 2.64 is between 1.81 to 3.00 is not a clear indicator of probability of bankruptcy.

Table 9: Altman z-score model for united breweries

Particular	2018	Coefficient from Alman's model	Calculation
Net working capital/Total Assets	21.51%	0.012	0.00
Retained Earnings/Total Assets	90.35%	0.014	0.01
EBIT/Total Assets	22.11%	0.033	0.01
Market value of equity/Book value of Debts	11848.89	0.006	0.71
Sales/Total Assets	1.906514427	-0.999	1.90
Altman Z-score model			2.64

### GM Breweries

Table 10 reveals the line items of P&L A/C and Balance Sheet of GM Breweries for the period of 2017 and 2018. The market value of GM Breweries in the year 2017 was Rs 1381.49 crore, increased to Rs 831.92 crore in 2018, registered the negative growth rate of 39.78%. The sales of GM Breweries was Rs 375.21 crores in 2017, increased to Rs 425.88 crores registered the growth rate of 13.50%.

Table 10: GM breweries

(Rs in crores)

Years	2018	2017
Sales	425.88	375.21
Receivable	0.87	0.45
Gross profit	143.06	106.84
CA	22.97	17.41
PPE	75.9	68.26
Total Assets	291.29	224.62

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Depreciation	10.21	5.04
SGA	0.02	0.01
Income before extraordinary	111.29	67
Cash from operations	N.A.	N.A.
Accruals	111.29	67
Debts	0	0
Net Working Capital	-36	-37.36
Retained Earnings	276.65	209.99
EBIT	111.32	67.21
Market Value of Equity	831.919	1381.49

Source: Money Control

Table 11: Beneish's M-score for GM breweries

Particular	2018	2017	Index	Coefficient from Beneish Model	Calculation
Days Sales Receivable index	0.00204	0.0012	1.70331	0.92	1.567046
Gross Margin Index	0.74682		0.74682	0.528	0.394321
Assets Quality Index	0.66058	0.6186	1.06786	0.404	0.431416
Sales Growth Index			1.13504	0.892	1.01246
Depreciation Index	0.11857	0.06876	0.5799	0.115	0.066689
Sales, General & Administration expenses Index	4.7E-05	2.7E-05	1.76205	-0.172	-0.30307
Accruals	0.38206	0.29828	0.38206	4.679	1.787655
Leverage Index	0	0	0	-0.327	0
Inercept					-4.84
M-score					0.116513
Probability of Manipulation					54.64%

Table 11 shows the application of Beneish's M Score model for GM Breweries. Days Sales Receivable Index(1.703), Gross margin Index(0.747), Assets Quality Index (1.06), Sales Growth Index (1.13), Depreciation Index (0.57), Sales, General & Administrative exp.Index (1.76), Accruals Index (0.38) and Leverage Index (0.00). M-score according to Beneish model was calculated around 0.11 indicate that the probability of earnings manipulation is 54.64%.



Table 12: Altman Z-score model for GM breweries

Particular	2018	Coefficient from alman's model	Calculation
Net working capital/Total Assets	-12.36%	0.012	0.00
Retained Earnings/Total Assets	94.97%	0.014	0.01
EBIT/Total Assets	38.22%	0.033	0.01
Market value of equity/Book value of Debts	83191.87%	0.006	4.99
Sales/Total Assets	1.4620481	0.999	1.46
Altman Z-score model			6.48

Table 12 shows the Altman Z Score Model for GM Breweries. According to Z score model the short-term liquidity risk (-12.36%), accumulated profitability (94.97%), return on assets (38.22%), leverage ratio (83191.87%) and company's ability to generate sales is 1.46. The Z-score of 6.48 is greater than 3.00 indicate the less probability of bankruptcy.

### IFB Agro

Table 13 reveals the line items of P&L A/C and Balance sheet of GM Breweries for the period of 2017 and 2018. The market value of IFB Agro in the year 2017 was Rs 801.11 crore, decreased to Rs 551.76 crore in 2018, registered the negative growth rate of 31.13%. The sales of GM Breweries was Rs 839.94 crores in 2017, increased to Rs 889.09 crores registered the growth rate of 5.85%.

Table 13: IFB Agro

(Rs in crores)

Years	2018	2017
Sales	889.09	839.94
Receivable	62.92	42.07
Gross profit	183.09	156.78
CA	142.88	100.17
PPE	175.54	160.78
Total Assets	363.34	334.18
Depreciation	40.55	20.22
SGA	16.93	4.21
Income before extraordinary	43.82	41.15
Cash from operations	N.A.	N.A.

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Accruals	43.82	41.15
Debts	19.01	30.82
Net Working Capital	48.37	14.77
Retained Earnings	334.96	293.99
EBIT	46.4	42.69
Market Value of Equity	551.763	801.113

Source: Money Control

Table 13 shows the application of Beneish's M Score model for IFB Agro. Days Sales Receivable Index (1.41), Gross margin Index (0.856), Assets Quality Index (0.56), Sales Growth Index (1.058), Depreciation Index (0.59), Sales, General & Administrative exp. Index (3.79), Accruals Index (0.12) and Leverage Index (0.56). M-score according to Beneish model was calculated around -2.12 indicate that the probability of earnings manipulation is 1.69%.

Table 14: Beneish's M-score for IFB Agro

Particular	2018	2017	Index	Coefficient from Beneish Model	Calculation
Days Sales Receivable index	0.07077	0.05009	1.41292	0.92	1.29989
Gross Margin Index	0.8563		0.8563	0.528	0.452126
Assets Quality Index	0.12363	0.21913	0.56418	0.404	0.227929
Sales Growth Index			1.05852	0.892	0.944196
Depreciation Index	0.18765	0.11171	0.59531	0.115	0.068461
Sales, General & Administration expenses Index	0.01904	0.00501	3.79907	-0.172	-0.65344
Accruals	0.1206	0.12314	0.1206	4.679	0.564303
Leverage Index	0.05232	0.09223	0.56731	-0.327	-0.185509
Inercept					-4.84
M-score					-2.122043
Probability of Manipulation					1.69%

Table 15 shows the Altman Z Score Model for IFB Agro. According to Z score model the short-term liquidity risk (-13.31%), accumulated profitability (92.19%), return on assets (12.77%), leverage ratio (2902.49%) and company's ability to generate sales is 2.45. The Z-score of 2.64 is between 1.81 to 3.00 is not a clear indicator of probability of bankruptcy.

Table 15: Altman Z-Score model for IFB Agro

Particular	2018	Coefficient from alman's model	Calculation
Net working capital/Total Assets	13.31%	0.012	0.00
Retained Earnings/Total Assets	92.19%	0.014	0.01
EBIT/Total Assets	12.77%	0.033	0.00
Market value of equity/Book value of Debts	2902.49%	0.006	0.17
Sales/Total Assets	2.446991798	0.999	2.44
Altman Z-score model			2.64

### Findings

Assets Quality Index (AQI) of United Spirits, United Breweries, and GM Breweries is more than 1 which indicates excessive expenditure capitalization other than fixed assets and current assets. Sales, General and Administrative expenses Index (SGI) of United Spirit and IFB Agro index are greater than 1 indicate decreasing administrative and marketing efficiency which motivate companies to manipulate earnings. Sales Growth Index (SGI) of United Breweries, GM Breweries and IFB Agro are more than 1 indicates positive sales growth relative to the previous year. Company could be inclined to manipulate earnings to manage perceptions of continuing growth. Days Sales Receivable Index(DSR) of GM Breweries and IFB Agro are greater than 1 indicates that receivable as a % of sales have increased, this change may be an indicator of inappropriate revenue recognition.

According to Beneish's M-score model GM Breweries' probability of manipulation is 54.64% which is highest as compared to other selected companies in same industry but according to Altman Z-score model the probability of bankruptcy is less as compared to other companies in the same industry. In the case of GM Breweries both model contradict each other. Hence, taking decision only on the basis of quantitative model is not appropriate. In the case of IFB Agro and United Breweries Altman Z-score model does not give clear indication about bankruptcy because its Z-score is between in the range of 1.81 to 3.0 In the case of Radico Khaitan and United Breweries Altman Z-score model give high chances of bankruptcy because its Z-score is less than 1.81. As per Beneish's M-score model the probability of manipulation in the case of Radico Khaitan and IFB Agro are 1.22% and 1.69% respectively and in the case of United Spirits and United Breweries are 3.15% and 9.87% respectively.

## Conclusion

In the process of evaluating financial reporting quality include an understanding of the company's business and industry in which the company is operating; comparison of the financial statements in the current period and the previous period to identify any significant differences in line items; an evaluation of the company's accounting policies, especially any unusual revenue and expense recognition compared with those of other companies in the same industry; financial ratio analysis; examination of the statement of cash flows with particular focus on differences between net income and operating cash flows; perusal of risk disclosures; and review of management compensation and insider transactions.

The management of the companies should evaluate the quality of financial report on the basis of both quantitative and qualitative approach. The management of the companies should undertake additional investigation of any unrecognized issues. The companies should pay special attention to an event such as capital raising, on-timely filing of financial reports, management changes and mergers and acquisitions(M&A) can provide important information relevant to assess risk.

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# Environmental Efficiency of Energy, Emissions and Economy of Top Emitting Countries

T. RAJASEKAR, RAHUL PACHERI AND MALABIKA DEO

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*Abstract:* The primary focus of this research is to examine the environmental efficacy in respect with energy, emissions and economy of top emitting countries around the world. The study is exclusively based on secondary data and the information was obtained from world energy outlook. To measure the efficiency, the study has chosen energy use in different sectors like "Petroleum, Coal & Lignite, Natural gas and Electricity" as input variables and "Carbon dioxide emissions and Gross Domestic Product (GDP)" used as output variables. To examine the environmental efficiency, the study adopted Data Envelopment Analysis (DEA) technique which measures the comparative efficiency among different DMUs. Based on the results, the countries like Germany, Indonesia and South Africa were observed as efficient country. The study further observed high economic countries such as China, United States, Russia and Canada found inefficient and low income countries like South Africa, Indonesia and Germany found efficient. Hence, it can be concluded that income is the key factor for the environmental degradation. Consequently, countries which were registered inefficient should adopt some precautionary steps to control their emissions, and also to take long term plan to reduce their emission level in order to maintain environmental based economy.

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## Introduction

Industrial revolution leads to maintain rapid and stable economic development in most of the emerging economies by using the energy sources more specifically petroleum, coal and lignite, natural gas and electricity. The usage of such energy sources leads to increase in environmental degradation by emitting high greenhouse gases especially carbon dioxide emissions. This will lead to increase in the global warming and climate change, which has attracted attention by the scholars in recent time due to not only increasing the environmental degradation but also to increase on the sea level, this will further be having the effect of

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unseasonal rain fall and natural calamities in many regions “Sutton, et al., 2007; Weart, 2008; Chowdary, et al., 2014”. Further increasing the world wide heating and weather transformation thrashes the atmosphere quality and also affect to the natural ecological system which will be the serious threat to the sustainable development. Due to change in the environmental system it would provide to increase the earth temperature by 3 to 4 degree celsius which will affect the human life through the natural disasters like unseasonal rain, flood, earthquake, drought and tsunami etc., through that almost 400 million people will be affected in the world. Under this situation, the industrial production generates more poisonous stuffs in many forms due to heavy use of fossil fuels. These stuffs are hugely affecting the environment and destroy the peoples and also natural ecological system. This was the reason attracted many scholars for doing research in environment and its related areas.

In emerging economies, environmental issues such as climate change, global warming needs urgent attention. In the past ten years, most of the countries emerged economically by high growth which used the exhaust sources of energy like oil, gas, coal & lignite etc. This will not only affect these countries environmental quality and increase the environmental degradation but also the entire world’s environment. In this situation governments of all over the countries try to reduce their environmental hazards by technological innovations like renewable sources like solar energy, wind energy etc., and improve the nature by encouraging the people by making awareness of environmental protection for reaching the sustainable development of the country. Since the countries have different regions and also different environmental quality with their economic development. In this backdrop it is important to examine the environmental quality of the countries by applying environmental efficiency and making policy decisions especially those countries in the position of developing and under developing status. Environmental efficiency aims to increase the value of goods and services, resources use and reduce the environmental degradation. The basic concept of measuring the environmental efficiency is to find out the efficient as well as inefficient countries in respect with their environment and take the appropriate action for inefficiency. Few studies have concentrated to examine the environmental efficiency by considering input and output variables in relating with economic growth, energy use and environmental degradation. Some studies have concluded that economic growth leads to environmental degradation and also leads to environmentally inefficient “Kuznets, 1955; Hu, 2013; Jorgenson, 2016”. Some of them have advocated no correlation among environment and economy i.e. high economic growth countries have operated environmentally efficient “Picazo et al., 2012; Taskin, & Zaim, 2000.” In this context it is important to examine the environmental efficiency by considering environmental input and output by applying sophisticated Data Envelopment Analysis approach especially top emitting countries in the world.

## **Review of Literature**

Some of the earlier research work have concentrated for measuring the environmental efficiency in relating with economic aspects by adopting "Data Envelopment Analysis (DEA)" models in different countries / provinces. Initial work done by Haynes, et.al., (1993) performed through DEA and examined the environmental degradation by undertaking pollution measures based on biochemical as inputs and biochemical waste as output and found that there is no association between environment and economy. The study done by Picazo- & Prior (2005) suggested that economic activities is able to reduce the environmental degradations by using DEA. According to Kuznets, 1955; Hu, X & Lin, 2013; Jorgenson, 2016 suggested that economic growth have long term relationship with environmental degradation with the level of environmental efficiency. Jorgenson, (2016) concluded that economic growth may have impact on environment and also might have continued to harm the environment. Taskin, and Zaim, (2000) measures cross country efficiency analysis in respect with environment of 52 provinces and found that there is a association between economy and environment i.e. high income countries shows efficient than low income provinces. Yin, et al., (2014) measure the ecological efficiency for urban sustainable cities and found the inefficient cities in Northwest and Southwest areas. Zhang, et al., (2015) examined the environmental efficiency by adopting ecological technological factors of heterogeneous provenance of Chinese cities and found that provenance of Chinese cities are not performing high ecological factors. Wang, et.al., (2012) examined the efficiency of environment in relation with economic measures of various provinces of China by using environmental degradation factors like carbon dioxide emissions and found that environmental efficiencies are found with low income countries whereas the higher income countries are operated environmentally inefficient. Some of the other studies also measured the ecological efficiency by using DEA in Chinese provinces"Yang, et Al., (2015), Chen, et.al (2016)". "Robaina, et. al., (2015)" considered the main cause of good or bad ecological efficiency and they have considered productivity resources, domestic material consumption and tax on pollution as the main input parameters.

Few studies also examined the environmental efficiency by using the advanced models of DEA, i.e. either in different sectors or with different providence by considering the effect of dynamic panel data models in different province. The pioneering research work done by "Charnes, and Cooper, (1985) and Halkos, and Tzeremes, (2009)" to examine the efficiency of environment of 17 OECD countries in respect with their economies and acquired the environmental efficiency ratios. The same methodology further used by "Zaim, and Taskin, (2000) and Zaim, (2004)" for measuring the environmental efficiency by using panel efficiency ratios. et al (2016) measured the environmental efficacy of six



Chinese provinces and the evidence of environmental policies adjustment in different regions. Filipovic, and Golusin, (2015) analysed the financial effects with environmental taxation of 27 European Union countries and concluded that environmental acts of European Union can regulate their environmental issues in safe manner with their member states.

