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Editor's Report for 2015

On behalf of the Management, the Editorial Board, and the Editorial Team of IJM, IJF, PIJM, AIJER, and IJRCM, **I would like to wish all authors, patrons, and readers of our journals a very happy, harmonious, and prosperous New Year 2016**.

Indian Journal of Research in Capital Markets (IJRCM) (ISSN 2394 - 3459) has been well received by the academic community. I would like to profusely thank all readers, authors, reviewers, subscribers, and academicians for lending their support to the new journal. IJRCM has received excellent perspective papers that highlight the development of the various sub-fields of Capital Markets.

2015 was another good year for Indian Journal of Marketing, Indian Journal of Finance, Prabandhan: Indian Journal of Management, Arthshastra Indian Journal of Economics, and Indian Journal of Research in Capital Markets. With the ending of 2015, IJM, IJF, PIJM, and AIJER completed 45 years, 9 years, 8 years, and 4 years of publication, respectively. Our journals continue to enjoy a pan India reach and an excellent international presence. In the year that has gone by, our publications continued to maintain a subscriber base that is unparalleled by any other journal in the field of Business Management in India.

In 2015, Indian Journal of Marketing and Indian Journal of Finance completed 3 years of being indexed in Elsevier's Scopus. The SCImago Journal Rank (SJR) and Source Normalized Impact per Paper (SNIP) have been generated for Indian Journal of Marketing (SJR : 0.187 and SNIP : 0.147) and Indian Journal of Finance (SJR : 0.186 and SNIP : 0.028). Our third journal : Prabandhan : Indian Journal of Management was also accepted for inclusion and is now indexed in Scopus. The Index Copernicus Values for the year 2014 also increased; ICV assigned a value of 8.01 to Indian Journal of Marketing (previous value: 7.12), 7.90 to Indian Journal of Finance (previous value: 7.10), 7.92 to Prabandhan: Indian Journal of Management (previous value: 6.93), and 6.99 to Arthshastra Indian Journal of Economics & Research (previous value: 5.31) using the parameters described in the Index Copernicus Evaluation Methodology, 2014. The NAAS Rating (ranking given by the National Academy of Agicultural Sciences (a Govt. of India institution)) for our journals for 2014 is as follows : 3.89 for Indian Journal of Marketing, 3.76 for Indian Journal of Finance, and 2.58 for Prabandhan : Indian Journal of Management (each on a scale of 10). Arthshastra Indian Journal of Economics will receive its first NAAS Rating by mid or end of January 2016. Indian Journal of Finance, Prabandhan : Indian Journal of Management, and Arthshastra Indian Journal of Economics & Research are now indexed in Google Scholar as well. These indexing and ratings show the recognition of the quality maintained by our titles on a global level.

The highlight of 2015 was that we completely overhauled the websites of Indian Journal of Finance, Prabandhan : Indian Journal of Management, and Arthshastra Indian Journal of Economics & Research. The new website for Indian Journal of Marketing is under construction and will go live soon. The websites have loads of new features, format, and content for easy navigation. Our new, revamped websites offer a more streamlined user experience. The websites come with added features of

Advanced Search, side panels with links for authors, added content that provides critical information for submitting papers, requesting a Sample Copy, accessing information related to subscribing to our journals, and display information regarding the archives and current issue of our titles. Our websites have various 'Article Tools' for the readers and authors as well. The digital edition of the papers will be available shortly.

We assigned Digital Object Identifiers (DOIs) to papers published in IJF, PIJM, and AIJER. A DOI provides a persistent and unique link for each research paper. DOIs make it easy for authors to track when and where their research is cited, discussed, shared, bookmarked, or otherwise used across the Internet, which ultimately enables them to improve their H-index.

Our journals have continued to expand in terms of publishing high-quality double blind peer-reviewed papers and have attracted a larger global audience of authors, academicians, research investigators, and scholars. We have further raised the standards of our journal and have become more rigorous in accepting papers. **Hence, in 2015, we published 52 papers in Indian Journal of Marketing, 49 papers in Indian Journal of Finance, 49 papers in Prabandhan: Indian Journal of Management, 25 papers in Arthshastra Indian Journal of Economics & Research, and 16 papers in Indian Journal of Research in Capital Markets written by authors whose primary affiliations included different institutions from India and abroad. The acceptance rate of papers is between 10-15% of the total manuscripts received for reviewal in our journals. In total, we published 191 original research papers in IJM, IJF, PIJM, AIJER, and IJRCM in 2015.** Readers will be happy to know that all our journals are members of and subscribe to the ethical principles of the Committee on Publication Ethics (COPE).

Our consistent efforts are aimed towards increasing the visibility, impact, editorial cycle time, and the overall quality of our journals. We very much look forward to strengthening the reputation of our publications, and we want to attract more and higher quality submissions. I hope our readers and patrons share a similar vision, and we look forward to a productive, challenging, and a successful 2016 ahead. In the spirit of continuous improvement, any constructive input on streamlining our processes is very welcome.

With Best Wishes and Season's Greetings,
Mrs. Satya Gilani
Editor-in-Chief
Indian Journal of Marketing, Indian Journal of Finance
Prabandhan : Indian Journal of Management
Arthshastra Indian Journal of Economics & Research
Indian Journal of Research in Capital Markets

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CONTENTS

Productivity and Cost Efficiency of Commercial Banks in India

** T. Narayanaswamy*
*** A. P. Muthulakshmi*

Abstract

This paper examined the productivity and relative cost efficiency of all commercial banks in India from 1993 to 2013 using the data envelopment analysis methodology and Malmquist index. The percentage of banks in the bank groups, such as foreign banks (69 %) , nationalized banks (58%), and old private sectors (77%) that experienced technological change were considerably higher than the new private sector banks and State Bank of India (SBI) associate banks. The total factor productivity changes of the aforementioned three bank groups was due to technological rather than technical efficiency change. Percentage of cost efficient banks in the bank groups such as the new private sector group (75%), SBI and Associate banks (67%), and old private sector banks (56%) was considerably higher than foreign and nationalized banks. The correlation between cost efficiency and technical efficiency ranged from 0.629 to 1 (moderate to strong positive) for different groups of banks. The correlation between cost efficiency and total factor productivity change ranged from -0.067 to -0.993 (weak to strong negative) for different groups of banks.

Keywords : **data envelopment analysis, total factor productivity change, efficiency change, technological change, cost efficiency, and Malmquist index**

JEL Classification: C61, C67, G21, P17

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Measurement of efficiency of banks plays an important role in comparing the extent to which inputs are effectively utilized to generate different levels of output by the banks. Efficiency models are so designed in such a way that it takes different inputs and output variables in different units of measurement to benchmark the best banks with peers so as to study the effect of various policy reforms on banking reforms. A strong financial system not only facilitates financial resources of intermediates, but also ensures efficiency in terms of resource generation and allocation. Efficiency and productivity analysis will help regulators to check and refine policy reforms so as to ensure economic growth. Hence, efficiency and productivity measurement is a continuous activity in the banking sector to ensure that policy measures have a better impact on the economic system.

Productivity can be defined as the ability and willingness of an economic unit to produce maximum possible output with given inputs and technology. In simple terms, efficiency and productivity are often used interchangeably, but they do have some differences. In case of single output and input, efficiency is a ratio of actual output generated to standard output, while productivity is the output produced per unit of input consumed at a given point of time. Accounting measures is one of the productivity estimates, which deals with calculation of

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output per unit change in a single input assuming that all other factors remain constant. Business per employee, profit per employee, ratio of operating costs to average assets, or ratio of operating income to staff expenses are often used as traditional measures of productivity in the banking sector. In case of productivity change, there is a subtle difference between efficiency and productivity. Measures such as total factor productivity (TFP) help to decompose output change into two major components, namely, output change due to change in efficiency and output change due to change in technology. While a change in efficiency measures the increment in output without a rise in input or the amount by which inputs may be reduced without reducing the output, a change in technology represents the change in output that may be attributed to changes in external economic environmental conditions (Oster & Antioch, 1995).

With the above backdrop, this paper makes an attempt to measure the productivity change and cost efficiency of the banking sector over the period from 1991-2013. Data envelopment analysis (DEA) is employed for this purpose. The cost efficiency and productivity change are calculated for banking groups such as nationalized banks (NB), public sector banks (PSB), old private sector banks (OPSSB) , new private sector banks (NPSB), and foreign banks(FB).

Review of Literature

Ahmad and Rahman (2012) examined the relative efficiency of the Islamic commercial banks (ICBs) and conventional commercial banks (CCBs) in Malaysia. The study measured and compared the level of efficiency of both Islamic commercial banks and conventional commercial banks from the year 2003 to 2007. Ten local commercial banks were selected in Malaysia, which comprised of eight conventional commercial banks and two Islamic commercial banks. The data envelopment analysis (DEA) was used to measure the relative efficiency of the selected banks in intermediating inputs into outputs. The study then analyzed the difference in the average efficiency score of the Islamic commercial banks and conventional commercial banks by using the Mann-Whitney U test. This study found that the conventional commercial banks outperformed Islamic commercial banks in all efficiency measures. The findings indicated that the conventional commercial banks may be more efficient than the Islamic commercial banks due to managerial efficiency and technological advancement. The study indicated that the domestic commercial banks' management was well organized, reflecting the effective roles of a bank as the mediator between the savers and entrepreneurs. The technology used in the commercial banks may be up-to-date and fully utilized in the banking operations. However, the study revealed that commercial banks in Malaysia were facing scale inefficiency. This means that the banks were unable to fully utilize their capabilities and capacities in generating outputs from their resources. The findings also indicated that scale inefficiency is the main factor that lead to low technical efficiency in the Islamic commercial banks as their size was relatively smaller than that of the conventional commercial banks. This study identified the most and the least efficient domestic banks, and the findings could be useful to the regulators and the banks to identify the bank's ranking within the industry.

Seong, Nixon, and Stoeberl (2011) made a study for benchmarking using DEA by suggesting a framework based on return on assets (ROA), which is popular and user-friendly to managers. The paper demonstrated the selection of variables using the elements of ROA and applied DEA for measuring and benchmarking the comparative efficiencies of companies in the same industry. Fourteen retail companies in U.S. were included as samples for the study. The three models such as the total asset model, current asset model, and expense model were used in the study to decide on the variables to be used for the data envelopment analysis. In all these models, different types of revenues were used as output variables. In the total asset model, current assets, fixed assets, and other assets were used as input variables. In the current asset model, cash & cash equivalent, accounts receivable, and inventory were used as input variables. In the expense model, cost of goods sold (COGS), selling, general and administrative expenses (SG&A), depreciation and amortization, and "other expenses" were used as input

variables. The input oriented DEA models were used in this study . For computing efficiency, three DEA models were employed. They were slack based model, constant returns to scale model, and variable returns to scale. It was concluded that the approach was applicable to various studies for performance measurement and benchmarking with minor modifications.

Liang, Hua, and Jeanneney (2006) used the data envelopment analysis (DEA) based on the Malmquist index to measure China's total factor productivity change and its two components (i.e., efficiency change and technical progress). It was found that China had recorded an increase in total factor productivity from 1993 to 2001, and that productivity growth was mostly attributed to technical progress, rather than to improvement in efficiency.

Isik and Hassan (2003) utilized a DEA-type Malmquist Total Factor Productivity Change Index to examine productivity growth, efficiency change, and technical progress in Turkish commercial banks during the deregulation of financial markets in Turkey. It was found that all forms of Turkish banks, although in different magnitudes, had recorded significant productivity gains driven mostly by efficiency increases rather than technical progress. Efficiency increases, however, were mostly owing to improved resource management practices rather than improved scales.

Liu (2010) employed the Malmquist productivity index approach, which is calculated from efficiency scores based on DEA linear programming technique, to measure the technical efficiency and productivity change of 25 commercial banks in Taiwan over the post Asian crisis period from 1997 - 2001. It was found that the technical efficiencies of 15 banks had improved, while the same of 10 banks declined over the period. It was also found that the banking industry had a decrease in technical efficiency but owned upward shifts of technology since the year 1998. Based on technical efficiency and the efficiency change of banks, 25 banks in Taiwan were classified into four categories to help realize the competitiveness and technical progress of the banks. Some of the commercial banks need to search for financial innovation activities and carry on production differentiation to be competitive in the market.

Deng, Wong, Wooi, and Xiong (2011) studied bank productivity in Malaysia during 2001-2008, that is, the period of Internet technology waves. Data envelopment analysis (DEA) technique was used to calculate and decompose the Malmquist index of total factor productivity (TFP) growth into technical change and change in scale efficiency. The study found that the average TFP change was 1.4%, which was mainly due to an efficiency change of 3.3%. In addition, foreign banks were found to have a higher efficiency level, followed by the local banks. Finally, the study found that the TFP did not always keep increasing as the technology improved.

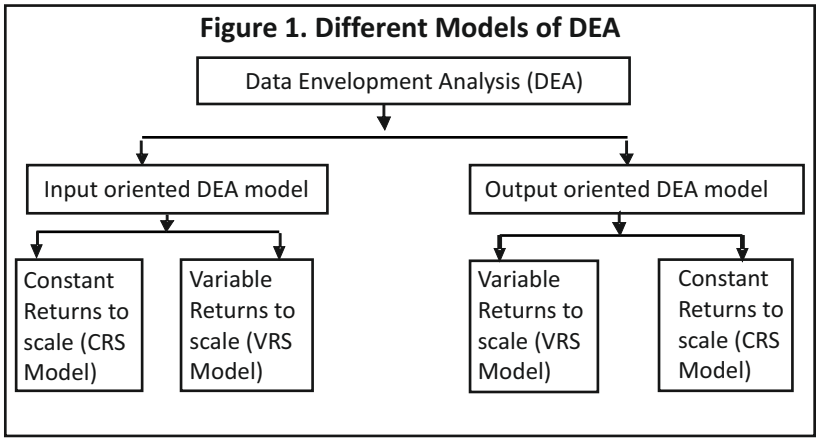
Chandrasekhar and Sonar (2008) examined the effect of information technology investments and related assets on the efficiency and total factor productivity of Indian banks. For this study, panel data of 29 banks (public and private banks) were considered for a period from 2001 to 2006.The results indicated that private sector banks had a slight edge over their counterparts.

Derli (2006) studied the efficiency of the Brazilian banking industry using the data envelopment analysis based on constant returns to scale. IT expenses were used as input variable and deposit as the single output variable. The Malmquist index was used for measuring productivity for the above combination of inputs and outputs. The results revealed that the public institutions were more efficient than the private institutions.

Sharma and Kumar (2013) studied the impact of banking sector reforms on the performance of commercial banks in India. The performance of these banks was measured using profitability indicators. The results revealed that the reforms had a significant impact on total income, especially in the post-reform period for all bank groups.

Sundaram, Geetha, and Kanjana (2008) made an analytical study on efficiency of scheduled commercial banks in India. The authors highlighted the role of the above categories of banks in achieving the economic development by providing effective institutional credit support to various regions/sectors/ sections.

Nagaraju (2014) analyzed the performance of Indian public and private banks by applying the data envelopment analysis (DEA) on a sample of 34 banks by considering the time period from 2006 to 2010. This study revealed that Indian public (nationalized and State Bank group) and private banks underperformed in terms



of marketability and profitability efficiency. However, they performed relatively better in terms of profitability efficiency as compared to the stock market performance (marketability efficiency). Specifically, these inefficiencies were explained by the ownership of the banks, and not by their size.

Objectives of the Study

(1) To study the productivity change of Indian commercial banks in terms of technical efficiency change and technological change using the Malmquist index.

(2) To study the trends in technical efficiency and cost efficiency of Indian commercial banks.

(3) To study the correlation between cost efficiency and technical efficiency.

(4) To study the correlation between cost efficiency and total factor productivity change.

Methodology and Data Sources

The prepared data used for the study were collected from statistical tables relating to banks in India, which are available on the RBI website. The study covers the time period from 1992 (base period) to 2013 in case of foreign banks, nationalized banks, old private sector banks, and SBI and its associates. Furthermore, the study covers the new private sector banks for the period from 1996 (base year) to 2013. The banks which did not have continuous data for the above mentioned period were excluded from the study.

Concepts Related to DEA

(1) Returns to scale measures the relationship between output and inputs. Returns can be constant, increasing or decreasing depending on whether output increases in proportion to, more than or less than inputs, respectively. In the case of multiple inputs and outputs, this means how outputs change when there is an equi-proportionate change in all inputs.

(2) Technical efficiency (constant returns to scale efficiency) is determined by the difference between the observed ratio of combined quantities of an entity's output to input and the ratio achieved by *best practice*. It can be expressed as the potential to increase quantities of outputs from given quantities of inputs, or the potential to reduce the quantities of inputs used in producing given quantities of outputs.

Table 1. Description of Notations

Symbol	Meaning	Symbol	Meaning
TFP	Total Factor Productivity	Pech	Technical Efficiency Change(Relative
S.D.	Standard Deviation		to VRS technology)
Tfpch	Total Factor Productivity Change		
CV (%)	Coefficient of Variation	Sech	Scale Efficiency Change
M	Malmquist Index	TE	Technical Efficiency
Effch	Technical Efficiency Change(Relative to CRS technology)	AE	Allocative Efficiency
Techch	Technological Change	CE	Cost Efficiency
ADCB	Abu Dhabi Commercial Bank Ltd	PNB	Punjab National Bank
BOA	Bank of America	SY	Syndicate Bank
BOBK	Bank of Bahrain & Kuwait	UB	UCO Bank
BONS	Bank of Nova Scotia	UN	Union Bank of India
BB	Barclays Bank plc	UD	United Bank of India
BP	BNP Paribas	VB	Vijaya Bank
CB	CitiBank	AX	Axis Bank limited
CACI	Credit Agricole Corporate and Investment Bank	HD	HDFC Bank Ltd.
DB	Deutsche Bank	IC	ICICI Bank limited
HSBC	Hongkong and Shanghai Banking Corpn. Ltd.	II	Indusind Bank Ltd
MB	Mashreq Bank	CLS	Catholic Syrian Bank Ltd
OIB	Oman international Bank Ltd.	CUB	City union Bank limited
SG	SocieteGenerale	FB	Federal Bank Ltd
SB	Sonali Bank	INV	IngVysya Bank Ltd
SCB	Standard Chartered Bank	JK	Jammu & Kashmir Bank Ltd
BOTMU	The Bank of Tokyo-Mitsubishi UFJ Ltd.	KA	Karnataka Bank Ltd
AL	Allahabad Bank	KV	KarurVysya Bank Ltd
AN	Andhra Bank	LV	Lakshmi Vilas Bank Ltd
BOB	Bank of Baroda	NB	Nainital Bank Ltd
BOI	Bank of India	RB	Ratnakar Bank Ltd
BOM	Bank of Maharashtra	SI	South Indian Bank Ltd
CN	Canara Bank	TM	Tamilnad mercantile Bank Ltd
CBI	Central Bank of India	DL	The Dhanalakshmi Bank Ltd
COB	Corporation Bank	SBJ	State Bank of Bikaner and Jaipur
DE	Dena Bank	SBH	State Bank of Hyderabad
IB	Indian Bank	SBI	State Bank of India
IOB	Indian Overseas Bank	SBM	State Bank of Mysore
OBC	Oriental Bank of Commerce	SBP	State Bank of Patiala
PSB	Punjab and Sind Bank	SBT	State Bank of Travancore

(3) Pure technical efficiency (variable returns to scale efficiency) is the efficiency measure corresponding to VRS assumption that represents pure technical efficiency (PTE) which measures efficiency due to *managerial performance*.

