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From The Chief Editor's Desk

We take pleasure in presenting our 'December 2018' issue of 'Uttaranchal Business Review'. This issue addresses the diverse perspectives of research related to Transport Infrastructure, Brand Loyalty toward Telecom Sector companies, Educational accessibility of Women, the Indian FMCG Sector Companies' Capital Structure, Problems of Tamil refugees, Agricultural Credit across Regions, and Cost Efficiency of Banks, Entrepreneurship & Company Structure, role of Stock Market Variables in Portfolio Management, and Inventory Models.

Gurpreet Randhawa and Summi Arora worked on the paper titled, "Status of State Road Transport Undertaking (SRTUs) in Punjab". The researchers analyzed the physical and financial performance indicators of different transport undertaking on all-India bases. The study suggested that professional approach should be followed to realize higher profit margins in Punjab SRTUs.

Nishant Sharma in his article "A Study on the antecedents of Brand Loyalty on CRM" - conducted on the Telecom Sector customers, the researcher found quality drivers, consideration & brand credibility factors as antecedents of CRM, which is defined in terms of brand credibility on unethical practices and the customer's loss arising there from.

Sunil Kumar and V K Tangri in their research paper, "Women's Education and Empowerment: A Study of Himalayan States in India", analyzed the 'Census 2011' data regarding educational status of women. The researchers found that the women are at the center of illiteracy problem, adversely impacting their empowerment in terms of their access to formal education in the Himalayan states of India.

Vikas Bhargaw and Reena Malik, in their research paper on "Determinants of Capital Structure in Indian FMCG Sector", analyzed the impact of firm size, tangibility, profitability, liquidity and growth on Capital Structure of the firm. The researchers admit the applicability of pecking order and trade-off theories in explaining capital structure of Indian FMCG firms.

Maneesh P and Aicha EL ALAOUI descriptively analyzed the impact of various welfare schemes provided by government for uplifting the status of Tamil refugees in Tamil Nadu. The researchers highlighted the lack of various basic amenities in term of education, food, and healthcare facilities provided to them.

Abhijit Sinha and Dipak Kundu investigated the agricultural credit disbursed by scheduled commercial banks in India. The results of the study showed unequal distribution of credit across different regions in India.

Aparna Bhatia and Megha Mahendru in their research evaluated the cost efficiency of banks based on ownership and found that the foreign sector banks have superior cost efficiency scores. While, the cost efficiency scores declined in the post-reform era for all banks in India.

P. Govindan in his comparative study on Limited Liability Partnership and One-Person-Companies (OPCs) suggested different policy measures to be applied to Government Financial Institutions to assist new entrepreneurs financially.

Sakar Saxena, Bipin Kumar and Himali Rawat in their article "Macroeconomic Variables and their Impact on the India Stock Markets" described the importance of different variables in portfolio management. The study showed that different macroeconomic variables showed significant impact on the stock market movement in different directions.

Anu Sayal, A. P. Singh and Deepak Aggarwal, in their research paper, exemplified an inventory system without shortage in both crisp and fuzzy environments. The optimal order quantities as well as the optimal total cost for the inventory model in both crisp and fuzzy environments were calculated by researchers.

I thank the reviewers and publisher for their wide support.

Sunil Kumar

Executive Editor

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STATUS OF STATE ROAD TRANSPORT UNDERTAKINGS (SRTUs) IN PUNJAB

ABSTRACT

The present study examined the state road transport undertakings (SRTUs) in Punjab state of India on the basis of certain physical as well as financial performance indicators. The study also compared the status of SRTUs in Punjab with that of SRTUs in India. The paper discussed physical performance and financial performance indicators of SRTUs. The ratios, percentages and compound annual growth rate were used to achieve the objectives of the study. The study found PUNBUS as one of the best performing SRTUs in India whereas Punjab Roadways has shown inefficient performance with respect to most of the physical and financial indicators. The results suggest that professional approach through policy initiatives is required so that these undertakings can be turned into profit making undertakings.

Key Words: India, physical performance, PUNBUS, Punjab, Punjab Roadways.

INTRODUCTION

Passenger road transport is an integral part of overall road transportation system. Both public as well as private sector participate in transportation of passengers in different parts of India. However in comparison to private bus operators the state road transport undertakings (SRTUs) have a special role in fulfilling certain responsibilities assigned to them by concerned state governments besides earning profits. For instance, SRTUs provide concessional services like bus passes at nominal rates to daily commuters, students, free transport services to police/jail personnel, concessional rates to senior citizens and handicapped persons. Considering the socio-economic significance attached with SRTUs, the present study attempts to examine the current status of SRTUs in Punjab, the state having one of the highest road connectivity in India.

The public passenger road transport services in Punjab are provided by three SRTUs namely Punjab Roadways, Punjab State Bus Management Company Limited (PUNBUS) and PEPSU Road Transport Corporation (PRTC). Punjab Roadways is a departmental undertaking, PUNBUS is a government company, and PRTC is a statutory corporation. Punjab Roadways including PUNBUS operates from 18 depots, whereas PEPSU road Transport Corporation operates from nine depots. Status of SRTUs in Punjab has been examined on the basis of certain physical performance indicators and financial indicators.

REVIEW OF LITERATURE

The Table 1 shows various research studies that have been undertaken to examine the performance of public transport in India. These studies have reported various reasons for

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inefficiencies in performance of public transport, particularly SRTUs in India like unviable routes (Sridharan, 1991; Sidhu, 2007; Hanumappa et al., 2015), low fares (Pucher et. al., 2004; Kothia, 2012), lack of professionalism and customer oriented approach (Agarwal and Bhargava, 2010; Devi, 2015; Kumar, 2017). Besides it has also been found that wide disparities exist in efficiency level of SRTUs in India (Jha and Singh, 2001; Singh and Raghav, 2014) with respect to physical and financial indicators.

Table 1: Studies Related with Passenger Road Transport

Author (year)	Objective of the study	Findings
Sridharan (1991)	To minimize dead kilometres in case of urban road transport undertakings.	Significant reduction in dead kilometres can be achieved by formulating the underlying bus routes problem as a transportation problem.
Jha and Singh (2001)	To measure cost inefficiency of nine major Indian SRTUs for the period 1983-84 to1996-97.	Wide disparity among SRTUs inefficiency levels. On an average smaller SRTUs appaer to be more efficient than their larger conter parts in Indian bus transport industry. By and large, there has been stability in cost inefficiencey ranks across SRTUs. The average cost curve is U-shaped, i.e., economics of scale are present up to a certain level of production and the diseconomies of scale set in
Pucher et al. (2004)	To identify main problems relating to public transport in India with main focus on public bus transport.	(i)Low fares were charged by public transport in India resulted into low earnings & lack of resources required to provide proper infrastructural and other facilities. (ii) Buses carried almost 90 present of passengers in India except for Mumbai where suburban rail was the main mode of passenger transport. However, due to narrow streets within cities and different vehicles like cycles, auto-rickshaws, minivans, cars, taxis etc. on the sameroad congestion created problems for vehicles as well as for passengers & this situation had led to increase in number of accidents. It also resulted in poor service quality of public road transport & was unable to cover all of their operating costs from the revenue they generate.

Author (year)	Objective of the study	Findings
Sidhu(2007)	To compare the performance of Pepsu Road Transport Corporation (PRTC) with Punjab Roadways as well as Haryana Roadways.	(i)Performance of PRTC had improved over the period of last 5 years and the corporation had performed better than Punjab roadways and Haryana roadways. However, PRTC had to suffer losses due to high rate of tax per km, unviable routes, non peak hours of service & surplus staff. (ii) 57 persent of the buses were over aged. Though PRCT had employed less staff as compared less staff as compared to Punjab roadways & Haryana roadways yet incured highest expenditure per day per employee.
Agarwal & Bhargava (2010)	To analyse profitability of Rajasthan & Uttar Pradesh SRTUs.	Both the SRTUs were suffering from losses & unable to control operating costs. Professionalism in work was missing in both cases.
Kumar (2011)	To measure the extent of technical efficiency in 31 SRTUs operating in India and to explore most influential factors explaning its variations across SRTUs.	The sample SRTUs are wasting about one-fourth of their resources in production operations. Occupancy ratio is the most significant determinant for all effciency measures, and bear a positive relationship with overall, pure technical, and scale efficiencies. Scale efficiency is also impacted positive by staff productivity.
Kothia (2012)	To examine factors affecting efficience of SRTUs. in India.	Main factors which were affecting efficiency of SRTUs were drop in occupancy ratio, absence of fare revision mechanism, and drop in bus staff ratio. As far as fleet utilization and fuel efficiency was concerned, study found that though the performance has improved for these two factors yet there were large variations in performance of different SRTUs.
Trivedi (2012)	To identify independent variables that is most effective in predicting traffic revenue for Gujarat SRTUs.	Most important predictor of traffic revenue was average seating capacity load factor.
Singh & Raghav (2014)	To examine productivity & productive efficiency of SRTUs in India.	A wide disparity among SRTUs was found according to their total factor productivity & productive efficiency levels and growth. Although not very strong, there is a positive relationship between total factor productivity & size of SRTUs. However, productivity efficiency & size of SRTUs has statistically insignificant relationship, which show that productive efficiency of SRTUs is independent of their size.

Author (year)	Objective of the study	Findings
Devi (2015)	To conduct SWOT analysis of Uttar Pradesh SRTUs.	(i) Strengths: qualified managerial staff well defined organizational structure, policies, procedures, strong government support and discharge of social responsibilities. (ii) Weaknesses: lack of feeling of job security, lack of customer oriented approach, government control, obligatory social services, & lack of performance linked incentive plans. (iii) Opportunities: increase in demand for transport services, large infrastructure facilities, strong government support, good public image and customization of bus services. (iv) Threats: competition from private operators, huge taxes, huge input costs, political interference in trade union activities, and lack of proper enforcement of rules & regulations.
Kovvali and Chandra (2015)	To evaluate financial performance of Andhra Pradesh SRTUs.	Debt-equity ratio of undertaking increased from 1.03 to 6.63 from 2000-01 to 2010-2011 resulting in increased financial burden to undertaking & due to huge interest charges the undertaking incurred losses for all the years under study except for 2007-08 and 2008-09. Results also showed that acquiring finance through issue of fresh equity or debentures was the most agreed strategy adopted for turnaround of the undertaking along with controlling the unproductive expenditure.
Hanumappa et al. (2015) `	To measures performance of premium bus services operated by Bangalore Metropolitan Transport Corporation (BMTC) using data envelopment analysis.	Regardless of increases in cost of operation in terms of fuel & maintenance cost, BMTC premium service operate efficiently. Few of the city & airport routes show potential for improvement. Inefficient units have opportunities for improvement in terms of staff productivity, indicating a need to align depot staffing patterns with needs.
Kumar (2017)	To identify reasons of loss making of Pepsu Road Transport Corporation (PRTC) in Punjab.	Due to government policies & lethargic attitude of some staff members PRTC is bearing loss year after & becoming liability on state government.
Singh (2017)	To measure technical efficiency of public owened urban bus companies (UBCs) in India for the period 2000-01 to 2012-13.	Profit and fleet utilization have a significant influence on technical efficiency of UBCs. Substantial inefficiencies, averaging between 12 to 41 percent exist in general, small and large size UBCs are more efficient than their medium size counterparts.

Source: Compiled by Authors.

OBJECTIVES OF THE STUDY

Although there a number of studies that have examined functioning and performance of public bus operators belonging to different states of India but there are very limited studies that have investigated performance of SRTUs in Punjab state. Thus, the present study is an attempt in this direction. The primary objective of this study is to examine physical as well as financial performance of SRTUs in Punjab. In addition, the study also compares the status of SRTUs in Punjab with that of SRTUs in India.

METHOD

Secondary data have been collected from various sources like published reports relating to review on profile and performance of SRTUs in India, Road Transport Year Book and Basic Road Statistics in India published by Ministry of Road Transport and Highways, Statistical Abstracts of Punjab, Reports of Comptroller and Auditor General of India, Reports of Planning Commission along with articles published in various national and international journals.

RESULTS

PHYSICAL PERFORMANCE INDICATORS OF SRTUs

The Table 2 exhibits physical performance of SRTUs in Punjab. In addition, their performance has also been compared with that of SRTUs in India. 46 SRTUs in India reported their performance to Ministry of Road Transport and Highways. Data in Table 2 shows that during the year 2015-16, PUNBUS had highest number of average fleet as compared to Punjab Roadways and PRTC. Average fleet held by SRTUs in Punjab is much lower than average fleet held by SRTUs in India during the same year. Maharashtra SRTC held highest fleet whereas lowest fleet was held by Tripura RTC. Regarding fleet utilization data in table 2 reveals that during the year 2015-16, Punjab Roadways and PUNBUS had 100 percent of fleet utilization which indicates none of the fleet remains unutilized during this year. In comparison to overall Indian SRTUs Punjab SRTUs performed better with respect to fleet utilization. On all India bases, Punjab Roadways and PUNBUS reported highest fleet utilization whereas Tripura RTC reported lowest percentage of fleet utilization.

As far as over-aged vehicles are concerned, both Punjab Roadways and PRTC had high percentage of over-aged vehicles in comparison to average percentage of over-aged vehicles in India. In case of PUNBUS, none of the vehicles was found to be over-aged which may be due to the fact that PUNBUS is relatively new undertaking as compared to Punjab Roadways and PRTC. On all India level, PUNBUS along with Pune TC and BEST undertakings have no over-aged vehicles. However it is disappointing to note that Bihar SRTC has 100 percent of vehicles as over aged vehicles among Indian SRTUs. Further data shows that during 2015-16 average fuel efficiency of SRTUs in Punjab is exactly same as that of Indian SRTUs. Best fuel efficiency in India has been reported by Tamil Nadu STC, Kumbakonam whereas worst fuel efficiency has been reported by Delhi ST.

Table 2: Physical Performance Indicators of SRTUs in Punjab and in India

Indicator	Punjab Roadways	PUNBUS	PRTC	Punjab SRTUs	All India SRTUs	Highest Figure	Lowest Figure
Average fleet held (number)	484	1258	1006	916	3039	18514 (Maharashtra SRTC)	48 (Tripura RTC)
Fleet utilization ratio (%)	100	100	95.13	98.21	90.43	100 (Punjab Roadways & PUNBUS)	33.33 (Tripura RTC)
Over aged vehicles (%)	23	0	24	12.80	17.38	0.0 (PUNBUS, Pune TC, BEST Undertaking)	100 (Bihar SRTC)
Fuel efficiency (KMPL)	4.52	4.63	4.74	4.63	4.63	5.62 (TN STC, Kumbakonam Ltd.)	2.26 (Delhi ST)
Staff strength	3834	3500	3604	3646	15709	105679 (Maharashtra SRTC)	270 (Meghalaya STC)
Staff/bus ratio	7.92	2.78	3.58	3.98	5.17	8.08 (Mizoram ST)	2.41 (UP SRTC)
Staff productivity	24.21	109.97	89.33	73.30	59.29	158.24 (Odisha SRTC)	1.04 (Tripura RTC)
Vehicle productivity	191.75	305.96	320.03	291.79	306.42	545.75 (State Exp. Tamil Nadu TC Ltd.)	7.68
(Tripura RTC)							

Source: Review of Profile and Performance of SRTUs in India, 2015-16.

So far as staff strength is concerned, it is worth noting that in Punjab, Punjab Roadways held lowest number of average fleet during the year but employed highest number of staff which resulted in highest staff/bus ratio for Punjab Roadways in comparison to PUNBUS and PRTC. In contrast to this, PUNBUS had highest number of fleet but employed less staff. One reason for this may be that drivers of Punjab Roadways are allowed to work for PUNBUS also whereas drivers of PUNBUS cannot work for Punjab Roadways. However, overall Punjab SRTUs reported less staff/bus ratio when compared to overall Indian SRTUs due to less number of staff employed per bus by PUNBUS and PRTC. On all India basis, highest staff was employed in Maharashtra SRTC as it also held highest average fleet. On the other hand, Meghalaya STC employed lowest staff. For staff employed per bus Mizoram ST employed highest number of staff per bus whereas Uttar Pradesh SRTC employed lowest number of staff per bus.

The data further shows that among the SRTUs in Punjab, PUNBUS reported highest staff productivity and Punjab Roadways reported lowest staff productivity. This points out towards a big gap in staff productivity of both undertakings. One reason for this could be the highest staff/bus ratio of Punjab Roadways as compared to PUNBUS and PRTC. Comparison of staff productivity of SRTUs in Punjab and SRTUs in India makes it clear that Punjab SRTUs have more productive staff than Indian SRTUs. Highest staff productivity in India has been reported by Odisha SRTC and lowest staff productivity in India has been reported by Tripura RTC. As far as vehicle productivity is concerned, PRTC reported highest vehicle productivity among Punjab SRTUs. However, in comparison to vehicle productivity of SRTUs in India SRTUs in Punjab reported low vehicle productivity. Among Indian SRTUs State Express Tamil Nadu TC Ltd. reported highest vehicle productivity which is almost doubles the vehicle productivity of Punjab SRTUs and Tripura RTC reported lowest vehicle productivity.

FINANCIAL INDICATORS OF SRTUs IN PUNJAB

The Table 3 depicts the financial performance indicators of Punjab Roadways, PUNBUS, PRTC, overall Punjab SRTUs, overall India SRTUs, best performance and worst performance on all India level. Among the three SRTUs operating in Punjab, PRTC earned highest revenue and incurred highest cost during the year 2015-16 followed by PUNBUS. Punjab Roadways earned lowest revenue during the same year. So far as profitability is concerned, only one of the SRTUs in Punjab i.e. PUNBUS earned profit during the year 2015-16. The reason for profitability of PUNBUS may be indicated to the fact that PUNBUS has employed contractual staff only with very low staff costs as compared to other undertakings. Highest loss in India was incurred by Delhi ST whereas Karnataka SRTC was the highest profit making undertaking. PUNBUS incurred lowest cost per bus in 2015-16; the highest cost per bus was incurred by PRTC.

Table 3: Financial Performance Indicators of SRTUs in Punjab and in India

Indicator	Punjab Roadways	PUNBUS	PRTC	Punjab SRTUs	All India SRTUs	Highest Figure	Lowest Figure
Total revenue (Rs. Lakhs)	10566.57	43564.45	44113.22	32748.08	1,12495.46	7,25,996 (Maharashtra SRTC)	184.95 (Mizoram ST)
Total cost (Rs. Lakhs)	20631.70	42990.42	44659.32	36093.81	1,39950.20	7,49696 (Maharashtra SRTC)	2162.08 (Mizoram ST)
Net profit/loss (Rs. Lakhs)	(10065.13)	574.03	(546.10)	(3345.73)	(27454.74)	5095.14 (Karnataka SRTC)	(3,41109.50) (Delhi ST)
Revenue per bus (Rs. Lakhs)	21.83	34.63	43.85	35.75	36.22	54.23 (State Exp. TC TN Ltd.)	3.77 (Mizoram ST)
Cost per bus (Rs. Lakhs)	42.62	34.17	44.39	31.90	45.06	124.57 (Delhi ST)	14.75 (J&K SRTC)
Net profit/loss per bus (Rs. Lakhs)	(20.79)	0.46	(0.54)	(3.65)	(8.84)	1.08 (Odisha SRTC)	(74.53) (Delhi ST)
Revenue per bus per day (Rs.)	5981.30	9487.65	12013.73	9160.89	9923.28	14818.00 (State Exp. Tamil Nadu TC Ltd.)	1031.00 (Mizoram ST)
Cost per bus per day (Rs.)	11678.76	9362.63	12162.45	11067.94	12345.21	34128.76 (Delhi ST)	4041.00 (J&K SRTC)
Net profit/loss per bus per day (Rs.)	(5697.46)	125.02	(148.72)	(1,907.05)	(2,421.93)	298.00 (Odisha SRTC)	(204.21) (Delhi ST)
Revenue per km (Rs.)	31.11	30.92	37.44	33.16	32.38	1446.46 (Tripura RTC)	16.50 (Andaman & Nikobar ST)
Cost per km (Rs.)	60.74	30.52	37.90	43.05	40.29	1475.69 (Tripura RTC)	25.48 (Odisha SRTC)
Net profit/loss per km (Rs.)	(29.63)	0.41	(0.46)	(9.89)	(7.91)	1.68 (Kadamba TC)	(325.19) (Mizoram ST)

Source: Review of Profile and Performance of SRTUs in India, 2015-16.
Note.: Figures in (parenthesis) indicate negative value.

Further, Punjab Roadways reported highest loss per bus within the state. This requires a peep into the costing structure of Punjab Roadways. There is a possibility to reduce losses being incurred by Punjab Roadways, if the cost is properly controlled. On all India level, Delhi ST incurred highest cost per bus and lowest cost per bus relates to J&K SRTC. The State Express Tamil Nadu TC earned highest revenue per bus during the same year. Performance on the basis of Kilometres (KMs) show that among SRTUs in Punjab, PRTC earned highest revenue per KM and Punjab Roadways incurred highest cost per KM. It is also worth noting that Punjab Roadways incurred highest loss per KM followed by PRTC. PUNBUS is the only undertaking which earned profit per KM in Punjab. On all India bases, Tripura RTC earned highest revenue per KM and also incurred highest cost per KM. Also, Kadamba TC earned highest profit per KM whereas Mizoram ST incurred highest loss per KM. Overall Punjab SRTUs reported higher levels of revenue per KM and cost per KM as compared to overall India SRTUs. The Table 4 shows the component wise cost structure of SRTUs in Punjab. Data reveals that in case of Punjab Roadways, salaries and other benefits of staff constitute 68.81 percent of total costs. Among the three SRTUs in Punjab, PUNBUS incurred minimum staff costs and PRTC bears 53.35 percent of total costs as staff costs during the year 2015-16. This is due to the reason that both Punjab Roadways and PRTC employ permanent employees who got salary and other benefits as per government rules whereas PUNBUS employs mainly contractual employees who receive much less than regular government employees. In comparison to PRTC, Punjab Roadways incurred more staff costs as it has more permanent employees than PRTC.

Table 4: Common Size Statement of Cost Structure of SRTUs in Punjab and India in Rs. Lakhs

SRTU Indicator	Punjab Roadways	PUNBUS	PRTC	Overall Punjab	Overall India
Staff costs	14197.37 (68.81)	12200.13 (28.38)	23826.90 (53.35)	50224.40 (46.38)	2909735.10 (45.20)
Fuel and lubricants	4153.28 (20.13)	16046.19 (37.33)	11449.74 (25.64)	31649.21 (29.23)	1621511.95 (25.19)
Cost of tyres, tubes and spares	259.82 (1.26)	1574.85 (3.66)	862.65 (1.93)	2697.32 (2.49)	230871.70 (3.59)
Interest	81.95 (0.40)	244.69 (0.57)	1160.00 (2.60)	1486.64 (1.37)	500315.37 (7.77)
Depreciation	12.54 (0.06)	2170.40 (5.05)	850.00 (1.90)	3032.94 (2.80)	238508.09 (3.70)
Taxes	1677.98 (8.14)	7261.68 (16.89)	4110.03 (9.20)	13049.69 (12.05)	391617.29 (6.08)
Other costs	248.76 (1.20)	3492.48 (8.12)	2400.00 (5.37)	6141.24 (5.68)	545149.69 (8.47)
Total cost	20631.70 (100.00)	42990.42 (100.00)	44659.32 (100.00)	108281.44 (100.00)	6437709.19 (100.00)

Source: Review of Profile and Performance of SRTUs in India, 2015-16.
Note.: Figures in (parenthesis) indicate % of total cost.

For all other components of cost, Punjab Roadways incurred least expenditure than PUNBUS and PRTC during the year 2015-16. PUNBUS incurred highest expenses on fuel and lubricants; tyres, tubes and spares; taxes and depreciation than Punjab Roadways and PRTC. The reason behind high expenses on these components is highest fleet size of PUNBUS which is almost three times that of the fleet size of Punjab Roadways and 1.33 times of fleet size of PRTC. Punjab roadways has reported least expenses on these components as it held minimum fleet size of the three SRTUs in Punjab during 2015-16. So far as interest component is concerned, PRTC incurred highest interest expenses during the same year among the three SRTUs in Punjab.

Table 5: Operational Strength of SRTUs in Punjab

Year/ Param	2010-11		2011-12		2012-1		2013-14		2014-15		2015-16		CAGR SRTUs	CAGR SRTUs
	Punjab	India	Punjab	India	Punjab	India	Punjab	India	Punjab	India	Punjab	India	Punjab	India
Fleet held	2884	129655	2817	130860	2908	133401	2640	125160	2593	125084	2748	142855	(0.8%)	1.63%
Staff strength	8947	716730	8045	717298	11910	722876	10790	679092	10119	667423	10938	738325	3.41%	0.50%
Staff/bus ratio	3.10	5.53	2.85	5.48	4.09	5.42	4.08	5.43	3.90	5.33	3.98	5.17		

Source: Compiled from Reports on Review of Profile and Performance of SRTUs in India.
Note.: Figures in (parenthesis) indicate negative value.

The Table 5 depicts the operational strength of Punjab SRTUs for six years from 2010-11 to 2015-16. During this six years period, both fleet size as well as staff strength was highest during the year 2012-13 for SRTUs in Punjab. Lowest fleet size and corresponding staff strength was reported for the year 2014-15 by SRTUs in India. Whereas in case of SRTUs in Punjab, lowest fleet size was reported during the year 2014-15 but lowest staff strength was reported for the year 2011-12. SRTUs in Punjab registered negative compound annual growth rate (CAGR) during the period of six years with respect to average fleet held. However, SRTUs in India reported positive CAGR. CAGR has been found to be positive for SRTUs in Punjab as well as for SRTUs in India in case of staff strength. This shows that though fleet strength for SRTUs in Punjab declined but staff strength increased over the period of six years. Further the data shows that staff/bus ratio has increased for the SRTUs in Punjab over the period of study and one of the reasons for this could be the decline in fleet size and increase in staff strength. On the other hand, staff/bus ratio shows decline for SRTUs in India during the same period which could be due to the fact that decline in staff strength is more than the decline in fleet size.

Table 6: Operational Productivity/Efficiency of SRTUs in Punjab

Year/ Parameter	2010-11		2011-12		2012-13	
	Punjab	**India**	**Punjab**	**India**	**Punjab**	**India**
Staff productivity (in KMs)	91.41	57.38	96.74	57.77	66.36	59.42
Vehicle productivity (in KMs)	283.59	317.21	276.30	316.68	271.82	322.03
Fuel efficiency (KM/liter)	4.55	4.42	4.82	4.49	4.51	4.39
Revenue per KM (Rs.)	10.60	21.42	23.35	23.91	30.58	25.93
Cost per KM (Rs.)	11.62	25.09	28.29	28.42	31.14	30.52
Net profit/loss per Km (Rs.)	(1.02)	(3.67)	(4.94)	(4.51)	(0.56)	(4.59)

Source: Compiled from Reports on Review of Profile and Performance of SRTUs in India.
Note.: Figures in (parenthesis) indicate negative value.

The Table 6 depicts operational productivity/efficiency of SRTUs in Punjab and in India. Data show that in case of SRTUs in Punjab staff productivity declined over the period of six years whereas in case of SRTUs in India vehicle productivity had declined. So far as staff productivity is concerned, during the period of six years, staff productivity has shown inverse relationship with staff/bus ratio both for SRTUs in Punjab as well as for India. This may be due to the fact that decline in staff/bus ratio means less staff employed per bus and as such staff productivity improves. However, staff productivity is also influenced by revenue earning kilometres. Staff productivity for SRTUs in Punjab was highest in the year 2011-12 when staff/bus ratio was lowest. In 2011-12, staff productivity was 96.74 which declined to its lowest in 2012-13 at 66.36 in just one year. One of the reasons attributable to this decline may be increase in staff strength during the same period. Likewise, for SRTUs in India staff productivity was highest during the year 2012-13. Vehicle productivity for

2013-14		2014-15		2015-16		CAGR SRTUs	CAGR SRTUs
Punjab	**India**	**Punjab**	**India**	**Punjab**	**India**	**Punjab**	**India**
66.61	56.42	70.17	58.83	73.30	59.29	(3.61%)	0.55%
276.59	306.10	273.87	308.60	291.79	306.42	0.48%	(0.58%)
4.48	4.23	4.51	4.47	4.63	4.63	0.29%	0.78%
35.30	32.83	37.25	31.89	33.56	32.38	21.18%	7.13%
39.67	39.80	42.66	38.90	36.99	40.29	21.29%	8.21%
(4.37)	(6.97)	(5.41)	(7.01)	(3.43)	(7.91)	(22.4%)	(13.65%)

Punjab SRTUs have remained low than average vehicle productivity of SRTUs in India during all the six years under study. Vehicle productivity increases when decline in average fleet held is more than the decline in revenue earning kilometres or when increase in revenue earning kilometres is more than increase in average fleet size. During 2012-13 vehicle productivity in Punjab SRTUs was lowest and the fleet size was highest which means though fleet size was increased during the year but there was no corresponding increase in revenue earning kilometres. So far as fuel efficiency is concerned table 6 shows that SRTUs in Punjab have reported slow improvement in fuel efficiency as compared to SRTUs in India.

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Table 7: Overall Profitability of SRTUs

Parameters	2010-11		2011-12		2012-13	
	Punjab	India	Punjab	India	Punjab	India
Total revenue	70,879.37	32,15,524.55	66,333.59	36,17,215.67	88218.57	40,67,360.09
Total cost	77,753.17	37,66,201.31	80,378.24	42,98,543.37	89859.79	47,85,233.21
Profitability ratio	(9.70)	(17.14)	(21.17)	(18.84)	(1.86)	(17.64)

Source: Compiled from Reports on Review of Profile and Performance of SRTUs in India.
Note.: Figures in (parenthesis) indicate negative value.

The Table 7 displays the comparison of overall profitability of SRTUs in Punjab from the year 2010-11 to 2015-16. Total revenue earned by SRTUs in Punjab has shown steady growth except for the year 2011-12 registering a CAGR of 5.59 percent. However, total cost also increased consistently during these years showing a CAGR of 5.68 percent thereby widening the gap between revenue and costs. This resulted into deterioration in profitability as depicted by profit/loss percent shown in the table 7.

Table 8: Profitability Analysis per Bus of SRTUs

Years/ Parameters	2010-11		2011-12		2012-13	
	Punjab	India	Punjab	India	Punjab	India
Revenue per bus (Rs. Lakhs)	24.57	24.80	23.55	27.64	30.33	30.49
Cost per bus (Rs. Lakhs)	26.96	29.05	28.53	32.85	30.90	35.87
Net profit/loss per bus (Rs. Lakhs)	(2.38)	(4.25)	(4.98)	(5.21)	(.57)	(5.38)

Source: Compiled from Reports on Review of Profile and Performance of SRTUs in India.
Note.: Figures in (parenthesis) indicate negative value.

The picture of financial performance becomes clearer when financial performance is examined per bus and per km. Table 8 shows per bus performance for SRTUs in Punjab. Loss incurred per bus was highest during the year 2014-15 for SRTUs in Punjab. Least loss per bus for SRTUs in Punjab was recorded for the year 2012-13 as during that year PUNBUS reported huge profits which were to the tune of Rs. 6705.88 Crores and these profits covered almost 80.5 per cent losses incurred by other two undertakings (Punjab Roadways and PRTC) during that year. CAGR for Punjab SRTUs shows that cost per bus has shown more increase than the increase in per bus revenue due to which the gap between revenue per bus and cost per bus has widened leading to highest net loss per bus in the year 2014-15 with CAGR showing increase in loss to the tune of 7.39 percent over the period of six years. Overall analysis of performance of SRTUs in Punjab shows that though

2013-14		2014-15		2015-16		CAGR SRTUs	CAGR SRTUs
Punjab	**India**	**Punjab**	**India**	**Punjab**	**India**	**Punjab**	**India**
94,352.68	45,65,316.26	96,573.40	45,63,505.76	98244.24	5174791.02	5.59	8.25
1,06,050.35	55,36,840.16	1,10,578.30	5,567,329.11	108281.44	6437709.19	5.68	9.35
(12.40)	(21.28)	(14.50)	(22.00)	(9.27)	(19.62)		

2013-14		2014-15		2015-16		CAGR SRTUs	CAGR SRTUs
Punjab	**India**	**Punjab**	**India**	**Punjab**	**India**	**Punjab**	**India**
35.74	36.48	37.24	36.48	35.75	36.22	6.45	6.52
40.17	44.24	42.64	44.50	31.90	45.06	2.84	7.59
(4.43)	(7.76)	(5.40)	(8.03)	(3.65)	(8.84)	(7.39)	(12.98)

physical performance parameters have shown mixed trend during the period of six years under study, but financial performance was least during the year 2014-15 as indicated by loss incurred per bus and loss incurred per kilometre.

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Table 9: Overall ranking of SRTUs in Punjab

Sr. No.	Indicator	Punjab Roadways	PUNBUS	PRTC
1.	Fleet utilization	1	1	12
2.	Over aged vehicles	26	1	27
3.	Fuel efficiency	21	24	28
4.	Staff/bus ratio	44	3	12
5.	Staff productivity	38	3	6
6.	Vehicle productivity	27	16	14
7.	Profit/loss per bus per day	41	4	10
8.	Profit/loss per km	38	4	8

Source: Compiled from Review of Profile and Performance of SRTUs in India, 2015-16.

The Table 9 shows the ranking of three SRTUs operating in Punjab state in comparison to 46 SRTUs operating all over India. This ranking has been prepared on the basis of certain selected indicators as listed in the table 9. Punjab Roadways is among the poor performers on seven out of eight key indicators. PUNBUS is among first five SRTUs in India with respect to six indicators out of total eight selected indicators. It is also worth noting that only three SRTUs in India reported net profit during the year 2015-16 and PUNBUS is ranked 2nd so far as profitability is concerned. PRTC is among top ten SRTUs in India with respect to staff productivity and it is among top 20 undertakings in India with respect to fleet utilization, staff/bus ratio, vehicle productivity, profit/loss per bus per day and profit/loss per km. However in tune of Punjab Roadways, PRTC also reported losses for the period of consecutive six years considered under the overall study. Overall comparison of the three SRTUs in Punjab indicates that Punjab Roadways has been showing poor physical as well as financial performance as compared to PUNBUS and PRTC.

DISCUSSION

The analysis of data has revealed that out of the three SRTUs operating in Punjab, PUNBUS which is relatively new undertaking has highest number of fleet and none of the fleet is over aged. However average fleet held by SRTUs in Punjab is less than SRTUs in India and that too is declining. Fleet utilisation which is percentage of average fleet operating to average fleet held better for SRTUs in Punjab as compared to other Indian SRTUs.

Other physical performance indicators which include staff/bus ratio, staff productivity and vehicle productivity, with respect to staff productivity SRTUs in Punjab are performing better than SRTUs in India. It is due to the fact that staff productivity is inversely related to staff employed per bus or staff bus ratio and though Punjab Roadways has reported high staff/bus ratio but PUNBUS and PRTC have employed less staff per bus. However, on the other hand vehicle productivity of SRTUs in Punjab is lower than average vehicle productivity reported by SRTUs in India in spite of the fact that PUNBUS has shown high vehicle productivity. This shows that Punjab Roadways and PRTC have been generating less revenue earning kilometres per vehicle.

Considering the financial performance, PUNBUS is the only state transport undertaking which is earning profits while other two undertakings are incurring losses. The reason which can be attributable to this is low staff costs reported by PUNBUS as compared to Punjab Roadways and PRTC. Moreover, PUNBUS has been operating on more routes than Punjab Roadways and PRTC. Overall in India most of the SRTUs are incurring losses. This is due to the non professional approach of state transport undertakings and concessional fare policy of state governments.

LIMITATIONS AND IMPLICATIONS OF THE STUDY

Status of SRTUs has been examined by considering certain selected indicators. Each and every financial and physical indicator has not been considered due to time and resource constraints. Moreover, data for Punjab Roadways and PUNBUS for the year 2011-12 has been taken from Statistical Abstracts of Punjab due to non availability of data from Ministry of Road Transport and Highways for the same year. So, the figures of total receipts and total expenditure have been considered instead of total revenue and total costs for that year.

The study throws light on various issues which need to be addressed so that SRTUs in Punjab as well as in India can be turned into profit generating undertakings. On physical as well as financial parameters SRTUs have shown dismal performance. Though PUNBUS is generating profits but they are mainly due to low salaries paid to staff as all the staff employed by this undertaking is contractual. Overall analysis imply that there is a need of taking certain policy initiatives like employing adequate staff, allocation of profitable routes, allocation of peak hours and evolving cost reduction strategies. To make these undertakings competitive, it should be ensured that not only policies should be designed rather implementation should be ensured.

The study leaves ample scope for future research also. The study can be extended by making comparison of private transport undertakings with state run transport undertakings. Moreover constructs like quality of work life, job satisfaction, job involvement etc. can be examined for these undertakings.

CONCLUSION AND SUGGESTIONS

To conclude, the status of SRTUs in Punjab has been examined on the basis of certain selected physical and financial parameters. Data have been analysed using ratios, percentages and also by comparing with other SRTUs operating in India. The study found that PUNBUS had highest average fleet size (1258) in Punjab in 2015-16. However, average fleet size held by SRTUs in Punjab is less than the average fleet size held by SRTUs in India during the same year. Moreover, fleet held by SRTUs in Punjab has shown decline as compared to SRTUs in India as indicated by CAGR over the last six years (2010-11 to 2015-16). The Fleet utilization ratio of SRTUs in Punjab is better than fleet utilization ratio of SRTUs in India. Both Punjab Roadways and PRTC had high percentage of over aged vehicles in comparison to average percentage of over aged vehicles in India. In case of PUNBUS none of the vehicles was found to be over aged. The fuel efficiency of vehicles of SRTUs in Punjab is found to be exactly same as that of Indian SRTUs. Punjab Roadways had highest staff strength among the three SRTUs in Punjab. However, average staff strength and staff/bus ratio for SRTUs in Punjab is much lower than SRTUs in India. It is to be noted that over the period of six years i.e., from 2010-11 to 2015-16 staff strength for SRTUs in Punjab has shown more growth than that of SRTUs in India. The Staff productivity for SRTUs in Punjab

was found to be higher than that of SRTUs in India but it showed negative growth over the period of six years as compared to all India SRTUs during the same period. Lowest staff productivity was reported by Punjab Roadways. SRTUs in India have performed better than SRTUs in Punjab in terms of vehicle productivity.