Ecological or environmental efficiency have concentrated not only in the province or region but also made their environmental efficiency in respect with different sectors like petroleum, coal and lignite, natural gas and electricity. Because these sectors are the important factors to degrade their environment. The study done by Kortelainen, (2008) for measuring the ecological efficiency of transport sector of Finland with different environmental pressures. "Mandal, and Madheswaran, (2010)" studied the environmental efficacy in cement industry of India. Followed by "Picazo et. al., (2011, 2012)" measured the environmental efficiency in agricultural sectors. Egilmez, et. al (2013) measures the life cycle assement in economic aspect of US manufacturing sectors. Rashidi, and Farzipoor (2015) measured the relationship between energy inputs and environmental efficiency and found that countries were consuming less energy inputs operates as environmentally efficient and less possible to reduce outputs.

Based on these earlier studies it is understood that majority of the studies considered environmental efficiency in respect with particular country i.e. Chinese providence and few studies were concentrated in other parts of the country and also with different group of the countries i.e. OECD. Hence the present research made an attempt to examine the environmental efficacy with energy, emission and economy more specifically with top emitting countries in the world. In this aspect the present study has taken energy use and environmental degradation as inputs variables whereas economic growth has taken as output.

### **Research Methodology**

The main focus of the present research work to examine the environmental efficacy of top emitting countries by taking input and output factors related to environment during the period of 1998 to 2018. The present study considered the important input factors which is harmful to the environmental quality by emitting the greenhouse gases by energy use i.e. oil, gas, coal & lignite and electricity and the output variables like "carbon dioxide emissions (CO<sub>2</sub>) and gross domestic product (GDP) used. Since the nature of data belongs to secondary data which availed mainly from the world energy outlook 2019. Based on these the present study used basic and advanced DEA models such as "Charnes, Cooper and Rhodes (CCR) model, Banker, Charnes and Cooper (BCC) model, Scale efficiency analysis (CCR/BCC)" and super - efficiency model used to examine the environmental quality of top emitting countries. The concept of

CCR model measures the “constant returns to scale and BCC measures variable returns to scale” which is the base of application of DEA, it measures both input oriented and output oriented models. Input oriented model suggests to minimize the inputs based on their outputs whereas output oriented model seeks maximize their output with present inputs, both the orientation seek to increase their output and decrease their inputs in respect with their efficiency. Since the data envelopment models measures the efficiency scores based on their inputs as well as outputs, the present study used carbon dioxide emissions (CO<sub>2</sub>) measured as metric tons per capita, energy use measured in million tons from different sectors and economic growth used as per capita Gross Domestic Product (GDP) for top emitting countries like “Canada, China, Germany, India, Indonesia, Iran, Japan, Russia, Saudi Arabia, South Africa, South Korea and United States of America”.

## Results & Discussion

Figure.1 shows the information observed by International Energy Agency and estimates the carbon dioxide emissions from the use of fossil fuel from various sources like coal and lignite, crude oil, natural gas, other fuels which includes industrial waste and non-composting municipal waste by the countries around the world. From the figure China emitted highest carbon dioxide emission among the world countries, followed by United States and European Union, shows highest carbon dioxide emissions. Further it is understood by the above graph, India have shown third highest carbon dioxide emission while compared with other countries in the world. The Figure 1 highlights the top level carbon dioxide emission from different sources around the world.

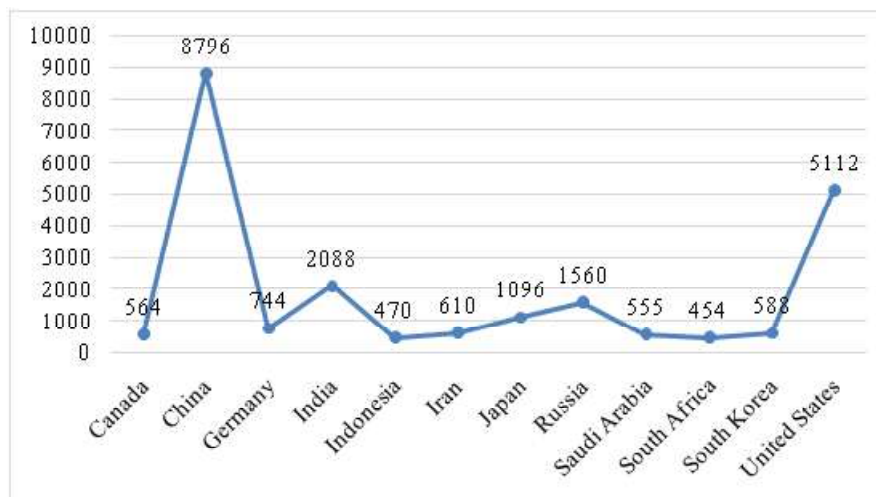


Fig. 1: Top carbon dioxide emitting countries around the world

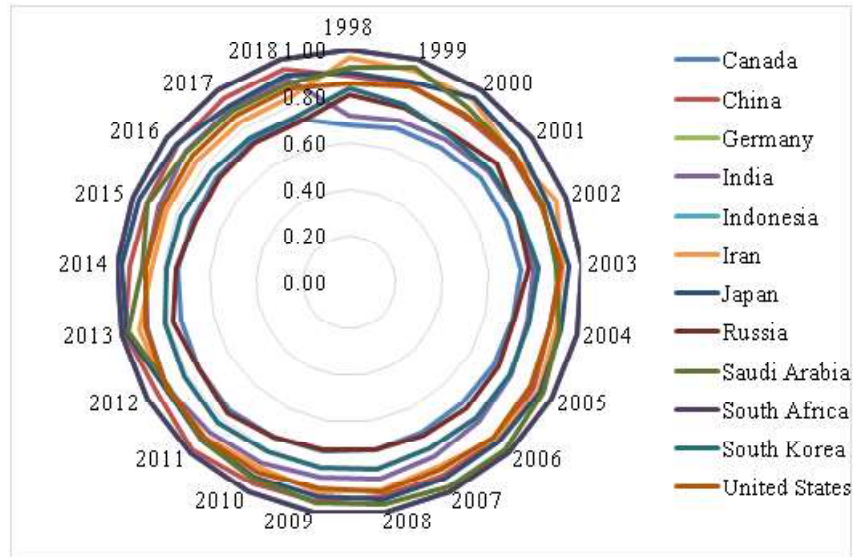


Fig. 2: Result of technical efficiency analysis (DEA - CCR)

With a view to acquire information to identify the relative efficient and inefficient in respect of environment of top emitting countries during 1998 - 2018, the study adopted different DEA models to measure the environmental efficacy of energy, emissions and economy. The Figure 2 shows the technical efficiency of environment of top emitting countries under study. From the figure it is found that the countries like Germany, Indonesia and South Africa found technically efficient in DEA - CCR model. While the other countries were proved inefficient in respect with energy, emissions and economy. Based on the result of "DEA - CCR" found, 25% of the top emitting countries (3) were acquired environmentally efficient and rest 75% of the countries (9) were found technically inefficient of energy, emission and economy.

Figure. 3 shows the results of pure technical efficiency analysis (DEA-BCC) of environmental efficiency of energy, emissions and economy of top emitting countries during 1998 to 2018. From the above figure it was observed that the countries like China, Germany, Indonesia, Japan, Saudi Arabia, South Africa and United States shows efficient performance over the period of time, and inefficient performance in terms of environment. While comparing the values between CCR and BCC, the values of BCC shows comparatively higher than CCR, this is because the former one takes fixed weightage throughout the year in respect with different decision making units (DMUs), whereas variable returns to scale gives flexible weightage in respect of decision making units (DMUs). It was also noted that 58.33% of the countries (7) were registered efficient performance and remaining 41.67% of countries (5) shows inefficient performance in respect to environmental

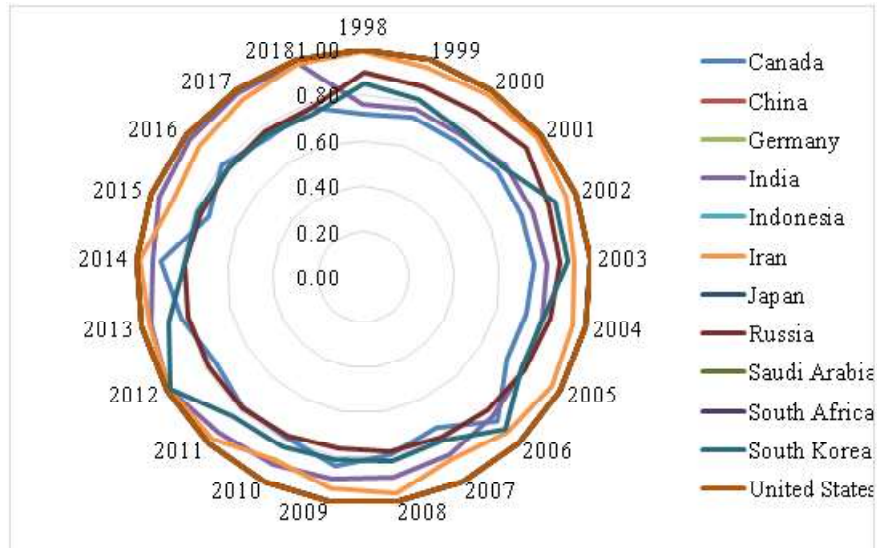


Fig. 3: Results of pure technical efficiency analysis (DEA - BCC)

efficiency of energy, emissions and economy. It is also suggested that those countries who needs to improve their efficient capacity either they have to reduce their inputs to reasonable level or expand their output to profitable level.

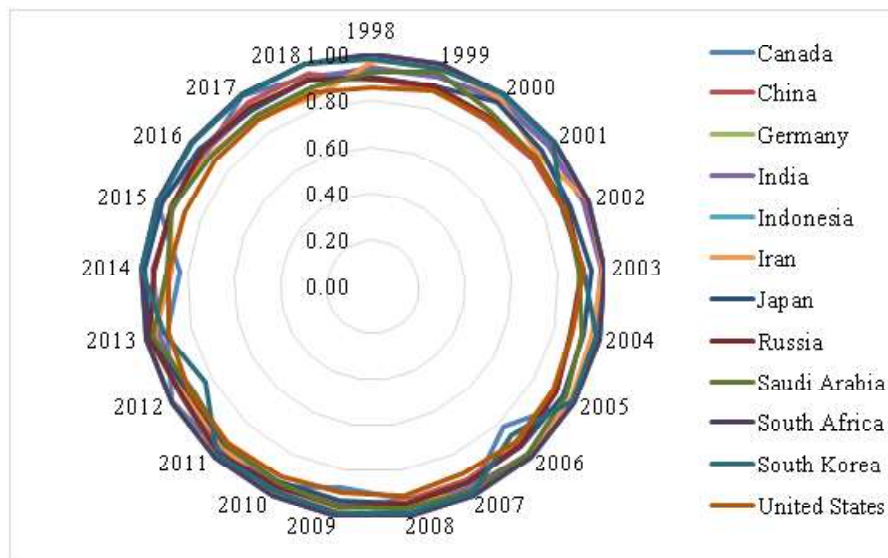


Fig. 4: Results of Scale efficiency analysis (CCR/BCC)

Figure. 4 shows the results of scale efficiency of top emitting countries in respect with environmental efficiency of energy, emissions and economy during 1998 to 2018. Scale efficiency takes place the relationship between technical and pure technical efficiency analysis (DEA - CCR / DEA - BCC). From the above figure it was observed that the countries like Germany, Indonesia and South Africa shows efficient performance over the period of time and rest of the countries have registered inefficient performance but it was closer to efficient score. It shows that most of the countries are given priority to keep their environmental quality and also frequent environmental related conferences and meetings take place to improve their environmental quality. In very particular scale efficiency analysis reveals utilization capacity of their resources, suppose the countries those who are registered inefficient performance reflects that they are not utilizing their resources in proper manner. Hence, the countries show inefficient performance must adopt modernize facilities to use their resources in proper manner so that they can improve their efficiency in respect with environmental efficient of energy, emissions and economy.

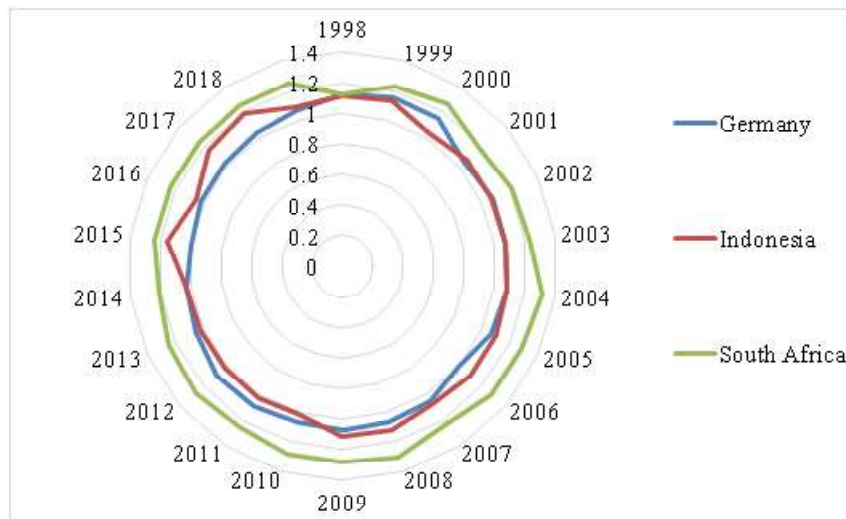


Fig. 5: Results of super efficiency analysis (A & P)

Figure. 5 shows the results of super efficiency model which was developed by Anderson & Peterson for top emitting countries in respect with environmental efficiency of energy, emissions and economy over the period of 1998 to 2018. The basic efficiency models such as “CCR (constant returns to scale), BCC (variable returns to scale) and SE (scale efficiency) measures with different decision making units and provide the scores of both efficient and inefficient units. If the particular decision making unit secured exactly the score of 1 or 100

will be treated as efficiency unit whereas the score which will be less than 1 or 100 will be treated as inefficient unit. But this super efficiency model measures the efficient unit and rank them accordingly in case of inefficient unit this model did not consider for this measurement. Based on the results of DEA - A & P super efficiency analysis it was observed that South Africa shows highest efficiency all through with the average value of 1.25 and acquired first position of environmental efficiency among top emitting countries. Followed by Indonesia shows highest efficiency among the countries with average score of 1.09 and had second position. Finally, Germany had registered superefficient performance in respect with environmental efficiency of energy, emissions and economy with the average value of 1.07 and acquired third position among top emitting countries around the world. The other countries like "Canada, China, India, Iran, Japan, Russia, Saudi Arabia, South Africa and United States" were observed as inefficient performance over the period of time and hence this super-efficient model do not examine the inefficient units.