The Figure 1 shows the different models of DEA. Input oriented model is concerned with the amount by which input quantities can be proportionally reduced without changing the output quantities produced. Output oriented model is concerned with the amount by which output quantities can be proportionally expanded without modifying the input quantities used. The Table 1 shows the description of notations used for the study.

Malmquist Index

The tool used for measuring productivity change over time is the Malmquist index. This index is calculated for panel data. The index is decomposed into technical efficiency change and technological change. So, it is the product of technical efficiency change and technological change. The efficiency change (EC) term relates to the degree to a decision making unit (DMU), which may be an organization or any other entity. Here, it refers to whether banks improve or degrade their efficiency. This is also known as the catch-up effect. Technical change (TC) reflects the change in the efficient frontiers (due to change in technology) between the two time periods. This is also known as frontier shift (or innovation).The formula for Malmquist total factor productivity index is given in equation(2).The index is calculated using a distance function from time period denoted as *"t"* to the subsequent period $t+1$.

$$M(I^t, O^t, I^{t+1}, O^{t+1}) = \sqrt{\frac{D^t(I^{t+1}, O^{t+1})}{D^t(I^t, O^t)} \times \frac{D^{t+1}(I^{t+1}, O^{t+1})}{D^{t+1}(I^t, O^t)}} \quad \text{----------} (1)$$

where,
M = Malmquist index,
I = Input variables of decision making units,
O = Output variables of decision making units,
D = Distance function,
t = Starting time period,
$t+1$ = Time period subsequent to *'t'*.

$$M(I^t, O^t, I^{t+1}, O^{t+1}) = \underbrace{\left[\frac{D^{t+1}(I^{t+1}, O^{t+1})}{D^t(I^t, O^t)}\right]}_{Efficiency\ Change} \times \underbrace{\left[\sqrt{\frac{D^t(I^{t+1}, O^{t+1})}{D^{t+1}(I^{t+1}, O^{t+1})} \times \frac{D^t(I^t, O^t)}{D^{t+1}(I^t, O^t)}}\right]}_{\textbf{Technical Change}} \quad \text{.....} (2)$$

$$\text{Efficiency Change } (EC) = \frac{D^{t+1}(I^{t+1}, O^{t+1})}{D^t(I^t, O^t)} \quad \text{.....} (3)$$

$$\text{Technical Change } (TC) = \left[\sqrt{\frac{D^t(I^{t+1}, O^{t+1})}{D^{t+1}(I^{t+1}, O^{t+1})} \times \frac{D^t(I^t, O^t)}{D^{t+1}(I^t, O^t)}}\right] \quad \text{.....} (4)$$

Equation (2) = Equation(3) x Equation(4).

The first ratio in equation (1) indicates Malmquist index at time *'t'*. This ratio measures the productivity change from time *'t'* to time '$t+1$' with technology at time *'t'* as reference, whereas the second ratio in the same equation estimates the change in productivity from time *'t'* to time *'t*+1' with technology at time '$t+1$'. Equation (1) is decomposed into efficiency change and technical change and shown in equation (2) as efficiency change (EC) and technical change (TC).The values of TC, EC, and Malmquist index (M) lies between 0 and 1.When the value of :

(1) M is equal to 0, there is no change in productivity.
(2) M is greater than 1, there is an improvement in productivity.
(3) M is lesser than 1, there is a deficiency in productivity.

In this study, an output oriented model is used to calculate the Malmquist index. The input variables used are based on the intermediary approach .The input variables used are deposits and borrowings. The output variables used are advances, investments, and net interest income.

Cost Efficiency

Farell (1957) stated that efficiency of a firm consists of two major components, namely technical efficiency and allocative efficiency. Technical efficiency indicates the ability of a firm to obtain maximum output from a given set of inputs. Price/Allocative efficiency indicates the ability of a firm to use the inputs in optimal proportions given their respective prices. These two measures are combined to provide a measure of overall economic efficiency/cost efficiency.

Suppose price information of inputs is available in addition to input and output variables and also an objective of either a cost minimization or revenue maximization is considered, technical and allocative efficiencies can be estimated. For a variable returns to scale (VRS) cost minimization, input oriented DEA model (shown below) can be run to find out the technical efficiency .

Minimize $\boldsymbol{S_n}$ subject to

$$\sum_{j=1}^{N} W_j Y_{ij} - Y_{in} \geq 0, \qquad i = 1,2,\ldots\ldots,I$$

$$\sum_{j=1}^{N} W_j X_{kj} - S_n X_{kn} \leq 0, \quad k = 1,2,\ldots\ldots,K$$

$$\sum_{j=1}^{N} W_j = 1$$

$$W_j \geq 0 \quad j = 1,2,\ldots\ldots N$$

N = number of decision making units/service units being compared in the DEA analysis,
S_n, = Efficiency rating of the decision making unit/service unit being evaluated by DEA under respective models of DEA,
Y_{ij} = amount of output i used by decision making unit/service unit j,
X_{kj} = amount of input k used by decision making unit/service unit j,
i = number of inputs used by the decision making unit/service unit,
k = number of outputs generated by the decision making unit/service unit,
I = number of output variables,
K = number of input variables,
W_j are weights applied across N organizations.

After calculating technical efficiency, cost minimization DEA model is run to calculate cost efficiency/economic efficiency.

Minimize $W_i x_i$
Subject to
$\Lambda Y - y_i \geq 0,$
$-\Lambda X + x_i \geq 0,$
$\sum_{j=1}^{N} \Lambda_j = 1,$
$\Lambda_j \geq 0 \quad j = 1,2 \ldots\ldots N$

W_i = Vector of input prices for i-th DMU,
x_i = Cost minimizing vector of input quantities for i-th DMU,
y_i = output levels.

The total cost efficiency (CE) or economic efficiency of i - th DMU can be calculated as :

$$CE = \frac{\text{Minimum cost of } i - \text{th DMU}}{\text{Observed cost of } i - \text{th DMU}}$$

In this study, the input oriented model is used to calculate cost efficiency. The input variables used are based on the intermediary approach .The input variables used are deposits and borrowings. The variables used for price of inputs are interest on deposits and interest on borrowings. The output variables used are advances, investments, and net interest income.

Selection of Input and Output Variables

There are three major methods in selecting input and output variables used for measuring banking efficiency. They are the production approach (PA), the intermediation approach (IA), and the asset approach (AA). The Figure 2 shows the various methods/approaches used in selection of input and output variables to be used for the study. The approaches are described below :

(1) Production Approach : The production approach considers banks as producers of deposit accounts and loan services. The number of accounts serviced or transactions processed are measures of outputs. Inputs include

Figure 2. Approaches for Selecting Input and Output Variables

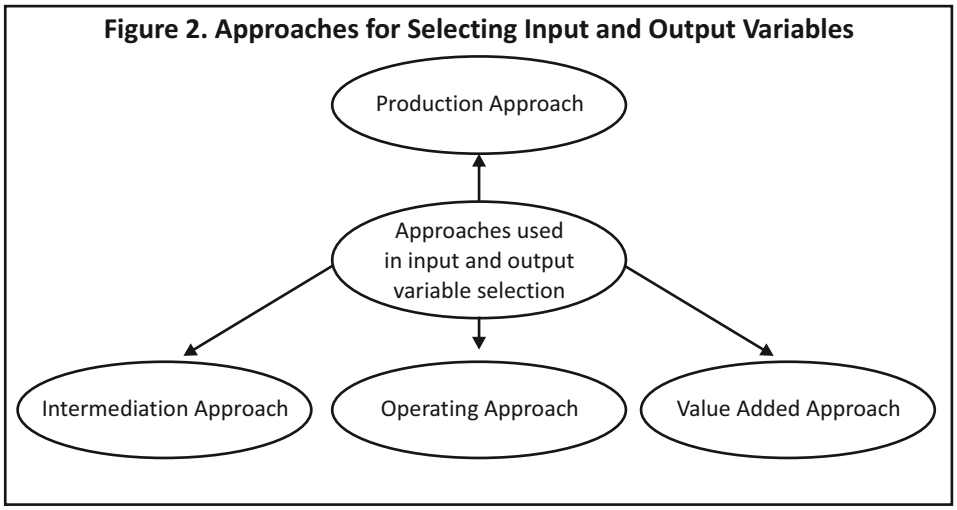


Table 2. Production Approach

Authors	Input	Output
Benston (1965)	Number of employees and physical capital	The number of accounts or its related transactions
Sherman and Gold (1985)	Labor, capital (rent paid to each branch),cost of supplies	Number of transactions
Ferrier and Lovell (1990)	Labor, expenditure on materials, occupancy costs, and expenditure on furniture and equipments	Number of deposit, accounts (demand, time), number of loans (real, estate, comm., inst.)

Table 3. Intermediation Approach

Authors	Input	Output
Bhattacharyya et al. (1997)	Interest expense, operating expense	Advances, investments, deposits
Shanmugam and Das (2004)	Deposits, borrowings, labor, fixed assets	Net interest margin, non-interest margin, credit, investment

capital and labor, but do not include interest costs. The production approach is more suitable for branch efficiency studies, as at most times, bank branches basically process customer documents and bank funding, while investment decisions are mostly not under the control of branches (Berger & Humphrey, 1997). The Table 2 exhibits the combinations of inputs and outputs used in the production approach.

(2) Intermediation Approach : In this approach, banks are considered as intermediaries who are involved in transformation and transfer of financial resources from units in surplus to units in deficit. This approach is suitable for banks where more activities are concerned with turning large deposits and funds purchased from other financial institutions into loans and financial investments. In this approach, total loans and securities are the best measures of outputs, whereas deposits along with labor and physical capital are defined as inputs (Sealey Jr. & Lindley, 1977). The Table 3 exhibits the combinations of inputs and outputs used in the intermediary approach.

(3) Value-Added Approach : In this approach, the inputs or outputs are identified based on the share of value added. Items of the balance sheet with a substantial share of value added are considered as important outputs. Bhattacharyya, Lovell, and Sahay (1999) used labor, physical capital as inputs, and fixed deposit, savings deposit, current deposit, investment loans and advances, and number of branches as outputs.

(4) Operating Approach : According to Leightner and Lovell (1998), banks are considered as business units with an objective of generating revenue from the total cost incurred for running the business. The total revenue (interest and non-interest income) is defined as output and total expenses are defined as inputs.

Analysis, Results, and Discussion

The Table 4 shows year wise productivity changes of foreign banks. It is found that there is an improvement in total factor productivity (more than 1) in the years 1993, 1994, 1997-2004, and 2010 to the extent of 24%, 15%, 20%, 37%, 27%, 5%, 24%, 1%, 3%, 28%, and 24%, respectively. It is evident from the Table that the improvement in productivity in the years 1994, 1999, and 2004 is due to improvement in technical efficiency change ; whereas, the productivity change is due to technological innovation or change for the years 1993, 1997, 1998, 2000-2003, and 2010. The C.V% of technical efficiency change is 32%, which is higher than 18.42% (C.V. % of total factor

Table 4. Malmquist Index of Annual Means (Foreign Banks)

Year	Effch	Techch	Pech	Sech	Tfpch
1993	0.661	1.87	1	0.661	1.236
1994	1.7	0.675	1	1.7	1.147
1995	0.935	0.865	1	0.935	0.809
1996	1.178	0.756	1	1.178	0.89
1997	1.02	1.18	1	1.02	1.204
1998	0.848	1.613	1	0.848	1.368
1999	1.215	1.043	1	1.215	1.268
2000	0.767	1.371	1	0.767	1.052
2001	0.724	1.71	1	0.724	1.239
2002	0.912	1.111	1	0.912	1.013
2003	0.843	1.223	1	0.843	1.031
2004	1.326	0.967	1	1.326	1.283
2005	0.812	1.193	1	0.812	0.969
2006	1.545	0.472	1	1.545	0.73
2007	0.917	0.815	1	0.917	0.747
2008	0.653	1.372	1	0.653	0.896
2009	1.832	0.546	1	1.832	1
2010	1.019	1.217	1	1.019	1.24
2011	0.866	1.007	1	0.866	0.872
2012	1.413	0.651	1	1.413	0.920
2013	0.915	0.956	1	0.915	0.875
Mean	**1.052**	**1.077**	**1**	**1.052**	**1.038**
S.D.	**0.337**	**0.374**	**0**	**0.337**	**0.191**
C.V.%	**32.011**	**34.729**	**0**	**32.011**	**18.424**

Table 5. Malmquist Indexof Firm Means (Foreign Banks)

Banks	effch	Techch	Pech	Sech	Tfpch
ADCB	0.972	1.019	1	0.972	0.99
BOA	0.98	1.009	1	0.98	0.989
BOBK	0.987	1.008	1	0.987	0.995
BONS	1.014	1.037	1	1.014	1.051
BB	1.053	1.119	1	1.053	1.178
BP	1.013	1.019	1	1.013	1.032
CB	0.994	1.003	1	0.994	0.997
CACI	1.014	0.992	1	1.014	1.005
DB	1.004	1.02	1	1.004	1.024
HSBC	1.033	0.989	1	1.033	1.021
MB	1.009	0.987	1	1.009	0.996
OIB	1.068	0.986	1	1.068	1.053
SG	0.997	1.015	1	0.997	1.013
SB	1	1.02	1	1	1.02
SCB	0.973	0.991	1	0.973	0.965
BOTMU	1.006	1.008	1	1.006	1.014
Mean	**1.007**	**1.014**	**1.000**	**1.007**	**1.021**
S.D.	**0.026**	**0.032**	**0.000**	**0.026**	**0.048**
C.V.%	**2.625**	**3.124**	**0.000**	**2.625**	**4.666**

productivity change). This implies that total factor productivity change is more consistent when compared to change in technical efficiency. The pure technical efficiency is 100 % (=1) for all the banks . This implies that improvement in scale efficiency is stable.

The Table 5 shows bank wise productivity changes of foreign banks calculated by using the Malmquist index. The banks denoted as BONS, BB, BP, CACI, DB, HSBC, OIB, SG, SB, and BOTMU show an improvement in total factor productivity (values more than 1) to the extent of 5%, 18%, 3%, 0.05%, 2%, 2%, 5%, 1%, 2%, and 1%, respectively. The productivity improvement of banks denoted as BONS, BB, BP, SG, SB, and BOTMU is due to technological change (innovation or process change) rather than technical efficiency change. For the banks such as CACI, DB, OIB, and SB, the change is due to technical efficiency change. There is an improvement in technical efficiency (more than 1) for the banks BONS, BB, BP, CACI, DB, and OIB. In case of banks, the C.V. % of technical efficiency change (2.62) is less than that of total factor productivity change (4.66) .This means that technical efficiency change is more consistent when compared to TFP change. The average TFP change and technical change are almost equal to 1, which means that the overall improvement is stable.

The Table 6 shows year wise productivity changes of nationalized banks. It is found that there is an improvement in total factor productivity (more than 1) in the years 1993, 1994, 1996, 1997, 2002, 2008, 2010, and

Table 6. Malmquist Index of Annual Means (Nationalized Banks)

Year	Effch	Techch	pech	sech	Tfpch
1993	0.921	1.59	1	0.921	1.464
1994	0.887	1.369	1	0.887	1.213
1995	1.007	0.876	1	1.007	0.882
1996	0.947	1.075	1	0.947	1.018
1997	0.919	1.167	1	0.919	1.073
1998	1.12	0.887	1	1.12	0.994
1999	0.885	1.089	1	0.885	0.964
2000	1.084	0.894	1	1.084	0.969
2001	1.004	0.9	1	1.004	0.903
2002	1.051	0.973	1	1.051	1.022
2003	1.131	0.855	1	1.131	0.968
2004	0.97	0.986	1	0.97	0.956
2005	1.023	0.886	1	1.023	0.906
2006	1.018	0.845	1	1.018	0.86
2007	1.073	0.885	1	1.073	0.95
2008	0.852	1.22	1	0.852	1.04
2009	1.15	0.817	1	1.15	0.94
2010	0.932	1.08	1	0.932	1.007
2011	1.049	0.808	1	1.049	0.847
2012	0.994	0.972	1	0.994	0.967
2013	0.99	1.027	1	0.99	1.017
Mean	**1.000**	**1.010**	**1.000**	**1.000**	**0.998**
S.D.	**0.084**	**0.196**	**0.000**	**0.084**	**0.133**
C.V.%	**8.409**	**19.461**	**0.000**	**8.409**	**13.372**

Table 7. Malmquist Index of Firm Means (Nationalized Banks)

Bank	Effch	Techch	Pech	Sech	Tfpch
AL	0.995	1.02	1	0.995	1.015
AN	0.989	1.003	1	0.989	0.992
BOB	1.01	1	1	1.01	1.011
BOI	1.003	1.007	1	1.003	1.01
BOM	0.991	0.999	1	0.991	0.99
CN	1.012	1.007	1	1.012	1.019
CBI	0.999	1.002	1	0.999	1
COB	1	1.005	1	1	1.005
DE	1.001	0.993	1	1.001	0.994
IB	0.996	0.968	1	0.996	0.964
IOB	0.987	1.001	1	0.987	0.988
OBC	0.999	1.01	1	0.999	1.01
PSB	1	0.975	1	1	0.975
PNB	0.99	0.997	1	0.99	0.987
SY	0.984	1.012	1	0.984	0.996
UB	1.001	1.021	1	1.001	1.022
UN	0.987	1.001	1	0.987	0.987
UD	1	0.941	1	1	0.941
VB	1	0.927	1	1	0.927
Mean	**0.997**	**0.994**	**1.000**	**0.997**	**0.991**
S.D.	**0.008**	**0.025**	**0.000**	**0.008**	**0.025**
C.V.%	**0.758**	**2.497**	**0.000**	**0.758**	**2.536**

2013 to the extent of 46%, 21%, 2%, 7%, 2%, 4%, 1%, and 2%, respectively. It is evident from the Table that the improvement in productivity in all these years except 2002 is due to improvement in technological innovation or change. The productivity change in the year 2002 is attributed to technical efficiency change. The C.V% of technical efficiency change is 8.4%, which is less than 13.372% (C.V. % of total factor productivity change). This implies that technical efficiency change is more consistent when compared to change in total factor productivity.