So far as financial performance is concerned, all the three SRTUs in Punjab reported losses for the year 2015-16 with highest losses incurred by Punjab Roadways. However, on an average basis losses reported by SRTUs in India were much higher than losses reported by SRTUs in Punjab for the same year. With respect to profit/loss per bus, PUNBUS earned profit per bus and other two undertakings incurred losses per bus. Besides, considering data for six years from 2010-11 to 2015-16, it is revealed that losses incurred by SRTUs in Punjab have expanded more than losses incurred by SRTUs in India. On kilometre basis it has been found that only PUNBUS earned profit per KM for the year 2015-16. On an average over the period of six years, both SRTUs in Punjab as well as SRTUs in India showed losses per kilometre. Overall ranking of these undertakings on eight selected indicators depicted that PUNBUS is among the top ten on six indicators (fleet utilization, over aged vehicles, staff/bus ratio, staff productivity, profit per bus per day, profit per KM), PRTC is among top ten only on two indicators (profit per km, staff productivity), and Punjab Roadways is among top ten only on one indicator (fleet utilization).

On the basis of findings of the study, some suggestions for enhancing performance of SRTUs in Punjab as well in India are: Over aged vehicles are financial burden on SRTUs as these vehicles require more fuel to operate, frequent repairs etc. Besides, passengers may not like to board such vehicles due to uncomfortable and untimely service. Thus, such vehicles cannot be expected to generate much revenue also. To improve the status of SRTUs, better quality service should be provided to customers i.e., bus passengers. Quality service here means comfortable and timely service. In case of SRTUs in Punjab, it has been found that both Punjab Roadways and PRTC have large percentage of over aged vehicles and these vehicles cannot be thought of providing comfortable journey. Proper planning should be made to replace such vehicles so that passengers do not hesitate in boarding these vehicles. The staff/bus ratio should neither be too high or too low. Too high ratio indicates employment of excessive staff which poses to be a financial burden. Too low ratio is an indication that less staff has been employed per bus due to which either it will not be possible to operate all the scheduled KMs or it may not possible to operate all the vehicles. In both cases, shortage of staff will result in poor physical performance of undertaking. Punjab Roadways should pay particular attention to the deployment of excessive staff as it has shown highest staff/bus ratio and lowest staff productivity. Increase in staff employed over the period of six years from 2010-11 to 2015-16 and decrease in fleet size results in increase in staff/bus ratio over the same period. The excessive staff may be the reason for declining staff productivity over time and should be paid due attention. It has been noted that all SRTUs in Punjab have reported low vehicle productivity, so attempt should be made to improve here also. One of the ways of improving vehicle productivity could be to increase revenue earning KMs of buses by allowing them to operate on more profitable routes and at more profitable time slots. Sidhu (2007) also found that PRTC operates on non remunerative routes and during non peak hours, so these issues should be taken up on priority basis in order to generate profits for PRTC. Besides, undertakings may plan to extend the routes of buses for interstate passenger transportation also. While, looking at the financial side, it can be seen that SRTUs both in Punjab as well as in India are

continuously incurring losses though PUNBUS reported marginal profits per bus and per KM. One of the obvious reasons for these huge losses of SRTUs in Punjab is high costs of these undertakings. Cost per bus and cost per km was highest for the year 2014-15 for SRTUs in Punjab resulting in poor financial performance. An insight into the cost structure of these undertakings showed that staff costs and fuel and lubricants costs were the major contributor to total costs of these undertakings. Further, Punjab Roadways which has lowest fleet size, has reported highest staff strength and staff costs among the three SRTUs operating in Punjab. Proper cost control system should be designed so that costs can be controlled and profits can be generated. Government of Punjab, in tune with turnaround strategy adopted by Andhra Pradesh SRTUs, should evolve strategies to improve status of SRTUs in Punjab. Outside agencies may even be hired to make possible turnaround of these undertakings. It is right that SRTUs run their operations in public interest and they have to bear the burden of concessional services being provided to various sections of society, such concessions should be reimbursed by government, so that on the one hand transport undertakings do not hesitate in providing these services to needy sections of society and on the other hand, they do not feel financial burden of these services. In other words, if government shows positive attitude and lends financial help, it will surely help SRTUs to bounce back to financial health (Gill and Sidhu, 2002). A survey by Singh (2015) found that politicians' owned/backed private buses are taking toll of SRTUs financial health in Punjab. The study revealed that private bus transporters have been taking the Punjab government for a ride, as it is now official that 659 of the 3,543 commercial buses registered in the state have no permit. This sort of system/arrangements needs to be relooked and it will require a strong political will.

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A STUDY ON THE ANTECEDENTS OF BRAND LOYALTY ON CRM

ABSTRACT

CRM is a powerful tool in the hands of someone who knows how to use it-but it can backfire when used improperly. All over the world every organisations, and profit maximising firms want to make their consumer loyal. The study focuses on to describing the usefulness of Brand Loyalty in the development of CRM process. There are many prominent factors responsible for loyalty & CRM. Employing Factor Analysis Techniques, the study finds Quality drivers, Consideration & Brand Credibility as the underlying factors leading towards Brand Loyalty. Unethical Practices, Benefits & Customer Loss are the factors retained under CRM. The specific influence of Quality drivers, Consideration & Brand Credibility on Unethical Practice, Benefits and Customer Loss has been attempted through Bi-Variate analysis to develop an instrument to measure effectiveness of Brand Loyalty in the development of CRM process.

Keywords: Brand Loyalty, CRM Process, Loyalty & CRM Factors.

INTRODUCTION

Modern marketers are rediscovering the old mantras for accomplishment in corporate world and mixing them with contemporary marketing. Long haul survival and competitive advantage must be accomplished by setting up a fervent bond with the clients. (Gronroos, 1994). In the present aggressive and changeable market place, cell phone industry is picking up popularity and as mobile usage is developing quickly; telecommunication marketers are developing new strategies to take advantage of the potential customers (Azila, Noor, 2011). Brand loyalty is a form of repeat purchasing behaviour reflecting a conscious decision to continue buying the same brand, for brand loyalty to exist, a pattern of repeat purchase must be accompanied by an underlying positive attitude towards the brand (Solomon et al., 2006). Customer loyalty is divided into two components one is based on behaviour and the other is based on attitudes (Guillén, Nielsen, Scheike & Marín, 2011). (Rauyruen and Miller 2007) also explain customer loyalty as a merged concept of behavioural loyalty (willingness of customer to repurchase from and continue relationships with the company) and attitudinal loyalty (emotional attachments and advocacy of customers toward the company). Customer loyalty is focal point for numerous business organizations (Vesel & Zabkar, 2009). Loyalty behaviours, including relationship continuance, increased scale or scope of relationship, and recommendation (word of mouth advertising) result from customers' beliefs that the quantity of value received from one supplier is greater than that available from other suppliers. Loyalty, in one or more of the forms, creates increased profit through enhanced revenues, reduced costs to acquire

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customers, lower customer-price sensitivity, and decreased costs to serve customers familiar with a firm's service delivery system (Reicheld and Sasser, 1990). Customer relationship management (CRM) is basis on the idea that developing a relationship with customers is the most excellent way to find them to become loyal and that loyal customers are more profitable than non-loyal customers. CRM mainly focuses on enhancing profitability and customer satisfaction. Therefore, CRM is mainly a strategic business and process issue rather than a technical issue (Dowling, 2002). (Gummesson 1999) defines relationship marketing as a continuation of the mutual relationship between a service provider and a customer who will lead to formation of profitability. Retention and attraction of new customer are used as drivers for increase in market share and revenues (Rust, Zohorik & Keiningham 1995). Technology, data and customer knowledge are used to create value of firm (Payne and Frow 2005). Hence, CRM brings together people, technology and organizational capabilities to ensure connectivity between the company, its customers and collaborating firms. In a few associations, CRM is just an innovation arrangement that expands Separate databases and deals drive mechanization instruments to connect deals and advertising capacities so as to improve focusing on endeavours (Peppers and Rogers, 1999). In the retention of customer, it is important for firm to know who to serve their customers. Post sales services are the important drivers for customer retentions (Saeed, Grover & Hwang, 2005). (Anderson and Mittal, 2000) customer relationship profitability arises through the acquisition and retention of "high quality" customers with low maintenance costs and high revenue. Relationship marketing strategies should enhance customers' perceived benefits of engaging in relationships (O'Malley and Tynan, 2000).

REVIEW OF LITERATURE

An extensive review of the literature is done and found a literature gap and lack of previous research work aiming to investigate the effectiveness of Brand Loyalty in the development of Customer Relationship Management. Thus this paper focuses on the fact that it makes an attempt to examine aforesaid issue imperially. Customer relationship practices have a direct and positive relationship with customers' loyalty. Better the CRM practices more will be the loyalty. Customer loyalty forms the basis for retained and profitable customers (Khandekar&. Deshmukh, 2012).Customer Relationship Management (CRM) means developing a comprehensive picture of customer needs, expectations and behaviours and managing those factors to affect business performance (Mike, 2005). Loyalty is used to describe the willingness of a customer to continue patronizing a firm's goods and services over a long period of time and on a repeated and preferably exclusive basis, and voluntarily recommending the firm's products to friends and associates (Lovelock, 1996). Customer

loyalty is the result of an organization's creating a benefit for customers so that they will maintain and increasingly repeat business with the organization (Anderson and Jacobsen, 2000). (Reinartz, W.J. & Kumar, V., 2003) describes that longevity of loyal customer comprises profitability of an organization. A framework has been prepared on the basis of past customer value and their duration of relationship with an organization which adds value to the decision makers in managing customer relationship. For maintaining strong and genuine relationship marketing, customer management orientation should be adopted by the marketers on the basis of customer retention and their lifetime analysis with the organization. Long term customers provide positive outcome of an organization that adds profit for the company. They also help in the identification of growing needs of the society. Author focused more in maintaining buyer-seller relationship for long term duration. Verhoef (2003) studied Effectiveness of Customer Share Development and Customer Retention to improve Customer Relationship Management. Results showed that better customer loyalty programmes and offering economic incentives to consumers helps to built good relationship with consumers and more growth in sales. Customer Retention can be more effective by applying sound strategies like call-up customers and updating them about the product updates. On the other hand, direct mailing helps to build better customer share development. Post purchase feedback in vital to understand the customer's satisfaction towards the product and providing more information about the product and services through direct mailing helps to update the customer easily about their product. (Krishnamoorthy, V. & Srinivasan, R., 2013) finds the relationship between Customer Relationship Management and Customer Loyalty, and he successfully established the relationship between the two terms. The study shows positive relationship between customer loyalty and customer relationship management. After successful study, it has been found that the promises and words made by banks are reliable and to trust upon. Positive services by the bank officials like how to invest to customers bring great impact and it brings customer loyalty. Strategies like enhancing relationship with existing customers and maintaining that relationship attract customers and they will remain loyal for that bank in future too. The term Relationship - Marketing is pre-dominant in here. In any banking group it is important to attract customers with attractive services with satisfied customer services like timely updates to the customers through phone calls or meeting in person. Velnampy and Sivesan (2012) studied mobile service companies and effective implementation of CRM and Customer Satisfaction. Trust, Commitment, Empathy and Equity are the variables that measures CRM. The objective is to identify and investigate the role and impact of customer relationship marketing on customer satisfaction and suggestions to mobile companies to value the customers' demands and expectations. Mobile companies give importance on building more towers and infrastructures to beat each other but completely failed to satisfy the psychological part of customers and their requirement. Customer needs were not fulfilled by the companies. Apart from that, study suggests that importance should have to be given to reduce customer dissatisfaction, improve service quality, customer retention, and customer loyalty and improve mobile service network facilities.

OBJECTIVES

The broad objectives of the study are as follows:

(i) To identify and measure the various dimensions of Brand Loyalty.

(ii) To identify and measure the various dimensions of Customer Relationship Management.

(iii) To examine the effectiveness of Brand Loyalty in the development of Customer Relationship Management.

HYPOTHESES

The hypotheses of the study are as follows:

H01: There is no impact of Quality Drivers in the development of CRM.

H02: There is no impact of Consideration in the development of CRM.

H03: There is no impact of Brand Credibility in the development of CRM.

METHOD

An exploratory research followed with causal research design was used to carry out the study. The present study is based on both the primary as well as on secondary data. Structured Questionnaire was used to collect primary data from all the 600 respondents. Probability sampling was used in research. Stratified Random Sampling was used to stratify the heterogeneity of population based on various demographic factors. Sample size considered for the study was 600 respondents with varied demographics. The study was conducted in some selected cities of Northern India. The cities were identified on the basis of concentration of Service Providers operations. The selected city mainly included Dehradun, Haridwar, Chandigarh, Ghaziabad & Delhi. The Service Providers selected for the study were BSNL, Air Tel, Vodafone, Reliance, Idea & TATA Indicom/ DOCOMO. Reliability analysis was performed to test the reliability of scale and inner consistency of extracted factors. For this purpose, Cronbach's alpha coefficient was calculated. Data set is said to be suitable for factor analysis if Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value is 0.6 or above & The Bartlett's Test of Sphericity value should be significant (i.e. the Sig. value should be .05 or smaller).

In the case Brand Loyalty Cronbach's alpha coefficient value for the data set is 0.681, which is considered acceptable as an indication of scale reliability. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value is .702. The Bartlett's test of Sphericity is significant, [?2(91)= 1274 , p=.001] and it is indicating that correlation matrix is not an identity matrix & therefore Factor Analysis is appropriate. In the case of CRM Cronbach's alpha coefficient value for the data set is 0.688, which is considered acceptable as an indication of scale reliability. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value is .654. The Bartlett's test of Sphericity is significant, [?2(21)= 699.676 , p=.001] and it is indicating that correlation matrix is not an identity matrix & therefore Factor Analysis is appropriate.

Exploratory Factor Analysis was used to identify the underlying factors for Customer satisfaction/ Dissatisfaction & Brand Loyalty. Influence of Antecedents of Brand Loyalty on CRM was tested with the help of test of significations besides using various other statistical techniques like correlation, chi-square, cross tabulation, etc.

RESULTS

Factor analysis was performed on the Brand Loyalty & CRM attributes included in the questionnaire in order to determine the underling dimensions of Brand Loyalty & CRM (see Table 1). A seven point Likert scale was used anchored from Never- Always/ Completely

Disagree- Completely Agree for fourteen Brand Loyalty attributes & seven CRM attributes. Principal Component Analysis with Varimax rotation and Eigen value equal to or greater than one was used. The approach was to retain items with factor loadings of equal to or above 0.50 (Hair et al., 1998).

Table 1: Factor Analysis: Brand Loyalty

Factor Name	Elements of Brand Loyalty	Rotated Factor Matrix			
		F1	F2	F3	F4
Quality Drivers	Your service provider is is good from others in network	.728			
	Your service provider is is good from others in scheme	.709			
	Your service provider is good from others in availability	.578			
	Service quality you look for while opting new service provider	.558			
Consideration	You are customer of particular company by occasion		.763		
	You are customer of particular by choice		.750		
	VAS you look for while opting new service provider		.557		
Brand Credibility	Reputation of company you you look for while opting mobile service provder			.640	
	You prefer sales person behaviour of service provider			.624	
	Preference for mobile service provider stand with ambiance			.525	
Trust	Same service provider renders service to all your family members				.836
	Your service provider provide all facilities which others do				.655

Factor Name	Elements of Brand Loyalty	Rotated Factor Matrix			
		F1	F2	F3	F4
Eigen Values		3.006	1.690	1.382	1.005
Percentage of of Total Variance		14.644	14.560	13.635	8.113
Cumulative Percentage of Variance		14.644	29.204	42.838	50.951
Number of Items per Factor		4	3	3	2

Source: Author's Compilation

Only factors with an Eigen value of 1.0 or more with factor loading 0.5 were retained for further investigation. First Factor was most important factor with Eigen Value of 3.006 explains 14.644% of total variance. Four medium in this factor reflects the superiority of service provider with certain attributes, hence this factor was named as Quality Drivers. Second factor Eigen Value of 1.690 explains 14.560% of the variance.Three medium reflects elements for considering a particular service provider that's why this factor was named as Consideration. Third factor with Eigen Value of 1.382 explains 13.635% of the variance in relevance with Value & reputation and so this factor was named as Brand Credibility. Fourth factor with Eigen Value of 1.005 explains 8.113% of the variance. The two elements under this factor were named as Trust.

Table 2: Factor Analysis: CRM

Factor Name	Elements of Customer Relationship Managment	Rotated Factor Matrix		
		F1	F2	F3
Unethical Practice	Your company use negative publicity an unethical approach to build customer reationship.	.860		
	Your company use discrimination an unethical approach to build customer relationship.	.827		
	Your company use insisting on sentiments an unethical approach to build customer relationship.	.687		

Factor Name	Elements of Customer Relationship Managment	Rotated Factor Matrix		
		F1	F2	F3
Benefits	Relationship-Marketing benefits customers in reducing their stress.		.892	
	Relationship-marketing helps in customers' empowerment.		.635	
Customer Loss	Organisation is losing customer due to service.			.788
	Organisation is losing customer due to competition.			.696
Eigen Values		1.927	1.680	1.127
Percentage of Total Variance		27.050	20.636	19.945
Cumulative Percentage of Variance		27.050	47.686	67.631
Number of Items per Factor		3	2	2

Only factors with an Eigen value of 1.0 or more with factor loading 0.5 are retained for further investigation. First Factor was most important factor with Eigen Value of 1.927 explains 27.050% of total variance. Three medium under this factor reflects that unethical practices used by service providers to generate CRM, hence this factor was named as Unethical Practice. Second factor with Eigen Value of 1.680 explains 20.636% of the variance. Two medium within this factor reflects how CRM was beneficial for service providers that's why this factor was named as Benefits. Third factor with Eigen Value of 1.127 explains 19.945% of the variance in relevance with reasons behind losing customers and so this factor was named as Customer Loss (see Table 2).

Parallel Analysis

Parallel analysis was used for determining the number of components or factors to retain from Principal Component Analysis (see Table 3). Four factors namely Quality Drivers, Consideration, Brand Credibility & Trust were generated from PCA. Tabled random data Eigen values were generated through Monte Carlo PCA. The results of parallel analysis support the decision to retain three out of four factors for further investigation. The underlying factors determining Brand Loyalty namely F1: Quality Drivers, F2: Consideration, F3: Brand Credibility was retained for further analysis.

Tabled random data Eigen values with number of variables seven, number of subjects 600 and number of replications 100 were generated through Monte Carlo PCA for Parallel Analysis. Systematically comparing the Eigen values from principal components analysis (PCA) and the corresponding criterion values obtained from parallel analysis. If PCA value is larger than the criterion value from parallel analysis, then we have to retain the factor; if it is less, then we have to reject it.

Tabled random data Eigen values with number of variables 14, number of subjects 600 and number of replications 100 were generated through Monte Carlo PCA for Parallel Analysis. The result for the same is summarized as follows:

Table 3: Parallel Analysis Result (Brand Loyalty)

Component Number	Actual Eigen Value from PCA	Criterion Value from Parallel Analysis	Decision
1	3.006	1.2608	Accepted
2	1.690	1.2021	Accepted
3	1.382	1.1533	Accepted
4	1.055	1.1143	Rejected

Source: Author's Compilation

Table 4: Parallel Analysis Result (CRM)

Component Number	Actual Eigen Value from PCA	Criterion Value from Parallel Analysis	Decision
1	1.927	1.1580	Accepted
2	1.680	1.0907	Accepted
3	1.127	1.0422	Accepted

Source: Author's Compilation

Table 5: Proposed Relationship Summaries

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
	Brand Loyalty Factors	CRM Factors			
	Quality Drivers	Unethical Practice			
H_{01}: There is no impact of Quality Drivers in the development of CRM.	Your service provider is good from others in network.	Your company use negative publicity an unethical approach to build customer relationship.	r = -.054	x^2= 140.0	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
		Your company use discrimination an unethical approach to build customer relationship.	r = -.113	x^2= 142.0	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = .016	x^2= 149.0	Rejected
		Benefits	r = .250	x^2= 157.9	Rejected
		Relationship-Marketing benefits customers in reducing their stress.			
		Relationship-marketing helps in customers' empowerment.	r = .204	x^2= 158.4	Rejected
		Customer Loss	r = .092	x^2= 199.4	Rejected
		Organisation is losing customer due to service.			
		Organisation is losing customer due to competition.	r = .039	x^2= 161.1	Rejected
	Your service provider is good from others in scheme	*Unethical Practice* Your company use negative publicity an unethical approach to build customer relationship.	r = -.108	x^2= 164.1	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = -.019	x^2= 127.7	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = -.035	x^2= 129.0	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
		Benefits	r = .253	x^2= 276.3	Rejected
		Relationship-Marketing benefits customers in reducing their stress.			
		Relationship-marketing helps in customers' empowerment.	r = .162	x^2= 229.3	Rejected
		Customer Loss			
		Organisation is losing customer due to service.	r = .182	x^2= 196.1	Rejected
		Organisation is losing customer due to competition.	r = .189	x^2= 300.1	Rejected
H_{02}: There is no impact of Consideration in the development of CRM.	*Consideration*	*Unethical Practice*			
		You are customer of particular company by occasion Your company use negative publicity an unethical approach to build customer relationship.	r = .188	x^2= 161.6	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = .168	x^2= 170.2	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = -.062	x^2= 193.1	Rejected
		Benefits	r = .058	x^2= 110.7	Rejected
		Relationship-Marketing benefits customers in reducing their stress.			
		Relationship-marketing helps in customers' empowerment.	r = .033	x^2= 170.7	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
		Benefits	r = .253	x^2= 276.3	Rejected
		Relationship-Marketing benefits customers in reducing their stress.			
		Relationship-marketing helps in customers' empowerment.	r = .162	x^2= 229.3	Rejected
		Customer Loss			
		Organisation is losing customer due to service.	r = .182	x^2= 196.1	Rejected
		Organisation is losing customer due to competition.	r = .189	x^2= 300.1	Rejected
H_{02}: There is no impact of Consideration in the development of CRM.	*Consideration*	*Unethical Practice*			
		You are customer of particular company by occasion Your company use negative publicity an unethical approach to build customer relationship.	r = .188	x^2= 161.6	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = .168	x^2= 170.2	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = -.062	x^2= 193.1	Rejected
		Benefits	r = .058	x^2= 110.7	Rejected
		Relationship-Marketing benefits customers in reducing their stress.			
		Relationship-marketing helps in customers' empowerment.	r = .033	x^2= 170.7	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
		Customer Loss Organisation is losing customer due to service.	r = .302	x^2= 244.1	Rejected
		Organisation is losing customer due to competition.	r = .160	x^2= 207.0	Rejected
	You are customer of particular company by choice	*Unethical Practice* Your company use negative publicity an unethical approach to build customer relationship.	r = .058	x^2= 174.3	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = .106	x^2= 200.0	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = - .150	x^2= 192.6	Rejected
		Benefits Relationship-Marketing benefits customers in reducing their stress.	r = - .061	x^2= 170.2	Rejected
		Relationship-marketing helps in customers' empowerment.	r = .065	x^2= 254.1	Rejected
		Customer Loss Organisation is losing customer due to service.	r = .334	x^2= 333.1	Rejected
		Organisation is losing customer due to competition.	r = .066	x^2= 175.5	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
		Customer Loss Organisation is losing customer due to service.	r = .302	x^2= 244.1	Rejected
		Organisation is losing customer due to competition.	r = .160	x^2= 207.0	Rejected
	You are customer of particular company by choice	*Unethical Practice* Your company use negative publicity an unethical approach to build customer relationship.	r = .058	x^2= 174.3	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = .106	x^2= 200.0	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship.	r = - .150	x^2= 192.6	Rejected
		Benefits Relationship-Marketing benefits customers in reducing their stress.	r = - .061	x^2= 170.2	Rejected
		Relationship-marketing helps in customers' empowerment.	r = .065	x^2= 254.1	Rejected
		Customer Loss Organisation is losing customer due to service.	r = .334	x^2= 333.1	Rejected
		Organisation is losing customer due to competition.	r = .066	x^2= 175.5	Rejected

Hypothesis	Proposed Relationship		Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
H_{03}: There is no impact of Brand Credibility in the development of CRM.	*Brand Credibility*	*Unethical Practice*			
	Reputation of company you look for while opting mobile service provider	Your company use negative publicity an unethical approach to build customer relationship.	r = -.101	x^2= 191.4	Rejected
		Your company use discrimination an unethical approach to build customer relationship.	r = .041	x^2= 135.0	Rejected
		Your company use insisting on sentiments an unethical approach to build customer relationship	r = -.088	x^2= 140.6	Rejected
		Benefits			
		Relationship-Marketing benefits customers in reducing their stress.	r = .066	x^2= 145.0	Rejected
		Relationship-marketing helps in customers' empowerment.	r = .101	x^2= 217.7	Rejected
		Customer Loss	r = .105	x^2= 137.9	, Rejected
		Organisation is losing customer due to service.			
		Organisation is losing customer due to competition.	r = .255	x^2= 249.0	Rejected
	You prefer sales person behaviour of service provider	*Unethical Practice* Your company use negative publicity an unethical approach to build customer relationship.	r = - .020	x^2= 186.8	Rejected

Hypothesis	Proposed Relationship	Karl Pearson's Coefficient of Correlation (r)	Chi- Square (x^2)	Result
	Your company use discrimination an unethical approach to build customer relationship.	r = - .017	x^2= 186.8	Rejected
	Your company use insisting on sentiments an unethical approach to build customer relationship	r = .061	x^2= 146.5	Rejected
	Benefits	r = .307	x^2= 232.6	Rejected
	Relationship-Marketing benefits customers in reducing their stress.			
	Relationship-marketing helps in customers' empowerment.	r = .159	x^2= 249.4	Rejected
	Customer Loss	r = .136	x^2= 179.3	Rejected
	Organisation is losing customer due to service.			
	Organisation is losing customer due to competition.	r = .431	x^2= 319.4	Rejected

Source: Author's Compilation

The proposed relationship summary examines the effectiveness of Brand Loyalty extracted factors (F1: Quality Drivers, F2: Consideration, F3: Brand Credibility) on the development of CRM (F1: Unethical Practice, F2: Benefits, F3: Customer Loss) process.

The first hypothesis examines the effectiveness of service provider's quality in terms of network & scheme in the development of CRM. Karl Pearson's Coefficient of Correlation (-.054) shows a negative association between service provider is good from others in network & company use negative publicity an unethical approach to build customer relationship. The calculated value of Chi-square (5% level of significance is 140.0) is greater than tabulated value of Chi-square (5% level of significance is 43.773) hence null hypothesis is rejected & it can be concluded that there is an impact of service provider is good from others in network on company use negative publicity an unethical approach to build customer relationship. Service provider is good from others in network with discrimination an unethical approach to build customer relationship is having negative

association with Karl Pearson's Coefficient of Correlation (-.113). The calculated value of Chi-square (5% level of significance is 142.0) is greater than tabulated value of Chi-square (5% level of significance is 43.773) hence null hypothesis is rejected or it can be concluded that there is an impact of service provider is good from others in network on discrimination as unethical approach to build CRM. Service provider is good from others in network & insisting on sentiments approach to build CRM is positively correlated with the Karl Pearson's Coefficient of Correlation value (.016). The calculated value of Chi-square 149.0 is greater than tabulated value of Chi-square is 43.773 which conclude that there is an impact of service provider is good from others in network on insisting on sentiments approach to build CRM. Karl Pearson coefficient of correlation (.250) shows a positive correlation between service provider better network & benefits of relationship marketing as reducing customer stress. Calculated value of Chi-square for 30 degree of freedom at 5% level of significance is 157.9 and tabulated value of Chi-square is 43.773 exhibits the impact of service provider better network on relationship marketing benefits in reducing customers stress. Service provider is good from others in network & relationship marketing benefits customers in empowerment is positively correlated with Karl Pearson coefficient of correlation (.204). The calculated value of Chi-square is 158.4 and tabulated value of Chi-square is 43.773. Hence there is an impact of service provider is good from others in network on relationship marketing benefits customers in empowerment. Service provider is good from others in network is positively correlated with organisation is losing customer due to service & competition. The calculated value of Chi-square is more than tabulated value of Chi-square. Hence there is an impact of service provider is good from others in network on organisation is losing customer due to service & competition. Karl Pearson coefficient of correlation shows a negative association for Service provider is good from others in scheme with insisting on sentiments, negative publicity & discrimination as an unethical approach to build customer relationship. The identified Chi-square for degree of freedom 30 at 5% level of significance is more than tabulated value which concludes that there is an impact of Service provider is good from others in scheme on insisting on sentiments, negative publicity & discrimination as an unethical approach to build customer relationship. Based on the identified value of Chi-square it can be concluded that there is an impact of Service provider is good from others in scheme on insisting on benefits of relationship marketing as reducing stress & customer empowerment. The value for Karl Pearson coefficient of correlation (0.182, 0.189) exhibits a positive association between Service providers is good from others in scheme & Organisation is losing customer due to service and competition. Chi-square for degree of freedom 36 at 5% level of significance (196.1, 300.1) also concludes that there is an impact of Service provider is good from others in scheme on Organisation is losing customer due to service and competition (see Table 5).

The second hypothesis examines the impact of customer for a company by occasion or choice in the development of CRM. Customer for a company by occasion with Karl Pearson coefficient of correlation (0.188, 0.168) shows a positive association with company use negative publicity & discrimination an unethical approach to build customer relationship. There is a negative (-0.062) association between customer for a company by occasion on insisting on sentiments unethical approach to build customer relationship. Rejected null hypothesis with calculated value of Chi-square concludes that there is an impact of customer for a company by occasion on company use negative publicity, discrimination & insisting on sentiments an unethical approach to build customer relationship. Customer for

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a company by occasion with Karl Pearson coefficient of correlation (0.058, 0.033) shows a positive association with Relationship-Marketing benefits customers in reducing their stress & customer empowerment. Calculated value of Chi-square concludes that there is an impact of Customer for a company by occasion on Relationship-Marketing benefits customers in reducing their stress & helps in customer empowerment. Karl Pearson coefficient of correlation (0.302, 0.160) & calculated value of Chi-square (244.1, 207.0) shows a positive correlation between Customer for a company by occasion & Organisation is losing customer due to service & competition. Rejected null hypothesis concludes that there is an impact of Customer for a company by occasion on Organisation is losing customer due to service & competition. Customer of particular company by choice is positively correlated (0.058, 0.106) with negative publicity, discrimination & negatively correlated (-0.150) with insisting on sentiments as unethical approach to build CRM. Customer of particular company by choice is positively correlated (0.065) with Relationship-marketing helps in customers' empowerment & negatively correlated (-0.061) with Relationship-marketing helps in reducing their customer stress. Customer of particular company by choice is positively correlated (0.334, 0.066) with organisation is losing customer due to competition & service. Since calculated value of chi-square is more than tabulated value therefore null hypothesis is rejected or it can be concluded that there is an impact of Customer of particular company by choice on the factors of CRM Unethical practice, Benefits & customer loss (see Table 5).

The third hypothesis examines the impact of Brand Credibility in the development of CRM. Reputation of company you look for while opting mobile service provider with Karl Pearson coefficient of correlation (-0.101, -0.088) shows a negative association with company use negative publicity & insisting on sentiments an unethical approach to build customer relationship. There is a positive (0.041) association between Reputation of company you look for while, opting mobile service provider & discrimination an unethical approach to build customer relationship. Null hypothesis with calculated value of Chi-square concludes that there is an impact of Reputation of company you look for while, opting mobile service provider on company use negative publicity, discrimination & insisting on sentiments an unethical approach to build customer relationship. Reputation of company you look for while opting mobile service provider is positively associated with Benefits & Customer Loss. The result of Chi-square explains there is an impact Reputation of company you look for while opting mobile service provider on the customer benefits & reasons behind customer loss. As per Karl Pearson coefficient of correlation there is a positive association between preference of sales person behaviour of service provider & Benefits, Customer loss as factors of CRM. The result of analysis also explains that there is an impact for the preference of sales person behaviour of service provider on Benefits, Customer loss & Unethical practice as an approach to develop CRM (see Table 5).

CONCLUSION

CRM is a technique that can help building long-term relationships with the customers and develops efficient management systems. Factor Analysis on the basis of respondents data set identifies three factors namely Quality Drivers, Consideration, Brand Credibility leading to Brand Loyalty & the other three factors Unethical Practice, Benefits, Customer Loss leading to Customer Relationship Management. In order to examine the effectiveness of Brand Loyalty in the development of CRM the summarised result explained that there is an impact of Brand Loyalty in the development of Customer Relationship Management. There

is a less significant positive association between Quality drivers & CRM factors (Benefits & Customer Loss). There is a less significant negative association between Quality drivers & CRM factor (Unethical Practice). The existing relationship elaborates that as the service providers enhances its quality in terms of Network & Scheme it is perceived as beneficial for customers in terms of empowerment & reduction of customer stress. As the service provider enhances its quality it also becomes a reason for increase of market competition as well as customer loss & Vice- Versa. The less significant negative association elaborates enhancement of Service provider's quality in terms of network & Scheme leads to reduction in negative publicity, discrimination & insisting on sentiments as an approach to build relationship with customers. The result of $\chi 2$ proves that there is an impact of Quality Drivers on Unethical Practice, Benefits & Customer Loss & state that there is an impact of Quality Deriver in the development of Customer Relationship Management.

Second Brand Loyalty Factor defines adoption of service provider based on Occasion & Choice hence named as Consideration. Adoption of Service provider by Occasion shows a less significant positive association with Benefits & Customer Loss. The existing relationship elaborates that generally the occasional adoption of service provider is perceived by customers as beneficial in terms of empowerment & stress reduction. Special occasions also generate the avenues for high competition & customer loss. Adoption of Service provider by Occasion also shows a positive association with negative publicity & discrimination as an unethical approach to build relation with customers at the same time it also shows a negative association with insisting on sentiments an unethical approach to build customer relation. This states that increase in occasional adoption of service provider increases the chance of using negative publicity & discrimination as an unethical approach to build relation with customers but decreases the chance of using insisting on sentiments to build relation with customers. Adoption of Service provider by choice shows a positive association with Customer loss. Which means customer choice of particular service provider generates stiff competition as well as customer loss. Adoption of Service provider by choice helps in customer empowerment and increases discrimination & negative publicity to build customer relationship but not reduce customer stress and decreases insisting on sentiments an unethical approach to build relationship. The result of $\chi 2$ proves that there is an impact of Consideration on Unethical Practice, Benefits & Customer Loss which rejects the second hypothesis of the study & state that there is an impact of Consideration in the development of Customer Relationship Management.

Third Brand Loyalty factor identifies reputation of service provider and sales person behaviour hence named as brand credibility. Reputation of service provider shows positive association with Benefits and customer loss. Customer looking for company reputation while opting mobile service provider helps in customer empowerment & reduces customer stress. It is also showing an association for increase in competition & customer loss. Reputation of service provider shows negative association with negative publicity & insisting on sentiments but positive association with discrimination as an unethical approach to build relation. Service provider with better reputation in market make less use of negative publicity & insisting on sentiments as an unethical approach to build relation but Service provider with better reputation discriminates between there service users. Better sales person behaviour helps in customer empowerment & reduces customer stress. But the proposed relationship also states that in search of better sales person behaviour is also a reason for customer loss and increasing competition. Service provider with better sales

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person behaviour makes less use of negative publicity & discrimination as unethical approach to build Customer relationship. The result of $\chi 2$ proves that there is an impact of Brand Credibility on Unethical Practice, Benefits & Customer Loss which rejects the third hypothesis of the study & state that there is an impact of Brand Credibility in the development of Customer Relationship Management. The results from the cross sectional bivariate analysis states that the factors of Brand Loyalty Quality Drivers, Consideration & Brand Credibility effects the factors of Customer Relationship Management. Service providers use different shorts of techniques to retain customers. But the results state that loyalty is an important parameter to retain customer for a longer period of time. CRM process is significantly affected by the perspective of customers. Perspective of customers can be improved by working on the quality of service, Brand building, better sales person behaviour, value added services etc.

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WOMEN'S EDUCATION AND EMPOWERMENT: A STUDY OF HIMALAYAN STATES IN INDIA

ABSTRACT

Gender equality in term of education accessibility can play a vital role in overall growth and development of society. The main objective of this paper is to examine the educational aspects of women's empowerment in Himalayan states of India on the basis of gender and background. Data was collected from census of India (2011) and Odds ratios were calculated for females in different categories. The findings of the study revealed a huge gender disparity in all categories, whatever is the background the women are far behind men in term of education level. The rural women are at the core of illiteracy problem. The number of women having graduation and higher qualification is very less in all Himalayan states. These outcomes are questioning the credibility of women educational empowerment schemes running at different levels. This paper will provide evidence to different agencies associated with educational system and future researchers to explore the root causes of the problem.

Keywords: Himalayan States, Education, Women Empowerment, Odds Ratios

WOMEN'S EDUCATION AND EMPOWERMENT

The constitution of India granted equality to all sections of society and also authorized the state to do positive discrimination for uplifting deprived sections of Indian society. The fundamental rights and directive principles of state policy are embedded in our constitution for upliftment of deprived sections of society (Basu, 2011). Before independence and after independence, women contributed for the growth and development of Indian. The women worked equally with their counterparts and the benefits were realized at individual and societal levels. The participation of each and every section of society in mainstream development will result in creativity, sharing of responsibility, higher productivity and increased social sensitivity. The old Indian society was based on the patriarchal lineage system. But in the modern society, this system is being challenged by education system and reforms at social and legal level. The women movements are changing the feminist politics in India (Agnihotri & Mazumdar, 1995). Toward a better society, education is playing a vital role in shaping the future of women in the Indian society. The 'Right to Education' was provided for free and compulsory education to all the children in the age group of 6 to 14 years (Basu, 2011). Presently, this legal framework is leading deprived sections of society especially women toward education accessibility.