### **Conclusion**

The primary focus of this research work is to examine the environmental efficacy in respect of energy, emissions and economy of top emitted countries around the world during 1998 to 2018. This study exclusively based on secondary data and the information was obtained from world energy outlook 2019. The concept of efficiency is to measure the relationship between input and outputs variables Energy use in different sectors like "Petroleum, Coal & Lignite, Natural gas and Electricity" as input variables and also the variables like "Carbon dioxide emissions and Gross Domestic Product (GDP)" used as output variables. To examine the environmental efficiency of energy, emissions and economy, the present study used "Data Envelopment Analysis (DEA)" technique which measure the comparative efficiency among different DMUs. Based on the results the countries like Germany, Indonesia and South Africa were observed as efficient performance all through and rest shows inefficient. The study also proved superefficient performance and found that South Africa, Indonesia and Germany shows highest efficiency in the order of ranks. Based on the results it concludes that high economic countries such as China, United States, Russia and Canada shows inefficient environmental efficiency and low income countries like South Africa, Indonesia and Germany found efficient performance of environmental efficiency. Hence it is proved that income is main factor for the environmental degradation. Consequently, countries which registered inefficient performance should adopt some precautionary steps to control their emissions, and also to take long term plan to reduce their emission level in order to maintain their economy. This will improve the quality of environment, subsequently it provides better environment for not only the respective country but also the entire globe.

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# Influence of Social Media on Purchase Intention: A Study of Consumers in Oman

NIRAJ MISHRA, S.L GUPTA AND ABHAYA RANJAN SRIVASTAVA

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*Abstract: The research investigates the consumer's preferences of social media as an advertising communication tool. The increase in popularity of social media and advertising on these social media has led to a question whether advertisements done on these social media are valuable or not. It also helps to investigate the consumer's preference and linking of the social media advertising and its effect on the online purchase decision in Oman. The sample frame consisted social media users from Oman. The sample size consisted of 307 social media users. From the study it is concluded that the Advertisements on the social media are entertaining, informative and credible to the consumers and they positively influence their perceived value but in the advertisements the entertainment part is weaker than that of informativeness and credibility. It was also found that the perceived value of advertising also positively influences the customers in their online purchase intention.*

**Keywords:** Social media, advertising, perceived value, online purchase intention

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## Introduction

It has been more than a decade now, social media websites / tools have changed our lives drastically. In the earlier days we made use of diaries, and now we use Twitter and such other blogging websites to express our feelings. Now-a-days, Facebook is used rather than meeting people in person; our world has changed with these new places for interaction. (Osterrieder, 2013). These Social media websites are highly dependent on the mobile and web-based technologies to create a highly interactive platform through which individuals, people and different communities share, co-create, discuss, and modify user-generated content. Social media as a concept is different from traditional media in many ways, including quality, reach, frequency and its usability.

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According to the March 2018 statistics published by smart insights, the total population is approx. 7.4 billion, out of which the global internet users are approx. 4.02 billion. The total social media users which are active are approx. 3.19 billion. The annual growth of active internet users and active social media users is also growing by approx. 13% per annum (Chaffey, 2018). As per a recent report, Facebook monthly users in the MENA region will be growing to 187 million active monthly users towards the end of the year 2019 and 9 out of 10 young Arabs use at least one social media channel every day (Radcliffe & Abuhmaid, 2020)

Over the past few decades, we have also observed and experienced a tremendous change in how businesses are done and how people react with each other. Since the introduction of personal computers was introduced, The Internet, and E-Commerce made a drastic change on how businesses function and how they market/promote their products and services. In a quite small time span, social media became one of the most favorite and preferred mediums for everybody. With the growing popularity of Social Media, Marketing in this media has led to development of new marketing concepts. Consumer behavior in present days is determined by social media communications and related technologies. Business organization would like to know how the marketing in the social media would be beneficial and create value for their businesses.

In today's generation, Consumers want to be well informed and more knowledgeable about the different products and services, the different offers a company gives, before they actually make the purchase decision. The most important aspect for businesses is that these social media networks are extremely capable of providing valuable information and have a very wide reach. They also have capabilities to influence the peoples purchase decision, as many users of social media, now believe and trust their peer's opinions more, rather than the information provided by the marketing strategists of different companies (Bashar, et al; 2012).

According to an analysis done by Hoot Suite Media Inc. at present, social media advertisements only represent about 14 percent of digital advertisement spending. Analysts are also predicting that social media ad spending will likely to exceed \$51.3 billion in 2018 (Cooper, 2018). Hence, in this today's extremely competitive world which we are living, the social media marketing has become a new trend which uses different social media such as blogs, community sites, video sharing sites etc. to market their product or service or their business. The popular websites such as Facebook, Twitter, and YouTube have more than 1 billion visitors daily and thus they have to be considered a very important marketing tool (Constine, 2017).

The advanced technology in today's world, has given rise to tremendous success in social networking and hence, the social media marketing becomes a very important aspect for the businesses. This aspect also has an importance because of the sheer number of people access these websites regularly. The growth of advertisements on these social media websites requires a research on users' view and users' preference of the forms of advertisements created by marketers on these social media platforms. If marketers want to make use of the communication channels like social media, particularly in an effective and efficient way they need to understand how the consumers perceive and evaluate social networking websites as a source of advertising (Voorveld, 2018).

### **Objective**

The main objective of this research is to examine the influence of social media on purchase intention.

### **Literature Review**

"The social media as a platform allows its users to interact and communicate over the internet directly and immediately with one another and with their mutual friends" (Correa, et al., 2010). As such, social media provides a space for firms to get involved in direct contact with the end-consumers. Businesses can therefore make use of social media to develop an effective relationship by using it as an advertising tool and enhance bonds between companies and customers (Kaplan & Haenlein, 2010). The study of attitude towards advertisements is an important concept for research in the field of marketing and the information system. "Attitude can be defined as a learned predisposition of human beings" (Ajzen & Fishbein, 1977). To be specific, attitude towards an advertisement is defined as a "learned predisposition on how people react in a consistent and favorable or unfavorable manner towards the advertisement in general" (MacKenzie & Lutz, 1989).

Advertising value as defined by Ducoffe (1995) is a "subjective evaluation of the relative worth or utility of advertising to consumers". Ducoffe (1995) further states that advertisement value is an assessment by the consumers about the wants of the consumers and the benefits the advertisement gives. The difference between consumers attitude for the advertisement and the value of advertisement leads to varied consumer responses. Researchers have tried to understand the impact of advertising by exploring the emotional responses from cognitive processing although it has been seen that in most of the cases consumers react emotionally towards advertisements (MacInnis & Jaworski, 1989). This can be done by forming a concept of the relationship between advertisement value and emotions (Lang & Friestad, 1993).

Ducoffe (1995) has suggested a framework which can be used, by creating a distinction between emotional component and cognitive reaction of consumers, to forecast the value which the consumer's get from an advertisement and the attitude they have towards the advertisement. Entertainment, informativeness, and irritation are the key factors identified by him which influence consumers assessment in this regard. A study done by Ducoffe (1995) in web environment confirms the utility of the framework and confirms that there is a positive relationship between attitude and advertising value. It was also established that advertising value is dependent on the perceived levels of entertainment, informativeness, and irritation.

Brackett & Carrs (2001) extended the Ducoffe's model and found out that credibility is a key factor which influences both advertising value and attitude toward advertising. It was also seen that certain demographic factors like gender, specialization of students affects the attitude towards advertising. The attitude towards advertising can be seen as favorable or unfavorable as per studies done by Ducoffe (1995) and Brackett and Carr (2001). However, these studies could not clearly differentiate between advertising value and advertising attitude. "The value of advertising can be analysed from consumers' assessment of advertising beliefs regarding the personal benefits of advertising to consumers" (Bamoriya & Singh, 2011).

Petrovici and Paliwoda (2007) has concluded in their study that most of the consumers understand and acknowledge the informational and entertaining roles of advertising. They also concluded in their study that there is limited brand knowledge and with increasing availability of products there is an increased demand for information about products. According to Rodgers and Thorson's (2000), consumers view online advertisements to seek information for satisfying their needs or addressing specific problems. Hence, advertisers should provide detailed information along with required entertainment aspects in order to improve communication between the consumers and advertisers (Ducoffe, 1995). Information can play a decisive role in building trust and relationships with the consumers. Numerous studies done in online advertising area has shown that consumers trust and belief towards advertising are greatly influenced by informativeness and entertainment quality of advertisements. A study done by Lee & Hong (2016) found that "informativeness and advertising creativity were the key drivers of favourable behavioural responses to a social media advertisement".

Moreover, these markets are subject to rapid changes, new brands are constantly appearing and under such changing conditions, trustworthiness becomes a very important aspect. Credibility thus has a great significance, and advertising credibility is therefore considered to play a major role in contribution of value in

the advertising in the consumers' perception. Therefore, Informativeness, entertainment and credibility are found to be important for establishing advertising value for any product or service. (Das et al, 2014). Among the different goals the advertisers try to achieve, the purchase intention and the purchase behavior are most significant for generating sales (Cramphorn, 2011). There is a significant impact of "performance expectancy, hedonic motivation, interactivity, informativeness, and perceived relevance on purchase intentions"(Alalwan, 2018)

**Hypotheses & Research Model**

Based on the conceptual foundation developed from the review of literature on social media, online advertisement, perceived value and online purchase intentions the following hypotheses are proposed for the study:

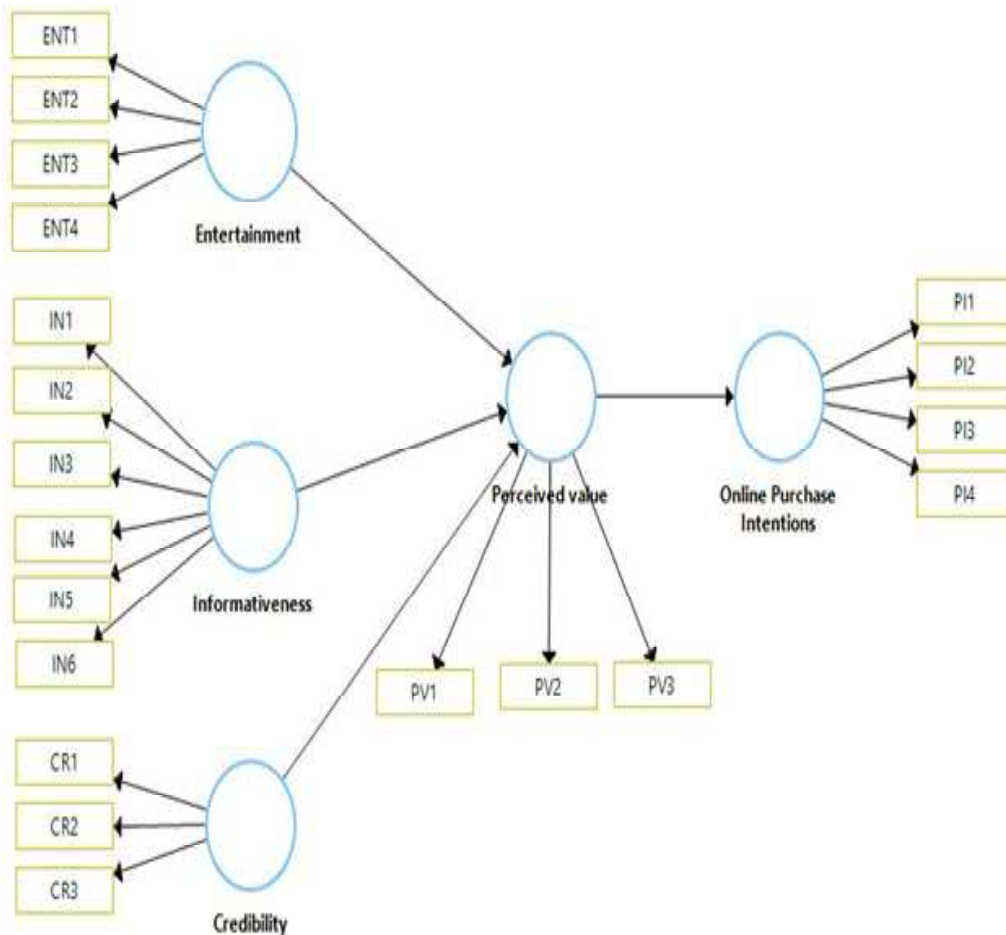


Fig. 1: Proposed research model

- H<sub>1</sub>: Informativeness of social media has a positive influence on consumers' perceived value of Advertising.
- H<sub>2</sub>: Entertainment function of social media is having a positive relation with consumers' Perceived value of Advertising.
- H<sub>3</sub>: Credibility function of social media is having a positive relation with consumers' Perceived Value of Advertising.
- H<sub>4</sub>: Consumers' Perceived Value of social media advertising has a positive influence on the online purchase intention.

Based on hypotheses mentioned above proposed research model (Figure-1) has been framed.

## Research Methodology

### Questionnaire

This study forms an exploratory study as the investigations still are in the early stages. The study is based on descriptive design as it tends to analyze the behavior of the people. The questionnaire was adopted from Dao et al.,(2014). Questionnaire has been designed, to know the point of view of respondents regarding the extent of social media that helps in understanding the online purchase intention. First part of the questionnaire contains information regarding demographics and usage pattern of social media of the respondent. The Second part of the questionnaire focuses on 5 major factors Entertainment; Informativeness; Credibility; Perceived Value and Online purchase intention.

Almost all the scale items are selected from the highly cited publications on empirical research in consumer psychology, satisfaction, online advertising, social media and online purchase intentions. Some of the items went through minor modifications with respect to wordings to fit the context of the study. Table-1 provides a summary of the construct items and their sources.

Table 1: Summary of scale items

Theoretical construct	Number of scale items	Measures	Sources
Entertainment	4	5-item Likert-type scale	Adapted from (Pollay & Mittal, 1993; Ducoffe, 1995; Dao et al., 2014)
Informativeness	6	5-item Likert-type scale	Adapted from (Pollay & Mittal, 1993; Ducoffe, 1995; Dao et al., 2014)
Credibility	3	5-item Likert-type scale	Adapted from (Dao et al., 2014)
Perceived Value	3	5-item Likert-type scale	Adapted from (Ducoffe, 1995; Dao et al., 2014)
Online purchase intention	4	5-item Likert-type scale	Adapted from (Dao et al., 2014)

600 questionnaires were distributed and 307 responses were analyzed after filtering out incomplete responses. The sampling technique used was non probability (convenience sampling) technique.

### Statistical Tools

The procedures used to analyse the data for the purposes of addressing and answering the research hypotheses are as: Preliminary Data Screening based on univariate statistical analysis; Cronbach alpha for test of reliability; Structural Equation Modeling using Smart PLS (Used for PLS path modeling). Demographic variables such as age, gender, education were subject to descriptive analysis in terms of understanding the demographic details of survey participants. The Cronbach alpha coefficient was used to assess the reliability of the instruments adopted in this research. Cronbach's (1951) coefficient alpha is a formula which examines the internal consistency of a multi-item measure using split-halves method and incorporating all possible ways of splitting a sample in half. A low coefficient alpha indicates that the combination of items did not capture the construct well and were not sharing the common core of the construct (Tavakol & Dennick, 2011). PLS path modeling is widely applied in business and social sciences in order to predict the likely behavior of endogenous "latent variables and to estimate and test relationships between latent variables (causal analysis)" (Joe et al., 2011). In the present study smart PLS was used to test the research hypotheses.