The Table 7 shows bank wise productivity changes of nationalized banks calculated by using the Malmquist index. The banks denoted as AL, BOB, BOI, CN, COB, BC, and UB show an improvement in total factor productivity (values more than 1) to the extent of more than 1%, only for these banks. The productivity improvement of banks denoted as AL, BOI, COB, OBC, and UB is due to technological change (innovation or process change) rather than technical efficiency change. For the banks such as BOB and CN, the change is due to technical efficiency change. There is an improvement in technical efficiency (more than 1) for the banks BOB, BOI, CN, and UB. In case of banks, the C.V. % of technical efficiency change (0.758) is lesser than that of total factor productivity change (2.536). This means that technical efficiency change is more consistent when compared to TFP change. The average TFP change and technical change is less than 1, which means that there is a reduction in overall productivity improvement.

The Table 8 shows year wise productivity changes of new private sector banks. It is found that there is an improvement in total factor productivity (more than 1) in the years 1998 and 2006. It is evident from the Table that the improvement in productivity in these years is due to improvement in technological innovation or change. The C.V% of technical efficiency change is 6.59%, which is less than 13.48% (C.V. % of total factor productivity change). This implies that technical efficiency change is more consistent when compared to change in total factor productivity for these banks.

The Table 9 shows bank wise productivity changes of new private sector banks calculated by using the Malmquist index. All the banks in this category have value of TFP change less than 1. The banks denoted as AX and II show an improvement in technical efficiency (values more than 1). This implies that these banks have the opportunity to improve the usage of technology or process innovation so as to improve the total factor productivity over time. By comparing the C.V. %, technical efficiency change is consistent when compared to total factor productivity change.

The Table 10 shows year wise productivity changes of old private sector banks. It is found that there is an improvement in total factor productivity (more than 1) in the years 1993, 1994, 1997, 1998, 1999, 2002, 2008, 2009, 2010, and 2013 to the extent of 22.10%, 3.60%, 14.20%, 13.80%, 18.20%, 9.90%, 7.60%, 4.20%, 1.80%, and 0.40%, respectively. It is evident from the Table that the improvement in productivity in all these years is due to improvement in technological innovation or change of value more than 1. The C.V% of technical efficiency change is 6.98%, which is less than 11.77% (C.V. % of total factor productivity change). This implies that technical efficiency change is more consistent when compared to change in total factor productivity.

The Table 11 shows bank wise productivity changes of old private sector banks calculated by using the Malmquist index. The banks FB, INV, JK, and KA have value of TFP change more than 1. This improvement is attributed to technological change. The banks denoted as AX and II show an improvement in technical efficiency (values more than 1). All the banks have technical efficiency of either less than or equal to 1. This implies that these banks have the opportunity to improve the technical efficiency and that in turn helps to improve the total factor productivity over time.

The Table 12 shows the year wise productivity changes of SBI and its associate banks . It is found that there is an improvement in total factor productivity (more than 1) in the years 1993, 1994, 1997, 1998, 1999, 2003, and 2008. It is evident from the Table that the improvement in total factor productivity in the years 1993, 1994, 1998, 1999, and 2003 is due to improvement in technological innovation or change of value more than 1. The improvement in total factor productivity in the years 1997 and 2008 is due to improvement in technical efficiency change of value more than 1. For years other than the above mentioned, there is no improvement in total factor productivity because TFP change values are less than 1.

The Table 13 shows bank wise productivity changes of SBI and its associate banks calculated by using the Malmquist index. It can be inferred from the Table that no banks have total factor productivity of value more than 1. This implies that this category of banks has not improved its total factor productivity over time. This is because both the technical efficiency change and technological change did not contribute towards the improvement in total factor productivity.

The Table 14 shows the cost efficiency of new private sector banks. The bank denoted as AX is cost inefficient to the extent of 72.4% in producing deposits and borrowings given the cost of deposits and borrowings in the form of interest on deposits and borrowings, respectively. The other banks denoted as HD, IC, and II are 100% cost efficient.

The Table 15 shows the cost efficiency of foreign banks. The banks denoted as ADCB, BOBK, BONS, BB, BP, CACI, DB, HSBC, MB, OIB, SG, and BOTMU are cost inefficient to the extent of 70.80%,61.10%,88.70%,66.80%,71.30%,43.00%,75.30%,59.20%,53.90%,75.50%, 58.90%, and 41.10%, respectively in producing deposits and borrowings given the cost of deposits and borrowings in the form of interest on deposits and borrowings, respectively. The other banks denoted as ADCB, BOA, CB, SB, SCB, and RBS are 100% cost efficient.

Table 8. Malmquist Index of Annual Means (New Private Sector Banks)

Year	Effch	Techch	Pech	sech	Tfpch
1996	1.226	0.432	1	1.226	0.53
1997	1.072	0.868	1	1.072	0.93
1998	0.961	1.09	1	0.961	1.048
1999	1.04	0.817	1	1.04	0.85
2000	1	0.84	1	1	0.84
2001	1	0.955	1	1	0.955
2002	1	0.998	1	1	0.998
2003	1	0.728	1	1	0.728
2004	1	0.8	1	1	0.8
2005	0.917	0.918	1	0.917	0.842
2006	0.981	1.028	1	0.981	1.008
2007	1.024	0.899	1	1.024	0.921
2008	1.035	0.923	1	1.035	0.956
2009	1.012	0.853	1	1.012	0.864
2010	0.912	0.992	1	0.912	0.904
2011	1.001	0.906	1	1.001	0.907
2012	1.054	0.938	1	1.054	0.988
2013	1.021	0.905	1	1.021	0.924
Mean	**1.014**	**0.883**	**1**	**1.014**	**0.889**
S.D.	**0.067**	**0.142**	**0**	**0.067**	**0.120**
C.V.%	**6.594**	**16.08**	**0**	**6.594**	**13.48**

Table 9. Malmquist Index of Firm Means (New Private Sector Banks)

Bank	effch	Techch	Pech	Sech	Tfpch
AX	1.039	0.927	1	1.039	0.963
HD	0.988	0.857	1	0.988	0.847
IC	1	0.85	1	1	0.85
II	1.022	0.844	1	1.022	0.862
Mean	**1.012**	**0.870**	**1.000**	**1.012**	**0.881**
S.D.	**0.023**	**0.039**	**0.000**	**0.023**	**0.055**
C.V.%	**2.245**	**4.451**	**0.000**	**2.245**	**6.290**

Table 10. Malmquist Index of Annual Means (Old Private Sector Banks)

Year	Effch	Techch	Pech	Sech	Tfpch
1993	0.942	1.297	1	0.942	1.221
1994	0.87	1.192	1	0.87	1.036
1995	1.068	0.899	1	1.068	0.96
1996	1.025	0.87	1	1.025	0.891
1997	1.018	1.122	1	1.018	1.142
1998	0.993	1.145	1	0.993	1.138
1999	1.035	1.142	1	1.035	1.182
2000	1.011	0.948	1	1.011	0.958
2001	0.942	0.97	1	0.942	0.913
2002	0.963	1.142	1	0.963	1.099
2003	0.94	1.056	1	0.94	0.992
2004	1.066	0.872	1	1.066	0.929
2005	1.056	0.734	1	1.056	0.775
2006	0.957	0.898	1	0.957	0.86
2007	1.098	0.824	1	1.098	0.905
2008	1.019	1.056	1	1.019	1.076
2009	0.928	1.122	1	0.928	1.042
2010	0.971	1.049	1	0.971	1.018
2011	0.961	0.872	1	0.961	0.838
2012	1.023	0.931	1	1.023	0.952
2013	0.81	1.24	1	0.81	1.004
Mean	**0.986**	**1.018**	**1**	**0.986**	**0.997**
S.D.	**0.069**	**0.151**	**0**	**0.069**	**0.117**
C.V.%	**6.980**	**14.82**	**0**	**6.980**	**11.77**

Table 11. Malmquist Index of Firm Means (Old Private Sector Banks)

Bank	Effch	techch	pech	Sech	tfpch
CLS	0.98	1.018	1	0.98	0.997
CUB	0.967	1.031	1	0.967	0.997
FB	0.972	1.038	1	0.972	1.008
INV	0.982	1.033	1	0.982	1.015
JK	1.012	1.026	1	1.012	1.038
KA	0.985	1.021	1	0.985	1.006
KV	0.972	1.026	1	0.972	0.997
LV	0.975	1.025	1	0.975	0.999
NB	1	0.942	1	1	0.942
RB	1	0.932	1	1	0.932
SI	0.964	1.029	1	0.964	0.991
TM	0.973	1.005	1	0.973	0.977
DL	1	0.978	1	1	0.978
Mean	**0.984**	**1.007**	**1.000**	**0.984**	**0.990**
S.D.	**0.015**	**0.035**	**0.000**	**0.015**	**0.028**
C.V.%	**1.538**	**3.480**	**0.000**	**1.538**	**2.874**

Table 12. Malmquist Index of Annual Means (SBI and its Associates)

Year	Effch	Techch	Pech	sech	Tfpch
1993	1.032	1.12	1	1.032	1.156
1994	0.972	1.275	1	0.972	1.239
1995	0.996	0.896	1	0.996	0.892
1996	1.014	0.85	1	1.014	0.862
1997	1.023	1.019	1	1.023	1.042
1998	0.965	1.071	1	0.965	1.034
1999	0.973	1.164	1	0.973	1.133
2000	1.023	0.973	1	1.023	0.995
2001	1.012	0.922	1	1.012	0.933
2002	0.993	0.989	1	0.993	0.982
2003	1.001	1.003	1	1.001	1.005
2004	0.993	0.949	1	0.993	0.942
2005	1.035	0.776	1	1.035	0.804
2006	0.983	0.809	1	0.983	0.795
2007	1.007	0.836	1	1.007	0.842
2008	1.029	0.985	1	1.029	1.013
2009	0.975	0.98	1	0.975	0.955
2010	1.026	0.865	1	1.026	0.887
2011	0.946	0.875	1	0.946	0.828
2012	0.981	0.96	1	0.981	0.942
2013	0.986	0.972	1	0.986	0.959
Mean	**0.998**	**0.966**	**1**	**0.998**	**0.964**
S.D.	**0.025**	**0.121**	**0**	**0.025**	**0.116**
C.V.%	**2.494**	**12.496**	**0**	**2.494**	**12.022**

Table 13. Malmquist Index of Firm Means (SBI and its Associates)

Firm	Effch	Techch	Pech	sech	tfpch
SBJ	0.998	0.968	1	0.998	0.965
SBH	0.999	0.988	1	0.999	0.987
SBI	1.001	0.985	1	1.001	0.986
SBM	1	0.941	1	1	0.941
SBP	0.991	0.954	1	0.991	0.946
SBT	1	0.922	1	1	0.922
Mean	**0.998**	**0.958**	**1**	**0.998**	**0.956**
S.D.	**0.004**	**0.026**	**0**	**0.004**	**0.026**
C.V.%	**0.366**	**2.687**	**0**	**0.366**	**2.728**

Table 14. Cost Efficiency of New Private Sector Banks

Bank	TE	AE	CE
AX	0.467	0.591	0.276
HD	1	1	1
IC	1	1	1
II	1	1	1
Mean	**0.867**	**0.898**	**0.819**
S.D	**0.267**	**0.205**	**0.362**
C.V.%	**30.747**	**22.779**	**44.200**

Table 15. Cost Efficiency of Foreign Banks

Bank	TE	AE	CE
ADCB	0.49	0.596	0.292
BOA	1	1	1
BOBK	0.39	0.999	0.389
BONS	0.402	0.282	0.113
BB	0.341	0.974	0.332
BP	0.288	0.998	0.287
CB	1	1	1
CACI	0.579	0.985	0.57
DB	0.248	0.997	0.247
HSBC	0.506	0.807	0.408
MB	0.461	1	0.461
OIB	0.253	0.969	0.245
SG	0.412	0.999	0.411
SB	1	1	1
SCB	1	1	1
BOTMU	0.736	0.8	0.589
RBS	1	1	1
Mean	**0.594**	**0.906**	**0.550**
S.D	**0.294**	**0.195**	**0.321**
C.V.%	**49.511**	**21.518**	**58.368**

Table 16. Cost Efficiency of Nationalized Banks

Bank	TE	AE	CE
AL	0.966	0.882	0.852
AN	0.916	0.946	0.867
BOB	0.705	0.824	0.581
BOI	0.863	0.573	0.494
BOM	0.997	0.999	0.996
CN	0.773	1	0.772
CBI	1	0.851	0.851
COB	1	1	1
DE	0.981	1	0.98
IB	0.906	0.626	0.567
IOB	1	0.632	0.632
OBC	0.895	0.999	0.894
PSB	1	1	1
PNB	1	1	1
SY	0.842	1	0.842
UB	0.904	0.602	0.544
UN	0.993	0.999	0.993
UD	1	1	1
VB	1	1	1
Mean	**0.934**	**0.891**	**0.835**
S.D	**0.087**	**0.160**	**0.182**
C.V.%	**9.329**	**17.961**	**21.785**

Table 17. Cost Efficiency of Old Private Sector Banks

Bank	TE	AE	CE
CLS	0.917	0.928	0.851
CUB	0.810	0.873	0.707
FB	1	1	1
INV	1	1	1
JK	1	1	1
KA	0.937	0.962	0.901
KV	1	1	1
LV	1	1	1
NB	1	1	1
RB	1	1	1
SI	1	1	1
TM	0.838	0.998	0.836
DL	1	1	1
Mean	**0.962**	**0.982**	**0.946**
S.D	**0.067**	**0.039**	**0.094**
C.V.%	**6.983**	**3.986**	**9.962**

Table 18. Cost Efficiency of SBI and Associates

Bank	TE	AE	CE
SBJ	0.957	0.995	0.953
SBH	0.993	0.945	0.938
SBI	1	1	1
SBM	1	1	1
SBP	1	1	1
SBT	1	1	1
Mean	**0.992**	**0.990**	**0.982**
S.D	**0.017**	**0.022**	**0.029**
C.V.%	**1.736**	**2.236**	**2.907**

The Table 16 shows the cost efficiency of nationalized banks. The banks denoted as ALAN, BOB, BOI, BOM, CN, CBI, DE, IB, IOB, OBC, SY, UB, and UN are cost inefficient to the extent of 14.80%, 13.30%, 41.90%, 50.60%, 0.40%, 22.80%, 14.90%, 2.00%, 43.30%, 36.80%, 10.60%, 15.80%, 45.60%, and 0.70%, respectively in producing deposits and borrowings given the cost of deposits and borrowings in the form of interest on deposits and borrowings, respectively. In the above category of banks, the bank denoted as CN is most cost efficient and UB is the least cost efficient. The other banks denoted as COB, PSB, PNB, UD, and VB are 100% cost efficient.

The Table 17 shows the cost efficiency of old private sector banks. The banks denoted as CLS, CUB, KA, and TM are cost inefficient to the extent 14.90%, 29.30%, 9.90%, and 16.40%, respectively in producing deposits and borrowings given the cost of deposits and borrowings in the form of interest on deposits and borrowings, respectively. In the above category of banks, the bank denoted as KA is most cost efficient and CUB is the least cost efficient. The other banks denoted as FB, INV, JK, KV, LV, NB, RB, SI, and DL are 100% cost efficient.

The Table 18 shows the cost efficiency of SBI and associate banks. The banks denoted as SBJ and SBH are cost inefficient to the extent 5% and 6%, respectively producing deposits and borrowings given the cost of deposits and borrowings in the form of interest on deposits and borrowings, respectively. The other banks denoted as SBI, SBM, BP, and SBT are 100% cost efficient.

The Table 19 shows the correlation between cost efficiency and technical efficiency of different banking groups. It can be found that there is a positive correlation between cost efficiency (CE) and technical efficiency (TE). There is a strong positive correlation (close to 1) between TE and CE in case of foreign banks, new private sector banks, and old private sector banks ; whereas, in case of nationalized banks, SBI and associates, the correlation is moderately positive. This indicates that if banks are efficient in utilizing deposits and borrowings (inputs) to produce advances and net interest income (outputs), then banks are economically efficient in using the inputs at the given cost of deposits and borrowings.

The Table 20 and Figure 3 show the percentage of bank groups with technological efficiency change, efficiency change, and total factor productivity change. In case of foreign bank groups, 53% of the banks have total factor productivity improvement, 69% of the banks have technological change (improvement), and 56% of the banks have improvement in technical efficiency. In case of the nationalized bank group, 33% of the banks have total factor productivity improvement, 58% of the banks have technological change (improvement), and 26% of the banks have improvement in technical efficiency. In case of old private sector banks, 31% of the banks have total

Table 19. Correlation Between Cost Efficiency and Technical Efficiency

Foreign banks	0.964
Nationalized banks	0.617
New private sector banks	1
Old private sector banks	0.972
SBI and Associates	0.629

Table 20. Percentage of Bank Groups with Improved Technological Efficiency Change, Efficiency Change, and Total Factor Productivity Change

Bank group	Total Factor Productivity Change	Technological Efficiency change	Efficiency Change
Foreign Banks	53%	69%	56%
Nationalized Banks	33%	58%	26%
Old Private Sector Banks	31%	77%	8%

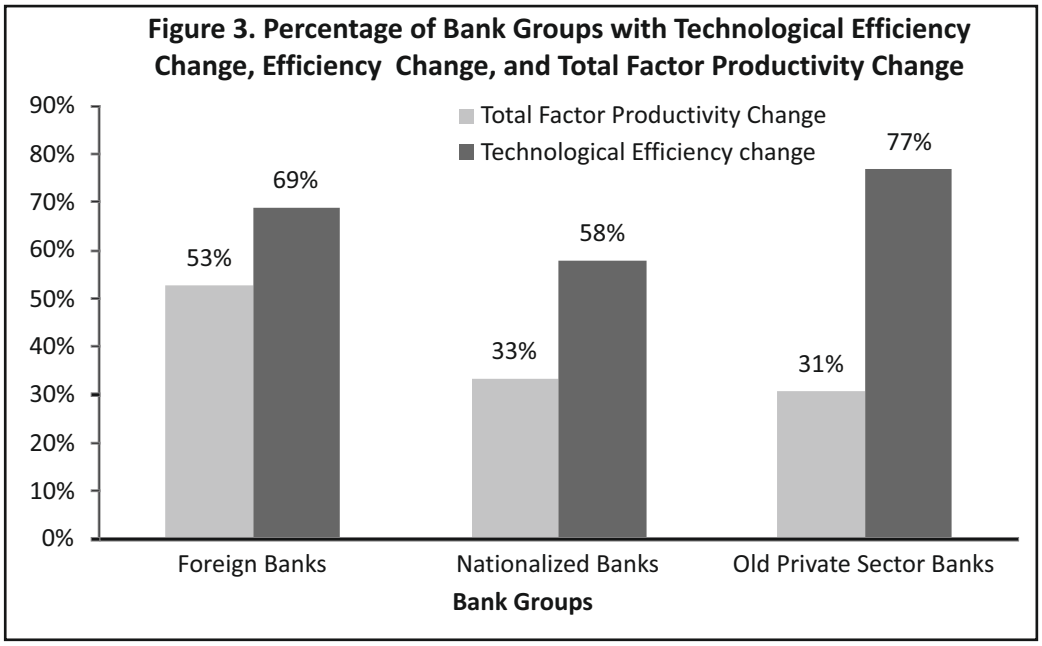


Table 21. Percentage of Bank Groups with Technical Efficiency, Allocative Efficiency, and Cost Efficiency

Bank	Technical Efficiency	Allocative Efficiency	Cost Efficiency
New Private Sector Banks	75%	75%	75%
Foreign Banks	29%	35%	29%
Nationalized Banks	37%	42%	26%
Old Private Sector banks	56%	56%	56%
SBI and Associates	67%	67%	67%

factor productivity improvement, 77% of the banks have technological change (improvement), and 8% of the banks have improvement in technical efficiency. Overall, total factor productivity is driven by technological (change) for all categories of banks because percentage of banks is maximum in technological change.