The contemporary women`s movement in India used "empowerment" as a strategy to change the existing gender bias through alteration in the structures of gender subordination. Presently, the debate on "women empowerment" is focusing on organizing

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the women of informal sector. In Indian context the term women empowerment has broadened its base to include movement for gender equality and social justice. By analyzing the women movements for equality and justice in India, Sharma (1992) defined empowerment as a set of different activities ranges from individual self-assertion to collective resistance, the challenges to the power relation in the society through protest and mobilization of resources. The section of society facing the wrath in term of caste, class, ethnicity and gender observe empowerment when they realize the source of their oppression and suppression. The change in the power relation is result of empowerment at different levels of society. "Empowerment, therefore, is a process aimed at changing the nature and direction of systemic forces which marginalize women and other disadvantaged sections in a given context" (Sharma, 1992). It deals with change in the society, change in social systems, structures and power relations (Banerjee, 1995). 'Women Empowerment' is a continuous and gradual process. In this process women understand the power and develop own capabilities for bigger change in the society as a whole. The question is how to mobilize poor and deprived women in India? For answering this question woman empowerment movement in India has oriented its actions and attention to educational system. Different authors talked about different aspects of women empowerment. For instance Sen and Batliwala (2000) discussed women empowerment with respect to their reproductive rights; Sathiabama (2010); Sharma and Varma (2008) described entrepreneurship as a tool for women empowerment; While, Reddy and Manak (2005) described the microfinance and self-help groups as media of providing social security and economic empowerment of women in India.

Education to deprived women helps them to acquire skills and knowledge for understanding unequal gender relations and to cope up and change the systematic forces that marginalize them (Agnihotri & Mazumdar, 1995). The Indian government at national and state level is focusing on women empowerment. In 11th five year plan government realized women as source and carriers of sustained growth and change in the society. All government and non-government players working in the area of women empowerment recognized the role of education in changing the gender inequalities. Education is observed as a critical constituent of the strategy for women's empowerment. Literacy is a tool for empowering women against inequality and injustice in society.

HIMALAYAN STATES OF INDIA

In the lap of Himalayas lie the states of Jammu & Kashmir (J & K), Himachal Pradesh (HP), Uttarakhand, Sikkim and Arunachal Pradesh. These mountainous states have their unique cultural and social systems. Agriculture, horticulture, animal husbandry and other allied activities are major sources of occupation. The women are playing major role in all these

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activities. In 1947, Jammu & Kashmir was merged into Indian Territory. The J&K has population of 1,25,41,302. Out of total population 66,40,662 are male and 59,00,640 are females, (Census of India,2011) the information is clearly underlining huge disparity in sex ratio. There are 889 women per thousand males in the state (Census of India, 2011). Suri (2013) in his research highlighted the role of skill building programs for uneducated, widows and encouraging the women for higher participation in politics for their economic sustainability. The self-help groups can play a vital role in mobilization of health, reach to educational resources and women empowerment in the state of J&K. While, in case of Himachal Pradesh women are playing vital roles in implementation of societal change. The Himachal government is promoting women empowerment through various schemes. The statistics report "Women and Men in Himachal Pradesh" published by Himachal Government also emphasized on the role of female education in growth and development of state. According to this report Himachal government is providing 19 different schemes for women empowerment. The scheme like 'Beti Hai Anmol' is run by the govt. to improve educational enrollment and retention of girls belonging to below poverty line families. Researchers explored women`s position in context of political, economic life and socio-religious in Himachal Pradesh. The gender biasness is common in local social system of Himachal Pradesh. The better educational facilities, financial empowerment, role of technology are key areas for development of women in Himachal Pradesh (Shukla, 2003). Kishor & Gupta (2004) investigated the existing condition of women empowerment with relative to men in Himachal Pradesh and found gender biasness inbuilt in different social systems. In Himachal Pradesh 972 women are with respect to 1000 males (Census of India, 2011). Uttarakhand became 27th state of India Union. Research in this area found the difference in perception level of government regarding development of women and highlighted that the modern society can be built with the involvement of civil society (Kaul, 1995). Most of researches explored that women in this region are facing social and economic problems. Women in this part of Indian society are still fighting for natural and fundamental rights of justice and equality (Kumar, 2016). The research on the state of Sikkim is verifying the role of state and non-state actors in women empowerment. The reservation to women in political arena at grass roots level and government schemes in the state of Sikkim leading women toward their empowerment. But, a woman's no participation in decision making leaving her with lower social capital (Subba, 2014). With 35th and 36th constitutional amendment in the constitution of India Sikkim became 22nd state of Indian union in 1975 (Basu, 2011). All constitutional provisions to empower women are applicable to the state after getting statehood and abolition of monarchy from the state. Females are major part of the workforce in Sikkim. But majority of the women in farming workforce are illiterate. Even in the formal sector women are working in low profitable jobs (Dwivedy, 2013). The studies on this part of country are showing discrimination with women in term of educational and employment opportunities. The other Himalayan state of Arunachal Pradesh lies at the extreme east of Indian union. The literacy rate of 66.95 was achieved in 2011 rather than 54.74 percent in 2001 (Census of India, 2011). The state of Arunachal Pradesh is at 19th rank in female literacy and at 11th rank on gender gap in literacy rate at all India level .The dropout rate from class first to matriculation in Arunachal Pradesh is 64.86 percent, out of this 64.7 percent dropouts are girls (Das, 2013). The status of education of women in these Himalayan states of India is significant for the development of this part of Indian society. This study is an attempt to identify the current status of women empowerment in term of different educational aspects. Because in this part of country the

educational reach and awareness level of women is fundamental to other different elements of women empowerment.

OBJECTIVES OF THE STUDY

- To explore the educational aspects of women empowerment in Himalayan States.
- To study the literacy statistics of Himalayan States on the basis of gender.
- To study the literacy statistics of Himalayan States on the basis of background

METHOD

In the present study people having access to formal education system were included and analyzed. The secondary data was collected from the Census of India website: http://www.censusindia.gov.in/. Collected data was compiled into different groups of education level, background-wise, sex-wise and state-wise. Odds ratios for females calculated manually for different categories.

RESULTS & DATA ANALYSIS

The table 1 is presenting educational status of males and females in Himalayan states. In the state of Uttarakhand 3205312 persons are illiterate and 6880953 persons are literate out of 10086292 (Census of India, 2011). The 31 percent people in the state of Uttarakhand are illiterate. In the state of Himachal Pradesh 1824866 people are illiterate and 5039736 people are literate. The information is clearly showing that 26 percent people are illiterate in the state of Himachal Pradesh.

Table 1: Educational Status of Males and Females in Himalayan States of India (Formal Education)

	Total			Illiterate		Literate	
Uttarakhand							
All Ages	Persons	Male	Female	Male	Female	Male	Female
	10086292	5137773	4948519	1274065	1931274	3863708	3017245
Himachal Pradesh							
All Ages	Persons	Male	Female	Male	Female	Male	Female
	6864602	3481873	3382729	729283	1095583	2752590	2287146
Jammu & Kashmir							
All Ages	Persons	Male	Female	Male	Female	Male	Female
	12541302	6640662	5900640	2375991	3098078	4264671	2802562
Sikkim							
All Ages	Persons	Male	Female	Male	Female	Male	Female
	610577	323070	287507	71801	93824	251269	193683
Arunachal Pradesh							
All Ages	Persons	Male	Female	Male	Female	Male	Female
	1383727	713912	669815	274044	343678	439868	326137

Source: Census of India (2011)

In the state of J & K 5474069 people are illiterate and 7067233 people are literate. Out of total population 43 percent are illiterate. In case of literacy rate Himachal Pradesh is higher than Uttarakhand and J & K. the state of J & K is exhibiting lowest literacy rate of 57 percent among western Himalayan States. In the state of Sikkim 27 percent people are illiterate and 73 percent people are literate. Out of illiterate population 57 percent are women. While, out of literate population in Sikkim only 44 percent are female. In the state of Arunachal Pradesh 45 percent people of all ages are illiterate and 55 percent people are literate. Out of illiterate population 56 percent population are women. While, out of literate population only 43 percent are women. In all Himalayan states Arunachal Pradesh has lowest literacy rate. In the table 2 level of education is categorized into below graduation and graduation & above. In the below graduation level all education categories like primary, middle, secondary, higher secondary, non-technical diploma and technical diploma were included.

Table 2: Gender-wise Educational Level (Formal Education)

	Below graduation			**Graduation & Above**		
Uttarakhand						
All Ages	Persons	Male	Female	Persons	Male	Female
	5807514	3270070	2537444	910288	512068	398220
Himachal Pradesh						
All Ages	Persons	Male	Female	Persons	Male	Female
	4453467	2432121	2021346	446609	251164	195445
Jammu & Kashmir						
All Ages	Persons	Male	Female	Persons	Male	Female
	6184077	3719639	2464438	653764	401279	252485
Sikkim						
All Ages	Persons	Male	Female	Persons	Male	Female
	392424	220262	172162	32669	19290	13379
Arunachal Pradesh						
All Ages	Persons	Male	Female	Persons	Male	Female
	688874	389797	299077	53606	36430	17176

Source: Census of India (2011)

In the state of Uttarakhand 5807514 people are below graduation and 910288 people have graduation or above graduation education level (Census of India, 2011). Out of total educated people in state of Uttarakhand 15 percent people have graduation or higher qualification. In the state of Himachal Pradesh 4453467 people are below graduation level while 446609 people are graduates or have higher qualification. In Himachal only 10 percent people are graduates or having higher qualification than graduation. In the state of J & K 6184077 people have below graduation level of education and 653764 people have graduation & above level of education (Census of India, 2011). In J & K 10.5 percent people

have graduation or above educational level. In Sikkim out of literate people 88 percent people are below graduate and 12 percent people are graduate or above. In below graduate 44 percent are female and in graduate and above 41 percent are female. In the state of Arunachal Pradesh out of literate people 90 percent are below graduation level of education and 10 percent people are graduate or above. In graduation or above education level only 32 percent women are there.

In table 3 background-wise literacy level in Himalayan States was given. In the rural areas of Uttarakhand 2422904 people are illiterate and 4614050 people are literate out of total 7036954 persons. In urban areas of Uttarakhand 782435 people are illiterate and 2266903 people are literate out of total 3049338 persons (Census of India, 2011).

	Total			**Illiterate**		**Literate**	
Uttarakhand							
All Ages (Rural)	Persons	Male	Female	Male	Female	Male	Female
	7036954	3519042	3517912	922871	1500033	2596171	2017879
All Ages (Urban)	3049338	1618731	1430607	351194	431241	1267537	999366
Himachal Pradesh							
All Ages (Rural)	Persons	Male	Female	Male	Female	Male	Female
	6176050	3110345	3065705	672524	1031790	2437821	2033915
All Ages (Urban)	688552	371528	317024	56759	63793	314769	253231
Jammu & Kashmir							
All Ages (Rural)	Persons	Male	Female	Male	Female	Male	Female
	9108060	4774477	4333583	1882728	2477382	2891749	1856201
All Ages (Urban)	3433242	1866185	1567057	493263	620696	1372922	946361
Sikkim							
All Ages (Rural)	Persons	Male	Female	Male	Female	Male	Female
	456999	242797	214202	58552	76517	184245	137685
All Ages (Urban)	153578	80273	73305	13249	17307	67024	55998
Arunachal Pradesh							
All Ages (Rural)	Persons	Male	Female	Male	Female	Male	Female
	1066358	546011	520347	236621	293835	309390	226512
All Ages (Urban)	317369	167901	149468	37423	49843	130478	99625

Source: Census of India (2011)

In the rural areas of Himachal Pradesh 1704314 persons are illiterate and 4471736 persons are literate out of 6176050 persons. In urban areas of Himachal Pradesh 120552 persons are illiterate and 568000 persons are literate out of 688552 persons. While in the rural areas of J & K 4360110 persons are illiterate and 4747950 persons are literate. In Urban areas of J & K 1113959 persons are illiterate and 2319283 persons are literate out of 3433242

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persons. In rural areas of Sikkim 135032 persons are illiterate and 535902 persons are literate. While, in urban areas of Sikkim 30556 persons are illiterate and 123022 persons are literate. In the state of Arunachal Pradesh in rural areas 530456 persons are illiterate and 535902 persons are literate. While, in case of urban areas of Arunachal Pradesh 87266 persons are illiterate and 230103 persons are literate.

In the table 4 odds ratios for females calculated under different categories. The Exponential ? values for illiterate females in all states are higher than males. The probability of finding a literate female in the state of J & K is 35 percent less than a male. In the state of Uttarakhand and Himachal Pradesh this probability is 22 and 17 percent less than a male. In case of Sikkim and Arunachal Pradesh this probability is 23 and 26 percent less. The odds for females having below graduation qualification is 34 percent higher than males in J & K. while in the states of HP and Uttarakhand the odds for females having below graduation qualification are 17 and 33 percent higher than males. In case of Sikkim and Arunachal Pradesh the odds of females having below graduation education level are 22 and 24 percent higher than males.

Table 4: Odds Ratio and Sex Ratio for Females with Respect to Males under Different Categories

Categories	J &K	H. P	Uttarakhand	Sikkim	Arunachal Pradesh
Illiterate (Females)	1.30	1.50	1.51	1.30	1.25
Literate (Females)	0.65	0.83	0.78	0.77	0.74
Below graduation (Females)	0.66	0.83	0.77	0.78	0.76
Graduation & Above (Females)	0.62	0.77	0.77	0.69	0.47
Rural (Illiterate-Females/Illiterate Males)	1.31	1.53	1.62	1.30	1.24
Rural (Literate-Females/Literate Males)	0.64	0.83	0.77	0.75	0.73
Urban (Illiterate-Females/Illiterate Males)	1.25	1.12	1.22	1.30	1.33
Urban (Literate-Females/ Literate Males)	0.68	0.80	0.78	0.84	0.76
Sex Ratio (per 1000 Males)	963	972	889	890	938

Note: Results Compiled Through Using Data from Table 1, 2 and 3.

In the state of J & K women chances to get graduation and higher qualification are 38 percent less than males. In the state of Himachal Pradesh and Uttarakhand the female probability of getting graduation and higher qualification is 33 percent less than males. While, in case of Sikkim and Arunachal Pradesh is 31 and 53 percent less than males. The state of Arunachal Pradesh and J &K are showing poor performance as compare to other Himalayan states. In case of rural illiterate females the odds are 31 percent higher than illiterate male in the state of J & K. However, chances of finding illiterate female in the state of HP and Uttarakhand are 53 and 62 percent higher than chances of males in these states. The odds of female illiteracy in rural areas are 30 and 24 percent higher than males in the states of Sikkim and Arunachal Pradesh. The state of Uttarakhand is showing highest odds among Himalayan states in case of rural illiterate women. The odds ratios for rural literate females are 0.64, 0.83, 0.77, 0.75 and 0.73 for the states of J & K, HP, Uttarakhand, Sikkim and Arunachal Pradesh. The odds of urban illiterate women are also higher than male in all Himalayan states. Moreover the odds ratios for urban literate females are also less than

males in all Himalayan states. When we compare all statistics with sex ratio the discrimination is clear. Even women are less in number in all Himalayan states. Still they are lacking in educational empowerment at every category and level.

FUTURE SCOPE OF STUDY

The government and non-government players' can generate insight of issues related with educational aspect of women empowerment for formulation and implementation of plans and policies for women educational empowerment. Researchers can elaborate this issue by comparing different zones or at Indian level to find more insight into the problem of women empowerment in educational terms.

DISCUSSION & CONCLUSION

This paper is clearly highlighting the gender disparity in education level. Gender bias in social context is also appearing substantial in the educational context (Kumar, 2016). The problem of illiteracy is more severe in case of females. This is leading to other problems in their personal and family life. The state of Himachal Pradesh is better than other Himalayan states in case of female literacy. In other states females are getting fewer opportunities than males. Most of the literate females are below graduate. Majority of persons having graduation or higher qualification are males, only 43 percent females out of total persons having graduation & above qualification. Even background wise information is providing huge gap in educational level of females. In urban and rural areas the women literacy rate is less and illiteracy rate is high in all states. The cases of illiteracy are high in rural areas. Now the question is: why women are behind men in educational level? The answer lies in working patterns of our society, where the traditions are tied in a way that the odds of equality and women empowerment are a nightmare (Kumar, 2016). Kishor & Gupta (2004) stated a slow pace of change for women over time in Indian society.

Gender disparity in educational level is more severe in the rural areas of all these states. In rural areas more women are illiterate than urban areas. We should have rethought on the formulation and implementation of plans and policies at rural level. In all these Himalayan states women are bound to their domestic and family obligations, so educational opportunities and training should be given to women nearby their homes. The states like J&K and Arunachal Pradesh need policies at grass root level to uplift the women status (Kumar, 2016). The women in Himalayan states of India are still striving for educational opportunities and empowerment through education system. The major change required at social level in term of family support and a changed perspective toward women education.

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DETERMINANTS OF CAPITAL STRUCTURE IN INDIAN FMCG SECTOR

ABSTRACT

The present paper is an attempt to examine the determinants of capital structure of Indian fast moving consumer goods (FMCG) companies for duration of five years from 2012-13 to 2016-17. The sample contains all eligible 27 FMCG firms listed in BSE-500 index. To carry out the study, five major variables namely size, tangibility, profitability, liquidity and growth have been identified and used to explore there potential impact over the capital structure of the firms under study by applying descriptive statistics, Pearson coefficient of correlation and multiple linear regression techniques. The descriptive parameters of the study proves that the total debts of FMCG companies in India is for short duration need and even some Indian companies do not generate debt for long duration while financing their projects. The correlation analysis found size to be an important and prime factor having significant association with term based debt ratio of the sample companies. The variable-wise regression analysis holds size and tangibility to have the positive relations with the debt burden of the companies whereas, corporate profitability and liquidity are found to have negative association with the long-term debt ratio of companies Overall Finally, the study admits the applicability of the two prominent approaches i.e. pecking order theory and trade-off theory while explaining the capital structure of Indian FMCG companies under certain pre-conditions.

Keywords: Capital Structure, Financial Leverage, Indian FMCG firms.

INTRODUCTION

The decision pertaining to design of corporate capital structure is one among the primary areas of financial management. Alike other decisions, this decision in any company is focussed towards the accomplishment of objective of maximization of the shareholder's wealth. Capital structure refers to the combination of debt and equity used to finance a project of a business firm. It is always important to consider the interest of shareholders and other stakeholders related to a company, while planning the best capital structure of the firm. The value of a firm largely depends upon the estimated future profits and cost of capital. Capital structure decision affects the value of the firm by functioning on either expected profits or the cost of capital or both. On account of tax deduction on interest payment, the debt financing reduces the tax liability of a company, but on the other side, debt financing increases the financial risk accruing to a company. It is therefore a matter of great importance for the management of a company to build up an appropriate capital structure that is most suitable to the company's operation. The financial managers, thus, has to select that proportion of capital structure, where there is low overall cost of capital

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along with higher profits available to shareholders that in turn maximizes the total value of the firm. Salawu (2007) stated that, initially, at the promotion stage of a company, a capital structure is planned and afterwards, a decision pertaining to capital structure is taken whenever finance is required to be raised for investment in the company. The above discussion makes capital structure to pose a remarkable assessment that affects the return on shareholder's wealth, the market value of the shares along with the risk assumed by the shareholders. The dilemma of how firms decide and adjust their tactical blend of securities requires a great deal of attention and debate among corporate financial researchers. Generally, the decision regarding the capital structure design is dogged by an assortment of external and internal elements. Many factors pertaining to an economy on a macro basis, such as tax-rate and policy, rate of inflation, Gross Domestic Product, capital market conditions etc. constitute the external factors affecting capital structure decision. Whereas, micro factors related to individual firms are known to be internal factors affecting capital structure choice. Many theories related to capital structure have been developed over the time to test the relationship between capital structure and its determinants. Since the seminal work of Modigilani and Miller (1958), most of the researches over capital structure has been aimed at testing the findings of two traditional views of capital structure: the static trade-off model in which firms shape a leverage target that optimally balances various costs and benefits of debt, and the pecking order model as ascribed by Myers and Majluf (1984) that holds the view that firms follow a financing composition which is designed to minimize unfavourable selection costs of security issuance. Empirically, these two models have been successful in some cases while have been failed in others. Neither view has been found successful in explaining the observed heterogeneity in capital structures and leverage changes decisions. The fast moving consumer goods (FMCG) companies form a major segment of the Indian corporate sector and also known as the backbone of Indian economy by playing a prime role in the growth and development of the country. As far as the capital structure decision is concerned, very few studies have been undertaken over the Indian FMCG sector companies. So, a need for research in said sector on this important topic of determinants of capital structure is identified. In view of above, the present study is an attempt to identify the factors affecting the capital structure of the Indian FMCG firms.

REVIEW OF LITERATURE

Since the beginning of this century, many studies have been conducted to investigate about the determinants to capital structure, especially in Asia pacific. In order to facilitate the foundation for undertaking the present study, a brief literature survey has been carried out on the dividend policy. Bevan and Danbolt (2001) conducted a study to explore various determinants to capital structure decision and found the negative correlation between

growth and long-term debt. However a positive association was found between total leverage and the growth opportunities. Their study further reported short-term debt to be positively associated to growth opportunities. The study presented the results in line with packing order theory as the theory argues a positive relationship. Debt normally increases when retained earnings are less than investment and decreases when it is vice-versa.

Welch (2004) investigated about the capital structure behaviour and found that companies do not modify the capital structure due to changes in stock prices. The study further reported that stock returns are comparatively more significant while explaining the debt equity ratios. Many other market timing theories also made alike estimation along with a major finding that time-varying negative selection can lead to negative association between leverage and stock prices. Hennessy and Whited (2005) argued that there may be situation of no identification of tax effects empirically because of transactions costs, even if it remains as a crucial point for the problem of the firms. On the basis of it, the relative importance of tax-bankruptcy versus agency cost this trade-off requires further research on it.

Faulkender and Petersen (2006) identified the factor related to supply side while explaining the variation in capital structure. The study observed that in case of other things remain equal, the restricted access to debt market lead to access to equity markets for financing the projects due to less availability of debt. Moreover, the firms having high debt rating gets priority in raising the debt. Kayhan and Titman (2007) identified that in a dynamic trade-off model, leverage can be affected negatively by the corporate profitability in a dynamic trade-off model due to various frictions in the data values. The study further supported the logic of passive accumulation of profits by the firms. Frank and Goyal (2008) examined the importance of diverse variable as determining factors in the capital structure decisions of American firms from 1950 to 2003 and revealed that the most significant factors affecting leverage positively are tangibility, log of assets, and expected inflation whereas market-to-book assets ratio and profitability have been found to bear negative association. Fauzilah et al. (2009) examined the association between capital structure, operation risk and profitability in Insurance companies by applying the structural equation model, factor analysis and path analysis and found the significant negative association between operational risk and profitability. One-way impact between operational risk and capital structure was also identified.

Lemmon and Zender (2010) also investigated about the various determinants to explain the capital structure behaviour and found that the companies with excess debt capacity primarily use debt when there is a need for external financing occurs. So, their study reported borrowing capacity as the major concern to design capital structure of a firm. Gill et al. (2011) admitted that improved profitability can lead to long-term survival of the firms hence the association between these is of prime importance. Their study on 272 New York stock exchange listed American firms by using correlation and regression analysis found profitability as the major determinant of capital structure having positive relation between short-term debts to total assets as well as to total debt to total assets. Nguyen et al. (2012) also examined about the major determinants of capital structure and revealed that growth factor is found to be more applicable to long-term duration debt rather than in short-term duration debt, where it is less relevant.

Shyu (2013) conducted a study by using panel data and two step LS regression on affiliated firms in Taiwan and found that capital structure has a significant positive impact on

performance. Apart from this, companies with higher leverage are associated with increased operational efficiency. The study further reported size having a negative effect on performance and ownership. Dan et al. (2015) explored the various factors affecting the capital structure decisions by using the SEM approach, which resolute the capital structure design choice for listed companies. The research further reported that the firms make use of equity more frequently instead of debt in long-term investment. The study identified growth opportunities, profitability and liquidity as the most influential factors while explaining he capital structure behaviour. Vo (2016) and Nha et al. (2016) also conducted similar studies over Vietnamese firms and found that companies put first priority to avail short-term loan instead of using equity for financing the projects and to improve the performance. They also admitted the significant impact of difficulty in accessing long-term debt following to influence capital structure behaviour. Martin and Hoffmann (2017) examined the factor affecting capital structure by taking a sample of 157 Chilean firms. The panel data method was used and the result reported the positive impact of the firm size and concentration of ownership over the leverage of the firms. The study also reported negative impact of pay-out policy, growth opportunities and profitability on the leverage. Their study further argued that a firm's association to certain economic groups also helps in increasing leverage due to enhanced accessibility to internal capital markets.

Wan and Manja (2018) examined the importance of appropriate capital structure strategy as required to manager as well as to review the capital structure composing internal and external financing among various Malaysian firms. Library research method was applied to carry out the objective of the study and found that firm's characteristics such as profitability, assets structure, size, liquidity and growth opportunities play a pivot role in explaining the capital structure of the firms.

The above discussion on available worldwide literature reveals various factors such as size, profitability, growth opportunities, tangibility and liquidity has been found prominent to act as major determinants to capital structure. However, their impact on capital structure has been found contradictory among various studies. So there is still a need to discover more insights into it. Further in India there is a lack of research in FMCG sector with regard to determinants of capital structure. So, this paper tries to fill this research gap and focuses on analyzing the factors affecting the capital structure in Indian FMCG firms.

RESEARCH METHODOLOGY

The prime objective of the present study is to explore the factors affecting the capital structure of the listed FMCG firms in India. The present empirical investigation has been done by taking a sample of FMCG companies, out of listed companies in the BSE-500 index at Bombay Stock Exchange. All those FMCG companies were taken into consideration for which required financial data was available. Further, only those companies have been selected in the sample who comply all the listing regulation of Bombay Stock Exchange during the period under study. Out of total 29 companies, 27 companies complied with this restriction, hence form a final sample for the present study. The study has been covering a period of five financial years from 2013-14 to 2016-17. The complete list of companies is given in the Table 1.

Table 1: List of Sample Companies from FMCG Sector

S. No.	Name of Company	S. No.	Name of Company
1	ITC LTD	15	RADICO KHAITAN LTD.
2	HINDUSTAN UNILEVER LTD.	16	MCLEOD RUSSEL INDIA LIMITED
3	NESTLE INDIA LTD.	17	RUCHI SOYA INDUSTRIES LTD.
4	COLGATE-PALMOLIVE (INDIA) LTD.	18	GILLETTE INDIA LTD.
5	DABUR INDIA LTD.	19	GODFREY PHILLIPS INDIA LTD.
6	UNITED SPIRITS LIMITED	20	VST INDUSTRIES LTD.
7	GLAXOSMITHKLINE CONSUMER HEALTHCATE LTD.	21	PROCTER & GAMBLE HYGIENE & HEALTH CARE LTD.
8	GODREJ CONSUMER PRODUCTS LTD.	22	TATA COFFEE LTD
9	TATA GLOBAL BEVERAGES LIMITED	23	JYOTHY LABORATORIES LIMITED
10	MARICO LIMITED	24	AGRO TECH FOODS LTD.
11	UNITED BREWERIES LTD.	25	ZYDUS WELLNESS LIMITED
12	JUBILANT FOODWORKS LIMITED	26	KWALITY DAIRY (INDIA) LTD.

Source: Compiled by Authors

Various secondary researches on studies pertaining to capital structure assisted in making selection of appropriate dependent and explanatory independent variables. As far as the dependent variable is concerned, the analysis of factors of capital structure is grounded upon the total debt analysis. Both long-term and short term debt ratios also have been considered separately, due to the fact that the use of total debt may hide their potential opposite effects. Thus, the study applied three measures of financial leverage. These are:

- Total debt ratio (TD) = total liabilities to total assets.
- Long-term debt ratio (LTD) = non-current liabilities to total assets.
- Short-term debt ratio (STD) = current liabilities to total assets.

Based upon the literature survey, the study uses the size, tangibility, profitability, liquidity and growth to be the independent variables explaining the capital structure. The data for the duration of the study for all the selected dependent and independent variables has been sourced from Prowess database of Centre for Monitoring Indian Economy (CMIE), money control website and annual reports of respective companies. The Table 2 describes the measurement of all the independent variables used for the purpose of analysis.

Table 2: List of Independent Variables and their Measurement

S. No.	Variable	Measurement of the Variable
1	Size	A sum of Total Assets of the firm in a given year
2	Tangibility	Fixed Assets to Total Assets in a given year
3	Profitability	EBIT to Total Assets in a given year
4	Liquidity	The sum of all the Liquid Assets in a given year
5	Growth	Change in sales over a period of past two years.

Source: Compiled by Authors

The data has been analysed by using descriptive statistics such as mean, median, minimum, maximum and their standard deviation. Further, the Pearson correlation coefficient has been used to assess the association between the variables and to identify the noteworthy factors related to corporate capital structure and further, the multiple linear regression analysis based on following equation (1) has been used to see the impact of explanatory variables on dependent capital structure variables.

$$FL_t = a + \beta_1 S_t + \beta_2 T_t + \beta_3 P_t + \beta_4 L_t + \beta_5 G_t + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:
- a = Constant term;
- FL_t = Financial Leverage in period 't'
- S_t = Size of the firm in period 't'
- T_t = Tangibility of the firm in period 't'
- P_t = Profitability of the firm in period 't'
- L_t = Liquidity of the firm in period 't'
- G_t = Growth opportunities with the firm in period 't'; and
- U_t = Error term.

RESULTS

The Table 3 represents the descriptive statistics related to the leverage ratios. All the descriptive statistics such as mean, median, minimums, maximums and their standard deviations are hereby shown with context to a particular time frame (2013-17) and corresponding debt maturity.

Table 3: Summary statistics of leverage ratios

Debt Ratio	Year	Mean	Median	Min.	Max.	Std. Dev.
Long-term	2013	9.03	6.71	0.03	41.15	9.71
	2014	8.20	5.62	0.00	38.07	9.28
	2015	7.75	5.65	0.00	29.39	8.21
	2016	6.04	4.38	0.06	31.73	6.58
	2017	6.01	4.14	0.23	33.27	6.86

Debt Ratio	Year	Mean	Median	Min.	Max.	Std. Dev.
Short-term	2013	35.85	30.29	12.76	74.50	16.83
	2014	35.06	32.01	10.25	70.18	17.50
	2015	35.19	32.90	9.51	75.71	17.07
	2016	35.89	32.11	3.51	79.01	17.28
	2017	33.12	29.47	7.63	88.40	18.82
Total Debt Ratio	2013	44.88	37.14	12.99	83.60	18.68
	2014	43.26	38.95	10.25	81.00	18.44
	2015	42.94	38.65	9.96	84.08	18.87
	2016	41.93	38.82	3.87	84.95	19.06
	2017	39.12	32.87	7.86	92.26	20.16

Source: Author's calculations

The table clearly shows that long-term debt ratios are gradually decreasing during the period under study but short-term debt ratios are almost at equal level during the selected time period, with an exception in the year 2017 whereby, it has shown a decreasing trend. So, it can be concluded that the total debts of FMCG companies in India is of short-term character and the minimum values corresponding to long term debt ratio represents that some FMCG companies in India that do not generate debt for longer duration while financing their projects. Table 4 shows the summary of descriptive statistics of different explanatory variables.

Table 4: Summary Statistics of Potential Determinants of Capital Structure

Determinants	Mean	Median	Min.	Max.	Std. Dev.
Size (millions `)	5019.50	2087.69	305.54	54215.95	8701.26
Tangibility (%)	29.96	27.93	4.31	80.34	17.32
Profitability (%)	19.25	18.58	-46.43	57.91	14.71
Liquidity (%)	201.67	144.87	47.40	2549.71	228.09
Growth (%)	108.07	110.08	56.97	154.16	10.52

Source: Author's calculations

Table 5 presents the correlation matrix showing the relationship between dependent and independent variables by applying the Pearson coefficient of correlation by taking 0.05 as the level of significance. The table shows a significant positive relationship between size and long-term debt ratio as well as short-term debt ratio. Another variable i.e. profitability is found to have statistically significant negative relationship with total debt ratio but no significant association was found with long-term and short-term debt ratio.

Table 5: Correlation Matrix

	TD	LTD	STD	S	T	P	L	G
Size	0.127	0.692*	0.820*	1				
Tangibility	0.170	0.080	-0.065	0.002	1			
Profitability	-0.275*	-0.132	-0.089	0.047	-0.047	1		
Liquidity	-0.466*	-0.123	-0.160	-0.080	-0.308*	0.156	1	
Growth	0.047	-0.083	-0.147	-0.066	0.003	0.084	-0.132	1

Source: Author's calculations
Note. * Statistically significant at 1% level, ** statistically significant at 5% level.

Further liquidity variable is also found to bear a significant negative association with total debt ratio along with no significant association with long-term and short-term debt ratio. The rest two variables i.e. tangibility and growth are not found significant statistically while explaining the debt ratios of the sample companies. The table concludes size to be an important and prime factor having significant association with term based debt ratio of the FMCG companies.

Table 6 represents the results summary obtained by applying regression analysis on data set of sample under study. The coefficient of determination (R2) for TD model gives a value of 0.259 indicates that 25 per cent variation in capital structure is caused due to negative variation of profitability and liquidity which are having significant negative values. The LTD model represents that out of total variation, 49 per cent variation is explained due to significant positive effect of size as well as significant negative impact of profitability. Further the coefficient of determination shows a value of 0.703 for STD model which indicates that more than 70 per cent behaviour is explained significantly by size, tangibility, profitability, liquidity and growth. The variable-wise regression analysis can also be very helpful in understanding the potential determinants to capital structure. The first variable i.e. size however shows the positive relations with the debt burden of the corporate that signifies that larger firms tend to borrow more in comparison to smaller firms. Another variable i.e. tangibility shows the significant positive association with the long-term debt ratio of the companies which means that companies having larger share of tangible assets are more like to obtain debt as financing options. This result of present study supports the applicability of the trade-off theory and reveals the enormity of deposit in securing debt. As the pecking order theory confirms that corporate profitability is primarily negatively associated with long-term debt ratio of companies, which proves the belief that additional profitable companies support the use of internal funds whereby the companies with insufficient or lesser availability of funds prefer to use more long-term debt financing.

Table: 6 Regression analysis

$$FL_t = a + \beta_1 S_t + \beta_2 T_t + \beta_3 P_t + \beta_4 L_t + \beta_5 G_t + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Variables	TD	LTD	STD
Constant	56.205	363.781	4665.51
Size (?1)	0.000	0.047*	0.297**
Tangibility (?2)	-0.151	2.149	-20.329**
Profitability (?3)	-0.277*	-6.171**	-22.700**
Liquidity (?4)	-0.034*	-0.063	-1.553**
Growth (?5)	0.017	-1.317	-26.351
R	0.536	0.715	0.845
Adjusted R2	0.259	0.493	0.703

Source: Author's calculations
Note. * Statistically significant at 1% level, ** statistically significant at 5% level.

The alliance of profitability to short-term debt ratio as well as to long-term debt ratio is also found to be negative. Further, the profitability results are in line with the results reported by Michaelas et al. (1999) who have also majorly argued for negative influence of firm profitability on short-term as well as long-term debt. The next variable i.e. liquidity is also found to bear a negative impact over the measures of capital structure. So, this result, along-with the adverse relationship between profitability and debt ratio, sustain the outcome of pecking order theory. The present study do not find any significant association between growth and debt ratios and hence hold the consistency of its result with the studies conducted by Song (2005), Mazur (2007) and Psillaki and Daskalakis (2009).

CONCLUSION

The present study has investigated about the determinants of capital structure in the Indian FMCG sector companies. To carry out the study, five major variables namely size, tangibility, profitability, liquidity and growth have been identified and used to explore their potential impact over the capital structure of the firms under study. The descriptive parameters of the study proves that the total debts of FMCG companies in India is for short duration need along with many Indian companies do not prefer debt for longer at the time of financing their projects. Further, the correlation analysis found size to be an important and prime factor having significant association with term based debt ratio of the sample companies. The variable-wise regression analysis holds size and tangibility to have the positive relations with the debt burden of the companies whereas, corporate profitability and liquidity are found to have negative association with the long-term debt ratio of companies, which proves the supposition that more profitable and companies with better cash position prefer the use of internal funds. Finally, the study admits the application of the pecking order as well as trade-off theories, while explaining the capital structure of Indian FMCG companies. The findings of the present study can help corporate sector to anticipate and design their capital structure by estimating the impact of said factors over the financial leverage of the firms. The scholars working on this issue can also get an idea about the prevailing scenario in the field of corporate finance.

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UPLIFTING THROUGH REGIONAL INSTRUMENTS: AN ANALYSIS OF IMPACT OF WELFARE SCHEMES ON SRI LANKAN TAMIL REFUGEES IN TAMIL NADU

ABSTRACT

This study intends to discuss nature of welfare schemes introduced for refugees and how it impacted on refugee's well-being. The primary and secondary data were used for analysis. Discussion with camp living refugees was conducted to understand the working and defects of welfare schemes. The secondary sources constitute the website of Commission of Rehabilitation & Welfare of Non Resident Tamils, Chennai and the Handbook of Department of Rehabilitation. The researcher observed the camp condition while visiting the camp. The study shows that the welfare schemes introduced by the government have significant impact on refugee's well-being. The schemes help the refugees to sustain their life. The condition of the camps is not satisfactory. There are no proper toilet and bathroom facilities in the camp. If toilets and bathrooms are available but they are remain unused due to water shortage. The remote location of the camp has made difficulties in accessing employment, health care and education. Irrespective of some defects in administration of the schemes, refugees have benefitted much especially from the schemes like free education, free food items, cash dole, healthcare and the services of NGOs.