### Analysis and Discussion

The characteristics of the sample are described in terms of the demographic data provided by the respondents. This data is reported in the order as it appeared in first part of the questionnaire which covered questions relating to the respondents' personal details.

Table-2: Demographic details of respondents

	Frequency	Percent (%)
<b>Gender</b>		
Male	177	58
Female	130	42
<b>Age Group</b>		
10-20 Years	0	0
20-30 Years	32	10
30-40 Years	185	60
40-50 Years	15	5

Contd...

50-60 Years	60	20
60 Years and Above	15	5
<b>Education</b>		
Secondary School	0	0
Higher Secondary School	27	9
Graduate	156	51
Post Graduate	124	40

As evident in Table-2, there were 58% male respondents and 42% female respondents in the survey. Majority of the respondents were in the age category of 30-40 years (60%) and were graduates (51%).

The relationships between the constructs were analyzed by using the Partial Least Squares (PLS) path-modeling algorithm. Smart PLS has been used in the present study to estimate the measurement model and structural model simultaneously (Tarka, 2018). The proposed model is shown in Figure1. The proposed model has five latent construct as entertainment; informativeness; credibility; perceived value and online purchase intention.

The measurement models can be evaluated by measuring internal consistency (composite reliability), indicator reliability, convergent validity (average variance

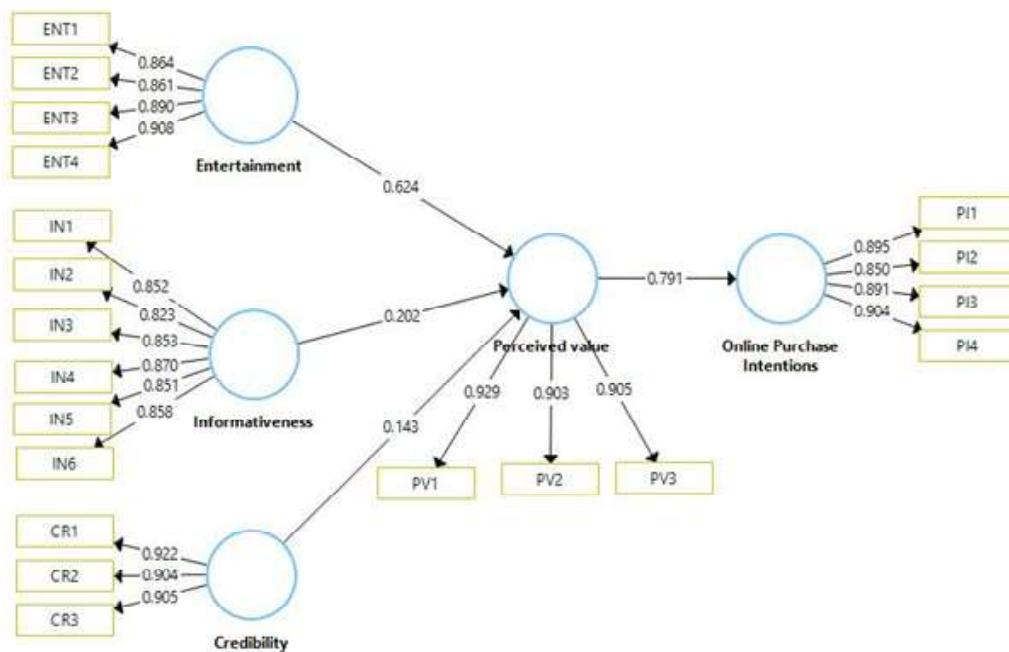


Fig.-2: Final path model



extracted) and discriminant validity. (Hair, et al., 2019). Factor loading was calculated for the initial path model and is presented in table-2. As evident from the results all factor loadings were more than 0.7 and hence the initial path model was taken as final path model (Figure-2 & Table-3).

Table 3: Factor loadings

	Credibility	Entertainment	Informativeness	Online Purchase Intentions	Perceived value
CR1	0.922				
CR2	0.904				
CR3	0.905				
ENT1		0.864			
ENT2		0.861			
ENT3		0.890			
ENT4		0.908			
IN1			0.852		
IN2			0.823		
IN3			0.853		
IN4			0.870		
IN5			0.851		
IN6			0.858		
PI1				0.895	
PI2				0.850	
PI3				0.891	
PI4				0.904	
PV1					0.929
PV2					0.903
PV3					0.905

Table 4: Construct reliability and validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Credibility	0.897	0.898	0.936	0.829
Entertainment	0.904	0.907	0.933	0.776
Informativeness	0.924	0.928	0.940	0.724
Online Purchase Intentions	0.908	0.911	0.936	0.784
Perceived value	0.899	0.900	0.937	0.832

Table-4 summarizes construct reliability and validity. Reliability of scale has been tested using Cronbach alpha, rho\_a and composite reliability. rho\_a is Jöreskog's  $\rho$ , generally used for assessing composite reliability in SEM. "Joreskog  $\rho$ " is a composite reliability indicator computed on unstandardized loadings where as "Composite reliability" is the same indicator, but it is computed on standardized loadings. This measure is preferred over Cronbach's alpha "because it offers a better estimation of variance shared by the respective indicator" (Joe et al., 2014). In this study the Cronbach alpha, rho\_a and composite reliability coefficient of the constructs ranged from 0.897 to 0.937 as shown in Table 3, which met the standard of 0.70 (Fornell & Larcker, 1981).

Average variance extracted (AVE) explains the amount of variance that is measured by a construct with respect to the amount of variance due to measurement error. AVE is also used as a test of both convergent and discriminant validity. AVE reflects the average communality for each latent factor in a reflective model. In an adequate model, "AVE should be greater than 0.5. AVE below 0.5 means error variance exceeds explained variance" (Chin, 1998). As seen in Table-3, the AVE scores are above 0.7 and hence is well within the prescribed range.

### Test of Hypotheses

PLS as a method is used to maximize variance explained rather than fit and hence prediction -oriented measures such as ( $R^2$ ) are used to evaluate PLS models (Chin, 1998). The coefficient of determination ( $R^2$ ) is the proportion of the variance in the dependent variable that is predictable from the independent variable. The coefficient of determination,  $R^2$  as shown in Table-5, is 0.831 for the Perceived Value endogenous latent variable. This means that the three latent variables (Entertainment, Informativeness, and Credibility) strongly explain 83.1% of the variance in Perceived Value whereas Perceived Value explains 62.5% variance in Online Purchase Intentions.

Table: 5 Coefficient of determination, (R<sup>2</sup>)

	R Square
Online Purchase Intentions	0.625
Perceived value	0.831

A bootstrap procedure using 1000/5000 sub samples was performed to evaluate the statistical significance of path coefficient. The Bootstrap result approximates the normality of data. The following Table 5 shows hypothesized path coefficient along with their bootstrap values, "T" values

Table 6: T-values and P-values

	Hypotheses	T Statistics ( O/STDEV )	P Values	Assessment
Informativeness -> Perceived value	H <sub>1</sub>	4.149	0.000	Supported
Entertainment -> Perceived value	H <sub>2</sub>	13.326	0.000	Supported
Credibility -> Perceived value	H <sub>3</sub>	3.120	0.002	Supported
Perceived value -> Online Purchase Intentions	H <sub>4</sub>	28.753	0.000	Supported

As per the T statistics data exhibited in Table-6, the relationships between Credibility and Perceived Value; Entertainment and Perceived Value; Informativeness and Perceived Value; Perceived Value and Online Purchase Intentions, are found to be significant ( $t > 1.96$  at  $p < 0.05$ ).

## Conclusion

The purpose of this research was to study the area of social media advertising, which is an emerging method of advertising and makes use of social networking websites as new advertising medium, based on how their viewers perceive the value and importance of the advertisements. Middle East has young, digitally savvy and eager netizens who use social media and their number is increasing at a rapid pace. The tech savvy young populations spend a considerable amount of time on social media platforms.

The study has found that consumers view social media advertisements in terms of their credibility, entertainment abilities and informativeness and it ultimately affects their online purchase intentions. Majority of the respondents in the study were in the age category of 30-40 years and the responses supported influence of social media on their online purchase intentions. As credibility is seen as an important aspect in social media advertisement, it is advised that the companies

should match the promises made in social media advertisement with their actual product offerings and service delivery. It has been seen that most of the trust deficit are due to inherent issues involved in e-commerce and it can be minimized by highlighting zero deduction return policy, 24 hrs customer call centers and cash on delivery options.

Social media, being a digital platform, can be used for creating innovative and creative and attractive advertisements as consumers tend to watch advertisement which provide them some kind of entertainment. Different advertising appeals like music, humor etc., can be used to make the advertisements entertaining and attractive to get the attention of the viewers. Social media advertisements which are shown on Facebook, YouTube etc., will be ignored by the viewers if they do not have the ability to retain their interest.

The study also revealed that information sharing abilities of social media advertisements affect their online purchase decisions. Hence it is suggested that companies should try to highlight key facts and figures in their advertisements which may attract attention of the viewers. The content displayed in the advertisements may have a positive effect on the viewers and may lead to online purchase. The above factors influence how social media users' view the advertisements and their perceived value for them is thus affected by credibility features in advertisements, information sharing and entertainment abilities. If the social media users perceive the advertisements to be valuable it may lead to online purchase.

Social media advertisement is gaining momentum and acceptance amongst users. It is worthy to note that 4 Fs of digital media play an important role in online purchase. They are friends, family Facebook (social media) and followers. Their influence is vital in context of social media advertising and purchase intentions and companies need to make strategies to reap desired benefits.

### **Implications of Research**

These findings from the analysis of research will help in media planning to corporate world, advertising agencies, Govt., and consumers will know influence of social media on purchase intentions of consumers in Oman. Oman consists of 54% Omani population and 46% Expats (approx.) population. It is also assumed that the findings have several important significances for companies in both assessing and implementing various advertising policies and using social media in their marketing plans. The consumers who are influenced by social media can make drastic impact on the ways goods and services are sold by companies. They also have the capability to influence the people purchase decision in terms of affordability, accessibility and aspirations. Social media can thus be used in

advertising, promotion and increasing the popularity of products and services. Most important implication of the research lies in examining the role of social media advertising which is an emerging method of advertising to measure its benefits in terms of monetary, functional, psychological and purchase intention in Oman. Three market segments have emerged: young generation, women and netizens, who are to be considered for social media advertising.

### Limitations of Study and Future Research

The study has inherent limitations which can be seen in majority of survey-based research. The geographical area was limited to key cities of Sultanate of Oman. Consequently, the scope of this study was circumscribed by resources and time constraints, as is often the case with non-sponsored research projects. It is also suggested to have further empirical investigation to establish whether the constructs in the proposed model vary across countries and consumer types. In order to apply the model to extended social media advertisement effectiveness or to a cross-cultural context, there is a need for further customization of the measurement scales used in this model. However, despite this caveat, the research findings could be generalized to countries that share some common characteristics with regard to the demographic and psychographic characteristics of social media users.

A general direction for future research is to replicate the study with data collected from similar studies done across the globe. It is possible that several other variables may moderate the relationships proposed in the research model. Investigation of various moderating variables in the research model could be done by exploring a multitude of contexts and thus obtaining considerable variability across such variables.

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## An Analytical Study of Application of Marketing Audit of Pharmaceutical Companies in Maharashtra

MANESH R PALAV, SATISH D. JAGTAP AND SHIRISH S RAIBAGKAR

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*Abstract: A research study was undertaken with the objective of studying the concept and application of marketing audit for selected pharmaceutical companies from Maharashtra. This paper presents the framework for facilitating application of marketing audit by the pharmaceutical companies. An inclusion criterion of turnover of Rs.100 crores was kept for selection of the company for the study. 400 employees of the marketing department from different pharmaceutical companies were surveyed. Significantly high percentage of respondents categorized the problems in marketing audit as those with strong intensity. Ignoring the 99 respondents whose organizations were not practicing marketing audit, amongst the other 301 respondents, the 10 applications listed were rated as those used with a high frequency. The problems with marketing audit strongly influence applications of marketing audit which in turn affects sales performance.*

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**Keywords:** Marketing Audit, Pharmaceutical Companies, Marketing Audit Problems, Marketing Applications

### Introduction

The marketing audit is a basic piece of the marketing strategy and is directed towards the start of the process. The marketing audit considers both inner and external impacts on marketing strategy, just as a survey of the strategy itself. In addition, the concept is applied at operational and functional levels as well. It is the thorough appraisal of all areas of marketing activity in a firm. It implies the deliberate assessment of plans, goals, techniques, activities and hierarchical structure just as marketing staff (Loya, 2011).

The key marketing function-wise/activity applications of marketing audit are: Marketing Environment, Marketing Strategy, Marketing Firm, Marketing System, Marketing Productivity and Marketing Functions.

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**Objectives of the study**

The objectives of the study are:

- To assess the impact of usage of marketing audit on sales performance of selected Pharmaceutical Companies and
- To develop a practical marketing audit model with special reference to selected pharmaceutical industries.

**Literature Review**

Kotler and Keller (2007) characterized the marketing audit as a thorough, efficient, autonomous and occasional assessment of firm's marketing condition, destinations, techniques and activities with a perspective on deciding issue regions and opportunities and prescribing a game plan to improve the firm's marketing performance. As indicated by Imran and Mondal (2012) the marketing audit method gives data as well as information and understanding. It can analyze the aspects of knowledge, as far as their precision, rule and amplex; audit the interior insight spread procedure adequacy and evaluate the authoritative responsiveness as far as speed and pertinence. Each firm has the opportunity to pick between two kinds of marketing audit. Each kind of audit can be led by two classes of auditors: an internal auditor who is a firm employee or a manager in various degrees of order and an external auditor who is an expert, autonomous professional (Chirla and Funar, 2010). During the process of marketing audit, firms utilize chiefly qualitative approaches and just a couple of quantitative techniques are utilized (Che, 2010). The way toward marketing auditing is, for some, firms, still a generally new and under-used movement. Past the target issues and entanglements engaged with its execution, the way that a few firms utilize only a portion of their components - once in a while not many - in an unsystematic manner, has added to the absence of lucidity encompassing their expansive application (Gama, 2011). The marketing audit may and ought to be utilized as a significant tool in supporting the top management in identifying the risks that are innate in the firm's action (Cecco et al. 2010). The marketing audit looks at marketing process and prescribes how these procedures can be progressively proficient. It tends to be viewed as a factor of the firm's development, which causes it to push ahead, to add to an appropriate focal point of its marketing activities. It permits to exploit opportunities offered in the market and in this manner to add to the general streamlining of the business. Research so far has largely focused on conceptual discussion in terms of explaining the meaning and scope of marketing audit.

## Research Methodology

The design adopts a mix approach to test the hypotheses. Since most of the primary data is in the form of opinions and views of the respondents, the basic nature of the data used is qualitative. However, due level of quantification has been used in the study to reach objective and measurable conclusions.

Out of the 400 marketing employees from the pharmaceutical companies surveyed the division of respondents belonging to companies conducting marketing audit was 301 whereas 99 belonged to companies that did not use marketing audit. The spread of grade in the 400 employees surveyed was 179 of officer group; 185 of executive group; and 36 for the manager group. The distribution of the sample based on turnover category was 167 in the <Rs.500 crores group; 184 in the Rs.500-1000 crores group; and 49 in the > Rs.1000 crores group.