The Table 21 and Figure 4 show percentage of bank groups with 100% technical efficiency, allocative efficiency, and cost efficiency. In this study, cost efficiency refers to the ability of banks to minimize use the inputs such as deposits and borrowings in an optimal manner given the interest costs for both and maximizes output. Percentage of banks (75%) which are cost efficient in the new private sector group is maximum, followed by SBI and associate banks (67%), old private sector banks (56%), foreign banks (37%), and nationalized banks (29%). The same trend is repeated for allocative efficiency and technical efficiency in case of SBI and associate banks, old private sector banks, followed by nationalized banks and then foreign banks (least efficient).

The Table 22 shows the correlation between cost efficiency and total factor productivity change. It can be inferred from this Table that there is a negative relationship between total factor productivity and cost efficiency for all the bank groups. Banks (here, new private sector banks and SBI associates) having the highest (to moderate) negative correlation have no change in total factor productivity, but witness increase in cost efficiency to the extent of 100%. Also, banks having better total factor productivity change have lesser cost efficiency. This is evident from Tables 21 and 22.

Chandrasekhar and Sonar (2008) revealed that the private sector had experienced better productivity change than public sector banks because of technology usage. Derli (2006) found using single input (IT expenses) and

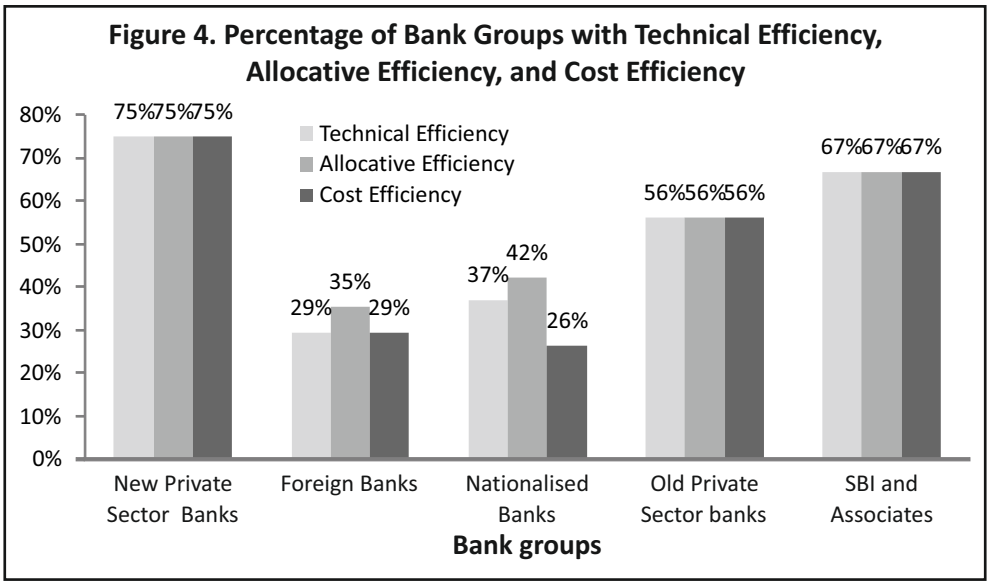


Table 22. Correlation Between Cost Efficiency and Total Factor Productivity Change

Bank Group	Correlation
New Private Sector Banks	-0.993
Foreign Banks	-0.438
Nationalized Banks	-0.400
Old Private Sector Banks	-0.067
SBI and its Associates	-0.576

output measures that public sector institutions are efficient in using technology. Deng et al. (2011) revealed that foreign banks have higher TFP change (improvement) than local banks. Liu (2010) found that TFP change of most of the banks was due to technology rather than technical efficiency. In this study, we also observed similar results that total factor productivity change was due to technology rather than technical efficiency change for the bank groups such as foreign banks, nationalized, and old private sector banks (maximum percentage of banks). Furthermore, the study period and the nature of inputs considered are different compared to previous studies.

Implications

The study used data envelopment analysis methodology to measure productivity change and cost efficiency using the Malmquist index. This methodology helps banks to benchmark productivity change over time with best performing units (banks) and accordingly increase or decrease inputs to achieve overall (cost) economic efficiency. The study revealed that total factor productivity is contributed by technological changes rather technical changes. Measurement of components of productivity change help banks to vary either the technology part or amount of input used to achieve the improvement in overall productivity.

Summary and Conclusion

The objective was to study the productivity change and cost efficiency (overall efficiency) of commercial bank groups in India. The bank groups that witnessed total factor productivity improvement are foreign groups,

nationalized groups, and old private sector groups to the extent of 53%, 33%, and 31% (percentages of banks), respectively. In these categories of banks, technological change varies to the extent of 69%, 58%, and 77% (percentages of banks), respectively. In terms of technical efficiency, the above bank groups witnessed improvement to the extent of 56%, 26%, and 8% (percentages of banks). Overall, the total factor productivity is driven by technological (change) for all categories of banks because percentage of banks is maximum in technological change. Percentage of banks having total factor productivity change is the highest in case of foreign banks followed by nationalized and old private sector banks. Percentage of cost efficient banks (75%) in the new private sector group is maximum, followed by SBI and associate banks (67%), old private sector banks (56%), foreign banks (37%), and nationalized banks (29%).

Limitations of the Study and Scope for Further Research

The study used secondary data obtained from the financial statements of banks for a period from 1993-2013. Future studies can carry out comparisons of productivity and cost efficiency among different branches of banks. Also, the cost efficiency of the banks can be compared with non-performing assets (NPA indicators) to check the nature of the relationship between them. Apart from the intermediary approach, there are other methods such as production approach and value added approach that are used for selecting input and output variables. These methods can also be used to compare productivity and cost efficiency and can be tested for difference in results among them.

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Financial Performance of the Luxury Market : A Study of Pre and Post Financial Crisis 2007-08

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Abstract

The financial crisis of 2007-08 brought down the sentiments of the investors in the market and the owners of the concerns. During a financial crisis, unemployment is assumed at the lowest, profitability sinks, investments are low, inflation is high, productivity is low, and there is a decline in demand. The entire economy endeavours for survival. Many sources have stated that the luxury market is not hit by recessionary times. The consumers of this market are assumed not to have any inclination to the market, even if bad news is pouring in. In order to check the claims of the executives and the companies and to check the resilience of the market, the present study examined the financial performance of the luxury market pre and post the financial crisis of 2007-08. The luxury market is scattered across the globe. So, the S&P Global Luxury Index was taken as a proxy of the market. It has 80 members from various countries; 2004-2013 data was collected from the Bloomberg database. Paired t -test was applied on all the measures, and the results were discussed. The results revealed that the tough time of recession proved to be difficult for the luxury market as a whole. The liquidity of the market in all the segments did not change significantly. Almost all sectors were hit by the downturn, but the textiles, apparel, & luxury goods sector proved to be the most profitable to entrepreneurs and to investors as well.

Keywords : **luxury market, financial crisis, financial performance, resilience**

JEL Classification: G01, G1, G320, O3

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Ever since the Great Depression, economists say that financial crisis of 2007-08 has been the longest and the most severe recession at the micro as well as at the macro level. In December 2008, a panel of economists announced the formal beginning and also the concluding phase of business cycle in NBER (National Bureau of Economic Research). Besides, they also disclosed that the U.S. economy entered in a recession in December 2007. What actually led to this slowdown was the 25 year long unusual consumption of credit, which impelled people to buy what they called 'luxury'. A renowned scholar Sombart in his essay on the concept and nature of luxury (Sombart, 1992) explained luxury to be an expenditure that is beyond necessity.

By theory, it is believed that a crisis influences the financial performance of firms negatively. When a crisis starts, it starts hitting one to many industries. People at large begin to act conservatively on extravaganza, credit policies are tightened, and acquiring funds becomes a distant dream. During a financial crisis, for every organization, capital is very crucial, and credibility is decided by the financial performance. Financial performance certifies the financial capability to meet the obligations even after the operation ceases. A financial performance demonstrates the efficiency of the economic goal of an organization, compares the sources of funds, turnover, risk, and so forth with the returns.

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Literature Review

Claessens, Djankov, and Xu (2000) studied the sharp decline in the performance of East Asian corporations following the 1997 financial crisis. This article compared the growth and financing patterns of East Asian corporations in the years before the crisis with those in other countries. The study found little microeconomic evidence that corporate growth had weakened, but offered some support for the argument that many firms had a weak financial structure that left them vulnerable to an economic downturn. It appears that firm-specific weaknesses already in existence before the crisis were important factors in the deteriorating performance of the corporate sector.

Sur, Chakraborthy, and Das (2007) conducted a study on measuring the efficiency of asset management of private sector enterprises in India during the pre and post liberalization periods. It was concluded that the efficiency of inventory management was achieved in the post- liberalization period. The average efficiency of cash management and the average turnover of fixed assets declined considerably in the post-liberalization period, signifying that the selected companies failed to adapt themselves to the liberalized and competitive environment.

Wilson and Eilertsen (2010) performed a survey study on how strategic planning affected company performance during the economic crisis of 2007-2009. The survey revealed that the sample reacted very differently as 49% of the companies took defensive actions, while 51% actually continued to invest in growth. The different reactions affected profitability differently, but in general, the decline in profitability ratios was not as steep as in revenues, suggesting that the reactions taken improved profitability relative to sales.

Kapferer and Tabatoni (2010) claimed that although sales in the luxury sector are modest, luxury does get a high share of investors' and financial analysts' attention. The reason this sector receives a share of attention much bigger than its actual weight is because of the prestige attached to its major brands. The paper analyzed luxury companies' key financial performance indicators over other sectors to assess the validity of the sector's attractiveness among the investors. The findings about the luxury industry were that luxury groups enjoyed clearly superior valuation multiples which could not be justified on the basis of shareholders' expectations in terms of growth and profitability.

Lopez, Monroy, and Cervino (2011) studied the performance of several hundred SMEs during the worst stages of the financial crisis (2008-2009). The authors reported a significant decline in profitability (gross operating profit and EBITDA) as a result of a sharp decrease in revenues due to falling demand. Furthermore, Lopez et al. (2011) argued that the fall in profitability was also higher in terms of return on equity as prior to the crisis, a large proportion of the sample had levered their balance sheets. Thus, despite the gradual reductions in the interest rates going through the crisis, the increase in financial costs explained part of the decline in ROE.

Marques, Gonzales, Cruz, and Ferreira (2011) argued that the effects of the downsizing did not bear fruits as expected as they did not find evidence of improved performance after downsizing by using measures of ROA and profit margins. Their findings suggested that during a steep crisis such as the recent one, downsizing did not add to the companies' long-term profitability rates.

Wilson, Wright, Siegel, and Scholes (2012) studied the operating performance of private equity backed companies during recessionary times. The authors discovered significant differences in terms of profitability during crises. The active private owners were able to create better operating efficiency and profitability than their public peers. In addition, profitability of these companies - both when measured with ROA and profit margins - remained clearly higher than the peer groups.

Singh, Jain, and Yadav (2013) studied the profitability of the 166 non-financial companies of the BSE 200 index with particular emphasis on a pre- and post-recession analysis (2001-2011) with an attempt to link the profitability with the liquidity of the sample firms. Profitability of sample companies (measured through gross profit and net profit), prima-facie, appeared to be stable and attractive (as an investment choice). Though the recession did witness some fluctuations in the profitability of certain constituent sectors, overall, the sample

seemed to have emerged intact from the impact of the recession, perhaps due to its strong financial fundamentals.

Saji, Harikumar, and Kasim (2013) revealed that India did not face a full - blown recession, but only experienced an economic deceleration- a temporary phenomenon. Analysis of the financial parameters of corporate India revealed intrasectoral differences among them in respect of their financial fundamentals during the period of crisis, which could be attributed to many factors. The banking sector found an opportunity for growth in crisis. The automobile and construction sector were hit most adversely by the crisis due to their high capital intensive nature and stringent measures taken by the lending institutions by cutting back of credit to individuals. The IT industry is more exposed to the U.S. and European markets; hence, the financial crisis in these advanced economies affected the export earnings of this sector. Domestic market orientation and not being very capital-intensive were among the factors that insulated the FMCG sector from the downturn. The degree of shock exerted by the global financial turmoil on the performance of the Indian corporate sector was also not the same. While some companies under a particular sector were severely hit by the crisis, fundamentally strong companies could unshackle themselves from it.

The Luxury Goods Worldwide Market Study 2012 by Bain & Company (2011) pointed to a continuation of the core market trends that created a sharp recovery of the luxury sector during the 2008-09 recession. Growth of online sales, rapid expansion in China, and a shift from wholesale to direct-owned retail remained factors to watch.

After thoroughly reviewing the mentioned literature on financial performance, it is observed that several studies have covered the profitability of the industries, few have covered the liquidity aspect, and the rest have taken care of examining the operating performance. Not many comprehensive studies have yet been conducted in the field of financial performance of pre and post 2008 crisis and that too in the luxury sector. Hence, the present study endeavors to fill this research gap.

Objectives of the Study

The study is intended to focus on the financial performance of the luxury market and how it has been affected due to the advent of the financial crisis of 2007-08. The following are the research objectives:

- To study the impact of the financial crisis of 2007-08 on the financial performance of the firms in the luxury market.
- To study the impact of the financial crisis of 2007-08 on the market measures of the firms in the luxury market.
- To analyze the sector wise performance of the luxury firms.
- To list the sectors of the luxury market that proved to be resilient to the crisis.

Hypotheses

The study revolves around the following hypotheses :

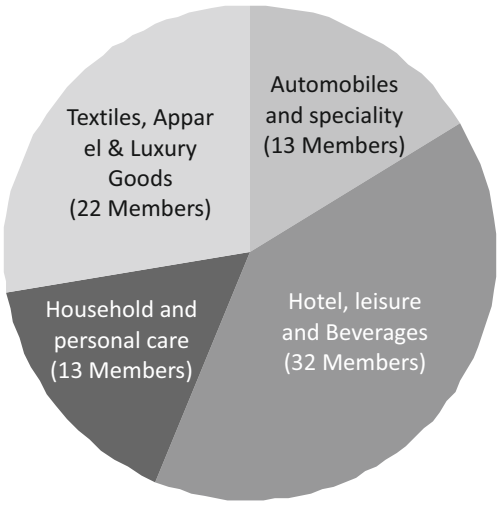
(1) H1 : There is no significant difference in the liquidity of the firms in the luxury market pre and post financial crisis of 2007-08.

(2) H2 : There is no significant difference in the operating performance of the firms in the luxury market pre and post financial crisis of 2007-08.

(3) H3 : There is no significant difference in the profitability of the firms in the luxury market pre and post financial crisis of 2007-08.

(4) H4 : There is no significant difference in the market measures of the firms in the luxury market pre and post financial crisis of 2007-08.

Figure 1. Composition of Data (80 Members)



Data and Methodology

The data collected for the study is of secondary nature. The final sample comprises of the members of S&P global luxury index collected from the Bloomberg database for calendar years 2004-2013. The S&P Global Luxury Index (80 companies; Figure 1) comprises of the largest publicly traded companies engaged in the production or distribution of luxury goods or the provision of luxury services. The annual data is gathered as on the last day of the calendar year, that is, December 31, except for market capitalization and price earnings ratio, which are quarterly reported.

The observations were collected for 80 companies - 10 accounting ratios for 10 years are 8,000 (80 x 10 x 10), and for market measures of 80 companies, two measures (Market cap and PE ratio), quarterly for 10 years are 6,400 (80 x 2 x 4 x 10). In total , 14,400 observations were looked into for the study. After eliminating missing values and extreme values, the actual observations are 10,521. The data is clubbed into four sectors as indicated in the Figure 1, namely automobiles and specialty (13 members) ; hotels, leisure, and beverages (32 members) ; household and personal care (13 members) ; and textiles, apparel, & luxury goods (22 members) on the basis of similar principal business operations. The structural break was calculated from the value of S&P 500, which suggested that the markets confronted a slow down during February 2007 and August 2008. So, the pre crisis phase covered the observations from 2004 to 2006 (3 years), and the post crisis phase has years between 2009 and 2013 (5 years). Paired *t*-test was applied on the entire series and also on four different sectors on the arithmetic mean of the two phases to test if the variables showed any significant changes overtime. The two tailed paired *t*-test was conducted to evaluate the observations of means from two related samples. Here the two samples are : the pre crisis phase and the post crisis phase. The software used for data processing is SPSS.

↳ **Variables Used :** After reviewing the literature, 12 variables elaborated in the Table 1 are considered. In order to study the financial performance of the luxury market as a whole as well as sector wise, the variables are categorized into accounting measures and the market measures in this research. Ten accounting ratios (liquidity ratio, efficiency or activity ratio, solvency ratio, and profitability ratio) and two market measures (market capitalization and PE ratio) are discussed. The ratios short listed for the study are :

(i) Liquidity : Quick ratio (QR) and current ratio (CR).