Key words: Sri Lankan Tamil refugees, welfare schemes, camp life, empowerment, well-being.

INTRODUCTION

Since the arrival to India in 1983, Sri Lankan refugees are treated arbitrarily by the Indian authorities. The government has been providing food, shelter and monthly cash doles to refugees to maintain the basic life and health. The assassination of Rajiv Gandhi (the former prime minister of India) by the Liberation Tigers of Tamil Eelam (LTTE) guerrillas in 1991 has made the situation worse. The non-camp refugees are arrested and jailed and the camp living refugees are restrained in the camps under stringent security. Later, the government restored the freedom of travel within the defined territory and is allowed to seek employment in the local labour market. In addition, a series of welfare schemes are introduced or extended to refugees with an objective to uplift their deprived condition. The coping strategy to deal with refugee's inflow in India stands largely on humanitarian policies. How the government and host population treats refugees during influx? What is the mechanism for rehabilitation, resettlement, and repatriation? Do the policies of the government lead to a protracted solution to refugee crisis? How long the government provides the assistance? How the settlement in the Host impacted on the socio-economic well-being?

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For seeking an answer to these questions by considering refugees as a whole, the result maybe varies to refugee group across the country due to the ad hoc treatment by the government. So far the Sri Lankan Tamil refugees are concerned, at the time of arrival they are registered, accommodated in camps with basic amenities, financial assistance, education, healthcare is provided and allowed integrate local community. The welfare schemes for Sri Lankan Tamil refugees have been covered all their requirements that they want to have in the short run and adjusted according to their demand as well. The financial outlays for refugee's welfare are firstly met by the state government and later the central government reimburses it. In a short span of time, refugees found their livelihood and start a peaceful life. The Government has commenced a wide range of development programs to refugees with durable solutions which includes the provision of housing facilities, water supply, sanitation facilities, other basic infrastructure facilities and livelihood facilities. On the other hand, the provision of citizenship, employment in the public sector and freedom of movement out of the state has been denied.

This study describes the efforts government of Tamil Nadu in policy making for refugees in particular and effectiveness of these policies in the welfare of camp living refugees in general. The researcher has visited a few refugees' camps for collecting their feedback about welfare schemes. A detailed inquiry was carried out and living condition of the camp inmates was well observed.

An estimate shows that since 1990 around 120,000 Sri Lankan Tamils have been living in government authorized camps in the southern state of Tamil Nadu in India and another 80,000 were living outside the camps. Sri Lankan refugees living in India are divided into two, based on their place of accommodation or where they finally live. The first category is called "Camp living refugees", who have been living in government established camps. These refugees are availing the benefits of welfare schemes and free assistance of the government. The second category is (maybe) called "Non camp refugees", who are staying outside of the camp without having any benefit of welfare schemes. According to Directorate of Rehabilitations, Tamil Nadu, there are 63,938 refugees are living in 108 camps located in 25 districts out of 32 whereas 34,757 refugees living with friends and relatives outside the camp. The total number of families living in the camp is 19429. The statistics on return migrants shows that 4870 refugees returned back to Sri Lanka from 2011 up until December 2016 according to Ministry of Resettlement, Sri Lanka.

It is significant to note that India accommodating refugees in its boundary without having a national legal framework. India is not a signatory of 1951 Refugee Convention and its 1967 Protocol related to the status of refugees. Refugees are considered under the range of the term 'alien'. The word alien appears in the Constitution of India (Article 22, Para 3 and Entry

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17, List I, Schedule 7), in the Indian Civil Procedure Code (Section 83), and in the Indian Citizenship Act, 1955 (Section 3(2)(b)). The Foreigner's Act 1946 and India's Citizenship Act 1955 defines "all non-citizens who enter without visas to be illegal migrants, with no exception for refugees or asylum seekers". The refugees who are living outside of the camp without proper registration has been arrested and jailed for violating the Foreigners Act.

The Sri Lankan refugees were registered by the authorities on their arrival and shelter was provided in the camps. Due to the mass influx in the mid-1980's, the basic facilities are found scarce in the camps and the mental and physical problems from the traumatic war have necessitated more attention of authorities in providing health care, security, shelter, and food. Thus, the government has allotted schools, godowns, constructed temporary shelters in government land across the state and shift the registered refugees to the camps. While shifting to the camps, many refugees are left their family and accommodated in camps which are away from the family living camps. Later, government shift these separated refugees to their family and allowed reunion. Since availing accommodation in the camp, refugees were sought out employment to supplement government assistance. In that time, the camp condition was highly deplorable, basic facilities were inadequate and life in the camp was very difficult. The refugees were not satisfied with the facilities but they are very happy to stay in the camps due to security and peaceful life. The approach towards refugees was changed since the assassination of Rajeev Gandhi, the Prime Minister of India, by LTTE gorillas in 1991. The sympathy received by the refugees turned into trepidation. The local people in the state was not glad to receive refugees from Sri Lanka further due to the presence of militants and the shock sent by the murder of the Prime Minister. The camp living refugees suffered a lot during this period where all the camps were shifted to inner parts of the state, freedom of movement was denied, education and employment opportunities were abolished and refugees were put under lock and key.

The sign insecurity owed to the government to think about the repatriation of refugees since the incident. The Chief Minister of Tamil Nadu, Smt. Jayalalitha has demanded to the central government to repatriate the refugees immediately. Hence, 54,188 refugees were involuntarily repatriated to Sri Lanka on 20 January 1992. This attempt has been criticised in many respect that the government sent the refugees without their consent, not evaluate the situation in Sri Lanka before repatriation and refugees are forced by the authorities to sign the repatriation consent form which was printed in English, thus, the refugees failed to read. The recently voluntary return refugees in Sri Lanka have faced the problems in housing, land, and livelihood (Ramakrishnan, T., 2016). The refugees with valid travel documents would prefer the third country for settlement. A study conducted by Tata Institute of Social Sciences (TISS) jointly with Adventist Development and Relief Agency (ADRA), India and Danish Refugee Council, Sri Lanka in 2014 revealed that about 68% of the respondents have stated that they would prefer local assimilation with 23% preferring voluntary repatriation and around 4% of respondents prefer to have resettlement in a third country.

As in the case of current status, refugees have been living in a distressing condition. The statelessness, status of alien and camp life has imposed a restriction on refugees in their freedom of movement, accessing opportunity of employment, education and other benefits enjoyed by the citizens of the country. Refugees are earning a livelihood from the local labour market, educating their children in government schools, accessing health care from government hospitals and receiving monthly financial assistance and food grains from the government. In most of the camps, common toilet and bathroom facilities were

constructed by the government and NGOs and facilities for water supply also made available. A free sewing machine was supplied to women and training also been provided. The absence of credit facilities from the commercial banks has obliged the refugees to borrow from money lenders and to sell their movable properties like gold, television, vehicle, etc. to meet their requirements. By and large, refugees are involved under debt trap and suffered a lot to repay the debt. Most of the refugees in the camp are involved in painting, carpentry, tailoring, driving, agriculture, and construction works. Refugees are hired by the contractors for work in the construction field for a fixed period and then remain unemployed till the next contract. It is significant to note that the introduction of self-help group (SHGs) for women is considered as a milestone in the process of empowering refugee women economically.

SCHEMES FOR REFUGEE WELFARE: PROMISE VS PERFORMANCE

It was not a single scheme designed to uplift the well-being, where a series of schemes were introduced by the government over the years and appropriate changes were made according to the time. The expenditure incurred for the welfare scheme is met initially by the state government and central government will reimburse it later. The major schemes implemented by the government to uplift the deprived condition of camp living refugees are discussed as follow:(1) free housing, water, sanitation and electricity, (2) monthly cash dole; (3) utensils and cloth, (4) education, (5) marriage assistance and social security, (6) vocational training, (7) free food items through Public Distribution System (PDS), and (8) health care.

FREE HOUSING, WATER, SANITATION AND ELECTRICITY

On the arrival, refugees were provided with temporary shelter in the transit camp of Mandapam in Rameswaram for registration and shifted to camps which are either schools, godowns, cyclone shelters or abandoned cinema halls. In most of the refugee camps, basic facilities such as sanitation, shelter, and food were found somewhat satisfied (Bastiampillai, 1994). The shelters were built with tarpaulin sheets and coconut leaf without a proper ceiling. The space inside of the house is very little. Tamil Nadu, in most, characterized by high temperature and heavy rain in monsoon has to constitute utmost difficulty in life in these huts (The Refugee Council London, 1999). The government employed a contractor to construct houses to refugees. The newly constructed houses are in the size of 10/10. The wall and ceiling are not properly built and dropped down of ceiling have threatened the life in these huts, results in the left of these houses and waste of money allotted to construct these houses.

Raju. K,.(2006) reported that the refugee camps in Dindigul district was exceeded the affordable limit due to the overflowing of refugees and they are accommodated in farmers regulated marketing committee godowns where toilet facilities have not existed. During the rainy season, rainwater washed away the hutments on the hilly terrain. The government constructed tube wells in the camps and in some camps a network of public taps are constructed to collect water.

The water will be available for a limited time and in the summer season, refugees were suffered a lot to collect water, especially women. In some camps, refugees collect water from nearby villages or travel 3-4 km to bring drinking water. Some economically sound

families in the camp have been purchasing bottled water for drinking purpose and constructing own well with the premises of the house. It is noted that public bathrooms constructed by the government and NGOs in the camp left used due to water shortage and they are forced to use open space for defecation. Free electricity was provided to each household and let them use one bulb in the night times only. Nowadays, these facilities are not given to all refugee camps. A separate meter was fixed to each home and asked them to pay the money according to the meter reading in a frequent period of time. The DMK government has distributed television to many refugee households. Today, refugees are using more or less household appliances in accordance with their financial status.

MONTHLY CASH DOLE

It was very difficult to refugees to stay in the camp without employment and income. By considering poor economic resources of refugees, the government has implemented a scheme to provide a monthly cash dole to each camp inmate which may vary in terms of age. Today, the head of the family receives Rs. 1000 in a month. Each other member of the family aged above 12 receives Rs. 750 and member aged below 12 receive Rs. 400 in every month (see Table 1).

Table 1: Cash dole to Sri Lankan Tamil refugees living in the camps (in Rs.)

Category	Previously	Effect from 01/08/2006	Effect from 04/08/2011
Individual member (above 12 years of age/head of the family)	200	400	1000
For each additional member	144	288	750
For first child (Less than 12 years of age)	90	180	400
For each additional child	45	90	

Source: Commissionerate of Rehabilitation & Welfare of Non Resident Tamils, Chennai.

In some camps, women were selected for receiving 1000 rupees. The government agreed to distribute the proposed amount before 5th of every month. The refugee's complained that the monthly dole is not distributing on time and is inadequate. The dole is distributing a particular date in every month which will be informed in advance. If someone failed to present in the camp for the dole, the camp registration will be cancelled and no benefit will be allowed to enjoy further. The commissioner of Rehabilitation has calculated the approximate expenditure for providing cash dole is Rs. 6065 crores per year. Today, the dole is directly transferring to beneficiaries' bank account. In a sense, the monthly financial assistance is a burden to the government. Hence, the time to think about new strategies that will benefit both parties has been exceeded.

UTENSILS AND CLOTH

Once in two years, each refugee family in the camp will receive aluminium utensils. The utensils distributed by the government for camp living refugees costing about Rs. 250 through cooperative stores. In 1998, the government has enhanced the amount for purchasing utensils from Rs. 83 to Rs. 150 per family. Another government order issued in 2007 has enhanced the existing rate for utensils of Rs. 150 per family to Rs. 250 per family (See Table 2).

Table 2: Utensils Supplied To Refugees

Type Of Vessels	Capacity/Eligibility	Weight (in Grams)
Rice Cooking Dheksa	5 lit/1 nos.	600
SambarAdukku	2 lit/1 nos.	200
Karandi	50 ml per scoop/2 nos.	120
Tumbler	200 ml/2 nos.	50
Eating Plates	1 ft.dia/2 nos.	250
Total	**8 nos.**	**1200**

Source: Commissionerate of Rehabilitation & Welfare of Non Resident Tamils, Chennai.

The annual expenditure would be Rs.0.50 crore for the distribution of utensils. The utensils are not distributed to all the refugee camps (The Refugee Council London, 1999). Refugees say that in the last few years no vassals are supplied. The amount allotted for purchasing utensils is very less as per the current monetary value. It is not possible to purchase the proposed utensils with Rs. 250. Therefore, refugees demanded that the amount should be increased as much as the market value of proposes utensils and should distribute the vassals on time.

In addition, the government provided clothes to refugees once in every year without any charge. The approximate expenditure under this head is Rs. 3.00 crores. The list of cloths provided to refugees in the earlier years is given in Table 3.

Table 3: Free Clothing Materials

Gender	Category	Items	Numbers
Male	Adult	Dhoti	2
		Vests	2
Male	Child	Half Trousers	2
		Inner Garments (Vests)	1
		Half Sleeve Shirts	1
Female	Adult	Sari	2
		Blouse	2
		In Skirt	1
Female	Child	Skirt	1
		Blouse	1
		Frock/Gown	1
Every Family		Towels	2
Every Adult		Mat	1
Every Adult (Once In Two Years)		Blanket	1

Source: Commissionerate of Rehabilitation & Welfare of Non Resident Tamils, Chennai.

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In 2008, the government revised the scheme, thus, two readymade clothes are supplied to each refugee through co-optex in every year. A blanket is provided to each person aged 12 and above once in every two years. The person with age 12 years and above is provided with a mat, two vests are supplied to each adult and one vest for children below 12 years once in a year. This scheme is very helpful to refugees to save a part of their income which is expected to spend on cloth. It is a question to rise in a sense that does these clothes is sufficient to meet one year demand of a person? The answer is definitely no on the refugee perspective but as an assistance to cure the pain of suffering section, it is highly appreciable.

EDUCATION

The refugees leave their homeland since 1983 exclusively for saving their lives. Subsequently, they realized that the resource that they have to secure from India is education. The consideration of future of refugee children, a collective demand for education has come into exists. In July 1988, the state government passed an order which stating that,

(a) Students in standard 10 and below would not be permitted to continue studies after the 1988 academic year;

(b) No new admission of students would be allowed in colleges, polytechnics and universities;

(c) Student visa will be restricted, and

(d) Visas would be extended on condition that parents do not insist on staying in India until completion of the student's courses.

This order was completely against the interest of refugees and their dream of education has been eroded. Human right activists and refugees have protected against this order, thus, the government has withdrawn the order. Hence, the government of Tamil Nadu has come forth with the order that allowing refugee children to seek admission in schools and colleges and reservation of seats for Sri Lankan refugee children in 1989.The refugee children enjoyed free education till 1991. All the educational facilities were withdrawn by the government in connection with the assassination of Rajiv Gandhi. The admission in schools was banned and refugee camps were shifted to highly secured places with a higher restriction on freedom of movement. Later in 1993, the government has issued an order which stated that the refugee children would be allowed to study up to 12 standards in schools in Tamil Nadu during the academic year 1993-94.

Today, Sri Lankan refugee students studying up to 12th class in Government and Government Aided Schools has given free education, free notebooks, textbooks, free uniform, free noon meals and a free bus pass to commute from the camp to the school. Students studying 11th class are given free bicycles. For college admission, permission has been given to participating single window scheme under open quota. The first graduate engineering student selected through single window scheme in government/aided colleges will be free from the tuition fee and in private colleges, tuition fees concession will be given. In Arts and Science Colleges, refugee students are permitted to access seats under open quota for Under-graduation (UG) and Post-graduation (PG) courses. For all students, the free bus will be issued. It is important to note that the government will reserve 5 seats in each hostel run by SC/ST Department and

BC/MBC/Minorities Department for students from a refugee camp. Free lodging and boarding will be provided to students admitted in these hostels.

Since 19 March 2012, the government has been providing scholarship to refugee students who are pursuing graduation and above. The scholarships are paid annually and the amount may vary according to the type of courses. The details of scholarship paid to each course are given in the Table 4.

Table 4: Scholarship for college students (in Rs.)

Name of the course	Amount
The Bachelor of Arts 'BA'	1200
The Bachelor of Science 'BSc'	1250
The Master of Arts 'MA'	1330
The Master of Science 'MSc'	1650
Polytechnic	850
Engineering	2750
Medical	4700
The Bachelor of Veterinary Science 'BVSc'	1400
The Bachelor of Law 'BL'	860
BSc (Agriculture)	2850

Source: Commissionerate of Rehabilitation and Welfare of Non-resident Tamils, Chennai

This scholarship amount is made available to refugee children admitted in graduation in every year. The amount varies according to the course. The higher amount will be given for engineering and medical courses and lowest on BL. The economically well-settled families will send their children to private schools where no subsidies of government available. The education of refugee children is not a problem up to 12th standard but higher education maybe problem due to financial backwardness and poor reservation regimes.

MARRIAGE ASSISTANCE AND SOCIAL SECURITY SCHEMES

The government has been providing pension to refugees under different categories including old age pension, widow pension, and pension for differently abled persons, pension for deserted wives and pension for unmarried women. The pension amount is fixed for all categories as Rs. 1000 per month. The revenue department is in charge of implementing the scheme in every district. The old age pension is paid to a person aged 60 years and above. A widow who is more than 18 years and not remarried eligible for the pension. The refugee says that the amount given as pension is insufficient to meet their basic needs.

In 2011, "Moovalur Ramamirtham Ammaiyar Memorial Marriage Assistance Scheme" has extended to camp living refugees. Through this scheme, women age 18 years or above and have studied up to 10th standard will be provided with 4g gold for thirumangalym. A relief assistance of Rs. 50000 will be paid to those who have Diploma/Degree qualification and Rs. 25000 for others. The Social Welfare Department is responsible to implement the

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scheme among the refugees. This scheme is considered as an important assistance to parents to marry off their daughters and also to promote their educational status. Under this scheme, 42 persons have benefitted and approximate expenditure under this head is Rs. 8.40 Lakhs (Kalaivanan, 2011).

VOCATIONAL TRAINING

There is no much effort on the part of government to provide vocational education to refugee youth. A few efforts such as training in tailoring for women in government recognized institutions and a free sewing machine is supplied to them and driving licence has been providing to those who learned and passed driving as per the rules. A recent effort is significant to note that 416 women Self Help Group was start in the camps and government will paid a revolving fund of Rs. 10,000 to each group. Good performing SHGs will be recommended for bank loan, incentives and training. The government has sanctioned Rs. 4,160,000 for proving one time grant of Rs. 10,000 for SHGs in 2012.

The contribution of NGOs in the field of skill training is significant. A variety of job oriented training has been given by NGOs which has helped the refugees to obtain a job. The training is provided in electronic machines repairing, carpentry, tailoring, driving vehicles, poultry, goat farming and office works. The NGOs working in this field are OfERR (Organisation for Eelam Refugees Rehabilitation), ADRA (Adventist Development and Relief Agency), JRS (Jesuit Refugee Service), CRS (Catholic Refugee Service) and Libra.

FREE FOOD ITEMS THROUGH PDS

The government, since the arrival of refugees, provides essential food items at a subsidised price through ration shops functioning within the camp. 12 kg rice will be supplied to those 8 years and above and 6 kg for others. The first 20kg rice of total entitlement is free and remaining demand for rice will be meeting with a subsidised price of Rs. 0.57 per kg. In addition, refugees can purchase all the commodities supplying through ration shop as per the norms and rates applicable to local people. The refugees complain that the rice supplied through the ration shop is poor in quality. In some camps, the measurement is nor proper and there is a delay in supply (Guha M., 2015).

HEALTH CARE

Providing health care is considered as the prime requirement because of the poor health condition of refugees. The refugees are the victim of war, many had been psychically injured and suffering from psychological disorders. The health services provided by the government are inadequate and lack of accessibility of services due to the location of the camp in remote areas. The camps have faced the problem of the prevalence of communicable diseases such as tuberculosis, typhoid, and diarrhoea. Chronic under-nutrition, diabetes, mental disturbances, congenital heart diseases, dyslexia and chronic asthma are the other major health problems of the refugees (The Refugee Council London, 1999). The government has introduced the scheme for providing free healthcare service in public hospitals. A relief assistance of Rs. 15,000 will be paid to those who undergoing major surgeries.

Under Dr. Muthulakshmi Reddy Maternity Financial Assistance Scheme of the Government of Tamil Nadu, pregnant Sri Lankan Tamil women are given Rs.12,000. The amount will be paid in three instalments at a rate of Rs. 4,000 during prenatal, natal and postnatal periods.

The scheme will be applicable for the first two deliveries. The scheme implemented through the medical officer of the Primary Health Centre. A healthcare worker will visit the camp on a regular interval to monitor the camp condition and assistance will give to pregnant women and ill persons. The refugee says that accessibility and availability of healthcare facilities are the two major problems ever. The remote location of the camps created the problem of accessibility. Healthcare facilities are located away from the camps and the available facilities are inadequate.

RECOMMENDATIONS

A few recommendations were listed on the basis of the analysis and discussion carried out with refugees:

- Renovate the old houses, toilets, and drainages and provide drinking water;
- Increase the amount of monthly dole and distribute the amount timely;
- Supply quality grains at a subsidized rate and extend other benefits accessed by the local people;
- Provide efficient and adequate medical services in the short distance;
- Supply utensils and clothes on a regular interval and the amount sanctioned for purchase of utensils should be increased.

CONCLUSION

The refugees are living in the southern state of India over 25 years as stateless. The assistance was given by the government largely intend to uplift the existing condition or bequeath a better life enjoyed by the local people in the host. The permission to seek employment was the major step that helped the refugees to earn an income to supplement monthly cash dole. The freedom of travel is restricted within the district and employment in the public sector is denied. Therefore, educated refugees are doing manual jobs with poor income. Many companies rejected the refugees during recruitment due to the fear of militant activities. Local integration has come about but discrimination in various forms is practicing. The provision of monthly dole and subsidized food grains has the significant impact on sustaining refugee's life in the camps.

The schemes implemented by the government over the years had imparted positive impact to refugees but the problems in the administration have made difficulties in affording the maximum welfare. An efficient administrative mechanism is a prerequisite for implementing any scheme for deprived sections like refugees. Hence, an effort on the part of government is required to monitor the working of the schemes and procedure in accessing the benefit should be minimal to maximise the advantage.

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REGION-BASED ANALYSIS OF AGRICULTURAL CREDIT BY SCHEDULED COMMERCIAL BANKS IN INDIA: A CRITICAL REVIEW

ABSTRACT

The present study makes an analysis of the pattern of agricultural credit through scheduled commercial banks in the country. This is done by making an examination at the regional level. The investigation is made on data for 2005 to 2017. Interesting results are obtained from the analysis. The disparity measured using Gini coefficient shows a wide inequality among the regions. The trend analysis using the semi-log method shows a moderately high rate of growth for all units of the study. Furthermore, the Kruskal-Wallis test shows a statistically significant difference among the regions in terms of agricultural credit disbursement. However, the coefficient of variation shows no major variation during the period of study.

Keywords: Agricultural credit, Coefficient of Variation, Disparity, Kruskal-Wallis Test.

INTRODUCTION

In any economy, the role of banking can never be under-estimated. There are research evidences that show a direct linkage between banking and economic development (Levin, 1997; Haiss and Waksik, 2005). The relevance of the sector for any country arises because of vital functions that it provides which are accumulation and mobilisation of savings, diversification of risk, making resources available to the needy segments, inculcating a habit of savings and investment and accumulation of capital. With respect to India, the banking sector has drawn immense interest for researchers like Kaur and Kaur (2010); Kanchu and Kumar (2013); Narwal and Pathneja (2015); Nedunsezhian and Premalatha (2013). In India, since Independence, agriculture has always remained a very important sector that has tremendous repercussions on the growth of the economy. As per the last Census of India (2011), 54.6% of the population is dependent on agriculture and allied activities. However, if one looks at the sectoral contribution to the county's GDP, one shall find that the share of the services sector follows an increasing trajectory whereas for the agricultural sector, the slope is downward with falling contribution to the country's gross value added (GVA). The figures as released by the Central Statistical Organisation (CSO), Ministry of Statistics and Programme Implementation, Government of India shows that the contribution to GVA from the agricultural sector has declined from 18.5% in 2011-12 to 17.0% by 2015-16. The details are there in the Table 1.

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Table 1: Contribution of Agricultural to INDIA'S Gross Value Added

Year	2011-12 (%)	2012-13 (%)	2013-14 (%)	2014-15 (%)	2015-16 (%)
Contribution to GVA	18.5	18.2	18.3	17.4	17.0

Source: Central Statistical Organisation

The Table 2 highlights the support provided by different institutions towards financing of agriculture directly. The term 'direct credit' implies that the loan is given directly to the farmers, self-help groups or joint liability groups in the form of short-term, medium-term or long-term loans.

Table 2: Share of Direct Institutional Credit for Agriculture and Allied Activities

Year	Co-operatives	State Governments	SCBs	RRBs
1981-82	57.71	3.57	34.82	3.90
1985-86	51.32	4.94	38.12	5.62
1990-91	47.30	3.52	45.89	3.28
1995-96	52.69	2.34	39.14	5.83
2000-01	56.64	1.01	34.12	8.23
2005-06	33.41	INA	55.96	10.62
2010-11	22.65	INA	64.60	12.75
2011-12	19.32	INA	68.72	11.96
2012-13	16.86	INA	73.48	9.66
2013-14	INA	INA	INA	1924.15
2014-15	INA	INA	INA	2385.80
2015-16	INA	INA	INA	2776.39
2016-17	INA	INA	INA	2868.49
2017-18	INA	INA	INA	3281.55

Source: RBI, Handbook of Statistics on Indian Economy (2017-18)
Note.: INA means Information not Available, SCBs - Scheduled Commercial Banks, RRBs - Regional Rural Banks

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Thus, it is clear that the scheduled commercial banks have been playing an important role in financing of agricultural activities. In fact, it is evident from the figures given by the Reserve Bank of India that the role of commercial banks is on the rise. The share of this category shows an increase from almost 35% in early 1980s to 55% by the middle of the last decade which stands at 73% in 2012-13. Already, there have been several researches made in the area of credit in the Indian perspective. Some of the aspects that have attracted researchers over the years include understanding the present position of agricultural credit in India (Mohan, 2006), an analysis of agricultural credit and its impact on productivity (Chavan and Verma, 2016), a description of the agricultural credit policy in India (Hoda and Terway, 2015), the importance of rural finance in Indian agriculture (Singh, 2016), the economic impact of agricultural finance on banking (Umanath and Parasivam, 2016), the study of agricultural finance with respect to the State Bank of India (Jothilakshmi and Kamalakannan, 2016), a study of literatures on productivity of rural credit (Sriram, 2007) among few others. Consequently, the researchers in the present article consider examining that aspect of agricultural financing which has not been researched upon yet in detail.

REVIEW OF LITERATURE

There are a number of studies that look into the agricultural sector and it's financing. Some of them are pointed out in chronological order. Rant et al. (2018) observe the inequality in medium term credit flow in Maharashtra. The study focuses on thirty six district central cooperative banks and finds an inequality in short-term credit flow across regions. Mishra and Mohapatra (2017) make a study on the nature of agricultural financing in India. It shows how the sources of financing have changed over the years with increased pace only after nationalization of banks. The study mainly hovers on the aspect of institutional and non-institutional sources of financing and how it has moved in line with the growing importance of agricultural GDP in the country. Dar (2015) looks into the trend and flow of agricultural credit in India after 1991. The investigator points to the contribution of different sources of credit towards household credit in agriculture for 1991, 2002 and 2010. The figures show a steady rise in the institutional sources. The author observes a high rate of growth in the case of Regional Rural Banks followed by Scheduled Commercial Banks. With regard to indirect financing in this category, the author reports highest growth for scheduled commercial banks and cooperative banks with a high level of coefficient of variation. The study further notes a wide disparity in the country with a majority share enjoyed by the states of Haryana, Kerala and Punjab. With regard to the share of farmers, the research observes rising share of those farmers having large or medium-sized land holdings.

Giri (2015) in the research paper focuses on the main concern areas in agricultural credit. The author identifies the need for improvement in the credit delivery mechanism which can lead to faster loan processing at the branch level. Das et al. (2015) in their discussion on agricultural credit also highlight the importance of credit and its effect on agricultural production. The authors observe early signs of positive trend in rural financing. It however, asserts that though the growth in agricultural sector is much less compared to the other non-agricultural sectors, the dependence on this sector is still considerably high. The dynamic panel regression shows the immediate impact of direct finance on production. But, in the case of indirect finance, though the effect is positively significant, it takes place with a lag of one year. Hoda and Terway (2015) in their paper discuss the agricultural credit policy in India considering data from 1952 to 2012 and report striking developments over

the period. In spite of the fact that there has been a lot of impetus towards development of institutional lines of credit flow, there is still a huge dependence on local money lenders among the farmers. However, in respect of the quantum of credit flow, the commercial banks play an impressive role. On the other hand, the importance of cooperative banks shows a decline during the period from 1975 to 2012. The authors mention about the short-term credit cost taking an increasing proportion of the total input cost. In respect of long-term financing, they find the dominating role of commercial banks compared to the cooperative banks. Seena (2015) studies the management of agricultural credit in India and examines the effect of banking sector reforms on agriculture. The performance of agricultural credit reveals that overall flow of institutional credit has increased over the years which have boosted the growth in agricultural GDP. The study suggests the cooperative banks and regional rural banks to extend the scope of the Kisan credit card scheme to cover term loans for agriculture.

Vallaserri (2015) in the doctoral research work on agricultural credit analyses data from 1971 to 2011. The main focus is to understand the trend and pattern in such credit during the post-reforms period. The researcher covers the aspects of development in agricultural credit, the functions of RBI and major developments in agricultural financing and priority sector lending. It also makes an elaborate mention of the cooperative system in India and developments cum progress which the sector has seen in recent years. Similarly, the researcher explains the disparity in credit flow and trends in direct and indirect agricultural financing during the pre- and post-reforms period. Godara et al. (2014) look into the area of rural financing and the issue of agricultural financing. The study using primary data finds serious loopholes with regard to generation of poor quality loans for banks, poor recovery and biasness of banks in lending towards certain sections of the farming community. The other issues include high transaction charges and processing time apart from larger default record for the medium farmers compared to the large and small counterparts. The researchers point to the liquidity problem in the agricultural sector. Ahangar et al. (2013) in a similar study focus on the institutional aspect of financing and see the trend in flow from 2000 to 2011. The study by Dankwa and Badu (2013) identifies the different principles and practices of lending in the banking sector in Ghana. The major function of banks is lending which forms the main source of income for banking institutions. There are different lending models which are namely CAMPARI model, credit scoring model, Five Cs model and other models. The descriptive study collects data with the help of a well–structured questionnaire. For achieving the objectives, the study applies a higher or lower order of scoring from 0 to 5, with 5 points being assigned for excellent and 0 for very poor. The result shows that 88.9% respondents enjoy significant benefit with the use of lending models. The remaining 11.1% respondents indicate that the selected models are not beneficial to the banks.

Ramkumar and Chavan (2013) highlight the changes in growth and distribution of agricultural credit during the phase of revival. The paper points that though there is a rise in the number of rural branches, it is less compared to the rise in the rural population. They identify that the supply of agricultural credit from urban bank branches is high in the states of West Bengal, Maharashtra and Tamil Nadu. Gupta and Jain (2012) in their study on lending practices of co-operative Banks in India show the impact of size on the efficiency of these banks. Mohan (2012) looks into the details of agricultural credit with regard to its status, issues and future agenda for such credit. The discussion touches upon the

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historical development of this credit in India and its evolution over time. It mentions the emergence of the concept and setting up of RBI in 1935. Though introduced, the dearth of rural credit bothered the banking regulator and Indian government which led to the setting up of the asset reconstruction companies. Furthermore, with the nationalisation of banking industry in 1969 and gaining popularity of the concept of social control, agricultural credit got even more impetus but commercial banks rendered less than desirable credit to the sector as they failed to understand the requirements of marginal farmers.

Shukla et al. (2012) examine the share of term-credit to agriculture by commercial banks and finds disparities among different states. The study which is based on RBI data from 1992 to 2005 suggests the need to increase the credit flow to meet the infrastructural needs. Soni and Saluja (2012) examine the role of co-operative banks towards agricultural credit in Chhattisgarh district based on the study from 2009 to 2011 using primary data. Kumar et al. (2010) in the study focus at the household level to extract the main determinants that affect the flow of agricultural credit to these individual units. The theoretical part of the discussion hovers around the development of formal institutions over time to cater to the need of such credit and also points to the important milestones in the journey of improving rural credit. As an introduction to the research, the authors point to the flow of agricultural credit from scheduled commercial banks, regional rural banks and the co-operative banks. Similarly, they explain the sector-wise distribution of agricultural credit for different sub-periods over one and a half decades. An interesting part of this study is that in the tobit regression model, they find almost all the demographic variables to be significant. Das et al. (2009) study the impact of agriculture credit on agriculture production. The researchers identify three main factors that contribute to agricultural growth which are namely agricultural inputs, technological change and technical efficiency. The analysis suggests the significant positive impact of direct agricultural credit on agricultural output. Awasti (2007) studies the performance of agricultural output at the national level. The study period from 1981-82 to 2000-01 observes that there is a substantial downward movement of investment production credit ratio from the ideal level after 1995-96 which is not a healthy development for the sector as a whole. The researcher also reveals that short term credit on the value of agriculture output has statistically significant relevance over the study period.

RESEARCH GAP

It is worthy to note that the issue of credit and more specifically agricultural credit has raised the interest of researchers for a long time. However, the different academic papers and contributions over time show that there are very few studies that make a study at the regional level. There are only a handful of researches that look into the aspect of growth in such credit over time. Moreover, the issue of disparity is looked at by using descriptive statistics and not using measures like gini coefficient or any such measure. Thus, this study plugs in these gaps and comes out with interesting findings.

OBJECTIVES OF THE STUDY

The objectives of this study are as follows:

- To identify the disparity in agricultural credit flow.
- To evaluate the growth pattern of agricultural loans across regions.
- To statistically test for difference among regions in respect of credit disbursement.

HYPOTHESES FORMULATION

In line with the objectives, the following are the hypotheses of this study:

- H_{01}: There is no effect of time on flow of agricultural loans.
- H_{02}: There is no significant difference among the regions in respect of flow of agricultural credit.

METHOD

It is well known that designing for a research is the most vital element in the research process as it decides the success of the study being made. In line with the objectives of this analysis, the design has the following components:

- Nature and source of data: The present study is made on secondary data collected from the website of Reserve Bank of India.
- Data period: The investigation uses data for thirteen years from 2005 to 2017.
- Units for study: The research is made on six regions as demarcated by the RBI in its reports. The regions are Northern (NR), North-Eastern (NER), Eastern (ER), Central (CR), Western (WR) and Southern (SR).
- Research methods used: The researchers use statistical tools to arrive at the results. The investigators apply Gini coefficient for arriving at the disparity score over the years. In order to know the growth rate, semi-log method is used. Moreover, in order to know statistical significance of the difference among the regions, appropriate test (parametric or non-parametric) is applied after testing for normality of data.

RESULTS

AGRICULTURAL CREDIT: DETAILED ANALYSIS

This is a basic necessity of any research as it throws light on the nature of data. The Table 3 gives the details of regional data about mean, standard deviation, skewness and kurtosis.

Table 3: Descriptive Statistics of Agricultural Credit Flow to Regions

Particulars	Regions					
	North	North East	East	Central	Western	South
Mean (in Rs. bn.)	1137.77	57.77	451.54	931.15	734.46	2052.46
Std. deviation (in Rs. bn.)	640.72	45.37	273.16	581.74	417.51	1296.41
Kurtosis	-1.18	-0.63	-1.47	-0.93	-0.94	-1.57
Skewness	0.40	0.79	0.32	0.59	0.54	0.27

Source: Computed by researchers

The Table 3 shows that the average disbursement in different regions varies a lot with a minimum mean flow to the north-eastern region and maximum to the southern region. In terms of variation around the mean, the table shows the highest variation of Rs. 1296.41 billion in the southern region. Moreover, the kurtosis and skewness figures show different characteristics in the data.

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REGIONAL SHARE IN AGRICULTURAL CREDIT

The discussion below gives a picture of the share of different regions with respect to agricultural credit.

Table 4: Regional share in Agricultural Credit disbursement (In Percentage)

Years	Regions					
	North	North East	East	Central	Western	South
2005	22.61	0.72	7.88	18.42	14.80	35.56
2006	23.52	0.87	8.17	17.61	17.21	32.62
2007	25.04	0.78	8.70	16.22	16.00	33.26
2008	22.31	0.73	8.25	17.12	17.74	33.84
2009	23.46	0.81	7.85	18.35	13.63	35.90
2010	22.60	0.85	8.48	18.12	13.66	36.29
2011	22.39	0.89	8.79	16.42	12.73	38.79
2012	20.64	0.98	8.45	16.30	12.65	40.97
2013	19.38	1.11	8.52	16.09	13.79	41.11
2014	20.65	1.03	8.51	16.31	12.71	40.79
2015	20.04	1.09	8.33	17.36	12.60	40.58
2016	21.66	1.37	8.81	18.54	13.93	35.69
2017	20.38	1.34	8.05	18.44	13.86	37.94
Std. deviation	1.62	0.21	0.32	0.97	1.72	3.06
Average	21.90	0.97	8.37	17.33	14.25	37.18
Coefficient of Variation	0.07	0.22	0.04	0.06	0.12	0.08

Source: Calculated by the researchers

The above table shows that a majority share (37% on an average) goes to the Southern region which is distantly followed by the Northern, Central and Western regions. The share of the North-Eastern region is negligible but it shows a steady rise from a share of 0.72% in 2005 to 1.34% in 2017. In order to measure the dispersion across regions, the coefficient of variation is computed. It shows that it lies within a narrow range of 0.04 and 0.12. The maximum is for western region whereas the minimum is for the eastern region. Hence, the results point that there has been no such major change in the percentage of credit flow in different regions.