The location-wise composition of pharmaceutical companies in Maharashtra has been shown in Table 1.

Table 1: Location wise composition of pharmaceutical companies in Maharashtra

District	Total Pharmaceutical Companies
Amravati	16
Aurangabad	59
Mumbai	67
Nagpur	39
Nasik, Jalgaon, Ahmednagar	80
Raigad	73
Ratnagiri	11
Thane	158
Total	503

(Source:www.pharmatips.in, 2020)

## Research Variables

### *Independent Variables*

- a) Problems in marketing audit - Based on the literature review ten of them were identified as lack of realization of value of the concept, lack of awareness, perception that audit is a fault-finding activity, looked upon as a complex activity, absence of expertise required to carry the audit, considered more of a western concept not really applicable in India , marketers believe that the auditors are highly theoretical, cost factor, marketing team unable to give

required time for the audit and outcome of the audit does not have much practical utility. The problems were measured on a 5-point Likert scale of strong and mild intensity. The problem intensity scales used were Strong, Very Strong, Neutral, Mild, and Very Mild.

- b) Marketing audit applications - Ten popular applications of marketing audit were included for study. Those included external factors like cultural, political and other environment, task environmental factors like markets, competitors, distributors etc. , vision, mission and strategy, goals, objectives, policies & programs, organizational structure (Marketing), parity of authority and responsibility, basic systems like planning and controlling, special systems like market research, productivity of non-human resources and productivity of human resources. A 5-point Likert scale to measure the extent of usage of these applications was used. The scales were, Never used, Used rarely, Used occasionally, Used frequently, and Used very frequently.

#### Dependent Variables

- a) Marketing audit applications (w.r.t Problems in Marketing Audit) - Same as stated earlier.
- b) Sales performance - Ten sales performance metrics were considered. These included, growth in overall revenue, growth in unit price realization (UPR), increase in overall market share, increase in product-wise market share, increased sales from new business, increase in repeat orders, increase in market penetration (local), increase in market penetration (exports), improvement in gross margins and improvement in net margins. A 5-point Likert scale of high/low was used to measure the sales performance. The scales were, Very low, Low, Neutral, High, and Very High.

The scales were duly tested for validity and reliability.

*Resource identification for variables identified above are given in the Table 2 -*

Table 2: Resource identification for data collection for research variables

Sl. No	Area	Primary Data resource
1	Problems in marketing audit	Responses to section I of the questionnaire by employees of Pharmaceutical companies
2	Marketing audit applications	Responses to section II of the questionnaire by employees of Pharmaceutical companies
3	Sales performance	Responses to section III of the questionnaire by employees of Pharmaceutical companies

Secondary Data resource used were agency research, publications by individuals, research publication by institutions, annual reports etc.

### ***Selection of sample and data collection***

Marketing audit as a concept is not very popular in India. Hence Pharmaceutical Companies with a turnover of more than Rs.100 crores were considered for this study. Details of turnover were obtained from websites like BSE, [www.pharmatips.in](http://www.pharmatips.in) and others.

### **Hypotheses**

H<sub>1</sub> : There are no significant problems affecting applications of marketing audit

H<sub>2</sub> : There is no impact of the problems on the application of marketing audit

H<sub>3</sub> : There is no impact of usage of marketing audit on sales performance of selected Pharmaceutical Companies

A questionnaire was designed to collect primary data in order to test the hypotheses. Responses were collected under 3 sections of the questionnaire on a 5-point scale. The responses under each of the sections were aggregated under two opposite groups of strong/mild, occasionally/frequently, low/high. While doing so for each of the extreme responses, a weight of 2 would be so as to distinguish them from the non-extreme responses. For each of the question an average count will be calculated in the two opposites. For the 1st hypothesis average responses of section I were compared with a 50% level taken as hypothesized mean of population and a t-test was applied to find out if the problems are strong or mild by comparing the average with 50% at 95% confidence level. For 2nd hypothesis average responses of section I were associated with those section II by using regression analysis taking applications as dependent variable and problems as independent variable. For 3rd hypothesis average responses of section II were associated with those section III by using regression analysis taking sales performance as dependent variable and applications as independent variable.

Population of pharmaceutical company employees (marketing department) in Maharashtra was estimated to be a large one (in excess of 20000) given the fact that there are more than 500 pharmaceutical companies. The sample Size is 400 each (as per standard Krejcie and Morgan table size for large population is 377 at 95% confidence level; same rounded off to 400).

Cronbach's Alpha and other tests were applied on various parts of the questionnaire using "Siegle Reliability Calculator" an excel program and the results showed that the Cronbach's Alpha was more than the standard of 0.70.

Theoretical model of the study

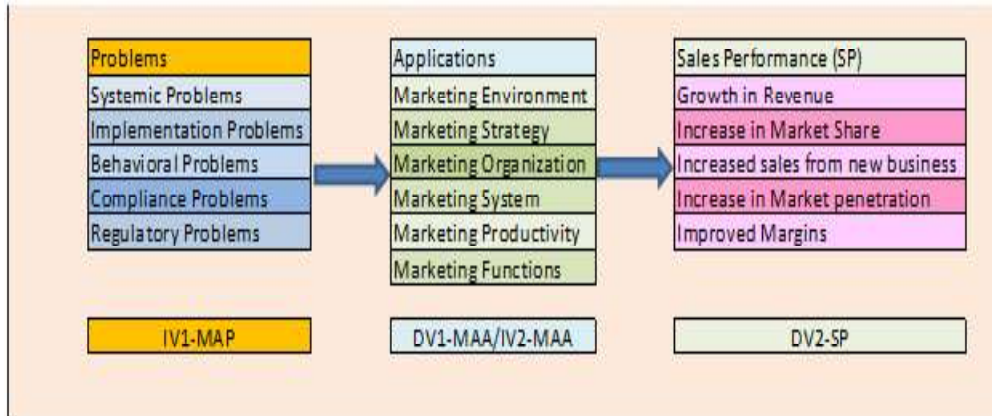


Fig. 1: Conceptual model of the study

Three basic constructs were used - problems, applications and sales performance. Problems and marketing audit applications were considered as the two independent variables while marketing audit applications and sales performance were considered as the two dependent variables.

**Hypotheses**

Ho<sub>1</sub> - There are no significant problems affecting applications of marketing audit.

Table 3: Strong intensity problem percentages to Part I of questionnaire

Qstn.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	Average
Strong Intensity%	62%	66%	67%	66%	68%	70%	65%	62%	65%	65%	66%

Table 4: Testing of statistical significance - (@ 95% level of confidence) Part I

Particulars	Values
H1 (average of the sample)=	66%
SD (SD of the sample) =	1.10674
Ho (hypothesized mean of the population) =	50%
H1(sample mean) =	0.66
N (sample size) =	400
t-Test statistic ((H1-Ho)/((SD)/Sqrt(n)) =	2.82
p-value (tdist(t),(n-1),1)	0.002546
Is p-value < 0.05	Yes
Accept/Reject Ho	Reject Ho

Since the Null Hypothesis got rejected it can be said that there are no significant problems affecting applications of marketing audit is not true.

Ho<sub>2</sub> - There is no impact of the problems on the application of marketing audit

Table 5: Frequent application percentage response to Part II of questionnaire

Qstn.	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	Average
Frequently used %	71%	67%	63%	66%	61%	58%	69%	68%	68%	66%	66%

Following values were assigned to each set of responses for the purpose of regression analysis:

Table 6: Values assigned to responses for the purpose of regression analysis

Sec.No.	Title	Response options	Values for analysis
I	Intensity of problems for marketing audit	No response, Strong, Very Strong, Mild, Very Mild	0, -1, -2, 1, 2
II	Extent of actual use of the marketing audit applications	Never used, Used rarely, Used occasionally, Used frequently, Used very frequently	0, 1, 2, 3, 4
III	Sales performance	No response, Very low, Low, High, Very High	0, -2, -1, 1, 2

For each of the 400 respondents, average values of the 10 problems, 10 applications and 10 sales performance parameters, were calculated by averaging their responses as per values assigned from Table 6.

For testing the 2nd hypothesis a regression analysis was done taking application responses as the dependent variable and problems as an independent variable (Table 7).

Table 7: Summary statistics

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Application_Occ	400	0	400	0.000	3.900	2.125	1.280
Problem_Sev	400	0	400	-2.000	1.500	-0.464	0.873

#### Correlation matrix

	Problem_Sev	Application_Occ
Problem_Sev	1.000	0.816
Application_Occ	0.816	1

Regression of variable Application\_Occ:

Goodness of fit statistics (Application\_Occ):

Observations	400
Sum of weights	400
DF	398
R <sup>2</sup>	0.665
Adjusted R <sup>2</sup>	0.665
MSE	0.549
RMSE	0.741
MAPE	20.488
DW	1.769
Cp	2.000
AIC	-237.543
SBC	-229.560
PC	0.338

Analysis of variance (Application\_Occ)

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	1	434.895	434.895	791.516	<0.0001
Error	398	218.680	0.549		
Corrected Total	399	653.575			

Computed against model Y=Mean(Y)

Model parameters (Application\_Occ)

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Intercept	2.680	0.042	63.838	<0.0001	2.598	2.763
Problem_Sev	1.195	0.042	28.134	<0.0001	1.112	1.279

Equation of the model (Application\_Occ):

$$\text{Application\_Occ} = 2.68019682527635 + 1.19536203613646 * \text{Problem\_Sev}$$

Standardized coefficients (Application\_Occ):

Source	Value	Standard	t	Pr >  t	Lower	Upper
Problem_Sev	0.816	0.029	28.134	<0.0001	0.759	0.873

Given the R<sup>2</sup>, 67% of the variability of the dependent variable Application\_Occ is explained by the explanatory variable. Given the p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

Thus, the second null hypothesis, there are no significant problems affecting applications of marketing audit stands rejected.

Ho<sub>3</sub> - There is no impact of usage of marketing audit on sales performance of selected Pharmaceutical Companies

Responses to sales performance parameters are shown in Table 8.

Table 8: Summary of responses to section III of questionnaire (Sales Performance)

Qstn.	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	Average
High %	48%	51%	54%	52%	54%	57%	51%	49%	50%	50%	52%
Low%	52%	49%	46%	48%	46%	43%	49%	51%	50%	50%	48%

For testing the 3rd hypothesis a regression analysis was done taking sales performance as the dependent variable and application responses as an independent variable (Table 9).

Table 9: Summary statistics

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Sales Growth	400	0	400	-1.900	1.800	-0.049	1.013
Application_Occ	400	0	400	0.000	3.900	2.125	1.280

Correlation matrix

	Application_Occ	Sales Growth
Application_Occ	1.000	0.943
Sales Growth	0.943	1

Regression of variable Sales Growth:

Goodness of fit statistics (Sales Growth):

Observations	400
Sum of weights	400
DF	398
R <sup>2</sup>	0.890

Contd...



Contd...

Adjusted R <sup>2</sup>	0.890
MSE	0.113
RMSE	0.336
MAPE	55.427
DW	2.053
Cp	2.000
AIC	-869.850
SBC	-861.867
PC	0.111

## Analysis of variance (sales growth)

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	1	364.371	364.371	3222.090	<0.0001
Error	398	45.008	0.113		
Corrected Total	399	409.379			

Computed against model Y=Mean(Y)

## Model parameters (sales growth)

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Intercept	-1.635	0.033	-50.130	<0.0001	-1.699	-1.571
Application_Occ	0.747	0.013	56.763	<0.0001	0.721	0.773

## Equation of the model (sales growth)

Sales Growth = -1.63534423499002+0.746662385597\*Application\_Occ

Standardized coefficients (Sales Growth):

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Application_Occ	0.943	0.017	56.763	<0.0001	0.911	0.976

Given the R<sup>2</sup>, 89% of the variability of the dependent variable Sales Growth is explained by the explanatory variable. Given the p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

Since the Null Hypothesis got rejected it can be said that there is no impact of usage of marketing audit on sales performance of selected Pharmaceutical Companies, is not true.

### ***Impact of Marketing Audit on Pharmaceutical Companies***

Findings show that for the variable intensity of problems with marketing audit the strong intensity of problem of the sample is 66%. For the variable extent of actual use of marketing audit application the frequently used count of the respondents is 66%. It was found that for the variable sales performance the high growth count of the sample is 52%. There is a correlation of 0.816 between problems in marketing audit and applications in marketing audit. There is a correlation of 0.943 between applications in marketing audit and sales performance of the pharmaceutical companies. Additionally, there is a correlation of 0.891 between problems in marketing audit and sales performance of the pharmaceutical companies. There is a correlation of -0.833 between conduct of marketing audit and sales performance of the pharmaceutical companies. Turnover of the company and number of employees does show some impact on the problems in marketing audit and application in marketing audit. However, period of existence of the company does not show any impact on the problems in marketing audit and application in marketing audit.

Table 10: Summary of model validation & overall interpretation

S.No.	Parameter	Parameters measured	Interpretation
1	Problems affecting applications of marketing audit	Average rating for strong intensity of problems 66%	Since percentage rating for strong is significantly different than hypothesized mean of population set at 50%, intensity of problem is considered as strong
2	Impact of the problems on the application of marketing audit	Correlation between problems and applications 0.816	Significant positive correlation between problems and applications is observed, hence the null that there is no significant impact of problems on applications is rejected
3	Impact of usage of marketing audit on sales performance	Correlation between applications and sales performance 0.943	Significant positive correlation between applications and sales performance is observed, the null that there is no significant impact of applications on sales performance is rejected.

### **Conclusion**

Significantly high percentage of respondents categorized the problems in marketing audit as those with strong intensity. Problems in marketing audit like lack of realization of value of the concept, lack of awareness, perception that

audit is a fault-finding activity, looked upon as a complex activity, absence of expertise required to carry the audit, considered more of a western concept not really applicable in India, marketers believe that the auditors are highly theoretical, cost factor, Marketing team unable to give required time for the audit and Outcome of the audit does not have much practical utility were quite strongly rated as problems of high intensity. Ignoring the 99 respondents whose organizations were not practicing marketing audit, amongst the other 301 respondents, the 10 applications listed were rated as those used with a high frequency. Applications like External factors like cultural, political and other environment, task environmental factors like markets, competitors, distributors etc., Vision, mission and strategy, goals, objectives, policies and programs, organizational structure (Marketing), parity of authority and responsibility, basic systems like planning and controlling, special systems like market research, Productivity of non-human resources and productivity of human resources were rated as those with frequent usage. The problems with marketing audit strongly influence applications of marketing audit in the select pharmaceutical companies from Maharashtra. Those who have rated strong intensity for problems have occasionally used marketing audit applications whereas those who have rated mild intensity for problems have high frequency of use of marketing audit applications. The sales performance for the pharmaceutical companies was found to be average. Parameters like growth in overall revenue, growth in unit price realization (UPR), increase in overall market share, increase in product-wise market share, increased sales from new business, increase in repeat orders, increase in market penetration (local), increase in market penetration (exports), improvement in gross margins and improvement in net margins, on an average were rated as high performance by only 52% of the respondents. There is a clear causal relationship between a) conduct of marketing audit, b) problems in marketing audit, and c) applications in marketing audit and sales performance. All the 3 variables showed direct and significant impact on sales performance of the pharmaceutical companies. Those who were not conducting marketing audit showed substantially low sales performance as compared to those who were doing marketing audit. Those who have ranked problems with high intensity, their sales performance is very low as compared to those who have ranked problems with mild intensity whose sales performance is high. Respondents with high frequency of application of marketing audit show high performance in sales and those with occasional use of applications of marketing audit show a low sales performance. Demographic variables like turnover of the company and number of employees does show some impact on the problems in marketing audit and application in marketing audit. However, another variable, period of existence of the company does not show any impact on the problems in marketing audit and application in marketing audit.