Table 1. Definitions and the Formulae for the Ratios

Ratios	Descriptions
LIQUIDITY	Examines a firm's ability to meet short-term obligations
Quick ratio LA/CL	Liquid Assets = Cash + Cash equivalents +ST Marketable Securities +Accounts Receivable. Current liability =Accounts Payable +ST Borrowings +Other ST Liabilities.
Current ratio CA/CL	Current Assets = Liquid Assets + Inventories+ Prepaid expenses + deferred income taxes. Current liability =Accounts Payable +ST Borrowings +Other ST Liabilities.
EFFICIENCY	Activity ratios/ operating efficiency ratio. They indicate the ongoing operational performance of the firm.
Collection period (AR/Credit sales)x 365	Collection period indicates the effectiveness of a debt collection routine. The collection period is the number of days between the date that a credit sale is made, and the date that the money is received from the customer.
Inventory turnover Sales/Av. Inv	Sales =Total of operating revenues less adjustments (Returns, discounts, allowances, excise taxes, insurance charges, sales taxes, and VAT) to Gross Sales. Inventory includes raw materials, work in progress, finished goods. This ratio looks at how quickly you turn over stock into sales. Higher the better.
Asset Turnover Sales/Total Asset	Assets =The total of all short and long-term assets as reported on the Balance Sheet.
Working capital turnover Sales/Net WC	Net working capital =Current assets -current liabilities.
SOLVENCY	Examines a firm's ability to meet long-term obligations
Debt Equity	LT Borrowings divided by Total Shareholder's Equity
PROFITABILITY	Explains the efficiency with which the economic activity is performed.
Net profit ratio Net profit /Sales	NPR, in percentage is an indicator of how profitable a company is relative to its sales.
Return on assets Net profit /Total asset	ROA, in percentage gives an idea as to how efficient management is at using its assets to generate earnings.
Return on Equity Net profit/ No. of o/s shares	ROE, in percentage shows the return earned on every share by the shareholders.

(ii) Efficiency : Collection period (CP), inventory turnover (IT), asset turnover (AT), and working capital turnover (WCT).

(iii) Solvency : Debt equity (DE).

(iv) Profitability : Net profit ratio (NPR), return on assets (ROA), and return on equity .

Analysis and Results

By theory, a financial crisis is known to make the organizations comparatively slower in terms of manufacturing owing to the slowed down demand of the market. People do turn conservative to spend, and they do not wish to spend as far as avoidable expenses are concerned. Their expenses tend to get postponed in this regard. This financial crisis witnessed the fall of numerous companies that were once considered to be too big to fail. However, the executives of the luxury market firms continuously reported about the efficiency and the perpetuity of the sector. They also said that the high end goods market (Table 2) fails to follow this concept of recession and retarded sales blindly.

Table 2. Results of the *t*- test with Mean Values, *p*- values of the Whole Market

Ratio	Mean	*p* - value
QR_Pre#	1.1562	.947
QR_Post#	1.1629	
CR_Pre	2.0531	.264
CR_Post	2.1189	
CP_Pre	36.4521	.266
CP_Post	34.3501	
IT_Pre	14.7389	.840
IT_Post	14.1295	
AT_Pre	1.0601	.116
AT_Post	.9952	
WCT_Pre	4.3375	.482
WCT_Post	5.2417	
DE_Pre	.4307	.255
DE_Post	.4942	
ROA_Pre*	9.0983	.018*
ROA_Post*	7.4412	
NPR_Pre**	15.8810	.053**
NPR_Post**	9.2932	
ROE_Pre	17.9981	.150
ROE_Post	15.7517	
MC_Pre*	7266017302.7898	.008*
MC_Post*	9963798330.3531	
PE_Pre	24.2153	.678
PE_Post	23.1567	

*Indicates significance at 0.05 and**Indicates significance at 0.10
#QR_Pre and QR_Post denotes the mean value of Quick Ratio pre financial crisis and post financial crisis, respectively, and so on as abbreviated in the Methodology section

(1) Accounting Measures : So as to ascertain the liquidity of the luxury market, quick ratio and current ratio are considered based on the literature review. Ceteris paribus, an investor prefers liquidity. By liquidity, we mean the degree with which the current liability can be met with quick and current assets. It explains the ease of marketability of the financial asset without making losses. The quick ratio and the current ratio are believed to be ideal if these are 1:1 and 2:1, respectively. Pomerleano (1998) insisted upon current ratio as a good measure to study the financial fragility of a firm. Investors and entrepreneurs prefer to have higher liquidity to keep the trading cycle in action. Liquidity is worst hit with the financial downturn of any company, but in case of the luxury market, no impact is evident on the liquidity ratios in the post crisis era. The two proportions seem to have similar mean values, and the difference between the phases is merely owing to the sampling error.

Business operations of entities are in general delayed during a financial meltdown. However, the luxury sector has a different story to narrate. The top level executives employed in this sector claimed to have that market segment as a consumer who is not affected by any slowdown, even in the developed economies. The collection period (in days) shows that it fell down from the firms' point of view, although not significantly, that is, from 36.4521 days to 34.3501 days. It may not suggest that the debtors were being liberal to pay; rather, it signifies that

the firms were paying attention to the credit policies and may be tightening them. Even if the mean values of the inventory turnover ratio and asset turnover ratio have diminished in the phase two, the difference shown is not statistical in the two sections. It indicates that a slight dip is observed in the sales that actually brought down the majority of the financial ratios of the luxe market.

The solvency ratio is ascertained to have the insights about a company's ability to meet its long term debts. It also assesses the likelihood of an organization to meet its debt obligations. Here, the debt equity ratio is regarded as the solvency ratio. The ideal value of the DE ratio is considered to be 2:1. The debt equity ratio is also a measure of financial leverage. It depicts the financial risk associated with a firm. It makes it easy to keep an eye on an organization from the bankruptcy point of view. In this study, although the DE ratio has been pushed up in the post-crisis phase, which indicates that hard times find it difficult to get an equal amount of equity issued in pace with the long term debt. But statistically, the mean values are not significantly different. It implies that financial leverage and financial risk are almost unchanged.

Moving towards the profitability of the whole market, which is also one of the key measures to assess the financial health of the industry, higher profitability of firms always fetches competitors. For any industrialist who is to begin a new business, what he/she seeks for his/her own interest is profitability. Harvey and Roper (1999) reported a statistical decline in return on equity prior to the Asian economic crisis. Claessens et al. (2000) pointed out towards significantly falling return on assets prior to the Asian crisis. Hence, on the profitability front, this market is not able to sustain even the previous levels of profit percentage.

Overall, for the luxury market, parallel liquidity, dipped sales, falling profitability, and the debt equity ratio are found to be increasing slightly. Hence, a sector wise study would lead to a better evaluation of the market.

(2) Market Measures : Besides the financial ratios, the market measures are tapped in the market capitalization and the price earnings ratio. The market cap is considered to be a better technique to value a company, especially when the asset side comprises of more of intangible assets. In the luxury market, what makes the products so unique is the skill of the workforce engaged in it. So, the market cap is apt for the study. It is the product of the current market price and the outstanding number of shares. The share price reveals the investors' expectations regarding a company's earnings. Investors in the stock market bid higher prices for the companies with growing earnings. The total market capitalization is price times the number of outstanding shares. The market cap in the two phases is significantly different. The market cap has gone up in the post crisis era, which is a sign of the growing phase of the industry. Big sized organizations are less prone to macro economic factors and they may not be uprooted easily with the threat of a financial meltdown. The smaller organizations are escorted with more of growth potential and even higher risk and vice versa.

Any investor tries to locate the PE multiple prior to bidding for a share. The price earnings ratio is actually a measure of the earnings growth. The most common measures of accounting returns used in studies of this question are simply earnings per share (EPS) or price/earnings (P/E) ratios. Bowman and Haire (1975) etc. all used EPS, P/E ratios, or some algebraic variation of them, and when the PE ratio is high, it implies that higher future earnings are expected than the current earnings. The PE ratio prices depict earnings growth.

The PER for S&P 500 & Dow Jones ranged between 7 to 10 during mid 1970s, and turned out to be over 20 in 1990s, and was found to be 33 in 2000, which is often called as a stock market bubble. In the sample for this study, the mean PE value in the first phase is 24.2153, and in the second phase, the value is 23.1567. It refers to the future performance potential of the entire market in a positive direction for the potential investors where they can be the buyer of the shares today and sell the same at later stages. In the phase two, investors demand for higher earnings for each dollar of the share price they are willing to pay. Even in this segment, the financers felt the burn of the recent crisis in the prices and the increased volatility. Hence, hypotheses H1 and H2 are accepted, and hypotheses H3 and H4 are rejected.

Table 3. Results of the Sector-wise *t*- test with Mean Values and *p* -Values

	Automobiles and specialty sector		Hotel, leisure, and beverages sector		Household and personal care sector		Textiles, apparel & luxury goods sector	
Ratio	**Mean**	***p*-value**	**Mean**	***p*-value**	**Mean**	***p*-value**	**Mean**	***p*-value**
QR_Pre	0.9347	.480	1.2003	.643	1.0117	.106	1.3198	.941
QR_Post	1.0510		1.0811		1.1904		1.3137	
CR_Pre	2.3971	.438	1.6281	.850	1.8949	.378	2.4602	.583
CR_Post	2.5243		1.6462		1.9955		2.5278	
CP_Pre	17.3914	.155	32.2186	.790	48.0363	.805	44.0154*	.005*
CP_Post	21.2197		33.1661		46.6608		35.3257*	
IT_Pre	5.9434**	.077**	34.5899	.907	3.9382	.957	2.7750	.492
IT_Post	4.6777**		33.5565		3.9555		2.6673	
AT_Pre	1.5638*	.010*	.7641	.810	1.2732	.225	.9766	.672
AT_Post	1.2852*		.7435		1.1807		1.0015	
WCT_Pre	8.7417	.978	.7044**	.077**	4.8818	.793	5.9412	.350
WCT_Post	8.5533		4.6212**		5.2120		4.3977	
DE_Pre	.4989	.327	.4831	.174	.5137	.917	.2760	.665
DE_Post	.7284		.5745		.5319		.2478	
ROA_Pre	10.4188	.159	7.2075	.131	9.3420**	.082**	10.4398	.411
ROA_Post	7.6601		5.3481		5.6786**		11.0408	
NPR_Pre	7.1430	.836	30.4657**	.074**	7.3049**	.094**	10.7741	.913
NPR_Post	6.7369		12.1520**		4.6639**		10.8695	
ROE_Pre	21.4188	.309	16.1988	.237	18.5850	.270	17.7479	.416
ROE_Post	17.2243		13.1127		13.2289		19.6189	
MC_Pre	14129667178	.400	5975188568	.239	3815933405.0833	.407	8150265030.9091*	.006*
MC_Post	16127481591		8683100274		4530580182.5667		13503954395.3091*	
PE_Pre	18.1980	.502	31.9812	.472	22.5700	.485	19.5400	.938
PE_Post	16.5986		27.0212		25.6331		19.3439	

*Indicates significance at 0.05 and **Indicates significance at 0.10

To study the market segment wise, the whole market is divided into the following four sections:

(i) Automobiles and Specialty : As far as the automobiles section is concerned, there are no issues relocating to liquidity as even after the hard times of the crisis, it has proved to be better on the parameters of quick ratio and current ratio, although the liquidity is not found to be significantly different. It seems that the luxury vehicles went comparatively slow on the mean activity ratios and the companies could not efficiently turn the inventories into sales. The probable reason behind this performance is not just the financial crunch, but also the 2008 oil price shock which made oil $140/barrel, an all time high that impelled the consumers to resist the purchase of automotives.

While the financial ratios did not fall significantly, the impact of the financial crunch is not found statistically on any of the ratios of this sector. The results show that the industry is quite similar to the pre crisis era. On making the payments, even the debtors slowed down slightly and the change was not statistically significant. This shows that during a financial crisis, the consumers are comparatively reluctant to spend on this asset. Market capitalization did not change significantly and the PE ratio has fallen, showing a better potential for the investors. The PE collapsed for this sector, mainly because the bubble burst in the market and excessive growth reduced and came back to normal.

(ii) Hotels, Leisure, and Beverages : Current assets and quick assets are sufficient enough in the section to maintain the current liabilities at an optimum level. The sales slowed down in proportion to the inventory and assets but have been efficient when scaled against the working capital. Since the market cap and debt equity ratio are rising overtime and the PE ratio is falling down, it can be concluded that the sector issued equity as well as long term debt to meet the capital requirements. For this sector, it can be concluded that the people were willing to spend on beverages even when the economy slows down. The statistical change in the NPR overtime indicates that the sectoral companies might have attempted to fetch more sales proceeds by promotional tools that has also cut short their profits. The Table 3 illustrates that the declined PE ratio is a sign of higher current earnings than the potential future earnings.

The credit period of the debtors declined in the final phase indicates towards the stringent credit policy of the companies. The short term liabilities are smoothly paid off by the companies. Not much impact has been seen in the performance of the firms and the credit policies are almost unchanged. The gainful aspect of this division is showing a positive trend. The investors are optimistic for the prospective earnings in the future.

(iii) Household and Personal Care : As soon as the bad news of the crisis poured in, the household and personal care sector made its credit policies even more rigid, which is prominently reflected in the collection period. For funds, firms rely more on debt. Besides the jump in the market cap, the DE ratio has shown a positive graph ; it points out that the companies went for shrinking the outstanding equity in proportion to debt. The profitability did not statistically change with the recession. During the recession phase, liquidity ratios may become more favorable as liquid assets increase in relation to total assets, and a firm tries to become more solvent. The liquidity is almost the same for this sector with respect to the pre and post crisis period as mentioned in the Table 3. The debtors did not show any slow down.

On the other hand, to visit this variable with respect to the collection period, the clients who were paying off their bills over a long period of time ceased to buying the same. But this is not true as the efficiency ratios, which also measure firm productivity, say that the inventory is converted into the sales at almost the same pace. A similar story is being narrated by other activity ratios. The profitability of this slice dipped down, which reveals that a sustainable level of operating ratios was deliberately maintained by the companies, even at the cost of profitability. That is why the ROA and the NPR have stepped down overtime by rolling the mark up margins. Whenever the exuberance is excessive in the market and PE makes an all time high, the PE starts falling soon after the bubble bursts. But as the multiple is not actually coming down, rather is on an upside trend, the peak prices are yet to be achieved. It might fetch a good return for the existing investors. A high P/E ratio is normally a sign that price has become higher than it should. Investors know that low earnings, even if accompanied by a little drop in price, makes the stock eye-catching to buy on the conjecture that these earnings will recover in the times to come.

(iv) Textiles, Apparel, & Luxury Goods : Louis Vuitton Moet Hennessy, the French luxury-goods conglomerate reported in 2008 that their jewelery division faltered, and sales of watches, wines, and spirits fell. Consumers have less of a taste for quality in the downturn. "There are four main elements to our business model - product, distribution, communication, and price," explained an executive at LVMH, the world's largest luxury-goods group. "Our job is to do such a fantastic job on the first three that people forget all about the fourth."

Liquidity position is all about how equipped is the concern in meeting its short-term obligations with short-term assets. A higher figure signals that the company's day-to-day operations will not get affected by working capital issues. A liquidity ratio of less than the ideal one is a matter of serious concern. Sometimes, companies find it difficult to convert inventory into sales or receivables into cash. This may hit its ability to meet obligations. In such a case, the investor may estimate the liquidity ratio. It has hardly shown any drift ; relatively, the probability value of QR and CR came out to be .941 and .583, respectively. It seems that the phase two also could not spot any statistical change in these ratios.

Table 4. Comparisons of the Present Study with Similar Past Studies

Authors	Studied	Results
Claessens, Djankov, and Xu (2000)	Performance of East Asian corporations following the 1997 financial crisis.	Sharp decline in the performance.
Sur et. al. (2007)	Efficiency of asset management of private enterprises in India during the pre -post liberalization.	Average efficiency of the average turnover of fixed assets declined considerably post-liberalization.
Wilson & Eilertsen (2010)	Strategic planning affected the company performance during the economic crisis of 2007-2009.	Decline in profitability ratios.
Kapferer and Tabatoni (2010)	Analyzed luxury companies' key financial performance indicators over other sectors to assess the validity of the sector's attractiveness among investors.	Luxury groups enjoy superior valuation multiples which could not be justified on the basis of shareholders' expectations in terms growth and profitability.
Lopez et al. (2011)	Studied the performance of SMEs during the worst stages of the financial crisis (2008-2009).	Significant decline in profitability (gross operating profit and EBITDA) due to falling demand.
Marques et al. (2011)	Downsizing adds to the companies' LT profitability.	During a steep crisis, downsizing does not add to the companies' LT profitability.
Gonchar (2013)	Impact of 2008-2009 crises on Russian manufacturing firms.	All manufacturing firms were affected by the 2008-2009 crises.
Singh et al. (2013)	Studied the profitability of the BSE 200 index with particular emphasis on a pre- and post-recession analysis.	Indian companies have emerged intact from the impact of the recession.
Saji et al. (2013)	Financial parameters of corporate India during the period of crisis.	The degree of shock exerted by the global financial turmoil on the performance of the Indian corporate sector was also not the same.
Jain & Bothra (2016)- (current study)	Financial performance of the luxury market before and after the financial crisis 2007-08.	Luxury textiles and apparels are the only head under the luxury market to be resilient to the downturn.

On the operating performance front, the collection period, that is the time period between the sales and the cash realization, went down from 44.0154 days to 35.3257 days after the crisis. However, the inventory turnover ratio claims that the industry is somehow more efficient in converting its inventory into sales despite the slowdown in comparison to its other counterpart sectors. The profitability ratios say it is a lucrative slice of the market. For capital, organizations went in for issuing capital as shares as well as debt. In proportion, the luxury textiles and apparels issued more of shares over the long term borrowings. Market capitalization is also observed to have made a significant jump in the sector. The rise is a sheer indicator that either fresh capital issues have been made or the market prices of the shares have increased. Both these sides with a similar level of PE ratio and the same level of profitability ratios is either a measure of lower risk or a measure of high returns in the future.

The studies conducted by Claessens, Djankov, and Colin (2000), Sur et al. (2007), Wilson and Eilertsen (2010), and Lopez et al. (2011) as also discussed in the Table 4 showed a negative impact of the crisis on liquidity, profitability, and operational performance of the firms. Marques et al. (2011) reported that the impact of recession was so severe that even downsizing could not help during the crisis to maintain a sustainable profitability in the long run. Kapferer and Tabatoni (2010) ; Singh, Jain, and Yadav (2013) ; and Saji, Harikumar, and Kasim (2013) statistically concluded that the downward phase of the globe could not impact the luxury market and the Indian corporate sector to that extreme extent. The conclusions drawn in our study cannot be put in a watertight compartment of negative impact or resilient to the crisis. There is no significant difference in the liquidity and operating performance of the firms in the luxury market during the pre and post financial crisis of 2007-08. But the profitability and the market measures of the firms witnessed a negative impact of the crisis of 2007-08.