DESCRIPTIVE STATISTICS OF REGIONAL SHARE IN AGRICULTURAL CREDIT

The discussion below gives a picture of the descriptive statistics on the share of different regions in respect of credit flow.

Table 5: Descriptive Statistics of Regional Share in Agricultural Credit (In Percentage)

Particulars	North	North East	East	Central	Western	South
Mean	21.90	0.97	8.37	17.33	14.26	37.18
Standard Deviation	1.63	0.21	0.32	0.97	1.72	3.06
Kurtosis	-0.49	-0.30	-0.89	-1.88	0.16	-1.46
Skewness	0.23	0.81	-0.28	-0.02	1.11	0.01

Source: Computed by the researchers

The above table shows that the extent of variability for all the regions is quite low. The minimum and maximum standard deviation is observed for the North-Eastern and Southern regions respectively. In terms of skewness and kurtosis, the data seems to be non-normal which is statistically tested using Shapiro-Wilk and Kolmogorov-Smirnov tests, though the former is considered to be more robust.

DISPARITY IN AGRICULTURE CREDIT

In this section, the researchers compute the Gini Coefficient to determine the extent of disparity during the study period. They analyse the inequality index on both agricultural credit and standardized agricultural credit. The latter is obtained by standardising the regional agricultural credit with the sown area. This is done to avoid the biasness that may arise from the fact that higher sown area demands higher agricultural credit.

Table 6: Agricultural Credit: Regional Disparity Score

Year	Agriculture Credit	Standardized Agriculture Credit
2005-06	37.21	28.97
2006-07	34.48	31.10
2007-08	35.60	30.38
2008-09	38.02	32.54
2009-10	37.64	31.31
2010-11	39.34	31.93
2011-12	40.32	33.59
2012-13	39.47	33.34
2013-14	40.03	37.07
2014-15	42.15	35.20
2015-16	35.80	28.20
2016-17	37.40	30.40

Source: Calculated by the researchers

The extent of inequality on the basis of agricultural credit for different regions shows that there is a moderate level of disparity with the minimum value of Gini coefficient being 34.48. Furthermore, in order to get a more logical picture about the disparity, the standardized value of agriculture credit is used as the variable of interest. Though the values are less than the former, the overall trend is still moderately high with the minimum index being 28.97 in 2005. In recent years, the Gini index is 28.20 (in 2015-16) which is quite low.

GROWTH RATE OF AGRICULTURAL CREDIT

This section of the analysis uses agricultural credit as the variable for analysis. The researchers calculate the growth rate in all regions of the country using semi-log method. As per this method, the growth equation is represented in the following form:

$$\ln (Yt) = a + b.t,$$

where, Yt is the variable for analysis, a is constant, b is the growth rate and t represents time.

In other words, the dependent variable is the natural log transformed value of the original variable. The growth rate for the different regions is given in the table below.

Table 7: Growth Rate in Agricultural Credit for Different Regions

Region	Growth rate (%)	R^2 (%)	F-statistic
Northern	16.28* (19.68)	97.23	387.53
North-Eastern	22.73* (33.35)	99.02	1112.41
Eastern	18.04* (19.06)	97.06	363.46
Central	17.73* (34.41)	99.07	1184.22
Western	15.82* (17.31)	96.46	299.80
Southern	19.15* (17.99)	96.71	323.78
All India	17.72* (22.87)	97.94	523.23

Source: Computed by the researchers
Note.: *significant at 1% level, Figures in the parentheses are the t-statistic values.

The above table shows that the R-squared value is quite high for all the six cases. This shows that the time variable explains a significant portion of the variability in loan flow over the period. Similarly, the value of F-statistic is found to be significant at one percent in all the cases thereby showing the fitness of the model. It is seen that the North-Eastern region grows at the highest rate of 22.73%. This is mainly due to a sudden rise in agricultural credit flow to that region in recent years. The growth in the flow of agricultural credit in the other regions is also considerably high.

AGRICULTURAL CREDIT: MEAN-DIFFERENCE ANALYSIS ACROSS REGIONS

This section tests the mean difference among regions. For this, the researchers first test for the normality of data by using Kolmogorov-Smirnov and Shapiro-Wilk tests. The tests are required to understand whether to apply parametric or non-parametric test. The results of the tests are given below.

Table 8: Agricultural Credit: Test for Normality

Agriculture Credit	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	0.190	60	.001	0.693	60	.001

Source: Calculated by researchers

The results of both the tests show that null hypothesis is rejected at 1% level, thereby showing that the data is non-normal. As the data is non-normal, the researchers apply Kruskal-Wallis test to look for inter-regional difference.

The hypothesis being tested is:

H_0: There is no significant difference among the different regions.

H_1: There is significant difference among the different regions.

The results obtained from the test are given below. First, the rank of the regions is given in table 7.

Table 9: Agricultural Credit: Regional Ranks

Agriculture Credit	Region	Mean Rank
	North	44.50
	North-East	6.09
	East	24.50
	Central	38.45
	Western	34.36
	Southern	53.09

Source: Calculated by the researchers

The mean rank clearly points to the fact that the southern, northern and western regions enjoy majority share in the agricultural credit disbursed by scheduled commercial banks. The minimum portion goes to the North-Eastern region.

Table 10: Agricultural Credit: Kruskal Wallis Test Statistic

Particulars	Agricultural Credit
Chi-Square	40.668
df	5
Asymp. Sig.	.001

Source: Calculated by the researchers

The result in the above table shows that the chi-square statistic is 40.668 at 5 degrees of freedom which is significant at 1% level. Hence, the null hypothesis of 'no significant difference' gets rejected and it can be concluded that there is a significant difference among the regions. For further interpretation, the researcher performs further test to identify those pair-wise combinations that show a significant difference. The outcome shows a significant difference between the following pair of regions as given below -

- North and North-Eastern
- Southern and North-Eastern
- Western and Southern

Since, agricultural credit is dependent on the sown area, it is logical to take into account such area and then test for mean difference to check for robustness of results. The results of normality and other tests are given below. The results are given below.

Table 11: Standardised Agricultural Credit: Test of Normality

Standard Agriculture Credit	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
	.142	78	.001	.841	78	.001

Source: Calculated by the researchers

The result of the above two tests shows that the null hypothesis is rejected at 1% level thereby pointing to the non-normality characteristic in the data. Consequently, the Kruskal Wallis test (the corollary of the analysis of variance used in parametric test) is applied for further investigation whose results are presented in the table below.

Table 12: Standardised Agricultural Credit: Rank of Regions

Standardised Agricultural credit	Region	Mean Rank
	NR	46.08
	NER	8.77
	ER	34.00
	CR	44.38
	WR	43.62
	SR	60.15

Source: Calculated by the researchers

Table 13: Standardised Agricultural Credit: Kruskal Wallis Test Statistics

Test	Agriculture credit per Sown Area
Chi-Square	37.602
df	5
Asymp. Sig.	.001

Source: Calculated by the Researchers

The mean rank shows the dominance of Southern region which is followed by the Northern, Central and Western regions. Hence, there is a slight change in the ranking sequence for the regions. In a similar line, the fourth and fifth placed regions also interchange their position after normalizing the data. Now, the more important area is to look for significant difference among the regions, if any. The computed chi-square test statistic is 37.602 at five degrees of freedom which is significant at 1% level. Hence, the null hypothesis of 'no significant difference' gets rejected again and we can confidently comment the existence of significant difference among the regions. For further interpretation, the researchers perform further analysis to identify the pair-wise combination of groups which show significant difference. The analysis shows the existence of a significant difference in the cases of North-Eastern and Northern, North-Eastern and Southern and Central and Southern regions.

LIMITATIONS OF THE STUDY

This study is an important one and relevant for policymakers because it brings to light various important aspects relating to lending. The researchers have tried their best to extract the relevant outcomes using appropriate tools and techniques. In spite of this, the study suffers from certain limitations. The study is based on Scheduled Commercial Banks of India only. In other words, this research has not taken into consideration the Regional Rural Banks to avoid confusion because the loan categories for these two groups are very much different. Moreover, there can be a study exclusively done on the Regional Rural Banks. Similarly, an analysis can be made on direct and indirect finance also. Thus, there is scope for further research to explore further on the issue.

CONCLUSION

The researchers look into the flow of agricultural loans to different regions of the country. The data from 2005 to 2012 focuses on important aspects like growth rate, disparity across the regions and mean difference among the regions. The overall analysis of the share shows the dominance of the southern and northern regions. Though there is a wide difference among the regions, the coefficient of variation is quite low thereby pointing to the fact that the overall trend with respect to flow has not shown a major change over the years. However, the rate of growth during the period shows that north-eastern region shows the maximum rise which is mainly due to the sudden flow in recent years. However, the rates of growth in the other regions follow closely behind; the minimum rate being 15.82%. Thus, the flow has risen at a substantially high rate in all regions during the period. It is in line with the rising credit over the years in the form of direct and indirect financing of agriculture. With regard to the disparity over the years, the researchers use Gini coefficient as a measure. The figures point to a moderate level of inequality during the study period using both

agricultural credit and standardized agricultural credit which agrees with the findings of Shukla et al. (2012). The noticeable aspect is that the disparity does not show a falling trend during the study period. Thus, the existence of disparity is evident from the empirical findings. With regard to statistical significance, there is a difference between north and north-eastern, south and north-eastern and western and southern regions. Thus, we find that despite the efforts on the part of the government to reduce disparity in regional growth, there is still a long way to go. The findings are interesting that can carve the pathway for disbursement decisions in the coming years.

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SECTOR-WISE COST EFFICIENCY ANALYSIS OF INDIAN SCHEDULED COMMERCIAL BANKS

ABSTRACT

The purpose of this paper is to assess the cost efficiency (CE) scores of all Indian scheduled commercial banks across bank ownership. The nature of return to scale (RTS) of banks across varied ownership was also analyzed. Further, the paper recognizes the number of banks operating as leaders and laggards according to cost efficiency and its components. Cost efficiency of banks is calculated by employing data envelopment analysis (DEA). The present study covers evaluation of cost efficiency of banks across ownership over a long period of 22 years from 1991-92 till 2012-13. The differences in the efficiency scores across ownership as well as across reformatory and post reformatory era are examined by applying 'panel tobit regression'. The sector wise results for cost efficiency and its components for reformatory era and post reformatory era reveal that foreign sector banks have superior cost efficiency scores. Cost efficiency scores declined in the post reformatory era as compared to reformatory era for all the banks belonging to different sectors.

Keywords: Cost Efficiency, Scheduled Commercial Banks, Return to scale, Leaders and Laggards, Data Envelopment Analysis, India.

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INTRODUCTION

Efficiency measures a bank's performance in relation to a yardstick at a given point of time (Ram Mohan and Ray 2004). Banks can take advantage of competitive environment only if these perform efficiently in the market (Bader et al., 2008). If banks are fully efficient, these can have improved profitability with greater amount of funds intermediated at greater prices and thus provide quality service to the consumers (Berger et al, 1993). To earn maximum profits, bank managers have two options; either to maximise their revenues or to minimise their cost. But practically, bank managers don't have much command on their revenues while they definitely have control on following practices that help reduce cost to a certain extent. As a result, a bank can endeavour to be cost efficient and maximise its profits by offering eminent services at the minimum cost. Focusing on the cost minimisation objective of the bank, assessing cost efficiency is an essential factor. Cost efficiency depicts the relative performance of the bank as against the best practice firm which is producing the same output at the lowest operating costs under the similar technological conditions as faced by the concerned firm. It tells how close a firm's cost is to what best practice firm's cost would be for producing the same level of outputs (Weill, 2004).

REVIEW OF LITERATURE

Numerous studies have explored the efficiency performance of banks. Majority of the research articles have focused on technical efficiency of banks i.e. reducing input to the maximum possible extent with given level of outputs or maximizing the outputs with the given level of inputs without considering their prices. Merely considering inputs outputs will not provide much useful information as it will not lead banks to earn financial benefits unless and until their prices are also taken into consideration. So, the researchers shifted their approach towards cost efficiency measures that consider prices. A snap shot of the studies evaluating exclusively cost efficiency is given in a tabular format as follows in the Table 1.

Table 1: Summary of studies measuring Cost Efficiency of banks

Author/ Year	Sample	Country	Time Period	Methodology
Isik and Hassan (2002)	National State Banks National Private Banks Foreign Banks Foreign Banks having branches	Turkey	1988-1996	Data Envelopment Analysis (DEA) Stochastic Frontier approach (SFA)
Niazi (2003)	23-40 commercial banks	Pakistan	1991-2000	Data Envelopment Analysis (DEA) Stochastic Frontier Approach (SFA)
Girardone et al. (2004)	Unbalanced panel of 1,958 banks	Italy	1993-96	Fourier-Flexible Stochastic Cost Frontier
Burki and Niazi (2006)	23-40 commercial banks	Pakistan	1991 to 2000	Data Envelopment Analysis (DEA)
Ioannis et al. (2008)	34 banks, varying across years	Greek	1994 to 2006	Data Envelopment Analysis
Brack and Jimborean (2009)	10 biggest banks	European and American banks	1994-2006	Data Envelopment Analysis

	Input	Output	Results
	Labour Capital Loanable Funds	Short-Term Loans Long-Term Loans Risk-Adjusted off-Balance Sheet Items Other Earning Assets	Downward trend in the cost efficiency as it decreased from 78 percent in 1988 to 71 percent in 1992 and further to 68 percent in 1996. Dominant source of the cost inefficiency was technical inefficiency due to banks were operating at incorrect scales.
	Labour Physical Capital Operating Cost Financial Capital	Loan and Advances Investments Contra Accounts	Foreign Banks were more efficient as compared to Private and State-Owned Banks Foreign Banks had cost efficiency score of 79.7 percent, Private Banks of 75.1 percent and State Owned Banks of 60.5 percent. Cost inefficiency among banks was due to allocative inefficiency.
	Staff Expenses Other Non-Interest Expenses Interest Paid	Total Customer Loans Other Earning Assets	Mean cost inefficiency levels ranged in between 13 percent to 15 percent. Inefficient banks all the time had lower levels of equity/assets and higher levels of Non-Performing loans
	Labour Physical Capital Operating Cost Financial Capital	Loans and Advances Investments Contra Accounts	The mean cost efficiency for all Pakistan banks was 75 percent. Cost efficiency of State-Owned, Private and Foreign Banks was 60 percent, 75 percent and 80 percent, respectively. State-Owned Banks, Private Banks and Foreign Banks had no differences in their cost efficiency scores.
	Personnel Outlays Fixed Capital Expenditure	Net Interest Income Net Commission Income Other Incomes	Average efficiency of Greek banking system enhanced from 0.74 in 1994 to 0.82 in 2006. Larger banks demonstrated higher efficiency followed by smaller banks.
	Fixed Assets Labour Borrowed Funds	Volume of Customer Deposits The Volume of Customer Credits The Net Fee and Commission Income	Cost efficiency of banks operating in France and Spain improved while it declined for Germany, Italy, the United-Kingdom and the United States. United States banks had superior efficiency score of 95.9 percent all over the years but it declined during the end study time period. German Banks had lowest efficiency of 85.41 percent.

Author/ Year	Sample	Country	Time Period	Methodology
Staub et al. (2010)	Unbalanced panel data of 127 banks	Brazil	2000-2007	Data Envelopment Analysis
Gulati (2011)	73 to 77 Scheduled Commercial Banks	India	1992-93 to 2007-08	Data Envelopment Analysis (DEA)
Uddin and Suzuki (2011)	4 Nationalized Commercial Banks (NCBs), 30 domestic Private Commercial Banks (PCBs) 4 Foreign Commercial Banks (FCBs).	Bangladesh	2001-2008	Non-Frontier Based Measures Frontier Based Measures
Abu-Alkheil (2012)	4 Islamic and Conventional Banks	Two European countries	2008-2009	DEA-Approach
Kumar (2013)	27 Public Sector Banks (PSBs)	India	1992-1993 to 2007-2008	Data Envelopment Analysis

	Input	Output	Results
	Interest Expenses Operational Expenses Net of Personnel Expenses (Proxy For Capital Expenses) Personnel Expenses	Investments Total Loans Net of Provision Loans Deposits	The allocative and technical efficiencies (inefficiencies) was about 66.9 percent (51.40 percent) and 63.3 percent (57.98 percent) respectively. Main source of cost inefficiency was technical inefficiency till 2002 but afterwards allocative inefficiency was the reason. Public Banks were most efficient and there was relative inefficiency among Foreign Banks.
	Physical Capital Labour, Loanable Funds Equity	Advances Investment Non-Interest Income	Cost inefficiency in Indian banking sector was mainly due to allocative inefficiency. FBs were always ranked at top position in Model A. Public Sector Banks were efficient followed by Private and Foreign Banks in Model B, Private Banks were consistently least cost efficient.
	Loanable Funds Physical Capital Labour	Investment Loans and Advances	Both traditional and frontier based measures indicated that bank performance had improved in Bangladesh.
	Labour Fixed Assets Total Funds	Total Loans Other Earning Assets	Cost efficiency (CE) performance of Conventional Banks and Islamic Banks was 69.7 percent and 49.3 percent respectively. Conventional Banks were better than Islamic Banks due to their large size. Most of Conventional Banks were operating on the decreasing return to scale of efficiency scores while Islamic Banks were operating at either constant or increasing return to scale.
	Physical Capital Labour Loanable Funds	Net Interest Income Non- Interest Income	The average cost efficiency (inefficiency) in Indian public sector banking industry was 79.6 percent (25.6 percent). The cost efficiency of the Indian public sector banking industry as a whole had improved significantly during the second phase of reforms relative to the first reforms.

Author/ Year	Sample	Country	Time Period	Methodology
Raina and Sharma percent, (2013)	64 Commercial Banks	India	2005-06 to 2010-11	Data Envelopment Analysis (DEA)

Source: Compiled by Authors

The review of literature suggests that evaluating Cost Efficiency is not much an old practice amongst researchers and as a result only a limited number of studies have been found that measured the cost efficiency of banks are available. With specific reference to India, even lesser literature is found on cost efficiency as Kalluru and Bhat (2009), Kaur and Kaur (2010), Gulati (2011), Kumar (2013) and Raina and Sharma (2013). Majority of these studies analyzed the cost efficiency of Indian banks till the year 2008 (Kalluru and Bhat, 2009 and Gulati, 2011), consequently ignoring the most critical time of recession aftermath. One study by Raina and Sharma (2013) evaluated the cost efficiency during 2005-06 to 2010-11 and covers the recession time period but an evaluation over just 5 years seems to be less comprehensive. Indian Banking industry has attracted more attention among researchers due to its diverse ownership pattern i.e. it classified into Public Sector, Private Sector and Foreign Sector Banks. These banks belonging to different ownership follow varied set of regulations though they all function in the same market. But only one study by Gulati (2011) analyzed the cost efficiency of banks across ownership. This study also didn't provide any conclusive results as Foreign Banks were ranked at top position in Model A when non-interest income is taken as output whereas Public Sector Banks were efficient in Model B when non-interest income is dropped. Hence, a there is a need to fill the gap by assessing the cost efficiency performance of Indian Banks across ownership over a long period of time to identify the sector leading to anxious results in the banking industry in India.

Thus, the main purpose of this paper is to assess the Cost Efficiency (CE) scores of all Indian Scheduled Commercial Banks across bank ownership. Besides, the nature of Return to Scale (RTS) of banks across varied ownership is also analyzed. Further, the paper recognizes the number of banks operating as leaders and laggards according to Cost Efficiency and its components.

METHODOLOGY

The study evaluates Cost Efficiency of banks over a long period of 22 years. For deriving more meaningful analysis, the period of 22 years has been divided into two parts as 1991-92 till 2001-02 representing the Reformatory Era and 2002-03 till 2012-13 representing the Post Reformatory Era. The former time period is termed as Reformatory Era as it encloses the major reforms in Indian Banking Sector initiated by Narasimham Committee with its first report in 1991 and second report in 1998. Similarly, Basel norms came up with their 3 pillared structures in 1992. In the early 2000s, reforms with respect to electronic banking

Input	Output	Results
Full-Time Employees Fixed Assets Loanable Funds.	Net Interest Income Other Income	The average CE of Scheduled Commercial Banks was 72.4 average Technical Efficiency (TE) was 94.5 percent, whereas Allocative Efficiency (AE) was 76.7 percent. Allocative efficiency was the main reason for cost inefficiency.

i.e., real time gross payment and settlement system, National Electronic Funds Transfers, Clearing Mechanism, Online Bill Payments, and Telephone Banking was introduced. Further, Anti-money Laundering (AML) and Know Your Customer (KYC) norms in 2002 filtered the unethical and illegal issues from the banking business. However, the period from 2002-03 to 2012-13 focused on the implementation of these reforms and is hence called Post Reformatory Era.

The sample of the study includes the Scheduled Commercial Banks across ownership operating in India during 1991-92 to 2012-13. The number of banks has been taken on the basis of bank ownership classified as Public Sector Banks, Private Sector Banks and Foreign Sector Banks. The number of observations varied across time due to some missing observations for some banks for certain years. The data for some banks was not available as the banks were either not in existence or some of them had merged with the other banks. Thus, the effective sample is given in a tabular format as follows in the Table 2.

Table 2: Sample of Scheduled Commercial Banks across ownership from 1991-92 to 2012-2013

Year	Public Sector Banks	Private Sector Banks	Foreign Sector Banks
1991-92	28	23	23
1992-93	28	22	21
1993-94	27	22	21
1994-95	27	29	20
1995-96	27	34	27
1996-97	27	33	32
1997-98	27	34	35
1998-99	27	33	34
1999-2000	27	32	37
2000-01	27	31	37
2001-02	27	30	34
2002-03	27	28	27
2003-04	27	30	27

Year	Public Sector Banks	Private Sector Banks	Foreign Sector Banks
2004-05	28	29	26
2005-06	28	28	26
2006-07	28	25	24
2007-08	28	23	23
2008-09	27	20	21
2009-10	27	22	24
2010-11	26	20	26
2011-12	26	20	30
2012-13	26	20	30

Source: Compiled by Authors

The paper is based on secondary data. The data has been collected from banks' annual reports and website of Reserve Bank of India (RBI). Reports on Trend and Progress in Banking from 1990-91 to 2011-12 have also been used.

DATA ENVELOPMENT ANALYSIS (DEA)

Data Envelopment Analysis (DEA) is a linear programming based technique which constructs a frontier from observed input-output ratios by assuming that Production Possibility Set is convex and both inputs and outputs are freely disposable (Das et al., 2005). DEA attempts to construct the frontier from the most efficient DMUs and then measures how far the inefficient DMUs are from the efficient frontier. The firm having score of one is the most efficient firm, while the firm having score between zero and one is less efficient. The present paper uses DEA to measure the Cost Efficiency of Banks. Cost efficiency is an input oriented model, as it minimizes inputs at a given level of output quantities given the input prices. DEA can further help to identify the reasons of cost inefficiency among banks. Since, Cost efficiency can further be decomposed into Allocative Efficiency (AE) and Technical Efficiency (TE) (input oriented) components to locate the reasons for inefficiency. Allocative Efficiency (AE) (input oriented) evaluates the capability of the bank to utilize their inputs to the minimum extent to generate the given outputs as well as considering the input prices. Technical efficiency (TE) (input oriented) is the ability of the firm to minimize their input to produce the given set of outputs. Furthermore, technical efficiency (input oriented) can be decomposed into its two components i.e., Pure Technical Efficiency (PTE) and Scale Efficiency (SE). This decomposition also helps to detect the reasons of technical inefficiencies which can be due to the inefficient implementation of the production plan in converting inputs to outputs (pure technical inefficiency) or due to the divergence of bank from the most productive scale size (scale inefficiency).

INPUT AND OUTPUT SELECTION APPROACH AND CHOICE OF VARIABLES FOR DEA

The selection of input and output variables is crucial for evaluating efficiency scores from DEA. To evaluate the efficiency of the banks, Intermediation Approach is mostly preferred as banks are considered and works as financial intermediaries. The reason for preference

of intermediation approach is that almost all the activities of bank consist of converting huge deposits and funds into loans and financial investments (Favero and Papi, 1995 and Berger and Humphrey, 1997). Sticking with the Intermediation Approach, this paper uses following four inputs and three outputs and their prices is described in the Table 3.

Table 3: Description of Input and Output Variables

Variables	Description
Input Variables	
• Deposits	Demand Deposits+ Term Deposit + Savings Deposits.
• Borrowings	Borrowings from RBI and other Banks or Financial institutions.
• Fixed Assets	Premises+ Fixed Assets under Construction+ Other fixed Assets.
• Number of Employees	Number of Employees working in the banks.
Output Variables	
• Investments	Investments in Approved Securities, Government Securities, other approved securities, shares, debentures.
• Loans and Advances	Term Loans + Cash Credit, overdraft + Bills purchased and discounted etc.
• Non- Interest income	Commission +Bill Discounted +Fee.
Input Prices	
• Price of Deposits	Interest paid on deposits/ deposits.
• Price of Borrowings	Interest paid on borrowings from RBI and other agencies/Borrowing.
• Price of Fixed Assets	Rent, taxes and Lighting + Depreciation on banks' assets + Repair and Maintenance + Insurance/ Fixed Assets.
• Price of number of employees	Payment and provisions for employees/ number of employees.

Source: Compiled by Authors

RETURN TO SCALE (RTS)

DEA can also help to determine return to scale. It tells whether a DMU is operating at Decreasing Returns to scale (DRS), Increasing Returns to Scale (IRS) or Constant Return to Scale (CRS). DRS indicates that DMU is operating at a scale that is too large which portrays that a percentage increase in inputs of that DMU produces a less than proportional increase in outputs. IRS depicts that DMU is operating at a scale that is too small, which shows that the percentage increase in inputs of DMU produces a more than proportional increase in outputs. Lastly, CRS depicts that DMU is operating at a correct scale and an increase in inputs will result in a proportionate increase in the outputs.

PANEL DATA TOBIT REGRESSION ANALYSIS

The Panel Data Tobit model is proposed by James Tobin (1958) to describe the relationship

between a censored dependent variable and independent variables. The simple application of OLS estimation procedure in censored dependent variable may produce biased estimates if there is significant position of the observation equal to 1 (Saxonhouse, 1976; Resende, 2000; Kumar and Gulati, 2008; Gulati, 2011). The Panel Data Tobit model is applied due to the censored nature of the dependent variable i.e. efficiency scores are in range of 0 to 1.

Table 4: Cost Efficiency scores of Scheduled Commercial Banks across Ownership in India, 1991-92 to 2012-13

Year	Public Sector Banks						Private Sector Banks		
	No. of Banks	CE	AE	TE (IO)	PTE	SE	No. of Banks	CE	AE
Reformatory Era									
1991-92	28	0.713	0.773	0.923	0.964	0.958	23	0.610	0.734
1992-93	28	0.811	0.853	0.949	0.977	0.972	22	0.647	0.730
1993-94	27	0.652	0.701	0.930	0.970	0.960	22	0.562	0.630
1994-95	27	0.725	0.776	0.936	0.985	0.950	29	0.658	0.775
1995-96	27	0.628	0.721	0.876	0.982	0.891	34	0.584	0.729
1996-97	27	0.654	0.721	0.913	0.982	0.929	33	0.622	0.772
1997-98	27	0.436	0.468	0.935	0.990	0.944	34	0.506	0.604
1998-99	27	0.704	0.762	0.926	0.975	0.951	33	0.685	0.766
1999-2000	27	0.670	0.730	0.914	0.980	0.933	32	0.646	0.727
2000-01	27	0.578	0.641	0.896	0.976	0.919	31	0.496	0.595
2001-02	27	0.769	0.828	0.925	0.979	0.945	30	0.706	0.804
Mean		0.667	0.725	0.920	0.978	0.941		0.611	0.715
Standard Deviation		0.101	0.103	0.020	0.007	0.022		0.068	0.072
Minimum		0.436	0.468	0.876	0.964	0.891		0.496	0.595
Maximum		0.811	0.853	0.949	0.990	0.972		0.706	0.804
Post Reformatory Era									
2002-03	27	0.615	0.692	0.878	0.986	0.891	28	0.556	0.671
2003-04	27	0.666	0.716	0.929	0.991	0.937	30	0.691	0.743
2004-05	28	0.684	0.738	0.926	0.986	0.940	29	0.702	0.766
2005-06	28	0.503	0.631	0.795	0.977	0.811	28	0.544	0.669
2006-07	28	0.863	0.903	0.956	0.985	0.971	25	0.828	0.855
2007-08	28	0.758	0.832	0.912	0.978	0.932	23	0.815	0.874
2008-09	27	0.650	0.755	0.866	0.983	0.880	20	0.698	0.803
2009-10	27	0.593	0.734	0.815	0.985	0.827	22	0.554	0.679

RESULTS

COST EFFICIENCY OF SCHEDULED COMMERCIAL BANKS ACROSS OWNERSHIP

Cost Efficiency scores for each bank is calculated over the total time period from 1991-92 to 2012-13. Then, these scores are aggregated to analyze the performance of Scheduled Commercial banks across ownership. The entire period has been split into two phases as, 1991-92 till 2001-02 representing the Reformatory Era and 2002-03 till 2012-13 representing the Post Reformatory Era. Table 4 evaluate the Cost Efficiency and its components across ownership in the Reformatory and Post Reformatory Era as follows.

						Foreign sector Banks		
TE (IO)	**PTE**	**SE**	**No. of Banks**	**CE**	**AE**	**TE (IO)**	**PTE**	**SE**
0.832	0.875	0.953	23	0.721	0.735	0.973	0.996	0.977
0.887	0.914	0.971	21	0.867	0.885	0.980	0.990	0.990
0.889	0.938	0.949	21	0.828	0.852	0.973	0.995	0.978
0.856	0.898	0.953	20	0.790	0.815	0.968	0.982	0.986
0.813	0.892	0.907	27	0.604	0.677	0.906	0.969	0.933
0.814	0.927	0.878	32	0.636	0.719	0.886	0.957	0.926
0.843	0.924	0.909	35	0.577	0.677	0.855	0.967	0.880
0.893	0.947	0.943	34	0.816	0.887	0.915	0.974	0.939
0.894	0.953	0.938	37	0.769	0.879	0.874	0.948	0.920
0.837	0.922	0.909	37	0.569	0.685	0.839	0.937	0.891
0.879	0.935	0.939	34	0.750	0.848	0.880	0.954	0.919
0.858	0.920	0.932		0.721	0.787	0.913	0.970	0.940
0.032	0.024	0.027		0.107	0.089	0.052	0.020	0.038
0.813	0.875	0.878		0.569	0.677	0.839	0.937	0.880
0.894	0.953	0.971		0.867	0.887	0.980	0.996	0.990
0.828	0.964	0.860	27	0.562	0.677	0.839	0.915	0.919
0.929	0.980	0.947	27	0.612	0.698	0.864	0.951	0.908
0.907	0.956	0.950	26	0.668	0.735	0.908	0.971	0.932
0.811	0.945	0.860	26	0.610	0.757	0.794	0.913	0.873
0.963	0.986	0.977	24	0.755	0.837	0.900	0.964	0.930
0.931	0.954	0.976	23	0.750	0.799	0.934	0.990	0.943
0.869	0.953	0.911	21	0.808	0.838	0.960	0.996	0.964
0.835	0.971	0.858	24	0.673	0.704	0.951	0.990	0.960

Year	Public Sector Banks						Private Sector Banks		
	No. of Banks	CE	AE	TE (IO)	PTE	SE	No. of Banks	CE	AE
2010-11	26	0.646	0.718	0.900	0.990	0.909	20	0.664	0.757
2011-12	26	0.117	0.147	0.812	0.983	0.824	20	0.113	0.165
2012-13	26	0.368	0.419	0.884	0.980	0.902	20	0.431	0.544
Mean		0.588	0.662	0.879	0.984	0.893		0.600	0.684
Standard Deviation		0.201	0.210	0.053	0.004	0.053		0.201	0.196
Minimum		0.117	0.147	0.795	0.977	0.811		0.113	0.165
Maximum		0.863	0.903	0.956	0.991	0.971		0.828	0.874

Note.: CE: Cost Efficiency, AE: Allocative Efficiency, TE (IO): Technical Efficiency (Input Oriented), PTE: Pure Technical Efficiency, SE: Scale Efficiency.
Source: Compiled by Authors

Table: 4 highlights that during Reformatory Era i.e. 1991-92 to 2001-02, the estimates of Cost Efficiency of Public Sector Banks vary from a low of 0.436 to a high of 0.811. Overall during Reformatory Era, the Cost Efficiency (inefficiency) of Public Sector Banks operating in India is 66.7 percent (33.3 percent). It is noticed that the estimates of Cost Efficiency of Private Sector Banks vary from minimum of 0.496 to high of 0.706. The average Cost Efficiency (inefficiency) of Private Sector Banks operating in India is 61.1 percent (38.9 percent) during Reformatory Era. This depicts that on an average Private Sector Banks could utilize 61.1 percent of inputs to produce the given outputs. Foreign Sector Banks have the minimum Cost Efficiency of 0.569 and the maximum of 0.867 during Reformatory Era i.e. 1991-92 to 2001-02. Throughout Reformatory Era, the Cost Efficiency (inefficiency) of Foreign Sector Banks operating in India is 72.1 percent (27.9 percent).

It is observed from Cost Efficiency of Public Sector Banks (PSBs) shows ups and downs in Reformatory Era. In the early 1990s, Public Sector Banks have very high Cost Efficiency as compared to the latter years of Reformatory Era. PSBs have always dominated the Indian Financial Market in terms of its share of deposits and assets (Reserve Bank of India, 2013). People have strong faith and believe that their funds are safe and secure once deposited with the PSBs. They don't even mind receiving a lower rate of interest. This reduces the most significant expenditure of PSBs in terms of rate of interest and leads them to an improved Cost Efficiency score. PSBs were also incurring lofty administrative cost due to overstaffing in the bank branches during Reformatory Era (Gulati, 2011). As a consequence, a downward trend in the Cost Efficiency brought the average score to less than 1. Private Sector Banks also follow an inconsistent pattern. Several new banks commenced their operations in the Private Sector during the Reformatory Era. They spent huge resources on establishment, recruitment and infrastructure (Kohli and Chawla, 2006). These new Private Sector Banks also adopted more sophisticated technology and offered facilities like ATMs, doorstep banking, Internet Banking etc which increased their cost. Foreign Sector Banks too have shown random behaviour during Reformatory Era. During the inception of the reforms, Foreign Sector Banks started to pay high rate of interest to attract customers. Thereafter in their endeavour to increase their business, they enlarged their employee base

						Foreign sector Banks		
TE (IO)	PTE	SE	No. of Banks	CE	AE	TE (IO)	PTE	SE
0.878	0.956	0.919	26	0.600	0.685	0.868	0.937	0.926
0.735	0.941	0.776	30	0.502	0.554	0.902	0.976	0.922
0.807	0.952	0.847	30	0.642	0.711	0.899	0.964	0.929
0.863	0.960	0.898		0.653	0.727	0.893	0.961	0.928
0.067	0.014	0.063		0.091	0.082	0.049	0.029	0.025
0.735	0.941	0.776		0.502	0.554	0.794	0.913	0.873
0.963	0.986	0.977		0.808	0.838	0.960	0.996	0.964

which increased their operating expenses. This lowered the Cost Efficiency scores of Foreign Sector Banks for Reformatory Era.

The Table 4 discloses that in Post Reformatory Era, the Cost Efficiency of Public Sector Banks stretches between a wide range of the lowest efficiency of 0.117 and highest of 0.863. In Post Reformatory Era, on an average, Public Sector Banks operating in India could utilize merely 58.8 percent of its inputs which means that they are wasting their inputs to the extent of 41.2 percent. In Post Reformatory Era, Private Sector Banks operating in India uses only 60.0 percent of inputs which is very low as compared to full Cost Efficiency score. Cost Efficiency of Foreign Sector Banks varies from a low of 0.502 to a high of 0.808. In Post Reformatory Era, Foreign Sector Banks have the average Cost Efficiency (inefficiency) score of 65.3 percent (34.7 percent).

In the Post Reformatory Era, it is noticed that all banks belonging to different sectors have low Cost Efficiency and its components scores. With the execution of reforms, the competition among banks operating in different sectors increased. It compelled PSBs to bring a change in their business strategies, accept computerization and adopt technology in their working. PSBs invested huge funds in technology to upgrade their services resulting in increased capital expenditure and leading to temporary inefficiency. Private Sector Banks' Cost Inefficiency is more attributable to their human resource acquisition and maintenance cost. They employ qualified staff having specialized skills on high salary packages. They provide rewarding incentives to their employees and managers which enhances their operational cost. Foreign Sector Banks have stronger control over their cost. They tend to save their infrastructural cost as they do not exist in brick and cement and follow virtual banking. They operate only in the metropolitan cities and in fact have less than 1 percent of the total branch network (PricewaterhouseCoopers (PWC), 2013). However, even Foreign Sector Banks could not become fully cost efficient as these too have enlarged employee base. Moreover, all banks belonging to different sectors have the lowest efficiency score during 2011-12 which has been attributed to slowdown in the domestic economy (Reserve Bank of India, 2011-12 and 2012-13).

As seen from the Table 4, Technical Efficiency (input oriented) scores of all banks operating

in different sectors are better to Allocative Efficiency scores both in Reformatory as well as Post Reformatory Era. Thus, the foremost reason behind cost inefficiency of Public Sector Banks, Private Sector Banks and Foreign Sector Banks is allocative inefficiency. Furthermore, during the reformatory era, the main source of technical inefficiency (input oriented) is attributed to scale inefficiency among Public Sector Banks and Foreign Sector Banks. On the other hand, Private Sector Bank's Technical inefficiency (input oriented) is due to Pure Technical inefficiency during Reformatory Era. Thus, depicting that Public Sector Banks and Foreign Sector Banks are not operating on the most advantageous scale while Private Sector Banks are not using their inputs effectively rather than their scale. However, during Post Reformatory Era, all banks operating in different sectors are facing the problem of scale inefficiency as their scale efficiency scores are less than their pure technical efficiency scores. It can be concluded that all banks are facing the problem of scale i.e., either they are operating on increasing or decreasing Return to Scale.