### Implications of the Study

The key factor in the model is the audit environment comprising of elements like sensitization of value of the concept among the marketing employees, creating awareness about the concept among the marketing employees, building a positive perception towards the marketing audit and finally creating an atmosphere of trust between the management, marketing auditor and marketing department staff. Denisa and Jaroslav (2013) have pointed out problems like underestimation of marketing audit benefits, the ignorance of marketing audit; and the fear from its results. Taking into account views of the experts and also the problems found by way of the study the framework has been constructed especially for the pharmaceutical companies.

This environment will facilitate the conduct of the marketing audit which can look into key areas like marketing environment, marketing strategy, marketing organization, marketing system, marketing productivity and marketing functions.

The marketing audit should be directly tied-up with clear measurable and tangible outcome in the form of sales performance measured with different parameters like growth in revenue, increase in market share, increased sales from new business, Increase in Market penetration and improved margins. It is important that the marketing auditor should be made accountable for results. Feedback from the outcome should be given to the marketing auditor and based on the results attempt should be made to make necessary changes in the audit environment.

Thus, the process has to function as a continuous system in a loop. The framework and the model is depicted in Figure 2.

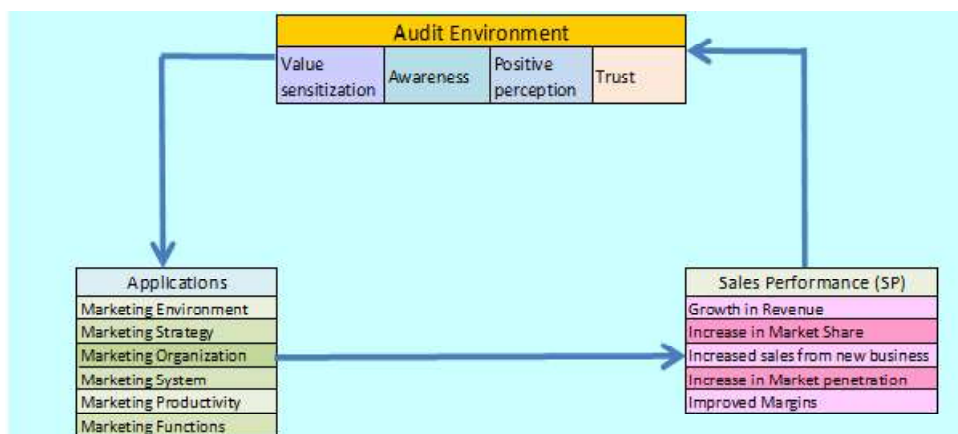


Fig. 2: Suggested framework for operationalizing marketing audit in pharmaceutical companies

### Limitations and Future Studies

The study was confined to select pharmaceutical companies from Maharashtra. Impact of geographical location cannot be altogether ruled out. Sampling is not free from limitations. The generalizations made on the basis of the sample for the population are subject to the limitation. Moreover, Similar studies can be carried out in other states of the country. Also comparative studies can be carried out between the states and areas within a state. Further such studies can be carried in comparison with other parts of the world.

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## Impact of Asset Risk on Profitability of Public Sector Commercial Banks in India

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*Abstract: The purpose of this paper is to calculate the asset risk and also to assess the impact of asset risk on the profitability of the selected five public sector banks in India from 2005-06 to 2018-19. Our analysis has clearly revealed that the asset risk of all public sector banks has enhanced during the period 2005-06 to 2018-19, while the profitability of banks which is measured by return on assets has diminished during the same period. The enhancement in asset risk of public sector commercial banks is indeed a cause of concern for these banks. These banks definitely need to put a check on the quality of loans and also have to strengthen their recovery process.*

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Keywords: Profitability, Asset Risk, Return on assets

### Introduction

The thrust towards enhancement of profitability of public sector banks with the recommendation of Narasimham Committee coupled with the diffusion of Information technology enabled services in the sphere of financial sector has stimulated the banking sector to diversify their revenue generation activities from fund based operations to non fund business activities. Almost all commercial banks sooner or later stepped into various forms of non- fund business functions like establishment of insurance marketing wing, bank assurance services (both life insurance and general insurance services), marketing of mutual fund activities, money transfer transactions in collaboration with Western Union Money Transfer, services of government tax collection, depository participant services, corporate sub agent of M/s. Weizmann Forex Limited, healthcare services, Indian Overseas bank visa international credit card services, sale of gold coins, association of Punjab National Bank with M/S SMC Global Securities Limited and M/S Networth Stock Broking Limited offered a unique service of "3 in 1" account (savings account + demat account + trading account), setting up of specialized recovery branches for asset management, gold coin business, Punjab National

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Bank also owned 100% merchant banking subsidiary i.e. Punjab National Bank interest securities limited, etc. The recommendations of Narasimham Committee-1 enabled banks to give away larger flow of funds so as to cater to the credit needs of the private sector. But larger flow of funds to private sector generated problem of non-performing assets (NPAs) with the banks, due to which banks have to set aside larger provisions for non-performing assets which ultimately impacted their profitability.

### **Review of Literature**

Andreas et al. (2011) in their study on 372 commercial banks of Switzerland from 1999-2009 analysed the impact on profitability of banks during the global financial crisis period (2007 to 2009). Their findings have shown that profitability of Banks deteriorated during the crisis years. Anita et al. (2012) in their study on Indian commercial banks for the period 2001-2009 investigated the impact of income diversification on profitability and insolvency of banks. They concluded that ownership does matter in the quest of non-interest income. In comparison to private sector banks and foreign banks, public sector banks earn less fee income. Fee based income of the banks reduces risk of the banks. Baele et al. (2007) have examined long term performance of seventeen diversified European banks using panel data for the period 1989 to 2004. The outcome of their analysis has revealed a positive relationship between banks performance as measured by their franchise value and share of non-interest income in total income of banks. De, (2012) in their study of ownership effects on bank performance analyzed that ownership on banks profitability and efficiency of public and private sector banks. Their findings suggest that ownership effect does not affect banks. But the net interest margin and operating cost ratio of public sector banks have increased. Elsas et al. (2010) have examined the mechanism by which revenue diversification affects banks value using panel data collected from nine developed countries for the period 1996 to 2008. Their investigation has revealed that diversification of banks activities has raised its profitability which in turn has enhanced its market value, irrespective of the fact, whether diversification activities has been pursued on its own (organic growth), or through mergers and acquisitions.

Gallo et al. (1996) scrutinized the bank holding companies of United States to know the impact of mutual fund activities on banks profitability during the period 1987 to 1994. Their findings have showed that mutual fund activities have enhanced banks profitability during the sample period of study. Gizaw et. al. (2015) examined the influence of credit risk on profitability of eight commercial banks in Ethiopia for the period of 2003 to 2014 and found that the credit risk measured by non-performing loans, loan loss provisions and capital adequacy have significant impact on the profitability measured by ROA of eight commercial banks in Ethiopia. The foregoing review of literature discloses that no intensive



efforts were made to study the impact of credit risk on the profitability of Indian commercial banks.

Jacob (2012) studied Uni bank, Cal bank and Zenith bank in Ghana and analysed that the fee component of the non-interest income has a positive impact on the performance of the banks. Till 2008 all the three banks have shown an increasing trend in return on asset (ROA). In 2009 Uni bank and Cal bank return on asset declined while that of Zenith bank increased. In 2010 return on asset of Uni bank and Cal bank increased while that of Zenith bank declined over the previous years. Jin et al. (2015) in their study on banking industry in Taiwan from 2004 to 2012 analysed that bancassurance business has tended to accrue larger risk-adjusted returns to the banks. Kodithuwakku (2015) examined the impact of credit risk management on the performance of commercial banks of Sri Lanka. The study found that non-performing loans and provisions have an adverse impact on the profitability and recommended that the banks should implement effective tools and techniques to reduce the credit risk. Lalon (2015) analyzed the impact of credit risk management on financial performance of bank. The study acknowledged the efficiency in managing credit risk of Bangladeshi Banks and provides conclusive reference for analyzing how credit risk management practices helps to increase profitability and long-term sustainability of commercial banks. Mercieca et. al. (2007) have assessed the performance of 755 European banks in the context of diversification of banks activities during the period 1997 to 2003. They found an inverse relationship between banks performance and non-interest income. Stiroh and Rumble (2006) for the period 1997 to 2002 have investigated the benefits of the income diversification activities of these companies. The results of their analysis have revealed that greater focus towards non-interest income activities have imparted volatility in banks income that has more than neutralized the benefits of diversification, which in fact represent the dark side of the diversification process.

Sultan and Deepak (2018) in their research paper have analysed the impact of credit risk on profitability of Indian Public Sector Banks. The findings of the study suggest that there is a significant and positive relation between return on assets and capital adequacy ratio whereas there is a negative relationship between return on assets and non-performing loans. The public sector banks should focus on its credit risk management so as to reduce the non-performing loans and to attain maximum profitability. Richard and Prakash (2019) in their study have analysed the impact of asset quality on various financial parameters such as efficiency, liquidity, profitability and solvency of public and private sector banks in India. The period of study is of ten years. Their findings suggest that deterioration in the quality of loans has severely affected their financial performance and the situation has worsened after the financial crisis of 2007-08. Vincenzo et. al. (2008) in their study on income diversification in Italian banks

concluded that diversification of income increases risk adjusted returns. It also analysed that the gains resulting from increase in non-interest income of the banks starts reducing as the banks get larger.

### Objectives

The objectives of the paper are:

- To assess the asset risk of five public sector commercial banks.
- To analyze the impact of asset risk on profitability of five public sector commercial banks.

### Research Methodology

The population of the study consists of the twelve public sector commercial banks in India. From the population of twelve public sector commercial banks in India sample size of five public sector banks have been selected namely State Bank of India (SBI), Punjab National Bank (PNB), Indian Overseas Bank (IOB), United Commercial Bank (UCO) and Union Bank of India (UBI). The sample of banks have been selected on the basis of their geographical locations i.e northern, southern, eastern and western which represents the whole of India. The period of study is from 2005-06 to 2018-19.

#### Research Design

The research design adopted for this research paper is descriptive in nature. The different measures adopted for estimation of return on assets (indicator of profitability) and asset risk are mentioned as under:

The profitability of the banks has been measured with the help of return on assets (ROA), which has been taken from the annual reports of the banks.

The asset risk of the banks is measured with the help of the following formula:

$$\text{Asset Risk (AR)} = \frac{\text{Loan loss provisions}}{\text{Net Loans}}$$

The data collected and used in this research paper is secondary in nature and has been collected from the annual reports of the five public sector commercial banks.

#### Research Tool

To assess the impact of asset risk on the profitability of public sector banks, we have used a simple regression equation between return on assets (ROA) as

dependent variable and asset risk as independent variable. The regression equation is framed as under:

$$ROA = a(AR) + b$$

Where, ROA=Return on assets,

a= Regression coefficient associated with asset risk

AR= Asset risk

b= constant term

The results of the regression equation mentioned above are estimated with the help of STATISTICA software.

The dependent variable in the above regression equation is the return on assets (ROA). The independent variable is the asset risk of the banks.

### Hypotheses

The hypotheses are:

H<sub>0</sub>: There is no significant relationship between asset risk and profitability of public sector commercial banks.

H<sub>1</sub>: There is a negative and significant relationship between asset risk and profitability of public sector commercial banks.

### Analysis

Asset risk which is measured as the ratio of loan loss provisions to net loans has increased for each of the five public sector banks considered in the analysis during the period 2005-06 to 2018-19 (Table 1).

Table 1: Asset risk of public sector banks from 2005-06 to 2018-19

Years	Union Bank	SBI	IOB	UCO	PNB
2005-06	0.29	0.06	0.51	0.48	0.97
2006-07	0.53	0.42	0.28	0.92	0.81
2007-08	0.79	0.48	0.20	0.85	0.86
2008-09	0.56	0.46	0.48	0.38	0.66
2009-10	0.58	0.81	1.50	0.42	0.39
2010-11	0.78	1.16	1.12	1.17	0.37
2011-12	0.85	1.33	1.04	0.65	0.88
2012-13	0.75	1.09	1.37	1.36	0.96

Contd...

Contd...

2013-14	0.92	1.18	1.26	0.93	1.54
2014-15	0.99	1.53	2.05	1.21	2.41
2015-16	1.67	1.91	4.57	4.66	4.40
2016-17	2.11	2.05	4.95	3.66	3.03
2017-18	4.68	3.65	9.01	6.83	5.64
2018-19	3.85	2.49	7.45	8.35	5.33

Source: Estimated on the basis of the data collected from the annual reports of public sector banks from 2005-06 to 2018-19 and the estimation is done in Tables (1 to 5 Annexure).

It is in place to mention that around sixty percent of the bank's assets consist of advances and increase in asset risk implies that banks have to set aside higher and higher loan loss provisions on non performing assets. This has an adverse impact on the net profits of the banks. The extent to which increase in asset risk for each of the five public sector banks has impacted their profitability as measured by return on assets (Table 2) is estimated with the help of simple regression equation (Table 3) between return on assets (measure of profitability) as dependent variable and asset risk as independent variable.

Table 2: Return on assets of public sector banks from 2005-06 to 2018-19

Years	Pnb	IOB	UCO	SBI	Union Bank
2005-06	1.09	1.32	0.34	0.89	0.84
2006-07	1.03	1.36	0.47	0.84	0.92
2007-08	1.15	1.3	0.52	1.01	1.26
2008-09	1.39	1.17	0.59	1.04	1.27
2009-10	1.44	0.53	0.87	0.88	1.25
2010-11	1.34	0.71	0.66	0.71	1.05
2011-12	1.19	0.52	0.69	0.88	0.79
2012-13	1.00	0.24	0.33	0.97	0.79
2013-14	0.64	0.23	0.7	0.65	0.52
2014-15	0.53	-0.16	0.48	0.68	0.47
2015-16	-0.61	-0.93	-1.25	0.46	0.35
2016-17	0.19	-1.21	-0.75	0.41	0.13
2017-18	-1.6	-2.33	-1.88	-0.91	-1.07
2018-19	-1.25	-1.35	-1.84	0.02	-0.59

Source: Estimated on the basis of the data collected from the annual reports of respective banks from 2005-06 to 2018-19.