(3) Du Pont Analysis : The DuPont analysis is a comprehensive analysis of a company's ROE. It locates that a return on equity is earned by which of the following sources: high net profit margin or efficiently using assets to generate more sales or has a high financial leverage. The following is the formula to segregate the impact of the ROE out of the three ways:

Return on Equity = Net Profit Margin × Asset Turnover × Financial Leverage

$$= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Total Equity}}$$

The DuPont equation provides a fair picture of the return a company is earning on its equity. It tells where a company's strength lies and where there is a room for improvement. For the analysis, the three-factor analysis is taken into account. The data of 80 luxury companies shows that the sinking ROE is due to a decline in the asset turnover ratio, a significant fall in the NPR, and also because of the mounting financial leverage. The first three sections were not very fruitful when measured on ROE. The automobiles and specialty sector observed that the collapse in the ROE is suitably pointing towards the inefficiency in the assets and the rest two factors chased the same market trend, but the results were not statistically proved.

Hotels, leisure, and beverages segment could spot the slowdown in the ROE mainly because of the negative returns on sales. The household and personal care sector also saw diminishing returns on equity due to similar reasons. It is only the textiles, apparel, & luxury goods sector that has contributed to the ROE in the entire market. Although all the three - NPR, asset efficiency, and financial leverage have played an equally important role, but nothing could be proved to be statistically different. The entire market is low on profitability. Elaborating the explanation sector wise, the hotels, leisure, and beverages segment and household and personal care sector have blindly followed the same. The automobiles and specialty sector, which has more of fixed assets to incur, could sustain the asset turnover ratio and ,therefore, the ROE went down as well.

Conclusion and Suggestions

For sure, the luxury market also experienced some of the impacts of the financial crisis. Besides, the collection period of the automobiles and specialty and hotels, leisure, and beverages sectors is highlighting the delayed payments made by the debtors, and none can deny that the liquidity was kept intact. The luxury market as a whole may not be generalized to be recession proof. The results confirm that the sector - luxury textiles, apparel, & luxury goods is the only sector which came out to be corporate resilient and was also not affected by the ill winds of the economic recession.

These findings also suggest that the luxe market could not make luxurious margins, with the exception of few sectors. The socio cultural aspecta play a crucial role in the goods demanded by the people. In less-developed countries, even today, the traditional and ethnic apparels and accessories are preferred over the branded goods. The companies should discover these avenues as well. Secondly, when one country confronts any crisis, companies can also play safe if they have diversified their operations across the globe. Thirdly, every country has some events where enormous unavoidable expenses are made, this might be any festive season, or weddings, or hosting any games, and so forth. These areas can be deciphered so as to maintain the continuity in the demand. Fourthly, whenever companies plan to expand their businesses beyond the national territory, the workforce employed should be domestic so that the local preferences of the denizens can be studied as it is a long learning process.

Implications

The study has predominantly focused on the financial performance of the luxury sector and the withstanding power of the whole industry as well as the sectoral division of the same. The research has implications for the following entities:

(1) Entrepreneurs : There have been reasons which make entrepreneurs think that the luxury sector has a very high mark up, is always profitable, and is indifferent to economic shocks. However, this may not always be true.

(2) Investors : The findings have tried to highlight the return on equity, profitability, financial risk, market cap, and PE ratio for the pre and post financial crisis period. Although existing and potential shareholders posses different interests, each one of them can decide which sector can fetch them higher returns over the rest.

(3) Management: The managers need to decide the prospects of the concern they are dealing into. They can also incorporate other factors which can also contribute to a handsome degree of turnover ratios. They may also learn the demographic reasons for the success or failure of a sector.

(4) Researchers and Academicians : The researchers who are keen to study the luxury sector can always go through the financial aspect of the industry and can even link it to the non financial performance as well.

Limitations of the Study and Scope for Further Research

The study has considered data from S&P Global Luxury Index but could also examine the unlisted companies in the luxury market which could witness slight deviations in findings from the given results. The country-specific data of the companies is found to be limited in number, so the conclusions could be subjective to every country.

The study has merely focused on the financial performance of the luxury sector, so future research can carried out to highlight the non financial performance of the same. A similar study on the corporate performance of the luxury companies can be conducted country wise since the present study has only classified the market on the basis of the principle business. The financial performance of the small scale, medium scale, and unlisted companies can also be a part of future studies. The leverage of the luxury sector can still be studied with respect to profitability.

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Performance of the Indian Banking Industry : A Comparison of Public and Private Sector Banks

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Abstract

The paper sought to analyze the performance of the banking industry in India on the basis of established financial parameters. By using the purposive sampling technique, 46 scheduled commercial banks were studied and the business standard banking annual database was explored to collect the relevant information. Both public and private sector banks were included in the sample and analyzed on the basis of four parameters (size, growth, profitability, and soundness) segregated into 11 financial performance indicators. The findings highlighted that public and private sector banks were not very much different in terms of size and growth parameters. However, significant differences were found in terms of profitability and soundness of business, indicating robust growth prospects for private sector banks. The study represented a pioneering and seminal attempt to provide a number of implications for policy makers, budding researchers, and professionals.

Keywords : **performance, banking industry, private banks, public sector banks**

JEL Classification: A1, G21, G18, M00

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After a sustained downturn, the Indian economy is moving towards a new direction of development and growth. With this dawn, the financial system of India is also witnessing startling changes, especially in the financial institutions. The Indian financial system has four pillars : these are financial institutions, the financial market, financial instruments, and regulatory bodies. Among all, the banking industry is one the most integral part of the Indian financial system. For an economy, the banking sector just acts as a mirror by which the financial health of that country can be predicted, and India is no exception (Kamath, Nayak, & Ravichandran, 2003). In India, the public sector banks account for more than 70% of the assets of the total banking industry. Thus, their performance and outcomes have a major impact on the financial health of our country.

Due to globalization and deregulatory forces, the competitive structure of the banking industry has undergone tremendous changes (Mohapatra, Sahoo, & Kesharwani, 2015 ; Uppal & Khanna, 2015). Changes in terms of customer demand, technology, culture, demographic shift, and so forth are imposing new challenges for every business organization, and not only the banking industry. Analyzing this change, Kumar and Singh (2013) opined that customers seek and demand world class products as in today's global market, everything is benchmarked and compared. In line with these changes, the public sector banks need to modify as well as restructure themselves in order to adopt and inculcate a new air of competition for providing the best value to their customers. With the opening up of the economy, the private sector banks are endeavoring to mark their footprint on the Indian banking industry; whereas, in the shadow of government protection, the public sector bank are enjoying their credibility since long and are now losing their ground due to inefficiency and traditional approach of business.

Various studies have confirmed that the private sector and foreign banks have a better performance as compared

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to the public sector banks (Business Standard, 2014 ; D'Souza, 2002 ; Jadhao, 2010 ; Selvaraj, 2009 ; Srivastava & Purang, 2009). Keeping this notion as a pivotal point, the present study tries to compare the private and public sector banks in terms of their performance.

This study is important in the Indian scenario because of various reasons. First, accounting for more than 70% of the assets, the public sector banks have a significant impact on the well developed financial system of India as well as its growth prospects (Das, Ashok, & Ray, 2004 ; Gupta, Yogesh, & Aneesh, 2008). Second, to analyze the differences in performance in the ambience of upcoming banking reforms becomes imperative so that a new direction for public sector banks can be paved (Makkar & Singh, 2013). Thus, the present paper is an attempt to compare the public and private sector banks in term established performance indicators.

Literature Review

The service sector is one the dominant sectors for global as well as the Indian context, and financial services are one the most important segment of the service sector. Therefore, the role of the banking industry cannot be taken for granted in a developing economy like India. Even before privatization and liberalization, the banking system was the backbone of the Indian economy (Milind, 2002). The Indian banking industry is one the most robust banking industries in the world. When we talk about the structure, Kamath (2009) defined the three tier system of the Indian banking industry :

(1) Scheduled commercial banks (public sector banks, private sector banks, foreign banks),
(2) Development banks (IFCI, IDBI, SIDBI, NABARD etc),
(3) Co-operative banks (State cooperative banks, centre cooperative banks, etc).

In the present scenario, India has a well developed banking industry that dates back to 1786, when the first bank was established, then the nationalization of banks happened in 1969, and recently, the liberalization of the banking industry happened in 1991. Traditionally, banking was related to only deposits and withdrawing for some nominal interest benefits, moreover, for lending, but now, the concept of banking has changed entirely. The span of banking has increased by many folds, and now, a bouquet of services are available as per customers' demands. Different types of accounts and loans, facilitating with plastic money, and money transfer across the globe are available. At one end, delivering a quality service at customers' demand has become an indispensable part of competitiveness (Gizaw & Pagidimarri, 2013 ; Kumar & Singh, 2013). On the other side, PSBs are at the verge of reforms in many policies related frameworks to sustain and maintain their position in a hyper competitive environment (D'Souza, 2002 ; Jadhao, 2010).

Due to the globalization and deregulation forces, the competitive structure of the banking industry has undergone tremendous changes (Arun & Turner, 2002 ; Ghosh, 2009 ; Reddy, 2005). Ghosh (2009) identified many major changes after 1991 as- lowering the statutory reserve requirement, liberalization of the interest rate regime, entry of foreign players, infusion of new competition, micro-prudential measurement (CAR, asset classification, income recognition, etc), diversification of ownership, strict mandatory disclosure, and so forth. Sensing the importance of the banking industry for a transitional economy like India, the government made it highly regulated (dual regulation) and amends the same from time to time (Ataullah, Cockerill, & Le, 2004 ; Milind, 2002). However, with the entrance of private and foreign players in the banking industry, demand for more autonomy is creeping in the public sector banks. Due to a hyper competitive market, state of art technology, innovation in services, new policies & philosophies by private sector banks, the public sector banks are lagging behind in competition (Business Standard, 2014; Selvaraj, 2009).

Many researchers have opined that governance related problems, political interference, a dual regulatory system, and so forth have imposed newer challenges for PSBs (Business Standard, 2014). With the changing

demographic shift, income levels, cultural convergence, technology dominated lifestyle, and other profound effects (Kamath et al, 2003; Srivastava & Purang, 2009), customers are also demanding customized, fast, and door step services. Private sector banks as well as foreign banks are providing a spectrum of services with added values in this realm. According to the *Annual Database of Top Banks in India* (Business Standard, 2014), foreign and private sector banks appear to lead the digital revolution in Indian banking, and are leveraging it with impact of high income, low cost, and reduction of NPAs relatively. Therefore, it becomes imperative for public sector banks to overcome their very problem of mis-management related to intellectual capital, policy issues, and focus on their core products with added mix of augmented services.

After analyzing the public sector banks, studies found that the basic three problems are debilitating the health and growth prospects of PSBs. These are:

(1) Problems/ issues related to governance as dual regulation, less autonomy, opaque appointment of top level executives, political interference, and so forth (Business Standard, 2014; Milind, 2002).

(2) Problem/ issues related to management of people as leadership gap, high attrition rate, inefficient training and development, cultural & ethical conflicts, and so forth (Kamath et al., 2003 ; Shukla, 2014 ; Srivastava & Purang, 2009).

(3) Problem/ issues related to management of funds as increasing level of non-performing assets, low capital adequacy ratio, and so forth (Kamath et al., 2003 ; Milind, 2002).

Many studies have identified that the Indian public sector banks are suffering from various problems related to management of risk and management of people. Being regulated by the supremacy of RBI and other regulatory bodies, individual public banks cannot take their own decisions related to policy matters and other strategic issues. So, it becomes imperative for authorities and policy makers to identify the thrust areas where changes are inevitable. However, mere changes and certain measures will not help if these are not properly aligned with the strategic needs of the banks.

Research Objectives

The study aims to accomplish the following objectives :

(1) Analyze the performance of the Indian banking industry.
(2) Compare the performance of public and private sector banks operating in India.
(3) Explore the future prospects for the Indian banking industry.

Research Hypotheses

In line with the above mentioned objectives, the working hypotheses of the present study are:

Difference in Terms of Size

↳ **H01:** There is no significant difference between domestic and foreign banks in terms of percentage change in total assets.

Difference in Terms of Growth

- **H02:** There is no significant difference between public and private sector banks in terms of percentage change in advances.
- **H03:** There is no significant difference between public and private sector banks in terms of percentage change in deposits.
- **H04:** There is no significant difference between public and private sector banks in terms of percentage change in total income.
- **H05:** There is no significant difference between public and private sector banks in terms of percentage change in interest income.

Difference in Terms of Profitability

- **H06 :** There is no significant difference between public and private sector banks in terms of percentage change in operating profit.
- **H07 :** There is no significant difference between public and private sector banks in terms of percentage change in net profit.

Difference in Terms of Soundness of Business

- **H08:** There is no significant difference between public and private sector banks in terms of NPA.
- **H09:** There is no significant difference between public and private sector banks in terms of CRAR.
- **H010:** There is no significant difference between public and private sector banks in terms of ROA.
- **H011:** There is no significant difference between public and private sector banks in terms of RONW.

Research Methodology

Quantitative research design has been used for the present study. Selection of banks was done on the basis of non probability (purposive sampling). A total of 46 scheduled commercial banks were selected (from the ranking of Business Standard's Annual Banking Database), in which 26 were public sector banks and 20 were private sector banks ($N = 46$). For the purpose of this study, secondary published database of Business Standard (2013, 2014) was explored to collect all the relevant information about the selected banks. A total four parameters have been used for analyzing the differences in performance. On the basis of established parameters, financial performance indicators used for analyzing performance are :

(1) Size : Percentage change in total assets (2013-14).

(2) Growth : (a) Percentage change in advances (2013-14) , (b) Percentage change in deposits (2013-14), (c) Percentage change in total income (2013-14), (d) Percentage change in interest income (2013-14).

(3) Profitability : (a) Percentage change in operating profit (2013-14), (b) Percentage change in net profit (2013-14).

(4) Soundness : (a) Nonperforming assets (NPA) of year 2014 (percentage), (b) Return on assets (ROA) of year 2014 (percentage), (c) Return on net worth (RONW) of year 2014 (percentage), (d) CRAR of year 2014 (percentage).

Instead of taking absolute values, percentage changes in indicators have been taken to remove the impact of bank size, experience, and other extraneous variables. SPSS 20 was used to analyze the data.

Analysis and Results

(1) Difference in Terms of Size : The Table 1 shows the change in total assets of the banks in the year 2014. It is seen that both public and private sector banks witnessed an increase in percentage change in total assets. Even the magnitude of change is also not significantly different in public as well as private sector banks. Non- parametric Mann Whitney test was performed because of not normal distribution of variable (K-S value : .121, Sig : .087) and test statistic (U = 294.00, Sig : .894) does not reject the null hypothesis H01 in terms of percentage change in total assets, indicating no significant differences. Although, wide range differences are found in terms of increment as minimum is 2.00 and maximum is 40.30. However, with the mean of 13.27, the Indian banking industry shows a satisfactory position, which can be ascertained from the Table 2.

(2) Difference in Terms of Growth : The Table 3 shows the growth rate of public and private sector banks and it is seen that public sector banks come in front position on all indicators as increase in advances (96.2% public sector bank as compared to 90% private sector banks), change in deposits (100% in case of public sector banks compared to 95% private sector banks), change in total income (100% in case of public sector banks compared to 95% private sector banks), and change in interest income (100% public sector banks compared to 95% private sector banks) can easily be figured out. Further analyzing the variables through Mann-Whitney test (for not normally distributed variables) and *t*-test (for normally distributed variables), it is seen that test statistics do not reject the null hypotheses in all cases (H02, H03, H04, H05) as H02 : percentage change in advances (U =230.00, Sig : .506), H03 : percentage change in total income (U = 201.00, Sig : .195), H04 : percentage change in interest income (U

Table 1. Type of the Bank * Change in Total Assets - Cross Tabulation

			Change in total asset	Total
			Increased	
Type of the bank	Public sector bank	Count	26	26
		% within Type of the bank	100.0%	100.0%
		% within Change in total asset	56.5%	56.5%
		% of Total	56.5%	56.5%
Private sector bank	Count		20	20
		% within Type of the bank	100.0%	100.0%
		% within Change in total asset	43.5%	43.5%
		% of Total	43.5%	43.5%
Total	Count		46	46
	% within Type of the bank		100.0%	100.0%
	% within Change in total asset		100.0%	100.0%
	% of Total		100.0%	100.0%

Table 2. Size of the Banks: Percentage Change in Total Assets (Descriptive Statistics)

			Statistic	Std. Error
Percentage change in total asset of the bank (2013-14)	Mean		13.2761	1.04553
	95% Confidence Interval for Mean	Lower Bound	11.1703	
		Upper Bound	15.3819	
	5% Trimmed Mean		12.7986	
	Median		12.4000	
	Variance		50.284	
	Std. Deviation		7.09113	
	Minimum		2.00	
	Maximum		40.30	
	Range		38.30	
	Interquartile Range		7.85	
	Skewness		1.319	.350
	Kurtosis		3.429	.688

Test Statistics

	Percentage change in total asset of the bank (2013-14)
Mann-Whitney U	254.000
Wilcoxon W	464.000
Z	-.133
Asymp. Sig. (2-tailed)	.894
Kolmogorov-Smirnov test value	.121
Df	46
Sig.	.087

a. Grouping Variable: Type of the bank

=182.00, Sig : .084), H05 : percentage change in deposits (*t*- test value = .333, Sig : .741) are not rejected, implying no significant difference between public and private sector banks in terms of growth indicators.

The descriptive statistics of Table 4 show that gap between lowest and highest values (Min-Max values = -4.60 to 5420, -.30 to 39.10, -4.00 to 60.30, -1.20 to 53.70) are more in all the indicators that implies greater discrepancies among banks in terms of growth rate. However, means (X_1=13.133, X_2=13.428, X_3=13.328, X_4=12.993) of all variables indicate poised growth collectively (Table 4).

(3) Difference in Terms of Profitability : Profitability of selected banks on the basis of net profit and operating profit is shown in the Table 5. It is seen that public sector banks are lagging behind the private sector banks in terms of both indicators. The data in the Table 5 depicts that 80% of the private banks showed an increase in operating profit compared to 61.5% of the public sector banks. On the other end, 75% of the private sector banks witnessed a positive change in their net profit, and only 19.2% of the public sector banks showed increased net profit.

Further analysis reveals that the null hypothesis H06 is rejected and there is a significant difference between public and private sector banks in terms of percentage change in net profit (Mann Whitney U = 154.00, Sig : .019). However, test statistics (b) (*t* - test value = -1.91, Sig : .062) do not reject the null hypothesis (H07) and conclude that there is no significant difference between public and private sector banks in terms of operating profit. Other descriptive statistics of Table 6 show that the net profit margin of all banks is negative (Mean X_1 = -9.88, Median = -11.00), and operating profit is also marginal in nature (Mean X_2 = 5.67, Median =3.300).