The results highlights that Cost Efficiency and its components scores of Public, Private and Foreign Sector Banks are different in Reformatory Era as compared to Post Reformatory Era. Further, the question of thought at this instant is if this variation in Cost Efficiency scores among banks operating in various sectors is statistically significant or not. To verify the same, panel tobbit regression is applied by taking ownership wise two dummies as independent variables. One dummy for Public Sector Banks i.e., a value of 1 for Public Sector Banks and 0 to other banks is given. Similarly, another dummy of Private Sector Banks is formed. Regression is applied with the hypothesis that there exists no difference in Cost Efficiency and other components scores of Public Sector Banks, Private Sector Banks and Foreign Sector Banks. The results of the same are given in Table: 5.

Table 5: Tobit Regression Results of Cost Efficiency and its Components with Ownership Dummy as Independent Variable

Efficiency	Constant	Public Dummy	Private Dummy	Log Likelihood
Reformatory Era				
Cost Efficiency	0.7241003* (0.0123056)	-0.0543238* (0.0312854)	-0.1101404* (0.017456)	146.60519
Allocative Efficiency	0.7997052* (0.0122613)	-0.0722591* (0.0180754)	-0.0794973* (0.0174614)	211.59203
Technical Efficiency (IO)	0.9685255* (0.0172608)	-0.0170664 (0.0261844)	-0.0874335* (0.024777)	79.445065
Pure Technical Efficiency	1.086035* (0.0182365)	-0.0051032 (0.0262288)	-0.116891* (0.0245194)	-41.698921
Scale Efficiency	0.9860478* (0.0137201)	-0.0190933 (0.0208268)	-0.0384227*** (0.0197208)	240.05763
Post Reformatory Era				
Cost Efficiency	0.6587917* (0.0253412)	-0.0666457*** (0.0371893)	-0.0327076 (0.0373255)	-110.47534

Efficiency	Constant	Public Dummy	Private Dummy	Log Likelihood
Allocative Efficiency	0.728857* (0.0238703)	-0.0623698*** (0.03487)	-0.021000 (0.0350891)	-78.646417
Technical Efficiency (IO)	0.9784565* (0.0224428)	-0.0791504** (0.0324005)	-0.073936** (0.0322973)	36.458821
Pure Technical Efficiency	1.128228* (0.0259267)	-0.0531954 (0.0339265)	-0.0917228* (0.0339042)	-67.680583
Scale Efficiency	1.000263* (0.0187322)	-0.0891679* (0.0269945)	-0.0632184** (0.0269945)	143.69594

Note.: * ,**, ***Significant at 1 percent, 5 percent and 10 percent level of Significance respectively.
Parenthesis includes Standard Error Value Source: Compiled by Authors

Table: 5 highlights the results of Panel Tobit Regression of both reformatory and Post Reformatory Era by taking Foreign Sector Banks as reference group. During Reformatory Era, the results of Panel Tobit Regression for Cost Efficiency and Allocative Efficiency depict that Foreign Sector Banks are better than Public Sector Banks. The difference in Technical Efficiency (Input Oriented), Pure Technical Efficiency and Scale Efficiency scores between Public and Foreign Sector Bank is insignificant. The coefficient of private dummy for Cost Efficiency, Allocative Efficiency, Technical Efficiency (Input Oriented), Pure Technical Efficiency and Scale Efficiency is negative and significant. The negative coefficient exhibits that Foreign Sector Banks are performing better than their counterparts in the Private Sector.

The results of Panel Tobit Regression for Post Reformatory Era depict that Foreign Sector Banks are superior performers in terms of Cost Efficiency, Allocative Efficiency, Technical Efficiency and Scale Efficiency as their coefficient of public dummy is negative and significant. Differences among Foreign and Public Sector Banks are insignificant for Pure Technical Efficiency. Similarly, the negative coefficient of private dummy for Cost Efficiency and its components depict that Foreign Sector Banks are superior performers than Private Sector Banks in terms of Cost Efficiency and its components.

However on the whole, ownership wise results for Cost Efficiency and its components for Reformatory Era reveal that Foreign Sector Banks have superior Cost Efficiency scores followed by Public Sector Banks (PSBs) and Private Sector Banks. Similar results are recommended by Panel Tobit Regression across Ownership. Foreign Sector Banks are performing better in terms of Cost Efficiency. They have been able to reduce their operational costs by offering faster services through Electronic Banking, Mobile Banking, Credit Cards, Electronic Fund Transfers (EFTs), Real Time Gross Settlement (RTGs) and National Electronic Fund Transfer (NEFTs) etc to the customers.

During Post Reformatory Era, once again according to Cost Efficiency scores, Foreign Sector Banks are placed on the first position, but the second position is taken by Private Sector Banks followed by Public Sector Banks. But the difference between Private and Foreign Sector Banks is insignificant although as depicted by Panel Tobit Regression, it is significant among Public and Foreign Sector Banks. Public Sector Banks have higher Cost Inefficiency. Public Sector Banks are inefficient in utilizing their huge manpower as massive

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low skilled employees are bunched under the category of clerk and sub clerical staff in these banks (Jagannathan, 2014). Huge expenditure of salaries is incurred without a proportionate contribution to the productivity in this type of disguised employment. Labor is a very important input of Cost Efficiency but it seems that this cost escorted PSBs towards Cost Inefficiency.

Table 6: Tobit Regression Results of Cost Efficiency and its Components with Time Dummy as independent Variable across Ownership

Efficiency	**Public Sector Banks**			
	Constant	**Dummy 1**	**Log Likelihood**	**Constant**
Cost Efficiency	0.5927443* (0.012083)	0.0764369* (0.0156206)	120.84992	0.6161734* (0.0139406)
Allocative Efficiency	0.6675631* (0.0127165)	0.0599034* (0.0156346)	120.0747	0.7009946* (0.0150658)
Technical Efficiency (IO)	0.8909652* (0.0113469)	0.0465921* (0.0082698)	295.07258	0.9037175* (0.0160263)
Pure Technical Efficiency	1.029549* (0.0098429)	-0.0000134 (0.0066291)	85.191375	1.0277* (0.0142369)
Scale Efficiency	0.9038695* (0.0109857)	0.0540493* (0.0074414)	342.62307	0.9340394* (0.0140551)

Note.: * ,**, ***Significant at 1 percent, 5 percent and 10 percent level of Significance respectively.
Source: Compiled by Authors

The results of Panel Tobit Regression suggests that the performance of PSBs in terms of Cost Efficiency and its components is superior in Reformatory Era as compared for that of Post Reformatory Era except for Pure Technical Efficiency. Pure Technical Efficiency of PSBs has negative sign depicts that PSBs are performing better in Post Reformatory Era with a minute variation, but this divergence is not at all significant. The coefficient of time dummy for Cost Efficiency for Private Sector Banks is negative and insignificant. Further, the coefficient for Allocative Efficiency and Scale Efficiency of Private Sector Banks is insignificant and it portrays that the performance of Private Sector Banks is almost the same during both the eras. These results of Panel Tobit Regression suggest that Cost Efficiency, Allocative Efficiency and Technical Efficiency of Foreign Sector Banks for Reformatory Era is statistically different from that of Post Reformatory Era. But the time dummy for Pure Technical Efficiency and Scale Efficiency is insignificant depicting that there exists no statistically significant difference in performance of Foreign Sector Bank in terms of Pure Technical Efficiency and Scale Efficiency.

RETURN TO SCALE OF COST EFFICIENCY OF INDIAN SCHEDULED COMMERCIAL BANKS ACROSS OWNERSHIP

The primary source of Cost Inefficiency among Scheduled Commercial Banks (SCBs) emerges to be connected with Scale inefficiency. So it is important to further scrutinize the movement of Return to Scale of Scheduled Commercial Banks across ownership operating in India in order to identify which sector in the Indian Banking Industry is responsible for these diseconomies of scale. To determine the Return to Scale, the number

The above results show that there exist some differences in the Cost Efficiency and its components for banks belonging to different sectors i.e. Public, Private and Foreign Sector Banks during Reformatory and Post Reformatory Era. To test whether the differences in Reformatory and Post Reformatory Era are statistically significant or not, Panel Tobit Regression is applied by taking time dummy as independent variable. The results of Panel Tobit Regression are presented as follows in Table 6

Private Sector Banks			Foreign Sector Banks	
Dummy 1	**Log Likelihood**	**Constant**	**Dummy 1**	**Log Likelihood**
-0.0045267 (0.0174024)	57.943216	0.6614552* (0.0269969)	0.0771773* (0.0228099)	- 153.40616
0.0194926 (0.0168984)	78.777848	0.7321448* (0.0248753)	0.0686987* (0.0206454)	- 97.540265
0.0367138* (0.0132709)	79.621387	1.010599* (0.0303942)	0.0436434** (0.0222026)	- 169.80689
-0.0702509* (0.0111869)	52.468874	1.235921* (0.424029)	0.0024704 (0.0294669)	- 151.14601
0.0025801 (0.0104529)	189.70094	1.021726* (0.0231541)	0.0259575 (0.0172027)	- 90.47868

(percentage) of banks operating under a Constant Return to Scale (CRS), Increasing Return to Scale (IRS) and Decreasing Return to Scale (DRS) is evaluated. The results of RTS across ownership are presented as follows in Table: 7:

Table 7: Scheduled Commercial Banks across Ownership at Different Return to Scale (RTS) according to Cost Efficiency and its Components

Year	Public Sector Banks				Private Sector Banks				Foreign Sector Banks			
	DRS	**IRS**	**CRS**	**Total**	**DRS**	**IRS**	**CRS**	**Total**	**DRS**	**IRS**	**CRS**	**Total**
Reformatory Era												
1991-92	23 (82)	1 (4)	4 (14)	28	2 (9)	17 (74)	4 (17)	23	5 (22)	2 (9)	16 (69)	23
1992-93	18 (64)	2 (7)	8 (29)	28	3 (14)	15 (68)	4 (18)	22	4 (19)	1 (5)	16 (76)	21
1993-94	22 (81)	1 (4)	4 (15)	27	2 (9)	12 (55)	8 (36)	22	3 (14)	3 (14)	15 (72)	21
1994-95	18 (67)	0 (0)	9 (33)	27	15 (52)	7 (24)	7 (24)	29	4 (20)	3 (15)	13 (65)	20
1995-96	23 (85)	0 (0)	4 (15)	27	23 (68)	3 (9)	8 (23)	34	7 (26)	2 (7)	18 (67)	27
1996-97	20 (74)	0 (0)	7 (26)	27	24 (73)	3 (9)	6 (18)	33	20 (62)	0 (0)	12 (38)	32
1997-98	18 (67)	0 (0)	9 (33)	27	23 (68)	2 (6)	9 (26)	34	20 (57)	0 (0)	15 (43)	35
1998-99	17 (63)	0 (0)	10 (37)	27	24 (73)	3 (9)	6 (18)	33	16 (47)	4 (12)	14 (41)	34
1999-2000	19 (70)	1 (4)	7 (26)	27	21 (66)	1(3)	10 (31)	32	17 (46)	7 (19)	13 (35)	37

Year	Public Sector Banks				Private Sector Banks				Foreign Sector Banks			
	DRS	IRS	CRS	Total	DRS	IRS	CRS	Total	DRS	IRS	CRS	Total
2000-01	20 (74)	0 (0)	7 (26)	27	24 (78)	2 (6)	5 (16)	31	16 (43)	2 (5)	19 (52)	37
2001-02	16 (59)	0 (0)	11 (41)	27	21 (70)	2 (7)	7 (23)	30	15 (44)	3 (9)	16 (47)	34
Post Reformatory Era												
2002-03	24 (89)	0 (0)	3 (11)	27	19 (68)	4 (14)	5 (18)	28	14 (52)	2 (7)	11 (41)	27
2003-04	20 (74)	0 (0)	7 (26)	27	16 (53)	3 (10)	11 (37)	30	11 (41)	4 (15)	12 (44)	27
2004-05	24 (86)	0 (0)	4 (14)	28	16 (55)	5 (17)	8 (28)	29	7 (27)	4 (15)	15 (58)	26
2005-06	23 (82)	0 (0)	5 (18)	28	20 (72)	4 (14)	4 (14)	28	11 (42)	5 (19)	10 (39)	26
2006-07	18 (64)	0 (0)	10 (36)	28	10 (40)	2 (8)	13 (52)	25	5 (21)	6 (25)	13 (54)	24
2007-08	23 (82)	0 (0)	5 (18)	28	9 (39)	5 (22)	9 (39)	23	8 (35)	5 (22)	10 (43)	23
2008-09	22 (81)	0 (0)	5 (19)	27	13 (65)	1 (5)	6 (30)	20	5 (24)	2 (9)	14 (67)	21
2009-10	26 (96)	0 (0)	1 (4)	27	16 (73)	0 (0)	6 (27)	22	7 (29)	1 (4)	16 (67)	24
2010-11	24 (92)	0 (0)	2 (8)	26	14 (70)	0 (0)	6 (30)	20	7 (27)	6 (23)	13 (50)	26
2011-12	23 (88)	0 (0)	3 (12)	26	16 (80)	0 (0)	4 (20)	20	11 (37)	4 (13)	15 (50)	30
2012-13	21 (81)	0 (0)	5 (19)	26	16 (80)	0 (0)	4 (20)	20	8 (27)	7 (23)	15 (50)	30

Source: Compiled by Authors
Note.: DRS: Decreasing Return to Scale, IRS: Increasing Return to Scale, CRS: Constant Return to Scale, Parenthesis includes percent of banks

Throughout the Reformatory Era, the Return to Scale results of Public Sector Banks exhibit that majority numbers of PSBs are operating on DRS in Reformatory Era. On the other side, increasing number of PSBs operating on CRS while decreasing number of banks on DRS reveal that PSBs are making efforts to utilize their scale effectively. The results of Return to Scale of Private Sector Banks display that majority of Private Sector Banks are operating on DRS while less number of banks are operating on CRS and IRS. The numbers of Foreign Sector Banks operating on CRS remained consistent. Foreign Sector Banks in Reformatory

Table 8: Number of Scheduled Commercial Banks identified as Leaders and Laggards on the basis of Cost Efficiency and its components across Ownership

Banks	Year	Total	Leaders						
			CE	AE	TE (IO)	PTE	SE	CE	AE
Public Sector Banks			**Reformatory Era**						
	1991-92	28	0 (0)	0 (0)	3 (11)	15 (54)	4 (14)	14 (50)	14 (50)
	1992-93	28	2 (7)	2 (7)	8 (29)	16 (57)	8 (29)	10 (36)	11 (39)
	1993-94	27	0 (0)	0 (0)	4 (15)	15 (56)	4 (15)	13 (48)	13 (48)
	1994-95	27	0 (0)	0 (0)	8 (30)	19 (70)	9 (33)	15 (56)	12 (44)
	1995-96	27	0 (0)	0 (0)	4 (15)	19 (70)	4 (15)	14 (52)	17 (63)
	1996-97	27	0 (0)	0 (0)	7 (26)	18 (67)	7 (26)	16 (59)	17 (63)

Era confirm that approximately equivalent numbers of Foreign Sector Banks are operating on DRS as well as on CRS. The highest proportion operating on CRS belongs to Foreign Sector Banks. During Post Reformatory Era, the results of Return to Scale for PSBs demonstrates that enormous number of PSBs are operating on DRS while small number of banks operate on the most efficient scale i.e., CRS. In Post Reformatory Era, Private Sector Banks depict that maximum number of banks are operating on an incorrect scale i.e., DRS. Overall, Foreign Sector Banks in Post Reformatory Era confirm that immense numbers of Foreign Sector Banks are operating on CRS.

Overall, the results of Return to Scale show that in Reformatory Era as well as in Post Reformatory Era, maximum number of banks operating on Decreasing Return to Scale (DRS) belong to Public Sector followed by Private Sector. This ensures that these banks are not able to utilize their inputs to the fullest extent to produce what they are producing at present scale. Private Sector Banks have the next maximum number of banks belonging to DRS. The results reveal that the highest number of banks operating on CRS belongs to Foreign Sector. Foreign Sector Banks mainly focus on corporate clients and do not compete for the share of retail clientele. They have professional work culture and business philosophy. They are technologically more adaptive with a tech-savvy manpower. In nut shell, the results of RTS across ownership suggest that Public Sector Banks as well as Private Sector Banks need to rectify their scale of operation in order to become fully efficient.

LEADERS AND LAGGARDS OF COST EFFICIENCY OF INDIAN SCHEDULED COMMERCIAL BANKS

In order to further minutely analyze the sector wise performance, it is necessary to identify the number of banks operating as leaders and laggards. On the basis of the average efficiency scores generated by the DEA, Scheduled Commercial Banks (SCBs) across ownership have been divided into three categories: (1) Banks with an efficiency score of 1 are considered as leaders (2) banks, which have efficiency score less than one but greater than average efficiency score are rated as moderate performers while (3) banks with a average efficiency score of less than average are considered as laggards. Table: 8, presents a bird's eye view of the number of banks falling in each category as follows

Moderates					Laggards		
TE (IO)	PTE	SE	CE	AE	TE (IO)	PTE	SE
13 (46)	4 (14)	13 (46)	14 (50)	14 (50)	12 (43)	9 (32)	11 (39)
7 (25)	3 (11)	8 (29)	16 (57)	15 (54)	13 (46)	9 (32)	12 (43)
10 (37)	4 (15)	12 (44)	14 (52)	14 (52)	13 (48)	8 (30)	11 (41)
5 (19)	1 (4)	7 (26)	12 (44)	15 (56)	14 (52)	7 (26)	11 (41)
10 (37)	0 (0)	11 (41)	13 (48)	10 (37)	13 (48)	8 (30)	12 (44)
9 (33)	4 (15)	12 (44)	11 (41)	10 (37)	11 (41)	5 (19)	8 (30)

Banks	Year	Total	Leaders						
			CE	AE	TE (IO)	PTE	SE	CE	AE
	1997-98	27	0 (0)	0 (0)	9 (33)	21 (78)	9 (33)	12 (44)	13 (48)
	1998-99	27	0 (0)	0 (0)	9 (33)	20 (74)	10 (37)	12 (44)	14 (52)
	1999-00	27	0 (0)	0 (0)	7 (26)	20 (74)	7 (26)	13 (48)	14 (52)
	2000-01	27	1 (4)	1 (4)	7 (26)	19 (70)	7 (26)	10 (37)	11 (41)
	2001-02	27	1 (4)	1 (4)	10 (37)	17 (63)	11 (41)	13 (48)	13 (48)
Post Reformatory Era									
	2002-03	27	2 (7)	2 (7)	3 (11)	19 (70)	3 (11)	11 (41)	13 (48)
	2003-04	27	0 (0)	0 (0)	7 (26)	19 (70)	7 (26)	15 (56)	17 (63)
	2004-05	28	1 (4)	1 (4)	4 (14)	18 (64)	4 (14)	11 (39)	14 (50)
	2005-06	28	3 (11)	3 (11)	5 (18)	13 (46)	5 (18)	3 (11)	8 (29)
	2006-07	28	1 (4)	1 (4)	10 (36)	18 (64)	10 (36)	15 (54)	18 (64)
	2007-08	28	0 (0)	0 (0)	5 (18)	19 (68)	5 (18)	12 (43)	13 (46)
	2008-09	27	0 (0)	0 (0)	5(19)	13 (48)	5 (19)	10 (37)	14 (52)
	2009-10	27	0 (0)	0 (0)	1 (4)	16 (59)	1 (4)	13 (48)	13 (48)
	2010-11	26	0 (0)	0 (0)	2 (8)	18 (69)	2 (8)	11 (42)	12 (46)
	2011-12	26	0 (0)	0 (0)	3 (12)	14 (54)	3 (12)	11 (42)	14 (54)
	2012-13	26	0 (0)	0 (0)	5 (19)	14 (54)	5 (19)	11 (42)	10 (38)
Private Sector Banks			**Reformatory Era**						
	1991-92	23	0 (0)	0 (0)	3 (13)	5 (22)	4 (17)	13 (57)	15 (65)
	1992-93	22	1 (5)	1 (5)	4 (18)	8 (36)	4 (18)	7 (32)	10 (45)
	1993-94	22	0 (0)	0 (0)	7 (32)	11 (50)	8 (36)	11 (50)	10 (45)
	1994-95	29	0 (0)	0 (0)	7 (24)	11 (38)	7 (24)	12 (41)	17 (59)
	1995-96	34	1 (3)	1 (3)	8 (24)	10 (29)	8 (24)	13 (38)	16 (47)
	1996-97	33	0 (0)	0 (0)	6 (18)	13 (39)	6 (18)	15 (45)	21 (64)
	1997-98	34	2 (6)	2 (6)	9 (26)	12 (35)	9 (26)	8 (24)	11 (32)
	1998-99	33	1 (3)	1 (3)	6 (18)	14 (42)	6 (18)	17 (52)	13 (39)
	1999-00	32	1 (3)	1 (3)	9 (28)	14 (44)	10 (31)	14 (44)	14 (44)
	2000-01	31	0 (0)	0 (0)	4 (13)	12 (39)	5 (16)	13 (42)	13 (42)
	2001-02	30	2 (7)	2 (7)	7 (23)	11 (37)	7 (23)	11 (37)	13 (43)
			Post Reformatory Era						
	2002-03	28	2 (7)	2 (7)	5 (18)	11 (39)	5 (18)	10 (36)	12 (43)
	2003-04	30	1 (3)	1 (3)	11 (37)	19 (63)	11 (37)	16 (53)	19 (63)

Moderates					Laggards		
TE (IO)	PTE	SE	CE	AE	TE (IO)	PTE	SE
7 (26)	2 (7)	7 (26)	15 (56)	14 (52)	11 (41)	4 (15)	11 (41)
6 (22)	0 (0)	7 (26)	15 (56)	13 (48)	12 (44)	7 (26)	10 (37)
7 (26)	1 (4)	6 (22)	14 (52)	13 (48)	13 (48)	6 (22)	14 (52)
4 (15)	2 (7)	7 (26)	16 (59)	15 (56)	16 (59)	6 (22)	13 (48)
4 (15)	3 (11)	6 (22)	13 (48)	13 (48)	13 (48)	7 (26)	10 (37)
11 (41)	1 (4)	12 (44)	14 (52)	12 (44)	13 (48)	7 (26)	12 (44)
8 (30)	1 (4)	8 (30)	12 (44)	10 (37)	12 (44)	7 (26)	12 (44)
7 (25)	1 (4)	8 (29)	16 (57)	13 (46)	17 (61)	9 (32)	16 (57)
11 (39)	7 (25)	10 (36)	22 (79)	17 (61)	12 (43)	8 (29)	13 (46)
6 (21)	1 (4)	7 (25)	12 (43)	9 (32)	12 (43)	9 (32)	11 (39)
11 (39)	2 (7)	8 (29)	16 (57)	15 (54)	12 (43)	7 (25)	15 (54)
8 (30)	6 (22)	9 (33)	17 (63)	13 (48)	14 (52)	8 (30)	13 (48)
12 (44)	4 (15)	13 (48)	14 (52)	14 (52)	14 (52)	7 (26)	13 (48)
11 (42)	0 (0)	10 (38)	15 (58)	14 (54)	13 (50)	8 (31)	14 (54)
10 (38)	3 (12)	10 (38)	15 (58)	12 (46)	13 (50)	9 (35)	13 (50)
6 (23)	3 (12)	7 (27)	15 (58)	16 (62)	15 (58)	9 (35)	14 (54)
8 (35)	6 (26)	12 (52)	10 (43)	8 (35)	12 (52)	12 (52)	7 (30)
7 (32)	3 (14)	12 (55)	14 (64)	11 (50)	11 (50)	11 (50)	6 (27)
4 (18)	1 (5)	6 (27)	11 (50)	12 (55)	11 (50)	10 (45)	8 (36)
5 (17)	2 (7)	16 (55)	17 (59)	12 (41)	17 (59)	16 (55)	6 (21)
7 (21)	5 (15)	11 (32)	20 (59)	17 (50)	19 (56)	19 (56)	15 (44)
11 (33)	6 (18)	13 (39)	18 (55)	12 (36)	16 (48)	14 (42)	14 (42)
8 (24)	6 (18)	13 (38)	24 (71)	21 (62)	17 (50)	16 (47)	12 (35)
11 (33)	4 (12)	13 (39)	15 (45)	19 (58)	16 (48)	15 (45)	14 (42)
7 (22)	5 (16)	11 (34)	17 (53)	17 (53)	16 (50)	13 (41)	11 (34)
11 (35)	5 (16)	14 (45)	18 (58)	18 (58)	16 (52)	14 (45)	12 (39)
10 (33)	6 (20)	12 (40)	17 (57)	15 (50)	13 (43)	13 (43)	11 (37)
12 (43)	8 (29)	13 (46)	16 (57)	14 (50)	11 (39)	9 (32)	10 (36)
9 (30)	3 (10)	9 (30)	13 (43)	10 (33)	10 (33)	8 (27)	10 (33)

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Banks	Year	Total	Leaders						
			CE	AE	TE (IO)	PTE	SE	CE	AE
	2004-05	29	2 (7)	2 (7)	8 (28)	16 (55)	8 (28)	14 (48)	16 (55)
	2005-06	28	1 (4)	1 (4)	4 (14)	14 (50)	4 (14)	11 (39)	13 (46)
	2006-07	25	3 (12)	3 (12)	13 (52)	20 (80)	13 (52)	13 (52)	14 (56)
	2007-08	23	1 (4)	1 (4)	8 (35)	14 (61)	9 (39)	12 (52)	12 (52)
	2008-09	20	3(15)	3 (15)	6 (30)	11 (55)	6 (30)	3 (15)	8 (40)
	2009-10	22	1 (5)	1 (5)	6 (27)	15 (68)	6 (27)	13 (59)	11 (50)
	2010-11	20	1 (5)	1 (5)	6 (30)	12 (60)	6 (30)	9 (45)	9 (45)
	2011-12	20	0 (0)	0 (0)	4 (20)	11 (55)	4 (20)	7 (35)	8 (40
	2012-13	20	0 (0)	0 (0)	3 (15)	8 (40)	4 (20)	8 (40)	10 (50)
Foreign Sector Banks			**Reformatory Era**						
	1991-92	23	5 (22)	5 (22)	16 (70)	20 (87)	16 (70)	5 (22)	6 (26)
	1992-93	21	6 (29)	6 (29)	16 (76)	19 (90)	16 (76)	4 (19)	5 (24)
	1993-94	21	7 (33)	7 (33)	15 (71)	18 (86)	15 (71)	3 (14)	6 (29)
	1994-95	20	4 (20)	4 (20)	12 (60)	15 (75)	13 (65)	7 (35)	8 (40)
	1995-96	27	2 (7)	2 (7)	17 (63)	23 (85)	17 (63)	10 (37)	12 (44)
	1996-97	32	3 (9)	3 (9)	12 (38)	22 (69)	12 (38)	9 (28)	10 (31)
	1997-98	35	4 (11)	4 (11)	15 (43)	28 (80)	15 (43)	6 (17)	11 (31)
	1998-99	34	6 (18)	6 (18)	14 (41)	25 (74)	14 (41)	11 (32)	16 (47)
	1999-00	37	8 (22)	8 (22)	13 (35)	24 (65)	13 (35)	9 (24)	14 (38)
	2000-01	37	4 (11)	4 (11)	18 (49)	25 (68)	19 (51)	11 (30)	18 (49)
	2001-02	34	6 (18)	6 (18)	16 (47)	26 (76)	16 (47)	10 (29)	13 (38)
			Post Reformatory Era						
	2002-03	27	4 (15)	4 (15)	11 (41)	18 (67)	11 (41)	5 (19)	10 (37)
	2003-04	27	4 (15)	4 (15)	12 (44)	20 (74)	12 (44)	11 (41)	12 (44)
	2004-05	26	5 (19)	5 (19)	15 (58)	22 (85)	15 (58)	9 (35)	11 (42)
	2005-06	26	5 (19)	5 (19)	10 (38)	19 (73)	10 (38)	7 (27)	8 (31)
	2006-07	24	4 (17)	4 (17)	12 (50)	18 (75)	13 (54)	7 (29)	10 (42)
	2007-08	23	5 (22)	5 (22)	10 (43)	19 (83)	10 (43)	8 (35)	8 (35)
	2008-09	21	5 (24)	5 (24)	13 (62)	19 (90)	14 (67)	5 (24)	7 (33)
	2009-10	24	5 (21)	5 (21)	16 (67)	21 (88)	16 (67)	10 (42)	10 (42)
	2010-11	26	5 (19)	5 (19)	13 (50)	20 (77)	13 (50)	7 (27)	13 (50)
	2011-12	30	3 (10)	3 (10)	15 (50)	27 (90)	15 (50)	10 (33)	11 (37)
	2012-13	30	3 (10)	3 (10)	15 (50)	24 (80)	15 (50)	13 (43)	15 (50)

Source: Compiled by Authors

Moderates					Laggards		
TE (IO)	PTE	SE	CE	AE	TE (IO)	PTE	SE
9 (31)	3 (10)	10 (34)	13 (45)	11 (38)	12 (41)	10 (34)	11 (38)
11 (39)	6 (21)	13 (46)	16 (57)	14 (50)	13 (46)	8 (29)	11 (39)
4 (16)	0 (0)	8 (32)	9 (36)	8 (32)	8 (32)	5 (20)	4 (16)
5 (22)	0 (0)	10 (43)	10 (43)	10 (43)	10 (43)	9 (39)	4 (17)
4 (20)	2 (10)	6 (30)	14 (70)	9 (45)	10 (50)	7 (35)	8 (40)
6 (27)	1 (5)	6 (27)	8 (36)	10 (45)	10 (45)	6 (27)	10 (45)
4 (20)	1 (5)	5 (25)	10 (50)	10 (50)	10 (50)	7 (35)	9 (45)
6 (30)	1 (5)	7 (35)	13 (65)	12 (60)	10 (50)	8 (40)	9 (45)
7 (35)	2 (10)	4 (20)	12 (60)	10 (50)	10 (50)	10 (50)	12 (60)
1 (4)	0 (0)	2 (9)	13 (57)	12 (52)	6 (26)	3 (13)	5 (22)
0 (0)	1 (5)	1 (5)	11 (52)	10 (48)	5 (24)	1 (5)	4 (19)
1 (5)	0 (0)	2 (10)	11 (52)	8 (38)	5 (24)	3 (14)	4 (19)
1 (5)	0 (0)	2 (10)	9 (45)	8 (40)	7 (35)	5 (25)	5 (25)
1 (4)	0 (0)	1 (4)	15 (56)	13 (48)	9 (33)	4 (15)	9 (33)
3 (9)	2 (6)	8 (25)	20 (63)	19 (59)	17 (53)	8 (25)	12 (38)
5 (14)	0 (0)	6 (17)	25 (71)	20 (57)	15 (43)	7 (20)	14 (40)
6 (18)	0 (0)	10 (29)	17 (50)	12 (35)	14 (41)	9 (26)	10 (29)
10 (27)	3 (8)	10 (27)	20 (54)	15 (41)	14 (38)	10 (27)	14 (38)
5 (14)	1 (3)	4 (11)	22 (59)	15 (41)	14 (38)	11 (30)	14 (38)
7 (21)	1 (3)	5 (15)	18 (53)	15 (44)	11 (32)	7 (21)	13 (38)
4 (15)	1 (4)	10 (37)	18 (67)	13 (48)	12 (44)	8 (30)	6 (22)
5 (19)	1 (4)	7 (26)	12 (44)	11 (41)	10 (37)	6 (22)	8 (30)
3 (12)	1 (4)	4 (15)	12 (46)	10 (38)	8 (31)	3 (12)	7 (27)
3 (12)	0 (0)	6 (23)	14 (54)	13 (50)	13 (50)	7 (27)	10 (38)
5 (21)	1 (4)	4 (17)	13 (54)	10 (42)	7 (29)	5 (21)	7(29)
4 (17)	1 (4)	5 (22)	10 (43)	10 (43)	9 (39)	3 (13)	8(35)
1 (5)	0 (0)	0 (0)	11 (52)	9 (43)	7 (33)	2 (10)	7 (33)
2 (8)	0 (0)	0 (0)	9 (38)	9 (38)	6 (25)	3 (13)	8 (33)
0 (0)	0 (0)	3 (12)	14 (54)	8 (31)	13 (50)	6 (23)	10 (38)
6 (20)	0 (0)	8 (27)	17 (57)	16 (53)	9 (30)	3 (10)	7 (23)
3 (10)	0 (0)	6 (20)	14 (47)	12 (40)	12 (40)	6 (20)	9 (30)

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Table 8 highlights that maximum numbers of Public Sector Banks, Private Sector Banks and Foreign Sector Banks are laggards according to Cost Efficiency for both Reformatory Era and Post Reformatory Era. Public Sector Banks are leaders in case of Pure Technical Efficiency score only. For all the other Cost Efficiency components they act as laggards. Majority of Private Sector Banks are also laggards according to Cost Efficiency, Allocative Efficiency and Technical Efficiency. According to Scale Efficiency, Private Sector Banks are to some extent moderate performers but in case of Pure Technical Efficiency large number of banks appears as leaders. Foreign Sector Banks show that maximum numbers of banks are laggards according to Cost Efficiency and Allocative Efficiency but they are leaders in terms of Technical, Pure Technical and Scale Efficiency scores as they provide speedy services to the customers.

CONCLUSION

The results indicate that Indian Scheduled Commercial Banks across ownership have never achieved the full Cost Efficiency score of 1 in any of the years of study. The dominant reason located behind cost inefficiency is the Allocative Inefficiency which is perhaps due to high variation and unsteadiness in the input prices. Further, Indian Scheduled Commercial Banks operating in different sectors are facing the problem of scale inefficiency. They need to correct their scale of operations which has come out as the most vital factor in cost inefficiency of the banks. The results also highlight that Foreign Sector Banks are most Cost Efficient Banks as they have high efficiency scores in both eras while Public Sector Banks have next highest cost efficiency in the reformatory era but have lowest efficiency in post reformatory era depicting that they are highly Cost Inefficient during the recent time period. No doubt, Public Sector Banks have large network of branches and cover even the rural population. But still there exists lack of freedom among PSBs to operate in a competitive manner, as not only Reserve Bank of India but somewhere Government of India is also interfering in their operations by setting the society oriented targets for them. 'Pradhan Mantri Jan Dhan Yojna' scheme is an evidentiary example of the same. In order to enhance the efficiency of banks operating in different sectors, RBI and government should divide such society oriented target among banks in different sectors evenly. This would definitely reduce the cost and burden of PSBs and make them cost efficient. No doubt there are some flaws on the part of PSBs also as they are not able to use their huge manpower and large branch network effectively. They should make an endeavour to educate and instruct their employees about the updated technology as followed by other competitors. This all will help banks to maintain their cost at the minimum level.

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A COMPARATIVE STUDY ON LIMITED LIABILITY PARTNERSHIPS (LLPs) AND ONE PERSON COMPANIES (OPCs) IN INDIA - AN INNOVATIVE BUSINESS MODEL FOR ENTREPRENEURIAL DEVELOPMENT

ABSTRACT

This study aim to examine that the number of companies and state/UT-wise status of registered and active in India, companies registered economic activity-wise and authorized capital wise as on 31.12.2018 in India. It also investigates growth, economic activity-wise registered and active limited liability partnerships (LLPs) and one person companies (OPCs). This study is used various secondary data from different organizations. In this study used various statistical tools such as percentage, tables, charts, correlation and paired t tests are used for analysis and interpretation of data. This study results found that total number of companies in India shows 18,37,345. Out of them 6,54,611 companies were closed and 1,136,243 active. In the registered and active companies state of Maharashtra secured first rank in registered 3,64,309 and 2,29,904 active, second rank secured by Delhi 3,29,374 registered and 2,00,219 active. Third rank secured by West Bengal 2,00,139 registered and 1,28,157 active companies. Totally 1,23,468 LLPs with the obligation of contribution Rs.78,16,775.40 (In Rs Lakhs) were in active up to 31.12.2018. Totally numbers of active OPCs were 20,896 with authorized capital of Rs. 55,920.11(Rs in Lakhs) up to 31.12.2018 in India. This study finally suggested that ministry of corporate affairs, Reserve Bank of India, ministry of commerce, non-banking and banking financial institutions felicitates to take imperative steps to provide financial assistance at concessional rates, tax holidays, and subsidies for existing as well as new entrepreneurs. This study finally concluded that LLPs and OPCs are now recognized as an innovative business vehicle in the future year's positive effects in LLPs and OPCs creates significant impacts and it definitely has a shows potential and prosperous opportunity for entrepreneurs in India.

Key words: LLP, OPC, MCA, Companies Act 2013, Investments, Investors

INTRODUCTION

The world history of national and international trade, commerce, business, globalization, liberalization, privatization economy and political map changed spectacularly between the seventeenth and nineteenth centuries. Unprecedented trade and commerce connected the countries simultaneously and set of a European move quickly to find out new resources and markets. Discovers from the European ships and traders reached across all over world, and their governments followed after them, inaugurating modem eras of imperialism and colonialism (Brunton, 2013). The east India Company and the Dutch east India Company (VOC) were similar nature in many respects. They established less two years apart, in 1600 and 1602 respectively. The east India Company is the first joint stock

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company in the world (Seth, 2012). British east India Company (Roukis, 2004) ruled in Bengal and its eastern frontiers (Sen, 2018) and governance in India (Shodhan, 2015).The British in India (Marshall, 1997), started by English east India Company in the mid 1680 end in attempt to improve its terms of trade (Hunt, 2017) and its emerged dominant in the 18th century. The east India Company has long been regarded as a mere merchant that turned into a sovereign only with its eighteenth century territorial acquisitions in India (Stern, 2007).During the east India Company's the rule of India (Sivasundaram, 2005), for the period 1600-1657 (Baladouni, 1983), direct interest of the east India Company (Sen, 2015).The period1700 to 1900 saw the beginnings, and the development, of the British empire in India (Blackwell 2008).Four hundred years after its founding and century and a half after, the east India Company seems to have resurged as an exemplar of vices, and for some the virtues, of colonialism, globalization and multinational capitalism (Stern, 2009).