Table 3: Estimated regression coefficients between return on assets as dependent variable and asset risk as independent variable for public sector banks from 2005-06 to 2018-19

Name of Bank	Intercept Terms	Regression coefficient associated with asset risk	R <sup>2</sup>	F- Ratio
Union Bank	1.2592(13.96)	-0.4986(-10.37)	89.97%	107.71
PNB	1.6153(29.74)	-0.5339(-26.50)	98.37%	702.44
IOB	1.1027(8.89)	-0.3922(-11.81)	92.08%	139.52
UCO	0.8343(9.78)	-0.3687(-14.59)	97.29%	212.91
SBI	1.2737(13.13)	-0.4996(-8.34)	85.29%	69.59

Source: Estimated on the basis of estimates of asset risk in Table 1 and for ROA, data is collected from the annual reports of respective banks from 2005-06 to 2018-19.

(Note: Figures in parenthesis indicate t-values)

From the Table 3, it is evident that the value of regression coefficient associated with the variable signifying asset risk has been negative and significant for all public sector banks in India which clearly indicates that increase in asset risk has significantly and adversely impacted the bank's profitability i.e. increase in asset risk has significantly curtailed the profitability of banks. These findings of the regression equation obviously rejects the null hypothesis.

The maximum impact of asset risk on banks profitability has been witnessed in the case of Punjab National Bank where the value of R<sup>2</sup> is 0.98 and value of regression coefficient is -0.53 indicating on an average a one percent increase in riskiness of the assets has tended to curtail net profit by 0.53 percent and this change explains 98 percent of the variations in the profitability of Punjab National Bank during the period of analysis.

Similarly, in the case of UCO Bank the value of R<sup>2</sup> is 0.97, while the value of regression coefficient associated with riskiness of the asset is 0.37, which implies that on an average a one percent increase in asset risk has diminished the profitability of bank by 0.37 percent. This change in asset risk explains around 97 percent of the variations in the profitability of UCO Bank during the period of analysis.

The case of Indian Overseas Bank is also noticeable, where the value of R<sup>2</sup> is 0.92, while the value of regression coefficient associated with riskiness of assets is -0.39. This suggests that on an average a one percent increase in asset risk has deteriorated the profitability of bank by 0.39 percent. On the whole this impact of asset risk on Indian Overseas Bank's profitability explains around 92 percent of the variations during the period of analysis.

Union Bank which is another important public sector bank has also experienced similar effect of assets risk on net profitability as that of other public sector banks. In the case of Union Bank, the value of  $R^2$  is 0.90 while the value of regression coefficient associated with riskiness of the assets is -0.50. This suggests that on an average a one percent increase in asset risk has reduced the profitability of the bank by 0.50 percent. This impact of asset risk on Union Bank's profitability explains around 90 percent of the variations during the period of analysis.

The situation of the country's largest public sector bank is no different from the case of other public sector banks considered in the analysis where the value of  $R^2$  is 0.85 while the value of regression coefficient associated with riskiness of the assets is -0.50. This suggests that on an average a one percent increase in asset risk has curtailed around 0.50 percent of the profitability of the bank. The impact of asset risk on State Bank of India's profitability explains around 85 percent of the variations during the period of analysis.

Our analysis of the asset risk of five public sector banks, as well as its impact on banks profitability has revealed that overtime asset risk of all banks has increased during the course of analysis. This is indeed a matter of concern. Moreover, the impact of this increase in asset risk has been significant and negative on banks profitability for all the public sector banks considered in the analysis. This is somewhat more serious and a matter of utmost concern for the bank since it has significantly curtailed their net profits. Banks should improve their lending requirement for the borrowers so that default in repayment of loans and provisions made thereof regarding non-performing assets should be reduced. Simultaneously, net profits could be increased through improvement in recovery from written-off accounts, since accumulated amount under written-off accounts is a direct outcome of the non performing assets of the banks. Since net profits are declining, that shows recoveries from written-off accounts are weak and poor and banks should effectively utilize the existing provisions for the recovery of their outstanding dues from the borrowers.

## **Conclusion**

The overall analysis of the asset risk and profitability of the public sector banks has revealed that the asset risk of all public sector banks has enhanced during the period 2005-06 to 2018-19, while the profitability of banks which is measured by return on assets has diminished during the same period. Moreover, asset risk as measured by loan loss provisions on non-performing assets has exercised a significant negative impact on bank's profitability which is a matter of serious concern and require substantial augmentation of recovery by the banks from the written-off accounts, as well as, granting loans after thorough scrutiny of the creditworthiness of borrowers, their nature of business, its variability overtime

and a suitable collateral security from the borrower so that default in repayment of loans could be mitigated and in case of default, loss in fund income can be minimized through recoveries from the written-off accounts.

### Implications of the Study

The study can be helpful to the bank managers in relation to the decisions taken by them in respect of granting loans to the customers and to recover them. They must keep a check on the credibility of the customers before granting any loan so as to prevent from becoming a non- performing asset of the bank. Asset risk can only be reduced if the banks increase their income sources especially by way of non- fund income so as to improve their profitability.

Banking industry can be benefitted only if they make some stringent norms for grant of loans and also to keep an eye on the quality of loans being granted by the commercial banks. Collateral securities that are kept aside in grant of these loans must be realistic. Recovery process should be completed within one year of loan becoming a non- performing asset. Profitability can not only be improved by decreasing asset risk but it can also be improved if the banks increase their income.

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## APPENDICES

Table 1: Details of asset risk estimation of state bank of india for the period 2005-06 to 2018-19

Years	Return On Assets	Loan Loss Provisions (In Crores)	Net Loans (In Crores)	Ratio of Loan Loss Provisions To Net Loans (In % Terms)	Gross NPA (In Crores)
2005-06	0.89	148	261642	0.06	9628
2006-07	0.84	1429	337337	0.42	9998
2007-08	1.01	2001	416768	0.48	12837
2008-09	1.04	2475	542503	0.46	15588
2009-10	0.88	5148	631914	0.81	19535
2010-11	0.71	8792	756719	1.16	25326
2011-12	0.88	11546	867579	1.33	39676
2012-13	0.97	11368	1045617	1.09	51189
2013-14	0.65	14224	1209819	1.18	61605
2014-15	0.68	19930	1300026	1.53	56725
2015-16	0.46	28005	1463700	1.91	98172
2016-17	0.41	32247	1571078	2.05	112343
2017-18	-0.91	70680	1934880	3.65	223427
2018-19	0.02	54529	2185876	2.49	172750

Source: Annual Reports of State Bank of India from 2005-06 to 2018-19

Table 2: Details of asset risk estimation of union bank of india for the period 2005-06 to 2018-19

Years	Return On Assets	Loan Loss Provisions (In Crores)	Net Loans (In Crores)	Ratio of Loan Loss Provisions To Net Loans (In % Terms)	Gross NPA (In Crores)
2005-06	0.84	155	53380	0.29	2098
2006-07	0.92	330	62386	0.53	1873
2007-08	1.26	585	74267	0.79	1657
2008-09	1.27	546	96534	0.57	1923
2009-10	1.25	699	119315	0.59	2671
2010-11	1.05	1188	150986	0.79	3623
2011-12	0.79	1511	177882	0.85	5450
2012-13	0.79	1556	208102	0.75	6314

2013-14	0.52	2106	229104	0.92	9564
2014-15	0.47	2537	255654	0.99	13031
2015-16	0.35	4655	277725	1.68	24171
2016-17	0.13	6032	286466	2.11	33172
2017-18	-1.07	13500	288760	4.68	49370
2018-19	-0.59	11435	296932	3.85	48729

Source: Annual Reports of Union Bank of India from 2005-06 to 2018-19

Table 3: Details of asset risk estimation of punjab national bank for the period 2005-06 to 2018-19

Years	Return On Assets	Loan Loss Provisions (In Crores)	Net Loans (In Crores)	Ratio of Loan Loss Provisions To Net Loans (In % Terms)	Gross NPA (In Crores)
2005-06	1.09	724	74627	0.97	3138
2006-07	1.03	778	96597	0.81	3390
2007-08	1.15	1026	119502	0.86	3319
2008-09	1.39	1016	154703	0.66	2767
2009-10	1.44	722	186601	0.39	3214
2010-11	1.34	904	242107	0.37	4379
2011-12	1.19	2576	293775	0.88	4454
2012-13	1	2961	308796	0.96	7236
2013-14	0.64	5365	349269	1.54	18880
2014-15	0.53	9159	380534	2.41	25694
2015-16	-0.61	18145	412326	4.40	55818
2016-17	0.19	12704	419493	3.03	55370
2017-18	-1.6	24453	433734	5.64	86620
2018-19	-1.25	24435	458249	5.33	78472

Source: Annual Reports of Punjab National Bank from 2005-06 to 2018-19

Table 4: Details of asset risk estimation of indian overseas bank for the period 2005-06 to 2018-19

Years	Return On Assets	Loan Loss Provisions (In Crores)	Net Loans (In Crores)	Ratio of Loan Loss Provisions To Net Loans (In % Terms)	Gross NPA (In Crores)
2005-06	1.32	183	35759	0.51	1227
2006-07	1.36	135	47923	0.28	1120

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2007-08	1.3	125	61058	0.20	996
2008-09	1.17	365	75810	0.48	1923
2009-10	0.53	1183	79003	1.50	3611
2010-11	0.71	1256	111833	1.12	3089
2011-12	0.52	1470	140724	1.04	3920
2012-13	0.24	2198	160364	1.37	6607
2013-14	0.23	2210	175888	1.26	9020
2014-15	-0.16	3529	171756	2.05	14922
2015-16	-0.93	7348	160861	4.57	30048
2016-17	-1.21	6948	140458	4.95	35096
2017-18	-2.33	11935	132488	9.01	38180
2018-19	-1.35	9881	132597	7.45	33398

Source: Annual Reports of Indian Overseas Bank from 2005-06 to 2018-19

Table 5: Details of asset risk estimation of uco bank for the period 2005-06 to 2018-19

Years	Return On Assets	Loan Loss Provisions (In Crores)	Net Loans (In Crores)	Ratio of Loan Loss Provisions To Net Loans (In % Terms)	Gross NPA (In Crores)
2005-06	0.34	180	37817	0.48	1234
2006-07	0.47	437	47471	0.92	1506
2007-08	0.52	475	55626	0.85	1651
2008-09	0.59	268	69669	0.38	2318
2009-10	0.87	353	83371	0.42	2648
2010-11	0.66	1180	100561	1.17	4396
2011-12	0.69	759	117504	0.65	5551
2012-13	0.33	1783	131569	1.36	9247
2013-14	0.7	1428	153163	0.93	6621
2014-15	0.48	1836	151812	1.21	10265
2015-16	-1.25	6318	135508	4.66	20907
2016-17	-0.75	4387	119724	3.66	22540
2017-18	-1.88	7343	107470	6.83	30549
2018-19	-1.84	8295	99313	8.35	29888

Source: Annual Reports of UCO Bank from 2005-06 to 2018-19

## Resurgence of Poverty with Financial Literacy A Study of Southern Rajasthan

HANUMAN PRASAD AND NEETU PRASAD

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*Abstract: Poverty remains a major stumbling block in country. Many studies advocate that people turn into poverty due to improper financial planning as a result in emergency needs, they are compelled to sell off their bread butter earning assets hampering their livelihood. In most of the instances, they are unable to come out of this financial shock and turn into poverty. The financial literacy can prove to be a dual edged sword for poverty alleviation by managing limited financial resources efficiently and providing exposure to high return earning investment opportunity. The Present study has taken a sample of 1200 households of TSP region of southern Rajasthan. The study may prove to be a boon in poverty alleviation by finding linkage between literacy level and poverty. This research will be a guide for policy makers to design financial literacy program more specifically for poor section of the society.*

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**Key words:** Poverty, financial literacy.

### Introduction

Financial literacy and financial inclusion has become a subject of considerable interest among policy makers, researchers and other stakeholders in the recent times. Financial literacy and financial inclusion are like two sides of the same coin (Nithyananda and Maiya, 2020). The importance of financial inclusion for economic as well as social development has been well recognized across the nations by both economically rich and fiscally poor countries. It has also been recognized that access to financial services and education has a critical role in reducing extreme poverty, boosting shared prosperity, and supporting inclusive and sustainable development. It is therefore, no surprise that governments around the world are interested in finding effective approaches to improve the level of financial literacy amongst their population and that many are in the process of creating and implementing a national strategy for financial education to provide learning opportunities throughout a person's life.

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The liquidity crunch in the big banking wizards of the world resulted in global financial crisis which in all affected citizens most. Proper knowledge about future recurring and non-recurring obligations among the citizens would have avoided this situation. On one hand financial education enables citizens in estimating future outflows on the other it gives knowledge about investment avenues to augment inflows. More particularly, the residents of rural areas are required manage funds more wisely due to limited resources. The understanding of basic financial concepts like budgeting, inflation effects on investments, risk and return, power of compounding and time value of money etc. can help them in managing financial resources in better manner. Proper financial knowledge among rural households will avoid the family financial distress and would result in reduction in financial suicides.

Financial literacy is the ability to understand finance and financial decisions. More specifically, it refers to the knowledge and set of skills that allows an individual to make effective decisions through their understanding of finances. It is a combination of knowledge, skills, awareness and behavior necessary to make financial decisions. Financial literacy may be defined as the ability to make informed judgements regarding the use and management of money. It is about having financial knowledge, understanding, confidence and motivation to make financial judgments and decision (<http://www.investmentsolutionsnorthland.co.nz>). Financial literacy can be generally defined as a person's ability to understand, analyze, manage, and communicate personal finance matters (Vitt et al., 2000). According to RBI, Financial literacy can broadly be defined as "Providing familiarity with and understanding of financial market products, especially rewards and risks, in order to making informed choices".

The Organization for Economic Cooperation and Development (OECD, 2005) defines "Financial Literacy" as 'the process by which financial consumers/ investors improve their understanding of financial products and concepts and, through information, instruction, and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being.'

An interesting classification showing inclusions in financial literacy is shown in the pyramid shape diagram (<http://www.investmentsolutionsnorthland.co.nz>). It may be considered benchmark in developing financial literacy among different categories of people. It categorizes components in three categories viz. every day, occasional and specialist activities.



Fig. 1: Financial literacy pyramid

Source: <http://www.investmentsolutionsnorthland.co.nz/uncategorized/financial-literacy>

The knowledge which is in the bottom of pyramid is related to basic personal financial literacy issues like saving, budgeting, banking goal setting etc. Knowledge of such aspects is essential for every household as it assists in managing day to day financing. Similarly, in the middle some occasional financial knowledge related issues have been kept. Knowledge of such aspects is also essential for converting saving into investments. At the peak of pyramid some specialist contents are kept which may not be necessary for all human beings.

### Poverty in India

The savings rate in India is highest in the world. Still socio economic and political discourse in India is dominated by Poverty. Poverty is considered as one of the biggest challenge for development planning in India. Earning livelihood is a challenge of many families in India. Even many do not get both times meals. Many do not have shelter and even many cannot offer proper schooling to their children. Poverty is a country wide problem and it must be solved on a war footing. The government is taking a number of steps to mitigate poverty. Eradication of poverty would ensure a sustainable and inclusive growth of economy and society. As per the United Nation's Millennium Development Goals (MDG) Report, 2015, India has halved its incidence of extreme poverty, from 49.4 per cent in 1994 to 24.7 per cent in 2011 (<http://www.thehindu.com>). The situation of rural India is more acute in terms of poverty. Rural poverty is larger as compared to urban poverty in India. Rural India abounds in poverty both in absolute and in relative terms, rural poverty represents staggering dimension (Ghosh, 2002).