Table 3. Growth of Banks : Change in Advances, Deposits, Income, Interest Income

Cross Tabulation

			Change in advances		Total	Change in deposits of the bank		Total	Change in total Income of the bank		Total	Change in interest Income of the Bank		Total
			Increased	Decreased		Increased	Decreased		Increased	Decreased		Increased	Decreased	
Type of the bank	Public sector bank	Count	25	1	26	26	0	26	26	0	26	26	0	26
		% within Type of the bank	96.2%	3.8%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%
		% of Total	54.3%	2.2%	56.5%	56.5%	0.0%	56.5%	56.5%	0.0%	56.5%	56.5%	0.0%	56.5%
	Private sector bank	Count	18	2	20	19	1	20	19	1	20	19	1	20
		% within Type of the bank	90.0%	10.0%	100.0%	95.0%	5.0%	100.0%	95.0%	5.0%	100.0%	95.0%	5.0%	100.0%
		% of Total	39.1%	4.3%	43.5%	41.3%	2.2%	43.5%	41.3%	2.2%	43.5%	41.3%	2.2%	43.5%
Total		Count	43	3	46	45	1	46	45	1	46	45	1	46
		% within Type of the bank	93.5%	6.5%	100.0%	97.8%	2.2%	100.0%	97.8%	2.2%	100.0%	97.8%	2.2%	100.0%
		% of Total	93.5%	6.5%	100.0%	97.8%	2.2%	100.0%	97.8%	2.2%	100.0%	97.8%	2.2%	100.0%

Table 4. Growth of the Banks: Percentage Change in Advances, Deposits, Total Income, Interest of Banks

Descriptive statistics		Advances of the bank		Deposits of the banks		Total Income of the bank		Interest Income of the bank	
		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		13.133	1.449	13.428	1.139	13.328	1.307	12.993	1.181
95% Confidence	Lower Bound	10.215		11.134		10.696		10.614	
Interval for Mean	Upper Bound	16.050		15.722		15.960			15.373
5% Trimmed Mean		12.573		13.080		12.618		12.290	
Median		12.950		12.850		12.250		11.500	
Variance		96.53		59.67		78.54		64.21	
Std. Deviation		9.83		7.72		8.86		8.01	
Minimum		-4.60		-.30		-4.00		-1.20	
Maximum		54.20		39.10		60.30		53.70	
Range		58.80		39.40		64.30		54.90	
Interquartile Range		11.25		8.85		7.15		7.63	
Skewness		1.470	.35	.86	.35	3.28	.35	2.96	.35
Kurtosis		5.650	.69	1.51	.69	17.43	.69	14.32	.69

Test of Normality

	Advances of the bank	Deposits of the banks	Total Income of the bank	Interest Income of the bank
Kolmogorov-Smirnova	.144	.114	.165	.148
Df	46	46	46	46
Sig	.001*	.080	.000*	.000*

Test Statistics (a)

		Mean Rank	Sum of Ranks	Test	Value	Sig
Percentage change in	Public sector bank	22.35	581.00	Mann-Whitney U	230.00	.506
advances of the bank	Private sector bank	25.00	500.00			
Percentage change in	Public sector bank	21.25	552.50	Mann-Whitney U	201.50	.195
total Income of the bank	Private sector bank	26.43	528.50			
Percentage change in	Public sector bank	20.50	533.00	Mann-Whitney U	182.00	.084
interest Income of the Bank	Private sector bank	27.40	548.00			

Test Statistics (b)

		Value	Sig	T-test for equality of means	Value	Sig.
Deposits of the banks	Levene's Test (F) Value	.302	.585	Equality of means assumed	-.333	.741
				Equality of means not assumed	-.323	.748

Note: Values marked with * have significant influence

Table 5. Profitability of the Banks: Change in Operating Profit , Net Profit Cross Tabulation

			Change in operating profit of the bank		Total	Change in net profit of the bank		Total
			Increased	Decreased		Increased	Decreased	
Type of	Public	Count	16	10	26	5	21	26
the bank	sector	% within Type of the bank	61.5%	38.5%	100.0%	19.2%	80.8%	100.0%
	bank	% of Total	34.8%	21.7%	56.5%	10.9%	45.7%	56.5%
	Private	Count	16	4	20	15	5	20
	sector	% within Type of the bank	80.0%	20.0%	100.0%	75.0%	25.0%	100.0%
	bank	% of Total	34.8%	8.7%	43.5%	32.6%	10.9%	43.5%
Total		Count	32	14	46	20	26	46
		% within Type of the bank	69.6%	30.4%	100.0%	43.5%	56.5%	100.0%
		% of Total	69.6%	30.4%	100.0%	43.5%	56.5%	100.0%

(4) Difference in Terms of Soundness : The fourth parameter of comparison is soundness of business, and it can be inferred from the Table 7 that private sector banks were in a favourable position as compared to public sector banks. Increased ROA is found in 30% foreign banks as compared to 3.8% public sector banks, and increased RONW is shown by 3.8% public sector banks as compared to 25% private sector banks, respectively.

On the other side, the condition of the public sector banks is also pathetic in terms of NPA and CRAR ratio. The Table 8 shows that the CRAR of 2014 of 88.5% public sector banks decreased as compared to 65% in case of private sector banks. Large number of public sector banks also saw increased NPA, that is, 80.8% compared to private sector banks (where the figure is 75%). Sensing the importance of uncontrolled NPAs in the Indian banking sector, it can easily be remarked that this is one of the critical issues that is hampering the performance of the whole Indian banking industry.

The descriptive statistics show that the condition is not even very good for both public as well as private sector banks. Means of ROA (X_1=.80), RONW (X_2= 10.11) do not indicate soundness of business for all banks collectively. Lowering CRAR (Means X_3= 12.33) and increasing NPAs (X_4=1.96) are also making the condition out of control. However, the private sector banks are somewhere able to manage their NPA, CRAR issues, but the picture is not quite satisfactory. Test statistics (a) for H08 : ROA (Mann Whitney U = 97.50, Sig : .000), H09 : RONW (Mann-Whitney U =126.00, Sig : .003), H010 : CRAR (Mann-Whitney U = 81.00, Sig : .000), and test statistics (b) for H011 : NPA (t - test = 4.780, Sig : .000) also adduce the pathetic condition by rejecting the null hypotheses H08, H09, H010, and H011 and confirm that private sector banks significantly differ from public sector banks in terms of soundness of business (Table 9). Thus, according to this parameter, private sector banks have a better performance than the public sector banks, and can expect to have good future prospects and sound business as compare to their public sector counterparts.

Discussion

In line with the above mentioned objectives, the major findings of the present study in terms of stated parameters are: The study brings forth the fact that there is no difference between the public and private sector banks in terms of total assets acquisition and change in the same, as null hypotheses H01 to H06 are not rejected. However, the quality of assets and their deterioration varies between these two groups, as is indicated by rejection of null hypotheses - H07 to H011. According to Business Standard (2014), asset quality deterioration among public

Table 6. Profitability of the Banks: Percentage Change in Net Profit, Operating Profit (2013-14)

Descriptive statistics		Change in Net profit of the banks		Change in Operating profit	
		Statistic	Std. Error	Statistic	Std. Error
Mean		-9.8891	6.15827	5.6761	2.97861
95% Confidence	Lower Bound	-22.2925		-.3231	
Interval for Mean	Upper Bound	2.5143		11.6753	
5% Trimmed Mean	-10.4877		6.2614		
Median	-11.0000		3.3000		
Variance	1744.518		408.118		
Std. Deviation	41.76743		20.20194		
Minimum	-100.00		-88.20		
Maximum	144.30		49.00		
Range	244.30		137.20		
Interquartile Range	42.58		15.73		
Skewness	.555	.350	-1.742	.350	
Kurtosis	3.642	.688	10.047	.688	

Test of Normality

	Change in Net profit of the banks	Change in Operating profit
Kolmogorov-Smirnova	.123	.185
Df	46	46
Sig	.077	.000*

Test Statistics (a)

		Mean rank	Sum of rank	Test	ValueSig
Percentage change in	Public sector bank	19.42	505.00	Mann-Whitney U	154.00.019*
net profit of the banks	Private sector bank	28.8	576.00		

Test Statistics (b)

		Value	Sig.	T-test for equality of means	ValueSig
Percentage change	Levene's Test (F) Value	.462	.500	Equality of means assumed	-1.91.062
in operating profit				Equality of means not assumed	-2.00.051

(Note: Values marked with * have significant influence)

sector banks is one of the most important factors driving the negative outlook of India's banking sector. One of the surprising results of the present study is that in spite of being indifferent in terms of percentage change in total income, interest income, advances, deposits, operating profit, and so forth, the eventual performance indicators like net profit, ROA, RONW, and so forth differ significantly between both groups.

Due to the quality deterioration (high NPA, low CRAR etc), highest reporting of flat or lower profits are found in PSBs. Here, private sector banks lead the banking industry and their future prospects also support the robust growth rate with sound business. These finding somewhere adduce the various claims made by studies that one the basic reasons for underperformance of public sector banks is the mismanagement of intellectual capital, that is, human resources, technology, goodwill, and management of funds (Kamath et al., 2003 ; Shukla, 2014 ; Srivastava & Purang, 2009). According to Shinjini Kumar, PWC (Business Standard, Banking Annual, Dec

Table 7. Soundness of the Banks * Change in ROA, Change in RONW (2013-14) Cross Tabulation

			ROA of the banks (2013-14)			Total	RONW of the banks (2013-14)			Total
			Increased	Decreased	No Change		Increased	Decreased	No Change	
Type of	Public	Count	1	24	1	26	1	24	1	26
the bank	sector	% within Type of the bank	3.8%	92.3%	3.8%	100.0%	3.8%	92.3%	3.8%	100.0%
	bank	% of Total	2.2%	52.2%	2.2%	56.5%	2.2%	52.2%	2.2%	56.5%
	Private	Count	6	11	3	20	5	15	0	20
	sector	% within Type	30.0%	55.0%	15.0%	100.0%	25.0%	75.0%	0.0%	100.0%
	bank	of the bank								
		% of Total	13.0%	23.9%	6.5%	43.5%	10.9%	32.6%	0.0%	43.5%
Total		Count	7	35	4	46	6	39	1	46
		% within Type of the bank	15.2%	76.1%	8.7%	100.0%	13.0%	84.8%	2.2%	100.0%
		% of Total	15.2%	76.1%	8.7%	100.0%	13.0%	84.8%	2.2%	100.0%

Table 8. Soundness of the Bank * Change in CRAR, Change in Net NPA Cross Tabulation

			CRAR of the bank (2014)		Total	Net NPA of the bank (2014)			Total
			Increased	Decreased		Increased	Decreased	No Change	
Type of	Public	Count	3	23	26	21	3	2	26
the bank	sector	% within Type of the bank	11.5%	88.5%	100.0%	80.8%	11.5%	7.7%	100.0%
	bank	% of Total	6.5%	50.0%	56.5%	45.7%	6.5%	4.3%	56.5%
	Private	Count	7	13	20	15	0	5	20
	sector	% within Type of the bank	35.0%	65.0%	100.0%	75.0%	0.0%	25.0%	100.0%
	bank	% of Total	15.2%	28.3%	43.5%	32.6%	0.0%	10.9%	43.5%
Total	Count	10	36	46	36	3	7	46	
		% within Type of the bank	21.7%	78.3%	100.0%	78.3%	6.5%	15.2%	100.0%
		% of Total	21.7%	78.3%	100.0%	78.3%	6.5%	15.2%	100.0%

2014), the challenge with public sector banks is that with all the advantage of location, they will lose their competitive advantage in the absence of sound, long term management that can lead with vision and integrity. One of the basic reasons of high NPAs may be the political interference and influence on the banking industry. Public sector banks also do not have complete autonomy in managing their funds and lending deals ; this is also a reason for their poor performance. Therefore, even after being at par with private sector banks in terms of assets, deposits, income, etc, due to these reasons, their profitability and growth prospects go downhill.

The present study bring forth the fact that previous studies have postulated in terms of high growth prospects for private sector banks, problems of mismanagement in PSBs (Shukla, 2014), and need of reforms for Indian public sector banks (D'Souza, 2002 ; Jhadao, 2010, Mohan & Ray, 2004 ; Makkar & Singh, 2013 ; Srivastava & Purang, 2009). However, the present government has some orientation to make the public sector banks more autonomous and interference free, as reported by Saha (2015) that the finance ministry has issued direction to public sector

Table 9. Soundness of the Banks: ROA, RONW, CRAR, NPA of Year 2014

Descriptive Statistics		ROA (2014)		RONW (2014)		CRAR (2014)		NPA (2014)	
		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		.8043	.11323	10.1196	1.20683	12.3380	.33345	1.9630	.20977
95% Confidence	Lower Bound	.5763		7.6889		11.6664		1.5405	
Interval for Mean	Upper Bound	1.0324		12.5502		13.0096		2.3855	
5% Trimmed Mean		.8106		10.6500		12.1872		1.8775	
Median		.7000		10.4500		11.5950		2.0000	
Variance		.590		66.996		5.115		2.024	
Std. Deviation		.76796		8.18513		2.26156		1.42273	
Minimum		-1.80		-29.10		8.67		0.00	
Maximum		3.20		25.00		18.83		7.20	
Range		5.00		54.10		10.16		7.20	
Interquartile Range		.85		7.78		2.95		2.03	
Skewness		-.020	.350	-2.336	.350	1.042	.350	.989	.350
Kurtosis		3.395	.688	10.983	.688	.622	.688	2.498	.688

Test of Normality

	ROA (2014)	RONW (2014)	CRAR (2014)	NPA (2014)
Kolmogorov-Smirnova	.169	.148	.158	.084
Df	46	46	46	46
Sig	.002*	.000*	.002*	.004*

Test Statistics (a)

		Mean rank	Sum of rank	Test	Value	Sig
ROA (2014)	Public sector bank	17.25	448.50	Mann-Whitney U	97.500	.000*
	Private sector bank	31.63	632.50			
RONW (2014)	Public sector bank	18.35	477.00	Mann-Whitney U	126.00	.003*
	Private sector bank	30.20	604.00			
CRAR (2014)	Public sector bank	16.62	432.00	Mann-Whitney U	81.00	.000*
	Private sector bank	32.45	649.00			

Test Statistics (b)

		Value	Sig.	T-test for equality of means	Value	Sig
NPA (2014)	Levene's Test (F) Value	.013	.911	Equality of means assumed	4.780	.000*
				Equality of means not assumed	4.885	.000*

(Note: Values marked with * have significant influence)

banks "...to act without 'fear or favour' and to ignore 'extraneous considerations' in their commercial decisions" (p.6). But merely issuing directions will not solve the problem at the ground level. There is a strong need for robust measures and reforms for PSBs. The banking industry is one of the important industries for any economy, therefore, it is imperative for the public sector banks to perform up to their level and compete with upcoming as well as existing rivals (Uppal & Khanna, 2015).

Table 10. Summary of Parameters, Accepted Hypotheses, and their Description

Parameters	Hypothesis	Description	Results	Interpretation
Size	H01: (Null)	There is no significant difference between public and private banks in terms of percentage change in total assets.	Not Rejected	Difference : Not Exist
Growth	H02: (Null)	There is no significant difference between public and private banks in terms of percentage change in advances.	Not Rejected	Difference: Not Exist
	H03: (Null)	There is no significant difference between public and private banks in terms of percentage change in deposits.	Not Rejected	Difference: Not Exist
	H04: (Null)	There is no significant difference between public and private banks in terms of percentage change in total income.	Not Rejected	Difference: Not Exist
	H05: (Null)	There is no significant difference between public and private banks in terms of percentage change in interest income.	Not Rejected	Difference: Not Exist
Profitability	HO6: (Null)	There is no significant difference between public and private banks in terms of percentage change in operating profit.	Not Rejected	Difference : Not Exist
	HO7: (Null)	There is no significant difference between public and private banks in terms of percentage change in net profit.	Rejected	Difference Exists
Soundness	HO8: (Null)	There is no significant difference between public and private banks in terms of NPA.	Rejected	Difference Exists
	HO9: (Null)	There is no significant difference between public and private banks in terms of CRAR.	Rejected	Difference Exists
	HO10: (Null)	There is no significant difference between public and private banks in terms of ROA.	Rejected	Difference Exists
	HO11: (Null)	There is no significant difference between public and private banks in terms of RONW.	Rejected	Difference Exists

Implications

Due to the lower economic activity (low economic growth, high inflation, etc) and its inevitable impact on the financial sector, the Indian banking industry needs to reformulate in terms of competitive ground. A hypercompetitive market enforces the banks to equip themselves with innovative ways of doing business. Public sector banks need to be ahead of their potential rivals in terms of services, processes, operation activities, strategic orientation, and financial performance. Furthermore, the strategic posture of PSBs need to reshape, and alignment of each and every functional unit with their strategic orientation is very important for their long term survival and profitability.

Conclusion

The study concludes that public sector banks, being equal in terms of size and growth, are not able to compete with private sector banks in terms of profitability and soundness. Thus, a gap exists between resource mobilization and utilization. Although, the Indian banking industry has grown with leaps and bounds, but time has come to take certain corrective actions in term of policy measures.

Limitations of the Study and Scope for Future Research

The study is limited to secondary data only. Therefore, limitations associated with the use of secondary data apply

to this study also. However, every measure was taken to ensure the accuracy of the results, though certain primary variables would have increased the relevance and generalization of the results. It is supposed that the findings of this study would be of interest to future researchers in this realm. Impact of certain factor like HR orientation, political interference, economic variables, and other managerial practices will increase the in-depth understanding of difference among private and public sector banks in terms of their performance.

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Pradhan Mantri Jan Dhan Yojana (PMJDY): A Step Towards Eradicating Financial Untouchability

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Abstract

Financial untouchability is a phenomenon that results from certain situations that prevents people to access formal financial systems. In the absence of a formal financial system, people are forced to go to local money lenders who charge exorbitant interest rates from poor people. Financial untouchability also creates the problem of social discrimination. The only solution to fight with the evil of financial untouchability is promotion of financial inclusion, which may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost. Financial inclusion can be achieved by ensuring access to financial services, affordability of services, and actual utilization of financial services. In order to promote financial inclusion, the Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched across the country. It is a mission mode project of the Government of India. The scheme aims to ensure universal access to banking facilities in each and every household of the country. The scheme has provision of opening a zero balance account with free debit card and inbuilt accidental insurance. It also includes program of financial literacy, access to credit, and insurance facility. The present study made an attempt to study the effectiveness of PMJDY by analyzing the effectiveness of the financial literacy program and awareness towards PMJDY. The study was carried out among workers in working in Central University of Rajasthan and villagers of Bandrasindri village in Ajmer district of Rajasthan. The primary data was gathered in the form of discussions held with respondents in 2015. The secondary data were collected from various published and non-published sources. The findings of study showed that still, there is a long path which needs to be covered to eradicate financial untouchability in a real sense from our country.