Business originations are not an altogether recent phenomenon in India. They existed in some form or the other in India (Varottil, 2015). The introduction new innovations in trade and commerce and industrialization in Europe countries came into India for trading purpose by way of East India Company. The East India Company was monopoly trading company that linked with the eastern and worlds (Brunton, 2013).This is charted by Queen Elizabeth in 1600.In the 1607 East India company establish its first trading post in India, in Surat on the west coast, and by 1614 has obtained a trade charter from the Mughal emperor Jahangir that grants trade concessions and protections to resident English merchants. The East India Company Act created in 1784 a board of commissioners for the affairs of India to supervise the East India Company's administration of its territories in India. During 1857 Indian rebellion, in resolving this crisis, the British government finishes its takeover of the company with the government of India act 1858. After this Act of 1858, the East India Company's only role is to continue managing tea trade on behalf of the British government; on June 1, 1874, the East India Company ceases to exist (Brunton, 2013). 1866 in India Companies Act was introduced and it was gradually revised in 1882 and 1913 (Rajharia et al. 2014).

INDIAN COMPANIES ACT 1956, COMPANIES ACT 2013 AND ONE PERSON COMPANY (OPC)

India company law in is the attach importance to English company laws and modelled from it. During the 1950 the government of India constituted a committee under chairman of H. C. Bhabha for revision a new companies Act. In the March 1952 Bhabha committee submitted his to Government of India (Bhabha committee report 1952). Based on this committee report recommendations a new companies Act passed in the parliament with 658 sections and secludes. This is first in India after independence in India new and

comprehensive Companies Act, 1956 enacted and commenced into 01.04.1956 (Companies Act 1956).

It is enforced more than 50 years in India with many amendments. During this period all over the world many countries revised various laws such as corporate law, business laws, banking laws, foreign exchange laws and other according to their and needs and wants countries business organizations. This period various new form business organizations were origins all over the world. Various scientific innovations technologies used by various businesses for production, manufacturing, marketing, transporting and other departments of businesses global standards. After globalization in India foreign direct investments inflows were come into India as significant part of investments from aboard. Due competition among countries other countries India need strong and comprehensive company law for facing current environments. Keeping view government of India decided to enact a new company law.

An expert committee constituted on 02.12.2004 by government of India by under the chairmanship of Dr. J. J. Irani to make recommendations on revision of Companies Act 1956. This committee presented his report to Ministry of Corporate Affairs of India on 31-05.2005 (Dr. J. J. Irani committee report, 2005). The companies Act, 2013 passed by Lok Sabha and Rajya Sabha of Indian parliament has received the assent of the president of India on 29.08.2013. This Act consolidating and amending the law relates to companies. The Companies Act, 2013 has been notified in the Gazette of India on 30.08.2013 (Companies Act 2013).

Due to various theological advancements and innovations brings into various new business services in service sectors participation in economic development. Dr. J. J. Irani committee (2005) recommends formation of single person company with simple procedures. The companies Act, 2013 was originated and implemented new concept of "One Person Company (OPC)" in India. The new form of business organization opens and creates new landmark of various new business opportunities especially in sole proprietorships and entrepreneurs enjoy as various special privileges and benefits equivalent to private companies limited liability and separate legal entity (Sridharan, 2014). In India only natural person being who is resident of India and Indian citizen become eligible for a member of OPC.

LIMITED LIABILITY PARTNERSHIP (LLP) IN INDIA

There is an olden times of strong uncommunicativeness to limited liability (Hardman, 2018). In the past, the overwhelming majority of law firms operated as general partnerships, entailing unlimited liability for all the partners (Murphy, 1995).The origin of the concept of limited labiality partnerships can be traced to the expansion of limited liability business forms in united sates. In the state Louisiana was the initially to implemented the LLPs model. The concept was soon used by other states. The first limited partnership act in the united sates was implemented by New York in 1822 (Meena et al. 2013). Liberated incorporation by registration came to Britain in 1844, thereafter in 1855 onwards considered by universal limited liability concept, situating in position two of the vital fundamentals of the corporate legal form that has come to rule business origination all over the world. The corporation is a new constituent of current entrepreneurship. In its contemporary from, the corporation comes with a string legal future; ownership is associated with limited liability (Djelic, 2013). Business limited liability refers to a common legal standard that limits the responsibility of

shareholders -proprietors for the debts of their companies to the present value of their shareholding (Blankenburg et al. 2010). Its safeguards owners' personal assets and theirs partner assets (Sikka, 2008) from firms' creditors (Hansmann et al. 2006) and it will provide effective for the professions freedom to incorporate as a limited liability.

The professionals and entrepreneurs are attracted by lower compliance cost, better control and management, greater flexibility in operations and limited liability of member of the LLP (Sharmendra, 2010).It is a innovative model of business organization in India that companies the positive aspects of both the company and partnership (Sharma and Garg, 2014) .LLP proved to be a unique mode of doing business appealing especially to those run professionals of different specializations such as accountants, Chartered Accountants, Cost accountants, Cost and management accountants, company secretaries, doctors, engineers, lawyers, various services providers and small scale traders, etc. alternative to joint ventures, venture capitals, small and medium enterprises formats to fulfill their business aspirations.

In India, more than 95% of business, trade, services and allied sectors are small and medium scale Enterprises units (SMEs). SMEs units are compare with corporate forms not easy in getting loan and advances for their business from various banking, on banking financial and other institutions. Therefore Government of India introduced limited liability concept in partnerships firms in new form of business organization. It will creating a welcoming and competitive business environments for small and medium traders, service providers, professionals, entrepreneurs to meet present competition across the world. Limited Liability Act 2008, enacted by parliament received the assent of the president of India on 7th January 2009. It was notified and published by the gazette of India on 09.01.2009(LLP Act 2008). The Indian LLP Act was the first most important introduction of a new business form in India over 50 years (Afsharipour, 2014). This Act comes to effect on 31st march 2009; various rules notified on 1st April 2009 and in India the new birth of LLP registered on April 4th 2009 (MCA Annual Report 2013-14).

REVIEW OF LITERATURE

The Companies Act, 2013, is a much anticipated and most wanted step to fetch the Indian corporate legal construction in line with international standards. Indian Government serious about improving its enforcement of the Companies Act 2013 will develop good corporate governance principles in India (Sharma, 2013). The opportunity of the Indian economy in 1990 which led to free flows of investments and creates to enable higher standards of governance (Varotti, 2010). The Companies Act of 2013 has initiated quite a lot of innovative concepts and medium for incorporating new companies in India (Gill, 2008). Corporate law and good governance is to develop results for contributors in industrial corporations (Coates, 2014). In this background, this study focused on total number of companies registered, closed and active in India by state and UT wise and economic activity wise private, public, total companies active and theirs authorized share capital wise in India. It also to investigates compare total number of registered, active and economic activity wise and capital wise Limited liability partnership (LLP) and One Person Company (OPC) as on 31.12.2018 in India.

Corporate governance disclosure practices for corporate entrepreneurial action, or suitable corporate autonomy for Indian local government and international organizations and community restructuring in the area of corporate governance have been in progress

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while 1990 (Khuntia, 2014) decisions taken by Indian government in 1991, taken by Indian Government in 1991, intended at various economic reforms of home economy begin transformation development of direct and indirect tax management reforms (Varma, 1997) for internal and external instruments of corporate governance(Maharishi, 2017). India has become progressively more vital sources of expansion and investment opportunities through comparative company law and governance for promoting transparency among corporate entities (Lele et al. 2006; Rajagopalan, and Zhang, 2008).

There is a legal requirement of strengthening high standards of corporate governance in Modern Corporations (Prusty & Kumar, 2016; Sridhar, 2016). Companies Act in 2013 is most likely the only most vital growth in India's olden times of company law reforms in India (Balasubramaninan, 2014). In this environment present study important for argument of development and comparative analysis among OPC and LLP. This study paying attention to examine on total number of companies registered, closed and active in India by state and UT wise and economic activity wise private, public, total companies active and theirs authorized share capital wise in India. It also to look into evaluate total number of registered, active and economic activity wise and capital wise Limited liability partnership (LLP) and One Person Company (OPC) as on 31.12.2018 in India.

The One Person Company form of business is highly preferred by small level of business entrepreneurs. Dorathy (2015) found that in the retail markets segments One Person Company business model created an impact on small retailers. The basic concepts of One Person Company with organized and unorganized sectors are their conversion into firms. It concluded that One Person Company will grow in future in case of SMEs. The researchers attempted to understand the concept opportunities and threats related with one Person Company in India. Results indicated that OPC appears a promising form of business but there is a long way to go in India. It is need for revision of Limited liability partnership Act 2008 for taxation, LLP amalgamation and other areas. The concept of OPC is in initial stages in India and its need for some time completely accepted by Indian business.

Upadhyay (2017) analyzed whether the changes made in the New Indian Companies Act 2013 is actually going to serve the purpose and is actually going to serve the purpose for which it is enacted or is going to be a bane for the company, the Economy as well as the investors. The concept of OPC is new in India and it will take time to instil a sense of confidence among the general public. The tax benefits and tax incentives associated with setting up an LLP, and the effectiveness of LLPs in assuring security to the partners and in terms of cost of set-up and maintaining the form, compared with other legal forms.

THE OBJECTIVES OF THE STUDY

The main objectives of the study are as:

- To examine the total number of companies registered and active in state/UT wise in India as on 31.12.2018.
- To assess the number of companies registered economic activity-wise and authorized capital wise as on 31.12.2018 in India.
- To study growth, economic activity-wise registered and active Limited Liability Partnerships (LLPs) and One Person Companies (OPCs) as on 31.12.2018 in India.
- To examine the obligation of contribution wise active Limited Liability Partnerships (LLPs) and Authorized share capital of one person company in India as on 31.12.2018.

METHOD

The present research study methodologies are data collections relating one Person Company and Limited liability Partnership and tools used for analysis and interpretation of data. The primary focuses with the data collected and compiled from already published international and national sources. The sources include the annual reports and other reports published by the various internationals organizations, newsletters, Ministry of Corporate Affairs, Circulars of RBI monthly Bulletins and the RBI Annual Reports, Department of Economic Affairs, SEBI, Ministry of Commerce and Industry, Government of India and Economic survey of India.

STATISTICAL TOOLS USED

This study has been carried out descriptive and exploratory nature with the help of the secondary data. In order explain the outcome of the study results and interpretations of data by using tables, charts, graphs and descriptive statistical tools of averages and percentages inferential statistical tools such as Correction and paired t test used to test hypothesis. This present's research study period covers since its incorporation of Limited Liability Partnership Act 2008 and One Person Company in Companies Act 2013 to as on 31.12.2018 in India.

RESULTS AND FINDINGS OF THE STUDY

TOTAL NUMBER OF COMPANIES REGISTERED AND IT'S STATUS IN INDIA AS ON 31.12.2018

Table 1 exhibited that the total number of companies registered and its status in India as on 31.12.2018. Totally 18,37,345 companies were registered. Out of these 6,54,611 companies were closed. In this closed companies 10,610 were liquidated or dissolved, 6,07,239 companies were defunct or struck off as per section 248 of companies Act 2013, 22,223 companies were amalgamated or merged, 9,745 companies were converted to LLPs, 4,794 companies were converted to LLPs and dissolved,1,598 companies were lying dormant u/s 455 of the Companies Act 2013, 6,300 were in liquidation,38,542 companies which process of section 248 of Companies Act 2013, 101 companies were lying AIPG(Active in Progress) and remaining 11,36,243 companies were in active. Out of active companies 11,29,145 were limited by shares, 6760 companies were limited by guarantee and 338 companies were in unlimited companies as on 31.12.2018 in India.

Table 1: Total number of companies registered and its status in India as on 31.12.2018

1	**Total Number of Companies Registered as on 31.12.2018**	**18,37,345**
2	Total Number of companies closed	6,54,611
2.1	Total Number of companies liquidated/Dissolved	10,610
2.2	Total Number of companies defunct/struck - off (section 248 of CA 2013)	6,07,239
2.3	Total Number of companies merged/amalgamated	22,223
2.4	Total Number of companies converted to LLPs	9,745

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2.5	Total Number of companies converted to LLPs and dissolved	4,794
3	Total Number of companies lying dormant u/s 455 of CA 2013	1,598
4	Total Number of companies under liquidation	6,300
5	Total Number of companies which are process of section 248 of CA 2013	38,542
6	Total Number of companies lying AIPG (Active in Progress)	101
Total Number of active companies		**11,36,243**
Total Number of companies limited by shares		11,29,145
Total Number of companies by guarantees		6,760
Total Number of companies unlimited companies		338

Source: http://14.140.191.120/Ministry/pdf/MIB_December'2018.pdf

Table 2: State/UT wise Total Number Companies Registered and Active Companies in India Up To 31.12.2018

S. No.	State\UT	Registered Companies	Closed Companies	Dormant U\S 455 of CA 2013
1	Maharashtra	3,64,309	1,28,490	203
2	Delhi	3,29,374	1,23,521	282
3	West Bengal	2,00,139	65,914	213
4	Tamil Nadu	1,40,455	62,821	124
5	Uttar Pradesh	1,01,364	28,331	64
6	Telangana	1,02,665	38,332	48
7	Karnataka	1,12,772	38,988	87
8	Gujarat	98,644	34,249	32
9	Rajasthan	56,645	18,673	23
10	Kerala	50,489	18,501	130
11	Haryana	43,056	11,538	70
12	Andhra Pradesh	29,746	9,756	19
13	Bihar	30,981	6,800	25
14	Madhya Pradesh	37,732	15,014	21
15	Punjab	30,494	14,216	15
16	Orissa	24,481	9,526	149
17	Jharkhand	13,349	3,167	3
18	Chandigarh	14,397	7,126	9
19	Chhattisgarh	9,720	2,719	12

STATE/UT WISE TOTAL NUMBER COMPANIES REGISTERED AND ACTIVE COMPANIES IN INDIA UP TO 31.12.2018

Table 2 clearly shows that State/UT wise Total Number Companies Registered and Active Companies in India Up To 31.12.2018. In the registered and active companies state of Maharashtra secured first rank in registered 3,64,309 and 2,29,904 active, second rank secured by Delhi 3,29,374 registered and 2,00,219 active. Third rank secured by West Bengal 2,00,139 registered and 1,28,157 active companies. Remaining registered and active companies were in the rest of the States/UTs of India.

Under Liquidation companies	Under stuck off companies	AIPG	Active companies
1,826	1,11,666	37	2,29,904
824	1,16,109	6	2,00,219
712	56,300	2	1,28,157
367	59,782	15	74,329
213	27,615	5	71,743
241	37,294	12	59,691
535	37,526	4	71,899
615	31,523	5	60,198
86	17,736	1	35,643
299	16,437	2	31,695
51	11,220	-	30,705
52	9,593	4	18,545
41	6,768	3	20,894
91	14,742	-	22,358
121	13,960	-	15,843
61	9,385	-	14,706
12	3,132	1	9,383
58	6,989	-	6,990
2	2,650	1	6,914

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S. No.	State\UT	Registered Companies	Closed Companies	Dormant U\S 455 of CA 2013
20	Assam	11,037	3,301	-
21	Uttarakahand	7,504	2,118	3
22	Goa	8,491	3,562	7
23	Himachal Pradesh	6,068	2,549	4
24	Jammu & Kashmir	5,381	2,413	-
25	Pondicherry	3,141	1,775	1
26	Meghalaya	1,019	393	2
27	Manipur	763	179	-
28	Dadra & Haveli	511	124	-
29	Tripura	509	124	-
30	A& N Islands	429	104	-
31	Arunachal Pradesh	580	275	1
32	Daman and Diu	375	92	-
33	Nagaland	562	303	-
34	Mizoram	144	62	-
35	Lakshadweep	17	5	-
36	Sikkim	2	-	-
	Total	**18,37,345**	**6,54,611**	**1,547**

Source: http://14.140.191.120/Ministry/pdf/MIB_December' 2018.pdf

ECONOMIC ACTIVITY WISE TOTAL NUMBER OF ACTIVE COMPANIES UP TO 31.12.2018

The Table 3 revealed that the economic activity wise total number of active private, public and total companies and its authorized capital (Rs in Crore). Economic activity wise total number of active private companies were in 10,69,364 with authorized capital of Rs.27,72,268.96 (Rs in Crore), total number of active public companies were in 66,879 with authorized capital of Rs.43,66,964.34 (Rs in Crore) and total number of active total companies were in 11,36,243 with authorized capital of Rs.65,39,233.3 (Rs in Crore) as on 31.12.2018 in India.

Under Liquidation companies	Under stuck off companies	AIPG	Active companies
16	3,129	-	6,593
15	2,091	-	5,050
12	615	-	4,260
20	2,500	-	3,347
17	2,393	-	2,871
6	1,736	-	1,343
1	385	-	565
-	178	1	551
-	113	-	375
-	123	-	352
-	104	2	319
2	273	-	244
3	75	-	243
1	302	-	226
-	62	-	75
-	5	-	11
-	-	-	2
6,300	**6,70,239**	**101**	**11,36,243**

Table 3: Economic Activity wise Total Number of active companies Up to 31.12.2018

Economic activity	Active Number of companies			Authorized capital (Rs in Lakhs)		
	Private	public	Total	Private	public	Total
Agriculture	30011	2414	32425	23489.98	34274.96	57764.95
Industry	323546	25371	348917	1042893	2540242	3583135.14
Manufacturing	206760	18533	225313	589217.47	987869.2	1577086.66
Metals	71583	8019	79872	221884.36	379876.47	601760.83
Machinery	48955	3494	52489	233427.14	478022.13	711449.27
Textiles	28549	2818	31367	38671.21	56054.17	94725.37
Food stuffs	28376	2474	30850	57128.8	41014.62	98143.42
Paper	13053	869	13922	15109.99	16088.63	31198.62
Others	10846	501	11347	15930.28	13379.67	29309.95
Leather	2671	197	2868	3558.92	2045.93	5604.85
Wood products	2417	181	2598	3506.76	1387.59	4894.35
Construction	94859	4373	99232	226208.39	285038.54	511246.94

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Economic activity	Active Number of companies			Authorized capital (Rs in Lakhs)		
	Private	public	Total	Private	public	Total
Electricity	11588	17171	13305	183728.74	1205395	1389123.71
Mining	10339	728	11067	43738.86	61938.97	105677.33
Services	700639	36218	736857	1057996.28	1665353.86	2723350.14
Business services	355701	10353	366054	414151.25	643353.82	1057505.07
Trading	140339	6143	146462	214656.43	105932.11	320588.54
Real estate	66187	2949	69136	92848.11	39670.78	132518.89
Community	67850	3938	71788	89565.46	141264.66	230830.12
Finance	37384	11192	48576	190336.22	412430.8	602767.01
Transport	32446	1477	33923	55687.19	270674.5	326361.64
Insurance	732	166	898	751.63	52027.24	52778.86
others	15166	2876	18044	47663.24	127093.84	174983.08
Total	**1069364**	**66879**	**1136243**	**2772268.96**	**4366964.34**	**6539233.3**

TOTAL NUMBER OF ACTIVE COMPANIES LIMITED BY SHARES AS ON 31.12.2018

Table 4 clearly indicates that the total number active 11,29,145 companies limited by shares as on 31.12.2018. Out of this 64,623 public limited companies and 10,64,522 private companies. In the private companies 20896 companies were one person companies (OPCs).

Table 4: Total Number Active Companies Limited by Shares as on 31.12.2018

S. No.	Companies limited by shares	Government	Non- Government	Total
1	Public limited	1,426	63,197	64,623
1.1	Listed	75	6,836	6,911
1.2	Unlisted	1,351	56,361	57,712
	Private limited	561	10,63,391	10,64,522
Of Which				
One Person Company(OPC)		-	20,896	20,896
	Total	**1,987**	**11,27,158**	**11,29,145**

Source: http://14.140.191.120/Ministry/pdf/MIB_December'2018.pdf

2.5 Total Number of LLPs and OPCs Registered as on 31.12.2018

Table 5 indicates that the total number of active Limited Liability Partnerships (LLPs) and One Person Companies (OPCs) in India .Totally 1,23,468 Limited Liability Partnerships (LLPs) and One Person Companies (OPCs) 20,896 up to 31.12.2018.

Table 5: Total Number of LLPs and OPCs Registered as on 31.12.2018

LLPs from 01.04.209 to 31.12.2018			OPCs from 01.04.2014 to 31.12.2018		
Financial Year (April -March)	**Number of LLPs Registered**	**% growth over previous year**	**Financial year (April - March)**	**Number of OPCs Registered**	**% growth over previous year**
2009-10	1,055	-	2014-15	2238	-
2010-11	3,261	209	2015-16	3926	75.42
2011-12	4,319	32	2016-17	4814	22.62
2012-13	5,167	20	2017-18	5735	19.13
2013-14	7,982	54	2018-19*	4183	-
2014-15	14,682	84	**TOTAL**	**20896**	
2015-16	22,505	49			
2016-17	29,407	34			
2017-18	32,934	22			
2018-19*	6,801	-			
TOTAL	**1,23,468**				

Source: Ministry of Corporate Affairs, Monthly Information Bulletin on Corporate Sector
Note.: 2018-19* (April 2018 to 31.12.2018)

ECONOMIC ACTIVITY WISE TOTAL NUMBERS OF ACTIVE LIMITED LIABILITY PARTNERSHIPS (LLPS) AND ONE PERSON COMPANIES (OPCS) UP TO 31.12.2018

The Table 6 revealed that the economic activity wise total number of Limited Liability Partnerships (LLPs) were in India and its obligation of contribution (Rs in Lakhs). It's also shows that the economic activity wise active One Person Companies (OPCs) were in India and its Authorized capital (Rs in Lakhs) up to 31.12.2018. Maximum number of Limited Liability Partnerships (LLPs) as per economic activity wise were in service sectors 94,291 with the obligation of contribution Rs.59,22,199 (Rs in Lakh), next in the industry sector 26,878 LLPs with obligation of contribution Rs.18,03,022 (Rs in Lakh) and agriculture and allied activities 26,878 with obligation of contribution Rs. 91,544.9 (Rs in Lakh).

Table 6: (Economic activity wise total numbers of active LLPs and OPCs up to 31.12.2018)

S. No.	Economic activity	LLPs	OPCs	obligation of contribution (Rs in Lakh)	authorized capital of (Rs in Lakh)	Total Active		Capital	
						LLPs	OPCs	LLPs	OPCs
						%	%	%	%
1	Agriculture	2298	313	91544.9	1164.75	2	1	1	2
2	Industry	26878	264	1803022	9203.87	22	13	23	16
2.1	Manufacturing	14646	1664	985463	5526.07	12	8	13	10
2.2	Construction	10786	829	583849.7	3235.95	9	4	7	6

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S. No.	Economic activity	LLPs	OPCs	obligation of contribution (Rs in Lakh)	authorized capital of (Rs in Lakh)	Total Active Capital			
						LLPs	OPCs	LLPs	OPCs
						%	%	%	%
2.3	Mining	766	44	34617.34	132.1	1	0	0	0
2.4	Electricity	680	87	199091.6	309.75	1	0	3	1
3	Services	94291	17597	5992199	45521.49	76	86	76	81
3.1	Business services	50574	13012	2363076	30910.13	41	62	30	55
3.2	Trading	15550	1580	639720	4988.07	13	8	8	9
3.3	Real Estate	12491	420	931930.8	1601.9	10	2	12	3
3.4	Community	10979	2348	888241.7	5935.5	9	11	11	11
3.5	Transport	2634	524	46137.82	1481.9	2	3	1	3
3.6	Finance	1820	71	1048277	584	1	0	13	1
3.7	Insurance	243	2	4815.74	20	0	0	0	0
4	Others	1	2	10	30	0	0	0	0
	Total	**123468**	**20896**	**7816775**	**55920.11**	**100**	**100**	**100**	**100**

Source: http://14.140.191.120/Ministry/pdf/MIB_December'2018.pdf

Maximum Number of One Person Companies OPCs as per economic activity wise were in the services sector 17,957 with authorized capital of Rs. 45,521.49 (Rs in Lakhs), Next in industry sectors 2,624 One Person Companies were in active with authorized capital of Rs. 9,203.87 (Rs in Lakh). Another 313 One Person Companies were in active Agriculture and allied activities with authorized capital of Rs.1164.75 (Rs in Lakh).

Obligation of contribution Range Wise Total Number of active Limited Liabilities Partnerships (LLPs) and authorized capital as on 31.12.2018

In the Table 7 indicated that the Obligation of contribution Range Wise total number of Limited Liability Partnerships (LLPs) and authorized capital as on 31.12.2018. This results clearly exhibited that the above 1 Lakh to 5 Lakh category has 59% (72,453) and next secured by Up to 1 Lakh category. It is amounted to 82% (1,01,149) and rest of LLPs were falls in other ranges. Obligation of contribution (Rs in Lakh) shows that above 100 crore category contributed Rs. 41, 23,522.68 (Rs in Lakhs)(53%), Next maximum contribution from in above 25 crore 100 crore category Rs.12,13,146.40 Rs in Lakhs(16%) and balance were in other ranges.

Table 7: Obligation of contribution wise active LLPs as on 31.12.2018

S. No.	Obligation of contribution Range	Total Active LLPs		Obligation of contribution	
		Number	%	(Rs in Lakh)	%
1	Up to 1 Lakh	28,696	23	9,557.99	0
2	Above 1 Lakh to 5 Lakh	72,453	59	1,06,832.18	1
3	Above 5 Lakh to 10 Lakh	7,617	6	70,255.09	1

S. No.	Obligation of contribution Range	Total Active LLPs		Obligation of contribution	
		Number	%	(Rs in Lakh)	%
4	Above 10 Lakh to 25 Lakh	4,563	4	84,236.64	1
5	Above 25 Lakh to 50 Lakh	3,341	3	1,36,273.50	2
6	Above 50 Lakh to 1 crore	2,714	2	2,30,740.38	3
7	Above 1 crore to 2 crore	1,405	1	2,18,255.56	3
8	Above 2 crore to 5 crore	1,366	1	4,75,988.01	6
9	Above5 crore to 10 crore	569	0	4,37,269.26	6
10	Above 10 crore to 25 crore	441	0	7,10,677.40	9
11	Above 25 crore to 100 crore	241	0	12,13,146.70	16
12	Above 100 crore	62	0	41,23,522.68	53
	Total	**1,23,468**	**100**	**78,16,755.39**	**100**

Source: http://14.140.191.120/Ministry/pdf/MIB_December'2018.pdf

RESULTS

HYPOTHESIS TESTING-1

Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between State/UT-wise total number of registered and active companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between State/UT-wise total number of registered and active companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as: t= 3.529

Result: The below table 8, 9 and 10 of Pair-1 shows results ofhypothesis-1, it is observed that ItI=3.529>tc=3.009, the p-value is P=0.001<0.05, it is concluded that the null hypothesis is rejected. Therefore, there is *enough evidence to claim* that the populations mean μ1 is *different than* μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-2

(1)Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is a no difference between State/UT- wise total number of registered and closed companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between State/UT- wise total number of registered and closed companies as on 31.12.2018

(2) Test Statistics: The t-statistic is computed as t= 3.546

(3) Results: Table 8, 9 and 10 of pair-2 shows that the results of hypothesis-2, it is observed that $|t| = 3.546 > tc = 2.03$, the value is $p = 0.0011 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1is *different than* μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-3

(1).Null and Alternative Hypotheses

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H0: $\mu 1 = \mu 2$: There is no difference between State/UT- wise total number of registered and under struck off companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between State/UT- wise total number of registered and under struck off companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=3.505

(3) *Results:* Table 8, 9 and 10 of pair-3 shows that the results of hypothesis-3, it is observed that ItI = 3.505> tc = 2.03, the value is p = 0.0013 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is *different than* μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-4

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between State/UT- wise total number of active and closed companies on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between State/UT- wise total number of active and closed companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=3.432

(3) *Results*: Table 8, 9 and 10 of pair-4 shows that the results of hypothesis-4, it is observed that |t| = 3.432> tc = 2.03, the value is p= 0.0016 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING -5

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between State/UT- wise total number of active and under struck off companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between State/UT- wise total number of active and under struck off companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=3.355

(3) *Results*: Table 8, 9 and 10 of pair-5 shows that the results of hypothesis-5, it is observed that |t| = 3.355 > tc = 2.03, the value is p= 0.0019 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-6

(1). Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total number of private companies and private companies authorized capital (Rs in Lakhs) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total number of private companies and private companies authorized capital (Rs in Lakhs) as on 31.12.2018..

(2) *Test Statistics*: The t-statistic is computed as t=-3.116

(3) *Results*: Table 8, 9 and 10 of pair-6 shows that the results of hypothesis-6, it is observed that |t| = -3.116> tc = 2.074, the value is p= 0.005< 0.05, it is conclude that the *null*

hypothesis is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING -7

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: there is no difference between economic activity wise total public number companies and public companies authorized capital (Rs in Lakhs) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total public number companies and public companies authorized capital (Rs in Lakhs) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=-3.13

(3) *Results*: Table 8, 9 and 10 of pair-7 shows that the results of hypothesis-7, it is observed that $|t| = -3.13 > tc = 1.63$, the value is $p = 0.005 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING- 8

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total number companies and total companies authorized capital (Rs in Lakhs) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total public number companies and total companies authorized capital (Rs in Lakhs) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=-3.159

(3) *Results*: Table 8, 9 and 10 of pair-8 shows that the results of hypothesis-8, it is observed that $|t| = -3.159 > tc = 1.63$, the value is $p = 0.005 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-9

(1)Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total number of private companies and total number of public companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total number of private companies and total number of public companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=2.869

(3) *Results*: Table 8, 9 and 10 of pair-4 shows that the results of hypothesis-4, it is observed that $|t| = 2.869 > tc = 1.43$, the value is $p = 0.009 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING -10

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total number of public companies and total number of companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total number of public companies and total number of companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=-2.912

(3) *Results*: Table 8, 9 and 10 of pair-10 shows that the results of hypothesis-10, it is observed that $|t| = -2.912 > tc = 2.13$, the value is $p = 0.008 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING -11

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total number of private companies and total number of companies as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total number of private companies and total number of companies as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=-3.41

(3) *Results*: Table 8, 9 and 10 of pair-11 shows that the results of hypothesis-11, it is observed that $|t| = -3.41 > tc = 3.03$, the value is $p = 0.003 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING-12

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise private companies authorized capital and public companies authorized capital (Rs in Lakhs) as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total of private companies authorized capital and public companies authorized capital (Rs in Lakhs) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=-2.602

(3) *Results*: Table 8, 9 and 10 of pair-12 shows that the results of hypothesis-12, it is observed that $|t| = -2.602 > tc = 2.16$, the value is $p = 0.016 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING-13

(1)Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total companies authorized capital and public companies authorized capital (Rs in Lakhs) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total of total companies authorized capital and public companies authorized capital (Rs in Lakhs) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=3.364

(3) *Results*: Table 8, 9 and 10 of pair-13 shows that the results of hypothesis-13, it is

observed that |t| = 3.364>tc = 3.23, the value isp= 0.003 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-14

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise total companies authorized capital and private companies authorized capital (Rs in Lakhs) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise total of total companies authorized capital and private companies authorized capital (Rs in Lakhs) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=3.142

(3) *Results*: Table 8, 9 and 10 of pair-14 shows that the results of hypothesis-14, it is observed that |t| = 3.142>tc = 2.01, the value is p= 0.0016 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-15

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between total number of LLPs Registered year wise and Total Number of OPCs Registered year wise on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between total number of LLPs Registered year wise and Total Number of OPCs Registered year wise on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t= 3.861

(3) *Results*: Table 8, 9 and 10 of pair-15 shows that the results of hypothesis-15, it is observed that |t| = 3.861>tc = 3.15, the value is p= 0.018 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-16

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise active LLPs and obligation of contribution (Rs in Lakh) as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise active LLPs and obligation of contribution (Rs in Lakh) as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=-2.626

(3) *Results*: Table 8, 9 and 10 of pair-16 shows that the results of hypothesis-16, it is observed that |t| = -2.626 >tc = 1.69, the value is p= 0.02 < 0.05, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean μ1 is different than μ2, at the 0.05 significance level.

HYPOTHESIS TESTING-17

(1)Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between economic activity wise active OPCs and authorized capital of (Rs in Lakh) as on 31.12.2018.

H0: $\mu 1 = \mu 2$: There is difference between economic activity wise active OPCs and authorized capital of (Rs in Lakh) as on 31.12.2018.

(2) *Test Statistics*: The t-statistic is computed as t=-2.336

(3) *Results*: Table 8, 9 and 10 of pair-17 shows that the results of hypothesis-17, it is observed that $|t| = -2.336 > tc = 1.39$, the value is $p = 0.035 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING-18

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between Economic activity wise active LLPs and Economic activity wise active OPCs as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between Economic activity wise active LLPs and Economic activity wise active OPCs as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=2.596

(3) *Results*: Table 8, 9 and 10 of pair-18 shows that the results of hypothesis-18, it is observed that $|t| = 2.596 > tc = 1.63$, the value is $p = 0.0016 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING-19

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between Economic activity wise active LLPs and authorized capital (Rs in Lakh) of OPCs as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference Economic activity wise active LLPs and authorized capital (Rs in Lakh) of OPCs as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=2.71

(3) *Results*: Table 8, 9 and 10 of pair-19 shows that the results of hypothesis-19, it is observed that $|t| = 2.71 > tc = 1.93$, the value is $p = 0.017 < 0.05$, it is conclude that the *null hypothesis* is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

HYPOTHESIS TESTING-20

(1) Null and Alternative Hypotheses

H0: $\mu 1 = \mu 2$: There is no difference between Economic activity wise active OPCs and obligation of contribution of LLP (Rs in Lakh) as on 31.12.2018

H0: $\mu 1 = \mu 2$: There is difference between Economic activity wise active OPCs and obligation of contribution of LLP (Rs in Lakh) as on 31.12.2018

(2) *Test Statistics*: The t-statistic is computed as t=-2.626

(3) *Results*: Table 8, 9 and 10 of pair-20 shows that the results of hypothesis-20, it is observed that $|t| = -2.626 > tc = 2.25$, the value is $p = 0.02 < 0.05$, it is conclude that the

null hypothesis is rejected. Therefore, there is enough evidence to claim that the populations mean $\mu 1$ is different than $\mu 2$, at the 0.05 significance level.