The most common method used to define poverty is income based. A person is considered poor if his or her income level falls below some minimum level necessary to meet basic needs. This minimum level is usually called the below poverty line (BPL). The official measure of Indian government, before 2005, was based on food security and it was defined from per capita expenditure for a person to consume enough calories and be able to pay for associated essentials to survive. Since 2005, Indian government adopted the Tendulkar methodology which moved away from calorie anchor to a basket of goods and used rural, urban and regional minimum expenditure per capita necessary to survive ([https://en.wikipedia.org/wiki/Poverty\\_in\\_India](https://en.wikipedia.org/wiki/Poverty_in_India)).

### **Financial Literacy: A Path for Poverty Alleviation**

Financial literacy plays major role in poverty alleviation and emerging economy's growth (Nithyananda and Maiya, 2020). Poor people have limited income thus every day money management tact discussed in pyramid becomes essential for them. Financial literacy at the macro-level ensures that citizens of a country are adequately equipped to deal with everyday financial situations and transactions in the marketplace. Low levels of financial literacy can produce sub-optimal financial decisions, which, in the aggregate, can yield low levels of well-being by making it difficult for consumers to meet their financial needs essential for living (Sohn et al., 2012). Proper management of money would not only help them in meeting their regular expenses but also would help in saving some amount for future contingencies. As has been discussed in many studies that most people turn in poverty due to unexpected heavy contingencies. Even money saved and invested may result in enhancing their standard of living. The standard of living of individual is dependent on financial resources which an individual possesses and efficiency with which these resources are utilized (Nithyananda and Maiya, 2020). Making appropriate financial product choice is a life skill that is necessary for making fundamental and far-reaching life decisions such as retirement planning, savings for unexpected life occurrences and meeting future needs related with life events. (Aboluwodi and Nomlala, 2020). Therefore, if poor people are trained about proper management of every day finances and judicious expenditure, it may prove to be dual edged sword in solving problem of poverty.

### **Review of Literature**

Poverty is the sum total of a multiplicity of factors. The study conducted by Krishna (2003) identifies how have people turned into poverty. The study has taken 12 Rajasthan villages in the district of Udaipur and Rajsamand a large number of households have overcome poverty in 25 years but simultaneously a very large number of households have also fallen into poverty among all poor household in villages 31% have experienced poverty for the first time in 25 years

it happened when national economy, state and district economy were growing. Falling into poverty in those villages associated not with any single cause it was combination of causes like poor health, social functions associated with deaths and marriages, private high interest loans.

Krishna (2004) has studied 35 north Indian villages, it shows that 11.1% of 6376 households in these villages have overcome poverty in the last 24 years, while members of another 7.9% have fallen into poverty. Reason behind falling into poverty was health problem and heavy expenses on health care, heavy expenditure on marriages, drunkenness, spend thrift son and Famine. The poverty in India has relation with sociological background also. Gang et.al (2008) analyzed the determinants of rural poverty in India, contrasting the situation of scheduled caste (SC) and scheduled tribe (ST) households with the non-scheduled population. Study show that incidence of poverty in SC and ST households is much higher than among non-scheduled households.

Money is considered to be the main element of poverty alleviation. Particularly, micro finance has emerged as a boon to eradicate poverty. Few studies focusing on micro finance as medium to overcome with poverty problem has been reviewed in this section. Microfinance is an important element for an effective poverty reduction strategy. Durrani et al. (2011) examines role of micro finance on poverty alleviation in both social and economic aspects. The social and economic factors considered the improvement of life style, accommodation standard, income generation, life standard, and purchasing power, expansion of business facility, self-employment and adoption of better technology. Economic growth and development is also considered in the study. It reveals that access and efficient provision of micro credit can enable the poor to smooth their consumption, better manage their risks, gradually build their assets, develop their micro enterprises, enhance their income earning capacity, and enjoy an improved quality of life.

It is considered that knowledge of managing personal finance has more importance to those who have limited income. Financial literacy can prove to be boon for poor as they have limited economic resources. The study conducted by Faboyede et al. (2014) focuses on importance of financial literacy on poverty. Financial literacy is very important because the journey to obtain independence and achieve financial success cannot just be prioritized by having good educational experiences, a sound resume and a career with a nice salary. Rather, the financial freedom road requires development of good financial habits, practice and discipline. It was found that promoting financial literacy among Nigerians provides them with the essential knowledge and financial responsibility to make decisions that will better their lives and ultimately grow the economy. This is because as financial markets become increasingly sophisticated and as households assume more of the responsibility and risk for financial decisions, financial education is



increasingly necessary for individuals, not only to ensure their own financial wellbeing but also to ensure the smooth functioning of financial markets and the economy.

Lusardi (2019) identifies that the lack of financial literacy even in some of the world's most well developed financial markets is of acute concern and needs immediate attention. Aboluwodi and Nomlala (2020) has conducted a study on investment literacy of university students in South Africa studying business degrees. The study analyzed relationship between the students' investment literacy and vis a vis their socio demographic diversities. The study found that female and non-finance related students were comparatively less financially literate than males and finance students. Nithyananda and Maiya (2020) have conducted a study for mapping financial literacy among rural women of Kundapur Taluk. The study found that rural women had lot of confusion regarding investment as they considered gold as most secured investment for future needs. Further they agreed with the fact that they save secretly money to avoid mismanagement of cash by male members. Setiawan (2020) has conducted a comparative analysis of financial literacy among public and private university students. The online questionnaire was administered to 608 respondents. The study was based on parameters of Standards and Poor's judgement of financial literacy covering numeracy, compound interest, inflation and risk diversification questions. The study found that public university students could perform better than private university students. The study also observed that the correct response of numeracy and compound interest was comparatively higher than the inflation and risk diversification related questions.

It can be seen from the available literature that a number of studies can be found on various aspects of financial literacy as well as poverty. But a very few studies have been observed which attempts to study association between financial literacy and poverty. Therefore, the present research attempts to gauge the association between financial literacy and poverty.

### **Research Methodology**

The present research follows descriptive as well as exploratory research design. The main aim of the study is to examine the impact of sociological background on financial literacy level. More specifically study tries to analyze the linkage between financial literacy level and poverty. As it is assumed that poor people have limited income resources thus, they need to have financial literacy to efficiently manage limited resources. A focused group discussion (FGD) was organized with financial literacy resource persons to generate statements to map financial literacy. The issues were raised among them on the basis of OECD financial literacy survey, SEBI literature on financial literacy and other relevant

literature. Thus, a well-structured questionnaire was developed based on inputs received. Most of the questions in questionnaire were closed ended. At initial stage, pre testing of questionnaire was done by using pilot survey data. It was found that few questions were giving confusing interpretations which were deleted and Finally, prepared questionnaire was sent to finance professionals, financial literacy resource persons and academicians. After incorporating their suggestions questionnaire was administered to households living in the survey area. Further in questionnaire, arithmetical calculation oriented questions were also included to map ability to understand calculative finance. Most of the studies have used similar type of questions to judge financial literacy. The questions were drafted in simple language oriented to map respondents' ability to calculate percentage, inflation, ratio and profit sharing, simple and compounding interest.

The samples are drawn using convenience sampling method. The sample size for the study is 1200 respondents from household residing in southern Rajasthan of state of Rajasthan from selected villages of six districts viz. Udaipur, Chittorgarh, Rajasamand, Pratapgarh, Dungarpur and Banswara.

### **Analysis and Interpretation**

The respondents were from rural as well as urban area therefore the financial literacy mapping instruments have been designed in simple manner and data was collected through field investigators. The responses of questionnaire were mapped on likert type five point rating scale and even numerical financial literacy measures were also converted in to five point scale by clubbing correct answers of a set of five questions. The responses received were converted in numerical score and was named as financial literacy Score (FLS). It has been used to analyze the impact of various demographic factors on FLS. To analyze the data statistical tools t-test, F ANOVA etc. has been used. The study has used simple tools for analysis with an objective to have wide understandability.

#### *Impact of Poverty on Financial Literacy*

It has been advocated that poor people have limited income and proper financial knowledge can help them in managing their livelihood efficiently. In India, the families below poverty line are issued BPL card. Therefore, a question was inserted asking do they have BPL card. Only families having BPL card are considered as poor for the purpose of study. To examine impact of poverty on literacy score (FLS) following null hypothesis was framed.

$H_1$  There is no difference between the financial literacy level of Below Poverty Line and Above Poverty Line families.

The above hypothesis was tested using t test (test of difference between means). The results are summarized in Table 1

Table 1: Impact of poverty on financial literacy: t value

Null Hypothesis	t value	Degrees of freedom	P value	Significance
H <sub>e</sub> 1	9.284	1198	.00	Rejected

It can be seen from Table-1 that the null hypothesis is rejected at both 1% and 5% levels of significance which means statistically significant differences exist between BPL and APL families with regards to financial literacy levels. An analysis of means shows that the financial literacy of APL is higher as compared to that of BPL families. It is a well-known fact that APL families have access to financial awareness resources due to which their financial literacy score is higher. Moreover, they have funds to spend as well as save, in search of proper investment opportunity they learn and interact with financial literacy resources.

#### *Impact of Sociological Background on Financial Literacy*

The study also aimed at studying the contribution of sociological background on financial literacy in general and race or cast in particular. Particularly in Indian scenario it is argued that the Hindu society was divided into four categories on the basis of work they perform as Brahmin, Kshtriya, Vaisya and Shudra. It was assumed that Vaisya by virtue of dealing in business and money matter, used to have greater degree of financial literacy. India is a democratic country, where persons of all religion reside here. Therefore, two questions, one on religion and other on caste category was included in questionnaire. Thus, first religion wise and then caste wise analysis of financial literacy is presented here.

#### *Influence of Sociological Factors: Religion Wise Analysis*

It was observed that people of Hindu, Muslim, Christian, Sikh and Jain religion reside in the area. Therefore, only these options were included in the questionnaire and respondents were asked to mark on their religion. The financial literacy score (FLS) and religion wise categorization was used to examine the impact of religion on financial literacy. Following hypothesis was framed.

H<sub>2</sub> There is no difference among religion of respondents with respect to financial literacy level.

The statistical technique, F- ANOVA test for one-way classification has been applied to examine the above hypothesis. The SPSS output is presented in Table 2.

Table 2: Results of F ANOVA: religion wise analysis

FLS	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	217.356	4	54.339	32.021	.000
Within Groups	2027.894	1195	1.697		
Total	2245.250	1199			

The results shows that  $H_2$  was rejected at both 1% and 5% levels of significance which means statistically significant differences exist among the various religious groups with reference to financial literacy score. The post hoc analysis and study of relative mean shows that the Jain religion has highest mean followed by Sikhs. Religion Hindu, could secure least mean score. The results of study are in consonance with general notion that the communities which have greater inclination towards business would have greater understanding of financial concepts. Jain and Sikh families are well known for venturing. Business families have financial walk of life in their routine therefore they have greater financial literacy. It was surprising to note that Hindu respondents have greater financial literacy mean score than Muslim respondents. But the differences are statistically not significant. The differences are statistically significant between Hindu, Muslim versus Christian, Sikh and Jain religion. In other words, it can be said that financial literacy among Christian, Jain and Sikh religion respondents was greater than the respondents of Hindu and Muslim community. It is also important to disclose that the respondents of Christian, Sikh communities were very less. On the basis of such small data drawing conclusion about their financial literacy would not be appropriate. Thus finally, Jain, Hindu and Muslim religion respondents' financial literacy level can be used to draw inferences. It can be said that financial literacy level among Jain community is much higher than Hindu and Muslim community.

#### *Impact of Race (caste) on Financial Literacy*

The study also aimed to analyze the impact of caste or race on financial literacy. Therefore, one question asking about caste was inserted in questionnaire. Few caste categorizations applicable in India has been included as next to religion question in questionnaire. The respondents were asked to mark on relevant category to which they belong i.e. Scheduled Caste/Scheduled Tribe /Other Backward Caste/ General.

The first three caste categories get reservation in government recruitment system to bring them in the main stream. Therefore, it can be said that first three categories i.e. SC/ ST/ OBC are socially as well as financially backward. The impact of race or caste on financial literacy was examined using caste category wise distribution with financial literacy data (FLS). Following hypothesis was framed.

H<sub>3</sub> There is no difference among caste categories of respondents with respect to financial literacy level.

The statistical technique, F- ANOVA test for one-way classification has been applied to examine the above hypothesis. The SPSS output is presented in Table 3.

Table 3 : Results of F ANOVA: caste wise analysis

FLS	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	207.592	3	69.197	40.615	.000
Within Groups	2037.658	1196	1.704		
Total	2245.250	1199			

The results shows that H<sub>3</sub> was rejected at both 1% and 5% levels of significance which means statistically significant differences exist among the various caste categories with reference to financial literacy score. The post hoc analysis and study of relative mean shows that the mean score of General category was highest followed by OBC, SC and ST category. In general, scheduled tribe is considered as most backward caste category on grounds of social, educational and financial backwardness. The situation of these category people is worse in southern Rajasthan. It was expected that this category would attain least score. Another category which could get little higher score than ST category was SC. It was surprising to note that although OBC could score higher than SC and ST category but the differences in means of SC, ST and OBC were not statistically significant. The OBC category has been given reservation on grounds of their economic backwardness. Very less evidences of their social and educational backwardness are found. It was expected that the OBC category would score comparable score with General category. It also reflects that economic condition of family also plays dominant role in financial literacy. In other words, it can also be said that respondents having good financial literacy would be in a position to manage their economic condition.

### Conclusion and Implications

Poverty is one of the major constraints in economic growth of the country. The problem of poverty is considered as the biggest challenge to India. Eradication of poverty would ensure a sustainable and inclusive growth of economy and society. In this parlance, knowledge of finance related aspects would help poor in managing limited financial resources. In absence of such knowledge, poor would not be able to choose correct saving and investment. In all they will not be able to manage their livelihood due to limited financial resources. Therefore, financial literacy needs to be embedded in the way of life of individuals in general

and poor's in particular. It is believed that if limited resources are well managed then the scarcity of funds for basic necessities can be avoided.

It is widely felt thought that efficiency needs to be applied prominently in scarcity. But the BPL families having financial scarcity does not have knowledge to efficiently manage their financial resources. In many cases it was also observed by the researcher that families have turned into poverty due to improper management of family financial resources. Imparting financial literacy among BPL as well as may prove to be a boon in strengthening their financial position. The families having limited income may be given proper financial literacy, would at least put break on turning good families in poor families. It may even help in eradicating poverty.

Study of impact of sociological background also shows that financial literacy among different groups also exists. Thus, financial literacy awareness programs and workshops need to be conducted according to sociological assessments. Particularly programs for marginalized groups need to be conducted. Even contents of programs also need to be framed according to sociological assessments and requirements. Although SEBI as well as other regulatory bodies have been conducting financial literacy programs for various income groups but through informal talks and replies to open ended questions it can be drawn that to increase effectiveness of such programs financial literacy programs must be developed in stages for the same group. Even few suggested to appoint a mentor who would help in practical implementation of inputs of workshops.

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