Keywords : **financial inclusion, financial untouchability, Pradhan Mantri Jan Dhan Yojans (PMJDY), economic development, financial economics, development planning and policy**

JEL Classification: G21, O16, R51

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Financial untouchability may be defined as inaccessibility to formal financial system. In India, there are more than 1.15 lakh branches of different banks, but still, majority of the people have no access to formal banking system. Different studies have shown that there is a positive correlation between poverty and financial untouchability. Majority of rural and semi urban people are dependent on local money lender for fulfilling their financial needs. These money lender charges multiple times interest rate as compared to market price. This leads to a situation of financial non-equilibrium in the society.

Banks play a very important role in the economic life of a nation. The health of the economy is closely related to the soundness of its banking system. India cannot stand among the best economy of world until it fights with issue of financial untouchability. Financial inclusion is the road map to fight against the issue. Financial inclusion is the process of delivering access to financial facilities to all in transparent manner at affordable cost.

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Steps Taken in the Past to Eradicate Financial Untouchability

In past several initiatives were taken by Indian government to remove financial untouchability. Some of the steps taken by Indian government are:

(1) In order to deal with issue of financial untouchability various initiatives were taken by Indian government with Reserve Bank of India (RBI). Some of these are nationalization of banks, expansion of banks in rural and remote area, micro financing facility and opening of self help group.

(2) In June2006, Indian government constituted a committee on financial inclusion, under the chairmanship of Dr. C. Rangrajan. The committee was asked to suggest measures including institutional changes to be undertaken by the financial sector to implement the proposed strategy of financial sector. The committee has submitted an interim report **d**efining financial inclusion as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost (Rangarajan Committee, 2008).

The government decided to implement two recommendations on priority basis:

(i) The first is to establish a Financial Inclusion Fund (FIF) with National Bank for Agriculture and Rural Development (NABARD) for meeting the cost of developmental and promotional interventions.

(ii) Second is to establish a Financial Inclusion Technology Fund (FITF) to meet the costs of technology adoption. Each of these funds will have an overall corpus of Rs.500 crore, with initial funding to be contributed by Central government, NABARD, and RBI.

(3) To cover larger segment of poor people in the country RBI advised banks to open 'No frill' account with zero balance scheme.

(4) In 2006, RBI opened the door of private group like NGO and self help groups to help banks to achieve financial inclusion.

(5) RBI also launched the idea of Business Correspondents (BC) to reach inaccessible and remote area of the country .This idea was a great success as more than 1.4 lakh BC are functional on the behave of different banks serving different geographical area of country.

(6) A lot of expansion of banking network is done in recent past. Technology is also integrated to ensure transparent and speedy financial services.

Although a number of steps have already been taken by Indian government, but still outcome of such programs is not significant in nature. There is a need of national level program to understand cause and remedy of the issue of financial untouchability. In order to ensure inclusive growth Indian government recently (2014) has come with a project named Pradhan Mantri Jan Dhan Yojan (PMJDY) to ensure universal access to banking facilities with at least one bank account for every household.

Review of Literature

The banks need to assess their capacities and local knowledge to promote financial inclusion and literacy as

financial exclusion can lead to social exclusion. Jerold (2008) supported the argument and addressed advice, banking and credit as main elements of financial inclusion. The study further concluded that financial inclusion will lead to financial development in our country, which will help to accelerate economic growth. In contrast to this, Siddik, Sun, and Kabiraj (2015) reported rural population, household size, literacy rate, paved road networks, Internet, and deposit penetration as significant determinants of financial inclusion.

Dasgupta (2009) pointed out that financial inclusion should not only serve the purpose of providing credit but it should also ensure services like saving, insurance and other facilities. This all can be made possible either by proper advice by bank officials or by promoting literacy. In a similar study, Kamath (2007) also pointed out the need to include forgotten sector of the society.

Dev (2006) addressed different issues and challenges to financial inclusion. Researcher focused on requirement of holistic approach which should address both demand and supply side issue of financial inclusion. Kumar and Mishra (2015) also focused on importance of focusing demand side factor along with supply side factor to implement financial inclusion. The reason for non-usage of banking facilities and types of banking interfaces at uses are discussed with the help of a primary study in selected area of Lucknow city.

Chavan (2007) discussed financial inclusion in reference to dalit rural households. Study is primarily based on All India Debt and Investment Survey (AIDIS) conducted by National Sample Survey Organisation (NSSO). Study throws light on credit facility given by banks to dalits in different time spam. Further, Rao (2007) analyzed the pattern of debt of rural and urban household with the help of AIDIS. The paper discussed inclusion of commercial banks in past decades with reference of three different time phases.

Mahadeva (2009) studied financial inclusion in Sindhuvalli Grama Panchayat (SGP). The study found that current financial infrastructure is not able to serve the size of population. There was more stress given on the need of expansion of Self Help Groups (SHG). On contrary, in a study of rural areas of West Bengal, Kuri and Laha (2011) reported that despite all the efforts by government, process of financial inclusion could not be enhanced to provide them economic security. In a study after implementation of PMJDY, Srivastava and Malhotra (2015) reported that PMJDY is helping Indians to be financially included and creating a universal platform for financial services for every Indian citizen, which is aiding in economic and social capacity building.

Mehar (2014) compared financial inclusion statistics of different countries with India. Study emphasizes that there is a great need of using innovation, capital and technology for issuing challenges in achieving financial inclusion. Siddik et al. (2015) studied financial inclusion in Bangladesh for years 2009-2013 and reported that only one district (Dhaka) in Bangladesh achieved high stated financial inclusion, 5 districts achieved medium stated financial inclusion, while very low financial inclusion was observed across the remaining 58 districts out of 64 districts of Bangladesh.

Deepa (2014) discussed rural financial literacy initiative taken by HDFC bank in Kerla. HDFC Bank Ltd had launched its first rural financial literacy initiative in Palakkad Marutha Road, in Kerala. The objective of the centre is to promote financial literacy program. This setup is done under the guideline of RBI. A brief study has also been carried out on Pradhan Mantri Jan-Dhan Yojana. Chowan and Pande (2014) explained financial inclusion plan of RBI and different banks in India. It is discussed that financial inclusion can save weaker section from exploitation by the money lenders. Pradhan Mantri Jan-Dhan Yojana focus on those people who have still remained deprived of basic banking & financial systems. Kaur and Singh (2015) studied progress of financial inclusion initiatives taken before and after launch of Pradhan Mantri Jan-Dhan Yojana (PMJDY). Different initiatives taken by RBI and other Banks for achieving financial inclusion were also discussed in study.

Shahid and Singh (2015) investigated the status of the PMJDY in India. The results revealed that the contribution of rural sector in terms of accounts opened under PMJDY was relatively higher than the urban sector in all the banking sectors namely, public sector banks, regional rural banks and private banks. The results further revealed that more than 70 percent of the accounts opened under PMJDY were opened with zero balance depicting the weakness in the implementation strategy of the plan regarding easy access to banking system. The state-wise

scenario of PMJDY shows that the highest numbers of accounts were opened in Uttar Pradesh including both rural and urban sectors due to its highest population rate. Furthermore, Punjab has become the third state after Kerala and Madhya Pradesh where all households have a bank account.

Most of studies conducted after the implementation of PMJDY revealed that implementation of PMJDY has been effective in different parts of India. No researcher has studies rural area of Rajasthan. So this study has been conducted to check the effectiveness of PMJDY in Bandrasindri village in Ajmer district of Rajasthan. The study has been carried out among workers in central university of Rajasthan and villagers of Bandrasindri village.

Objectives of the Study

The core objective of the present study is to examine the Pradhan Mantri Jan Dhan Yojana (PMJDY).The study aims to fulfill some additional objectives which are as follows:

(1) To measure awareness towards Pradhan Mantri Jan Dhan Yojana (PMJDY).

(2) To find out reason of non-usage/access of banking products.

(3) To measure effectiveness of financial literacy program.

Research Methodology

The following methodology has been used to fulfill the objectives of the present study:

(1) Scope of the Study : The scope of the study is limited to 210 rural labors working in central university of Rajasthan and villager of Bandrasindri village in Ajmer district of Rajasthan.

(2) Sample Selection : Random sampling and judgment sampling method are used for the present study. Due to the illiteracy issue with most of the respondents, discussion method is used to collect information. Respondents are chosen among labors, people visiting Bank of Badoda and villagers of Bandrasindri village.

(3) Data Collection for the Study : The data for the study has been collected through primary as well as secondary sources. The primary data has been gathered in the form of discussion held with respondent. The survey was conducted in the year 2015. The secondary data has been collected from various published and non-published sources.

Analysis and Results

The findings of the present study have been divided into the following sections:

[1] Pradhan Mantri Jan Dhan Yojana (PMJDY) : The PMJDY was announced by Prime Minister on 15th August 2014. It was launched on 28th August 2014 across the country. It is a mission mode project of Indian government .It is a joint afford of different ministries and public private bodies like Ministry of State for Finance, Ministry of Information and Broadcasting, Department of Telecom (DoT), RBI, Indian Banks Association (IBA) and various public private banks. The scheme covers universal access to banking facilities with at least one bank account to each and every household of country. It also includes program of financial literacy, access to credit, pension and insurance facility. There is a facility to open zero balance account under PMJDY. The entire account holder will get RuPay debit card which can be used for money withdrawal from ATM and for shopping purpose. There is a provision of accident insurance cover of ₹ 1 lakh as well.

(I) Objective of PMJDY : PMJDY has six main objectives out of which first three will be fulfilled in first year of launching of scheme. It comprises of the following pillars:

(a) Universal Access to Banking Facilities : In order to ensure in depth penetration of banking facilities each district is divided into Sub Service Area (SSA) so as to confirm access to banking facilities within 5km range by 14 August 2015. Some of the country which has accessibility and connectivity problem will be covered in phase-II of the program.

(b) Banking Accounts with RuPay Debit Card with Provision of Overdraft Facility : The primary aim is to open a basic account of each household in country. A RuPay debit card is also provided with each account. In future there will be provision of over drafting up to ₹ 5000 after successful operating debit card for a period of 6 months. There will be nominal interest rate on overdraft money. It will also act as micro finance scheme.

(c) Financial Literacy Programme : Being majority of villagers are illiterate there is a need to run financial literacy programme. The main aim of such program is to make people aware and capable of using financial services provided by banks.

(d) Creation of Credit Guarantee Fund : In future government has planned to create a credit guarantee fund that would be used to cover the defaults in overdrafts accounts.

(e) Micro Finance: Government will provide micro- insurance to all willing and eligible persons. This objective will be fulfilled in 2nd phase of PMJDY.

(II) Timeline for PMJDY Plan : The complete action plan to achieve 100 percent financial inclusion in the country is divided into two phase as follows:

(a) Phase-I (15 Aug, 2014 - 14 Aug, 2015) : There are four primary objectives in phase-I**.** These objectives are outlined as:

(i) To ensure universal access to banking facilities throughout the country except areas with infrastructure and connectivity constrains.

(ii) To provide basic banking accounts and RuPay debit card.

(iii) To facility each account holder accident insurance cover of ₹ 1 lakh.

(iv) To implement Financial Literacy Programme.

(b) Phase-II (15 Aug, 2015 - 14 Aug, 2018): The objectives for Phase-II are listed below:

(i) To ensure overdraft facility up to 5000/- after six months of satisfactory operation of account.

(ii) To creation credit guarantee fund for coverage of defaults in overdraft account.

(iii) To promote micro finance scheme.

(iv) To cover geographical areas left in phase1 due to infrastructure and connectivity problem.

(v) To promote financial inclusion program up to individual level covering adults and students of each households.

Table 1. Current Status of Number of Accounts Opened under PMJDY

Sr. No.	Banks	No of Accounts (in Lacs)			No of RuPay Debit Cards(in Lacs)	Balance in Accounts (in Lacs)	No of Accounts With Zero Balance (in Lacs)
		Rural	Urban	Total			
1.	Public Sector Banks						
		580.06	492.92	1072.98	1000.92	993720.98	663.68
2.	Regional Rural Banks						
		202.27	35.77	238.04	166.79	196174.44	163.09
3.	Private Banks						
		34.17	22.85	57.02	51.17	79492.07	32.4
	Total	816.50	551.54	1368.04	1218.88	1269387.49	859.17

Source: http://www.pmjdy.gov.in/account-statistics-country.aspx
Disclaimer: Information is based upon the data as submitted by different banks/SLBCs

In order to fulfill the objectives government has plan to promote public private partnerships. Time bound responsibilities have already been allotted to different public sector agencies like banks, post office and BSNL. DOT (Department of Telecom) will ensure to resolve connectivity problem in remote areas. A special drive is already set up by telecom department to cover north east area which is still not connected to rest of country. Government has also plans to expand BC (Business Correspondent) model to ensure deeper penetration in rural area. RBI will provide subsidy for promoting rural banking in country.

(III) Current Status of PMJDY : Pradhan Mantri Jan-Dhan Yojna is an ambitious programme on financial inclusion to cover about 7.5 crore unbanked households in the country. It was launched by Prime Minister on Aug 28, 2014. Preparatory work was started well in advance from Aug 16, 2014. Over one crore accounts have been opened on Aug 28, 2014 which is a world record of opening such large account in banking sector in a single day. Banks were also instructed to organize mega account opening camps on the day of the launch and to carry such camps in later stages at each rural and urban branch in the district. Banks are organizing camps for account opening on every saturday with a mega camp on first saturday of the month. The current status as on Feb 28, 2015 is shown in Table 1.

[2] Awareness Towards Pradhan Mantri Jan Dhan Yojana : Government has focused well on awareness issue of PMJDY. Government has proposed a common fund for publicity activities. There is a structured 3-tier scheme for publicity of scheme dealing at centre level, state level and district level. Authorities have issued special instruction are for using publicity material in local language. 180 out of 210 (86%) respondent have heard of PMJDY, but information available is very primary in nature. Most of the respondents were not aware of using debit card and insurance scheme. More than 70 % respondent still doesn't have bank account.

[3] Reason for Non-Usage/Access of Banking Products : One of the main reasons for not using banking facilities is that people don't have money to deposit. Most of the respondents are daily laborer who only earn for fulfilling their daily needs. Illiteracy is also found main hurdle to approach banks. Timing of banks is also not suitable for villagers as they are engaged in work during banks working hours.

[4] Measurement of Effectiveness of the Financial Literacy Program : In order to reach under reached section of society special focus is given on financial literacy program. Financial literacy centers have been setup to promote

awareness towards banking product. Different platforms like seminars, lectures, choupal meeting and personal meetings are used by different authorities to improve level of awareness among citizen of country. But sample study reveals that on ground these programs do not have significant impact as nearly all respondents confirmed that there was not financial literacy program conducted in recent in their village. Government should take ensure proper implementation of such program by having proper monitoring systems.

Key Barriers to Financial Inclusion

There are many hurdles on the path of financial inclusion. Strong will power and efficient institutional setup is the need of hour to fulfill the objective. Following are the different challenges and barriers to achieve financial inclusion.

(1) Human Barriers: One of the biggest hurdles of the road to achieve financial inclusion is lack of financial literacy. People are still not aware of less interest rate on credit given by banks, use of debit card and online transitions. Until people are made aware of financial literacy, instead of helping poor's, financial inclusion may put them in more trouble. Lack of proper identity card and poor financial status are also main reasons that avoid people to attract towards banking system.

(2) Institutional Barriers: There are many public private ventures along with different ministries which are working in the field of financial inclusion, but due to lack of proper coordination outcome of such programs is not significant. There is conflict among goals of different organizations. Inadequate framework on rules and regulations is also a major challenge which needs to be handled. There is also need to expand number of bank branches in order to reach the left out people.

(3) Telecom Connectivity : In India still 55000 villages (nearly 10%) are not connected with telecom connectivity. It is nearly impossible to provide banking facilities in these area. Most of the left out part are of Himachal Pardesh, Jaamu and Kasmir and 82 LWE (Left Wing Extremism). Due to demographic constraints it will take long time to ensure connectivity in such areas.

(4) Issue of Keeping Accounts Functional: This is a great challenge to ensure proper functioning of accounts. It takes a lot of effort to convince and open a bank account of new customer, but if the account becomes dead means no transition takes place then there is no outcome of the project. Until people feel the importance of saving and banking product it is very difficult to keep accounts live.

Research Implications

We tried to find out the awareness level towards PMJDY in rural part of country with the help of selected samples in the state of Rajasthan. Results of the study are alarming in nature, as it is found that most of the respondents still have no access to financial services. Here it is to be noted that only having a bank account does not fulfill the condition of eradicating financial untouchability. Poverty and illiteracy are found two main reasons for non usage of banking services. Government need to empower the common people of country so that they can use banking services in true sense.

The findings of the study can be used by policy makers to redesign the financial literacy program in the country. There are few suggestions for implementation of effective financial inclusion in the country as follows:

(i) Government needs to think beyond opening 'No Frill' accounts.

(ii) Proper coordination among different public and private organization should be ensured.

(iii) Time bound action should be taken to break infrastructural barriers like issue of connectivity in remote areas.

(iv) Roles of major stakeholders should be clearly defined which will ensure proper execution of different schemes and policies to achieve financial inclusion.

(v) In order to uplift demand side of financial inclusion, there is a strong need to promote financial literacy program in effective manner.

(vi) Government should enforce strong and effective monitoring mechanism to ensure timely result of the program.

Conclusion

The following conclusions can be drawn from the research findings:

(i) Majority of respondent have primary or basic knowledge about PMJDY.

(ii) Lack of money and financial illiteracy are the primary reason for financial exclusion.

(iii) Government needs to ensure proper delivery of financial literacy program as nearly all respondents have not attended any such program.

Overall, finding of the study matches the general perception that rural people have comparatively less level of awareness on financial and banking services. Different survey and study indicates that poverty and illiteracy level are also high in villages which is also reflected by the under taken study. In real life situation villagers do not feel comfortable in using various banking services like debit card, credit card and insurance services etc. The result of study also confirms that most of the respondents have never used banking services. It can clearly be said that the results of the under taken study are refection of real life situation regarding financial and banking awareness in the country.

Limitations of the Study and Directions for Future Research

Despite its valuable findings and implications, this study contains some limitations as discussed below:

(1) Due to time constraints, the research could not be made extensively. The study is limited to only 210 villager respondents of Bandrasindri village in Rajasthan. Therefore, researchers should be cautious while generalizing the findings of study.

(2) A more typical approach of using questionnaire may have provided a broader measure about actual status of financial untouchability. Such a method is not used in study because it was difficult to approach illiterate respondent asking daily measure about the use of online shopping habits.

(3) Future studies can be conducted taking larger sample size. Also, a study can be conducted for cross-cultural and targeting different geographical area

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