Table 8: Paired Samples Correlations

Pairs & Variables		N	Correlation	Sig.	Result
Pair 1	VAR1 &VAR4	36	0.998	.001	Strong Positive Correlation
Pair 2	VAR1 &VAR2	36	0.995	.001	Strong Positive Correlation
Pair 3	VAR1 &VAR3	36	0.991	.001	Strong Positive Correlation
Pair 4	VAR4 &VAR2	36	0.988	.001	Strong Positive Correlation
Pair 5	VAR4 &VAR3	36	0.982	.001	Strong Positive Correlation
Pair 6	VAR5 &VAR9	23	0.895	.001	Strong Positive Correlation
Pair 7	VAR6 &VAR10	23	0.902	.001	Strong Positive Correlation
Pair 8	VAR7 &VAR11	23	0.792	.001	Positive Correlation
Pair 9	VAR5 &VAR6	23	0.855	.001	Strong Positive Correlation
Pair 10	VAR6 &VAR7	23	0.863	.001	Strong Positive Correlation
Pair 11	VAR5 &VAR7	23	1.000	.001	Strong Positive Correlation
Pair 12	VAR9 &VAR10	23	0.919	.001	Strong Positive Correlation
Pair 13	VAR11 &VAR10	23	0.992	.001	Strong Positive Correlation
Pair 14	VAR11 &VAR9	23	0.962	.001	Strong Positive Correlation
Pair 15	VAR12 &VAR13	5	0.648	0.237	Positive Correlation
Pair 16	VAR14 &VAR16	15	0.975	.001	Strong Positive Correlation
Pair 17	VAR15 &VAR17	15	0.986	.001	Strong Positive Correlation
Pair 18	VAR14 &VAR15	15	0.948	.001	Strong Positive Correlation
Pair 19	VAR16 &VAR17	15	0.983	.001	Strong Positive Correlation
Pair 20	VAR15 &VAR16	15	0.899	.001	Strong Positive Correlation

Source: SPSS Output

Note. VAR1 = Registered Companies, VAR2 = Closed Companies, VAR3 = under stuck off companies, VAR4 = Active companies, VAR5 = Economic activity wise total Private Number, VAR6 = Economic activity wise total public Number, VAR7 = Economic activity wise total Number, VAR9 = Economic activity wise total Private Authorized capital (Rs in Lakhs), VAR10 = Economic activity wise total public Authorized capital (Rs in Lakhs), VAR11 = Economic activity wise Total Authorized capital (Rs in Lakhs), VAR12 = Total Number of LLPs Registered year wise, VAR13 = Total Number of OPCs Registered year wise, VAR14 = Economic activity wise active LLPs, VAR15 = Economic activity wise active OPCs, VAR16 = obligation of contribution of LLPs (Rs in Lakh), VAR17 = authorized capital of OPCs (Rs in Lakh), VAR18 = Total Active LLPs, VAR19 = Obligation of contribution range wise (Rs in Lakh)

Table 9: Paired Samples Statistics

Pairs & Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAR1	51037.36	36	86800.15	14466.69
	VAR4	31562.31	36	53929.33	8988.22
Pair 2	VAR1	51037.36	36	86800.15	14466.69
	VAR2	18196.14	36	31486.8	5247.8
Pair 3	VAR1	51037.36	36	86800.15	14466.69
	VAR3	16791.97	36	28557.17	4759.53
Pair 4	VAR4	31562.31	36	53929.33	8988.22
	VAR2	18196.14	36	31486.8	5247.8
Pair 5	VAR4	31562.31	36	53929.33	8988.22
	VAR3	16791.97	36	28557.17	4759.53
Pair 6	VAR5	99999.87	23	163177.65	34024.89
	VAR9	211397.8	23	301400.71	62846.39
Pair 7	VAR6	7063.26	23	9215.31	1921.53
	VAR10	415670.9	23	634404.52	132282.49
Pair 8	VAR7	106404.8	23	171475.44	35755.1
	VAR11	627078.5	23	919188.37	191664.02
Pair 9	VAR5	99999.87	23	163177.65	34024.89
	VAR6	7063.26	23	9215.31	1921.53
Pair 10	VAR6	7063.26	23	9215.31	1921.53
	VAR7	106404.8	23	171475.44	35755.1
Pair 11	VAR5	99999.87	23	163177.65	34024.89
	VAR7	106404.8	23	171475.44	35755.1
Pair 12	VAR9	211397.8	23	301400.71	62846.39
	VAR10	415670.9	23	634404.52	132282.49
Pair 13	VAR11	627078.5	23	919188.37	191664.02
	VAR10	415670.9	23	634404.52	132282.49
Pair 14	VAR11	627078.5	23	919188.37	191664.02
	VAR9	211397.8	23	301400.71	62846.39
Pair 15	VAR12	21265.8	5	10683.38	4777.75
	VAR13	4179.2	5	1289.95	576.88
Pair 16	VAR14	16309.13	15	25420.72	6563.6
	VAR16	1040800	15	1535798.62	396541.5
Pair 17	VAR15	2583.8	15	5284.24	1364.39
	VAR17	7376.37	15	13103.67	3383.35
Pair 18	VAR14	16309.13	15	25420.72	6563.6
	VAR15	2583.8	15	5284.24	1364.39

Pairs & Variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 19	VAR16	16309.13	15	25420.72	6563.6
	VAR17	7376.37	15	13103.67	3383.35
Pair20	VAR15	2583.8	15	5284.24	1364.39
	VAR16	1040800	15	1535798.62	396541.5

Source: SPSS Output

Note. VAR1 = Registered Companies, VAR2 = Closed Companies, VAR3 = under stuck off companies, VAR4 = Active companies, VAR5 = Economic activity wise total Private Number, VAR6 = Economic activity wise total public Number, VAR7 = Economic activity wise total Number, VAR9 = Economic activity wise total Private Authorized capital (Rs in Lakhs), VAR10 = Economic activity wise total public Authorized capital (Rs in Lakhs), VAR11 = Economic activity wise Total Authorized capital (Rs in Lakhs), VAR12 = Total Number of LLPs Registered year wise, VAR13 = Total Number of OPCs Registered year wise, VAR14 = Economic activity wise active LLPs, VAR15 = Economic activity wise active OPCs, VAR16 = obligation of contribution of LLPs (Rs in Lakh), VAR17 = authorized capital of OPCs (Rs in Lakh), VAR18 = Total Active LLPs, VAR19 = Obligation of contribution range wise (Rs in Lakh)

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Table 10: Result of Paired Samples Test

Pairs & Variables		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	VAR1 - VAR4	19475.06	33114.04	5519.01
Pair 2	VAR1 - VAR2	32841.22	55563.56	9260.59
Pair 3	VAR1 - VAR3	34245.39	58618.91	9769.82
Pair 4	VAR4 - VAR2	13366.17	23364.23	3894.04
Pair 5	VAR4 - VAR3	14770.33	26416.45	4402.74
Pair 6	VAR5 - VAR9	-111397.94	171458.57	35751.58
Pair 7	VAR6 - VAR10	-408607.59	626106.71	130552.27
Pair 8	VAR7 - VAR11	-520673.68	790396.76	164809.12
Pair 9	VAR5 - VAR6	92936.61	155369.16	32396.71
Pair 10	VAR6 - VAR7	-99341.52	163587.23	34110.30
Pair 11	VAR5 - VAR7	-6404.91	9008.87	1878.48
Pair 12	VAR9 - VAR10	-204273.03	376439.22	78493.00
Pair 13	VAR11 - VAR10	211407.62	301395.16	62845.24
Pair 14	VAR11 - VAR9	415680.65	634399.89	132281.52
Pair 15	VAR12 - VAR13	17086.60	9896.06	4425.65
Pair 16	VAR14 - VAR16	-1024490.64	1511027.44	390145.61
Pair 17	VAR15 - VAR17	-4792.57	7946.55	2051.79
Pair 18	VAR14 - VAR15	13725.33	20477.91	5287.37
Pair 19	VAR16 - VAR17	8932.77	12764.52	3295.78
Pair 20	VAR15 - VAR16	-1038215.97	1531052.33	395316.01

Source: SPSS Output

Note. VAR1 = Registered Companies, VAR2 = Closed Companies, VAR3 = under stuck off companies, VAR4 = Active companies, VAR5 = Economic activity wise total Private Number, VAR6 = Economic activity wise total public Number, VAR7 = Economic activity wise total Number, VAR9 = Economic activity wise total Private Authorized capital (Rs in Lakhs), VAR10 = Economic activity wise total public Authorized capital (Rs in Lakhs), VAR11 = Economic activity wise Total Authorized capital (Rs in Lakhs), VAR12 = Total Number of LLPs Registered year wise, VAR13 = Total Number of OPCs Registered year wise, VAR14 = Economic activity wise active LLPs, VAR15 = Economic activity wise active OPCs, VAR16 = obligation of contribution of LLPs (Rs in Lakh), VAR17 = authorized capital of OPCs (Rs in Lakh), VAR18 = Total Active LLPs, VAR19 = Obligation of contribution range wise (Rs in Lakh)

MAJOR FINDINGS OF THE STUDY

- 18,37,345 companies registered up to 31.12.2018. In this 6,54,611 companies liquidated or dissolved and remaining 11,36,243 are in active.

95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)	Result of hypotheses
Lower	Upper				
8270.88	30679.23	3.529	35	0.001	Difference
14041.22	51641.23	3.546	35	0.001	Difference
14411.60	54079.18	3.505	35	0.001	Difference
5460.85	21271.48	3.432	35	0.002	Difference
5832.29	23708.38	3.355	35	0.002	Difference
-185542.19	-37253.70	-3.116	22	0.005	Difference
-679356.43	-137858.74	-3.13	22	0.005	Difference
-862466.87	-178880.49	-3.159	22	0.005	Difference
25749.95	160123.27	2.869	22	0.009	Difference
-170081.95	-28601.10	-2.912	22	0.008	Difference
-10300.64	-2509.18	-3.41	22	0.003	Difference
-367057.56	-41488.51	-2.602	22	0.016	Difference
81074.58	341740.66	3.364	22	0.003	Difference
141345.57	690015.74	3.142	22	0.005	Difference
4799.02	29374.18	3.861	4	0.018	Difference
-1861269.74	-187711.54	-2.626	14	0.02	Difference
-9193.22	-391.91	-2.336	14	0.035	Difference
2385.04	25065.62	2.596	14	0.021	Difference
1864.01	16001.52	2.71	14	0.017	Difference
-1886084.49	-190347.45	-2.626	14	0.02	Difference

- In the registered and active companies state of Maharashtra secured first rank in registered 3,64,309 and 2,29,904 active, second rank secured by Delhi 3,29,374 registered and 2,00,219 active. Third rank secured by West Bengal 2,00,139 registered and 1,28,157 active companies in India up to 31.12.2018.
- Economic activity wise total number of active companies 11,36,243 with authorized capital of Rs.65,39,233.30(Rs in Crore). Out of this 10,69,364 private companies with authorized capital of Rs.21,72,268.96 (Rs in Crore) and 66,879 public companies authorized capital of Rs.43,66,964.34 (Rs in crore).
- Totally 1,23,468 Limited Liability Partnerships(LLPs) with the obligation of contribution Rs.78,16,775.40 (In Rs Lakhs) were in active up to 31.12.2018.

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- Maximum number of Limited Liability Partnerships (LLPs) as per economic activity wise were in service sectors 94,291 with the obligation of contribution Rs.59,22,199 (Rs in Lakh), next in the industry sector 26,878 LLPs with obligation of contribution Rs.18,03,022 (Rs in Lakh).
- Totally numbers of active One Person Companies (OPCs) were 20,896 with authorized capital of Rs. 55,920.11 (Rs in Lakhs) up to 31.12.2018 in India.
- Maximum Number of One Person Companies OPCs as per economic activity wise were in the services sector 17,957 with authorized capital of Rs. 45,521.49 (Rs in Lakhs), Next in industry sectors 2,624 One Person Companies were in active with authorized capital of Rs. 9,203.87 (Rs in Lakh).
- Majority of 82% (1,01,149) of the active Limited Liability Partnerships (LLPs) were in within five Lakhs of obligation of contribution wise and reaming 18% (22,319) were in the other ranges.
- Totally 20 pairs correlations tested, Results of Paired Samples Correlations shows that all variable strongly positively correlated with other variables.
- Totally 20 pairs test with Paired Samples t Test tested, Results of Paired Samples t Test shows that 20 pairs variable associated with other variables.

CONCLUSION

This study concluded that limited liability partnerships (LLPs) and One Person Companies (OPCs) is innovative business organization model in India. Both are suitable small scale business, its provide limited liability, tax benefits, perpetual succession and flexibility of converted to other forms of business organizations. LLPs and OPCs are suitable for various service sectors and professionals innovative option for their investments to start business. This study finally suggested that ministry of finance and corporate affairs , RBI, banking & non-banking financial institutions felicitates to take imperative steps to provide financial assistance at concessional rates tax holidays and subsidies for existing as well as new entrepreneurs. It also creates better environment for investors by easy way of doing business India and protecting their investments. This study finally concluded that LLPs and OPCs will give entrepreneurs and businessmen a more structured business system compared to traditional partnership. This is a new innovative business models to form easily, maintain, conversion and winding up easily. In future limited liability partnerships (LLPs) and One Person Companies (OPCs) is business model in India has a prosperous future for entrepreneurs like Small Medium Scale Enterprise (SME), services sectors and professionals to start business in India.

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MACROECONOMIC VARIABLES AND THEIR IMPACT ON THE INDIAN STOCK MARKET

ABSTRACT

The study focuses on the impact of various macroeconomic variables on stock price movement, for the purpose of study Price movement of BSE SENSEX are taken and six macroeconomic Dimensions namely Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP) were selected. Five year data from January 2013 to December 2017 is taken under consideration .Regression analysis; Correlation and Anova were used to analyze the data. The results showed that the macro-economic variables have impact on stock market movements. Inflation rate, Foreign Exchange Rate, Crude oil Prices and Gold Prices, have negative relationship with stock market prices movements and Money supply (MS3) while Bank Rate (BR) showed positive relationship with stock market price movements. This study will help to gain the better understandings of stock market movement and also help investors in designing the optimum portfolio. This study will help the investors to manage their risk and provide useful insight of how macro-economics of country can affect their investments.

Keywords: macroeconomic variable, stock market, gold, consumer price index, bank rate, inflation rate

INTRODUCTION

Stock market is considered as the economic barometer of any economy. It defines the economic status as well as the living standard of the population. Stock market get affected by number of factors like economic factors, social factors , political factors, international market environmental factors, government decisions and even psychological factors. These all factor have combined impact on the stock market. Because of all round effects of various factors and environments it is almost impossible to predict the movements of stock market accurately. Fundamentals of economy have a significant role in determinant of the stock market prices. As India adopt globalization in 1991 which increase the exposure of Indian fundamentals to several international factors like international market growth, foreign exchange reserve and international events. Several examples are available which shows how international environment affect the Indian fundamentals like recent fall in crude oil price boost up the stock market in India. Earlier studies give different views toward different macroeconomic variables and their relationship with the stock market, but most of studies prove that macroeconomic variables have bearings on stock market movement. Foreign institutional investors and Foreign exchange rate have significant impact on the movements of stock market in India (Gurloveleen and Bhatia, 2005). Indian stock market is

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approaching toward informational efficiency at least with respect to two major macroeconomic variables namely exchange rate and inflation rate (Singh, 2010). Sharma (2010) investigated the relationship between the stock market price and economic fundamental and stated that there is high degree of relationship of stock prices with exchange rate and gold prices at same time while showed limited relationship with foreign exchange reserve and inflation. This study is further description covering data of five year and taking six macroeconomic variables. In this study we covered the impact of selected macroeconomic factors on stock market and also understand the relationship between stock market and the selected six macro economic variables namely Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP).

MACRO-ECONOMIC DIMENSIONS

Macro economics is that branch of economics that deals and study's the behaviour and performance of economy as whole, thus it is the study of economic at the aggregate level. Macro economic variables are the indicators which show the current trend in the economy. Macro Economic variables are the different components of the macro-economic. In other word all those indicator that helps in analyzing the macro-economic environment are known as the as the macro economic variables. The selected economic variables are explained below

GOLD PRICE (GP)

Gold is considered as one of the preferred alternative avenue for the investment and it is also one of the most demanded commodities of India. Generally people consider gold as more safer investment as the fluctuation in gold price is very low as compared to the prices of stock market and second thing is investment in gold create a tangible assets (Sharma, 2010).

MONEY SUPPLY

Money supply refers to the total stock of the currency and other liquid instruments which are either held by the people of a particular nation or either circulating in the country's economy. Here money supply is calculated at M3

M3 = C + DD + OD + savings of public with post office + net time deposits with commercial banks

C = Currency held by public in form of coins and paper notes.
DD = Demand deposits of public with commercial banks.
OD = other deposits

CONSUMER PRICE INDEX (CPI)

Consumer price index is the of the most used method of measuring the inflation and deflation of an economy, In CPI the change in the general price level is calculated by taking the changes in prices of the predetermined basket of goods and then averaging them. Previous studies show that there is negative relationship between inflation (CPI) and stock market movement (Pal and Mittal, 2011).

BANK RATE (BR)

A bank rate is the rate at which the central bank of an economy lends money to domestic banks that means it ultimately results in determination of the interest rate of savings as well as interest rate of loans. Generally it is assumed that a negative relationship exists between these two (Naka, Mukherjee and Tufte, 1998).

FOREIGN EXCHANGE RATE (FER)

Exchange rate or foreign exchange rate refers to the value of the currency of one country to the other country's currency. The foreign exchange rate consist of two major components the domestic currency and a foreign currency. As India is always suffering deficit in balance of payment as India have more import than export, thus change in exchange rate also effect the whole nation.

CRUDE OIL PRICES (COP)

As India import more than 80% of its crude oil requirement from foreign countries which is increasing day by day as the Indian is currency is depreciating continuously and the price of crude oil is increasing in international market, the joint effect of both factors creating huge deficit for Indian economy.

STOCK MARKET

Stock market is an arrangement for successful exchange of securities between the issuer and buyer and also between the buyers or investors. There are total 21 stock exchanges are currently operating in India but for this study we taken only Bombay Stock Exchange (BSE) into the consideration (Securities Exchange Board of India).

BOMBAY STOCK EXCHANGE (BSE)

Bombay stock exchange was established in 9 July, 1875 located at Dalal Street, Mumbai and is the oldest stock exchange of not only of India but also of Asia and BSE is also considered as the fastest stock exchange of the world with the speed of 6 micro seconds.

The index is taken under consideration is SENSEX , the SENSEX is based on the free floating market cap of 30 SENSEX stock traded on the BSE relative to the base value which is 100(1978-79) and it is calculated for every 15 seconds.

SENSEX = (sum of free flow market cap of 30 benchmark stock)*Index factor

Where,

Index factor = 100/market cap value in 1978-79

100 the index value during 1978-79

REVIEW OF LITERATURE

Large numbers of studies are already conducted with the aim of analyzing the impact of changes in macro-economic variables on stock market movement and to find out the relationship between stock market and macro economic variables. Many scholars, industry experts and research firm have done several empirical and descriptive studies in this field. Some macroeconomic variables have direct impact on the movements of stock market whereas others have indirect and derived impact on the stock market.

Money Supply (MS) and Interest Rate (IR) have direct and immediate impact on the stock market. Patel (2012) executed a study understand the relationship of stock market with Money supply, Interest rate and other variable and the study found that money supply is one of major factor that affects the stock market. Tests used were augmented dickey fuller unit root test. Ray (2012) also found that Money Supply is major components of macro economics that have direct and immediate bearings on the stock market movements, with the use of multiple regression model and granger causality test; it was found that there is casual relationship with Interest rate and bi-directional casual relationship with Money supply. Ahmed (2008) executed a study to understand the nature of the casual relationship between stock price and Money Supply, Interest and other key macro economic variables with the help of BVAR (Bayesian Vector Auto-Regression) model. And the results show that there is the casual link between the selected macroeconomic variables and stock market movements in both short as well as in long term. Naka, Mukherjee and Tufte (1998) conducted an study to find out the relationship between the stock market movements and the major macroeconomic variables including Money supply and Interest rate in Singapore, the tools used for the study was VECM (Vector Error Correction Model) and the results reveal that Singapore stock market have significant relationship with the money supply, Interest rate and all other selected macroeconomic variables. Naka, Mukherjee and Tufte (1998) also investigated the relationship of money supply and Interest rate with the stock market movements in India. They employed the Vector Error Correction Model and found that the money supply and Interest rate are co-integrated with the stock market. They found two long term equilibrium relationship exist among these variables. First is long run monetary neutrality second is relationship of interest rates to output.

Gold is an alternative avenue for the investment and thus its prices also have impact on the stock market movements similarly the Inflation defines the value of the funds available for the purpose of investment and have bearing on the stock market many scholars and industry experts have examined the relationship between these two macro economic variables and stock market movements. Gurloveleen and Bhatia (2005) conducted a study to analyze the impact of various macro-economic variables including gold and inflation rate and found that the gold prices and inflation have no significant relationship with the stock market movement. The Augmented Dickey Fuller test, Multiple Regression and granger causality test were used to analyze and interpret the data. The Researchers examined the behavior of Indian stock market with respect to the inflation, gold price and other selected macro economics, for this purpose monthly data was collected from April 1991 to December 2005. With the help of granger causality test it was found that the stock market has unidirectional relationship with inflation and bidirectional relationship with gold prices. Sharma (2010) also examined the relationship between BSE movements and inflation, gold

price and other macroeconomic variables. The Multiple regression equation models were used to analyze the data for the period of one year from January 2008 to January 2009. This study reveals that gold prices have more significant impact on stock prices as compared to inflation rate, the degree of correlation between gold price and stock market movement was 90.2% whereas inflation has the correlation of 25% only. Another study was conducted by Pal and Mittal (2011) to examine the long term relationship between the capital market and inflation rate and other selected macro economic variables, for this purpose the Unit root test, the co-integration test and error correction mechanism (ECM) were used to analyze the data and it was found that inflation has the significant impact on both S&P CNX Nifty and BSE of India. Hosseini (2011) studied the relationship between the stock market indices and inflation along with three other macroeconomic variables in India and China. Augmented Dickey Fuller root test, Johansen-Juselius multivariate co-Integration and vector error model techniques were used to analyze the data and the results reveal that inflation has the positive relationship with the stock markets of both the countries.

International factor also have significant bearing on the stock exchange. As the market react to each and every event happening in the different environments, international events and global cues are also the part of this environment. Two major international macro economic variables those have direct relationship with the stock market are Crude oil prices and the Foreign exchange rate. The study was conducted by Ghosh and Kanjilal (2014) to analyze the relationship between international crude oil prices and Indian stock market for this purpose they collected the data on daily basis from January 2, 2003 to July 29, 2011. The nonlinear threshold co-integration test and Toda-Yamamoto version of Granger non-causality tests were applied and the study reveals that there is no co-integration among the variables in long term but further the data is divided into three categories and than non-causality test shows that there is co-integration for the third category and there is a symmetry in the transmission of oil price changes to stock markets. Singh (2010) gone through the study to analyze and calculated the correlation and causality between the stock market index BSE (SENSEX) and exchange rate and other selected macroeconomic variables. Techniques of correlation, unit root stationarity tests and Granger causality test were used for the analyzing the relationship and results reveal that foreign exchange rate have no significant correlation with the stock market in India. Tripathy, (2011) executed a research to investigate the relationship between stock market (BSE Sensex, S&P 500 and BSE Trading Volume) and exchange rate along with other macro economic variables, for the period of January 2005 to February 2011. Ljung- Box Q test, Breusch-Godfrey LM test, Unit Root test and Granger Causality test were used for analysis of the data. The study discovers that the Indian stock market is sensitive toward changing behaviour of international market, exchange rate and other macro economic variables. And these variables can be used to predict the direction of the Indian stock market. Kumar and Padhi (2012) investigated the relationship between the BSE (SNSEX) and exchange rate and other macroeconomic variables over the period from 1994 to 2011. Johansen's co-integration and vector error correction model have been applied to explore the relationship. The result reveals that stock market have significant relationship with the exchange rate and other selected macro economic variables. Gay (2016) to research into the relationship between stock market returns and multiple economic variables in the emerging economies: Brazil, Russia, India and China. The monthly average data of all the above

factors was collected. He used the technique of ARIMA (Autoregressive Integrated Moving Average) to analyze the relationship and study reveals that there is no significant relationship between the stock market of BRIC and exchange rate, oil prices and other selected macro economic variables.

OBJECTIVES OF THE STUDY

The paper concentrates on the following objectives:

- To study the macro-economic variables.
- To understand the relationship between macro-economic variable and stock market movement.
- To analyze the effect of changes in macro-economic variables on stock market movement.

METHODOLOGY

This is an exploratory and descriptive research that attempts to identify the relationship between the stock price movement and the selected macro economic variables.

The hypothesis for the Study is as follow

H0=There is no significant impact of selected macroeconomic variable on stock price movements

For the purpose of study six different macro economic variables are selected namely Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP).These macroeconomic variables are selected after considering the various factors like constant depreciation in the value of Indian rupee, constant increase in crude oil demand and gold, similarly money supply and bank rate show the availability of fund in hand of Indian population and Inflation creates various disturbances in the economy. And for the stock price movements BSE SENSEX is taken under the consideration. After the review of various researches by different scholars and experts we found that the selected macroeconomic variables have relationship with the stock price movement. In order to get the deeper understanding of this relationship the monthly data of five years from January 2013 to December 2017 is taken under consideration. The data is divided into two sets, first set cover the monthly data of selected six macroeconomic variables namely Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP) and the second set consist the monthly data of change in index of BSE SENSEX. The data is collected from secondary sources. The data for stock prices are taken from bseindia.com, data related to macroeconomic variables are taken from monthly economic report of government, trading economics, index mundi and money control.

$$Y_i = b_0 + b_1X1_+ b_2X2_+ b_3X_{3+} b_4X_{4+} b_{5x}5_+ b_6X_{6...} \quad (1)$$

Where,

Y_i - stock price movements (Dependent variable)

b_0 - constant

X_1 - changes in Gold price

X_2 - changes in Money Supply

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X_3 - changes in Consumer Price Index

X_4 - changes in Bank Rate

X_5 - changes in Foreign Exchange Rate

X_6 - changes in Crude Oil Price.

RESULTS

First we measure the degree of correlation between the selected macroeconomic variables and stock price movement with the help of Pearson Correlation and then regression analysis is used to interpret and analyze the relationship between the stock price movements and selected macroeconomic variables for this purpose stock prices are taken as the dependent variables whereas macroeconomic variables are taken as independent variables.

Table 1: Descriptive Statistics

Variables	Mean	Std. Deviation
BSE SENSEX	25943.905	4130.738
Foreign Exchange Rate	63.220	3.671
Inflation Rate	6.095	2.543
Bank Rate	7.961	1.077
Crude Oil Price	69.338	26.963
Money Supply (M3)	108090.243	15665.774
Gold Price	79924.792	4851.864

Source: SPSS Output

Table 1 shows the descriptive statistics of the both set of the data. From Table 1, the mean of the BSE SENEX is 25943.9050 and its standard deviation is 4130.73811 that mean in these five years the variation in the stock price is high. The Foreign exchange rate is more stable as the standard deviation is only of 3.67 Rupee. The inflation rate and bank rate are also stable as the standard deviation is only 2.5434 and 1.0774 respectively. The money supply and gold price continuously increases during these five years which results in high standard deviation of both variables 15665.77 for money supply and 4851.864 for gold prices.

Table 2: Correlation Matrix

Variable		BSE SENSEX	Inflation Rate	Foreign Exchange Rate	Money Supply (M3)	Bank Rate	Crude Oil Price	Gold Price
BSE SENSEX	Pearson Correlation	1	-.872**	.563**	.880**	-.708**	-.693**	-.080
	Sig. (2-tailed)		.001	.001	.001	.001	.001	.546

Source: SPSS Output

Note. ** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).

From the Table 2, correlation between the stock price movement and the selected macroeconomic variables. The table shows that the stock price have high degree of negative correlation with the inflation rate which is -0.872 and moderate positive correlation with the foreign exchange rate which is 0.563. The stock price has high degree of positive relationship with money supply (M3) which is 0.880 and moderately high negative correlation with the bank rate and crude oil prices stands as -0.708 and -0.693 respectively. With respect of Gold prices the degree of correlation is very low and negative which is only -0.080.

The Table 2 shows that correlation is significant with the all the selected macroeconomic variables except the gold prices as the value is only-0.080.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.957a	.916	.906	1264.55997	96.091	.001

Source: SPSS Output
Note. a Predictors: (Constant), Gold Price, Foreign Exchange Rate, Bank Rate, Inflation Rate, Crude Oil Price, Money Supply (M3) Dependent Variable: BSE SENSEX

Table 3 describes how perfectly the model fits for the analysis. R shows the degree of correlation between the macroeconomic variable and stock prices as the value of R is .957 that means there is high degree of relationship between both sets of data. R2 states the strength of association, the value of R2 ranges from 0 to 1 value closer to the 1 shows high degree of association. In the model the value of R2 is .916 which means the strength of association between two set of data is 91.6%. That means the selected macroeconomic variables have significant impact on stock price movements. The Table 3 presenting the difference in the value of mean of dependent variable stock. From Table 3, the calculated value of F which is more than the tabulated value of F, which shows that null hypothesis is rejected so selected macro economic variables Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP) have impact on stock price movements that reveals the relationship between six selected macro economic variables and stock price movement.

Table 4: Standardized Coefficient Values of Independent Variables

Variables	Standardized Coefficients (β)	T-value	Sig.
(Constant)	-	1.430	.158
Money Supply (M3)	1.665	8.909	.001
Inflation Rate	-.095	-.760	.450
Foreign Exchange Rate	-.581	-6.658	.001
Bank Rate	.556	4.755	.001
Crude Oil Price	-.117	-1.222	.227
Gold Price	-.090	-1.787	.080

Source: SPSS Output

Coefficient Table 4 describes the direction of the relationship between selected macroeconomic variables and stock price movements. The results shows that stock price movement have positive relationship with only two macroeconomic variable namely Money supply (MS3) and Bank Rate (BR). While with all other variable namely Inflation rate, Foreign Exchange Rate, Crude oil Prices and Gold Prices, stock market prices have negative relationship.

CONCLUSION

The main purpose of the study was to find out the relationship between macro-economic variable and stock market movement. And analyze the effect of changes in macro-economic variables on stock market movement. We selected the six different macroeconomic variables namely Gold price (GP), Money Supply (MS), Consumer Price Index (CPI), Bank Rate (BR), Foreign Exchange Rate (FER), and Crude Oil Price (COP) and the data for stock market movements was taken from BSE SENSEX in two sets. The results reveals that the there is high degree of correlation between macroeconomic variable and stock market movements, the result of our study is almost similar to the study of (G.D. Sharma 2010) his study reveal the strong correlation between his selected three macro economic variables and stock market movements. Similarly our study found that the degree of correlation between our selected macro economic variables and stock market was standing at 95.7%. The results also described that Inflation rate, Foreign Exchange Rate, Crude oil Prices and Gold Prices, have negative relationship with stock market prices that means if these variables increases than the stock market move downward and if these variable decreases than stock market moves upward. Whereas Money supply (MS3) and Bank Rate (BR) have positive relationship with stock market price movements that means if these variables increases than the stock market moves to upward and if these variables decreases than the stock market moves to downward. The study also suggested that the analysis of these selected macro economic variables can help the investors to predict the future movements of stock market.

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OPTIMIZATION OF EOQ MODEL WITHOUT SHORTAGE IN CRISP AND FUZZY SYSTEM

ABSTRACT

In the present world for achieving perfect equilibrium which is mandatory for proper functioning of the inventory system there should be no shortage of commodities in the system. The present paper exemplifies an inventory system without shortage in both crisp and fuzzy environments. The main objective of this investigation is to find the optimal order quantity as well as the optimal total cost for the inventory model in both crisp and fuzzy environments. Appropriate numerical example has been used to exemplify the model in both the environments. The results obtained in both the environments are validated by applying sensitivity analysis.

KEYWORDS: Fuzzy set theory, fuzzy variables, trapezoidal fuzzy number, fuzzy inventory system, signed distance method, defuzzification.

INTRODUCTION

Inventory is basically the items or commodities or the economic resources which are stored for smooth working of any sort of business.

If a manufacturer runs out of stock of goods then on receiving an order from the dealer he has to put forward an order so that he can purchase the required raw materials and proceed with the required production. If such a situation arises then the customer will definitely look for commodity in the market as he would never wait for the delivery of the commodity from this manufacturer when it is already available in the market with other suppliers. This in turn can lead to tremendous loss in the business. Thus maintain an inventory is the primary concern of any business affair.

Inventory represents the backbone of any business as it the main source of raising funds and also the earnings of the owner. Inventory management plays a vital role in setting up the most efficient closed loop supply chains. It is the process that regulates the flow of units in and out of any business which is maintained in the form of an inventory. The sole motive of inventory management is to attain the maximum profit for the organisation and reduce the cost of production to minimum level thereby increasing the customer satisfaction.

The EOQ inventory Model is the main inventory model which is widely used in inventory system, in this model supply and demand are the successive models. The simple EOQ model was the first quantitative treatment of inventory. Harris (1915) and Wilson (1934) were the one who developed this model. After this Hadley et al. (1963) was the one who analyzed many inventory systems. Also the demand functions depending on price and the level of stock. An inventory model without back order with fuzzy total cost and fuzzy storing cost

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defuzzified by centroid and signed distance and also a model without backorder and fuzzy order quantity was proposed by Yao et al. (1999; 2003). A fuzzy inventory model under function principle with backorder was studied by Chan et al. (1996).

Sayal et al. (2018a) studied the supply chain management system in case of the inventory models for both the crisp and fuzzy systems. An inventory model without shortage in crisp and fuzzy environment system has been developed by Sayal et al. (2018b). The fuzzy models of inventory management were developed by Sayal et al. (2018c). Inventory models for perishable products for both crisp and fuzzy environments were studied by Sayal et al. (2018d).

Sometimes there are situations in which we cannot interpret the values of variables i.e. we cannot assign fixed values to the variables. The reason behind this uncertainty which is further caused due to fuzziness. F. Harris in the year 1915 propounded the first inventory model. Due to the introduction of fuzziness, this concept of fuzzy set was proposed in the year 1965 by Bellman, and Zadeh, 1970; Zadeh, 1965. Jain (1976) proposed a mathematical model which was based on making decisions when considered in case of variables of the fuzzy environment. H. J. Zimmerman in the year 1983 gave the fuzzy set applications in the field of operational research. Fuzzy theory has a widespread application in field related to the inventory management as proposed by Park (1987) and Urgeletti (1983)

In the EOQ model the order size is chosen keeping in view that it reduces the total production cost of the inventory under consideration. The assumptions for EOQ model in general are given below:

- The demand for inventory is fixed, known and also independent
- Quality is maintained in such a way that no discount are permissible
- The replenishment of the inventory is a sort of instantaneous
- The setup cost and also the holding cost of the inventory bare variable
- There is no stock which is maintained as safety

There are numerous papers on the Economic order quantity model as it can be regarded to serve as a primary source for obtaining the solution to many problems related to real life situations. EOQ model was regarded as an inventory model in which it was assumed that there is no backorder, the concept of trapezoidal fuzzy number was used by Chen and Wang (1996) which further helped to generate the cost in total in the fuzzy system. In order to defuzzify the total cost Vujosevic et al. (1996) used the centroid method.

The same principle of fuzzification technique by centroid method was also used by Yao et

al. (1999; 2003) for inventory models with or without backorder to get the sum of all costs in fuzzy system and also corresponding total cost which has been defuzzified. From this study it was also observed that the method known as the signed distance method provided as better approximation in regards to the defuzzification method in comparison to the centroid method.

There are some production inventory models that have been proposed by Hsieh (2002). Also single-period inventory models having fuzzy demands have been proposed by Kao and Hsu (2002). The concept related to trapezoidal fuzzy number has also been applied by Syed and Aziz (2007). An EOQ model in which no shortage was taken into account was proposed by De and Rawat (2011) taking into account the concept of triangular fuzzy number.

Goyal et al. (2013; 2015) proposed n EPQ Inventory Model With Stock and selling Price Dependent Demand Rate, Partial Backlogging and Variables Ordering Cost and a model with shortage under inflationary environment. Goyal et al. (2016) developed an EOQ model for deteriorating items with selling price dependent demand rate with learning effect. Kacpryzk et al. (1982) proposed a long-term inventory policy-making through fuzzy-decision making models.

In the proceeding paper we have discussed a model of the inventory system in no shortage environment. In this case set up and carrying cost are taken as triangular fuzzy numbers. For the defuzzification of the given inventory system we have applied the signed distance method. Main motive of this investigation is to obtain optimal order cost and also order quantity which is optimal. The economic order quantity (EOQ) is computed by is done by the signed distance method. This proposed approach is easy to use and obtain better results with higher accuracy.

SOME BASIC DEFINITIONS

Consider a fuzzy set represented by $\bar{A}$. This set is defined on universal set 'X', such that X is a set of the pairs which are ordered,

$\bar{A} = \{(x, \mu_{\bar{A}}(x) : x \in X\}$

where $\mu_{\bar{A}} : \rightarrow [0,1]$, defines the membership function of the fuzzy system.

The α - cut of the fuzzy set $\bar{A}$, is given by: $A\alpha = \{x : \mu_{\bar{A}}(x) = \alpha, \alpha \geq 0\}$.

If R defines the real line, then the respective membership function is given by

$\mu_{\bar{A}}$ [0,1], has the properties listed below:

(i) the set A is a set which is normal set, i.e., there exists $x \in R$ in such a way that (x) = 1

(ii) *A* is also a piece-wise continuous.

(iii) suppremum(A) = cl{ $x \in R$: $\mu A\, x > 0$}, here cl represents the closure of the given set

(iv) Also set A is a convex fuzzy.

- Trapezoidal Fuzzy Number: A fuzzy set A= (m, n, o, p) where $m \leq n \leq o \leq p$, is said to be a trapezoidal fuzzy number if its membership function is given by

$$\mu_{\tilde{A}}(x) = \begin{cases} 0 & ; \text{for } x < m \\ \frac{x-m}{n-m} & ; \text{for } m \le x \le n \\ 1 & ; \text{for } n \le x \le o \\ \frac{p-x}{p-o} & ; \text{for } o \le x \le p \\ 0 & ; \text{for } x \ge p \end{cases}$$

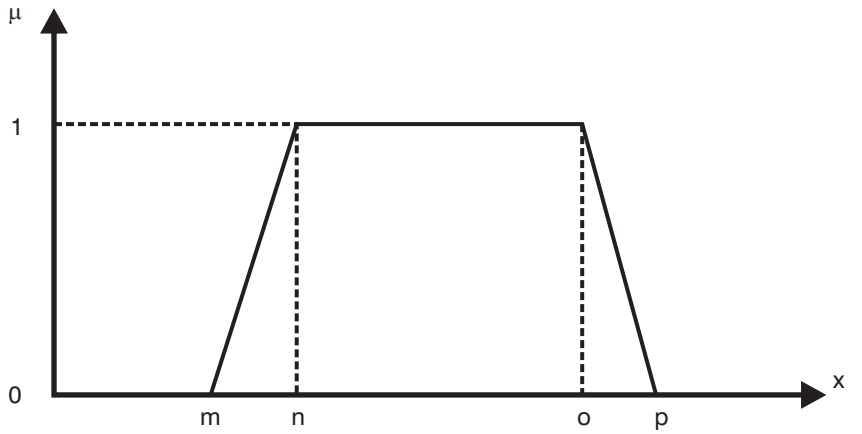

Figure 1: (Trapezoidal Fuzzy Number)

- In LR-Form a fuzzy set is defined as below,

The functions L (for left), R (for right), with membership function given below

$$\mu_{\tilde{A}}(x) = \begin{cases} L\left(\frac{x-m}{n-m}\right); & \text{if } x \in [m, n] \\ 1; & \text{if } x \in [n, o] \\ R\left(\frac{p-x}{p-o}\right); & \text{if } x \in [o, p] \\ 0; & \text{otherwise} \end{cases}$$

In this case L, R [0, 1] ? [0, 1], are non-decreasing functions such that $R(0) = L(0) = 0$, $R(1) = L(1) = 1$.

- **NOTATIONS AND ASSUMPTIONS**

Notations for crisp model are:

a) The holding cost per unit of the item per unit time = A

b) Ordering cost for each order = B

c) Total length of production = T

d) Ordering quantity for each cycle = Q

e) Length of each cycle = t1

f) Total demand of product over interval (0, T) = X

g) Total cost for the interval (0, T) = T_c

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h) Optimal order quantity = Q_d*

i) Assumptions for fuzzy model;

j) The holding cost per unit of the item per unit time =$\bar{A}$

k) Ordering cost for each order =$\bar{B}$

l) Total length of production = T

m) Ordering quantity for each cycle = Q

n) Length of each cycle = t_1

o) Total demand of product over interval (0, T) = X

p) Fuzzy total cost for the interval (0, T) = $\bar{T}_{cs}$

q) De-fuzzified total cost for the interval (0, T) =TC

r) The minimum de-fuzzified total cost for (0, T) = TC_{min}

s) Optimal order quantity = Q_d*

MODEL IN CRISP ENVIRONMENT

The proposed model is developed in the crisp environment. For this model the economic lot size is given by

$Q = \sqrt{\frac{2BX}{AT}}$ where .....(1)

The total cost of the inventory system over the interval (0, T) is given by:

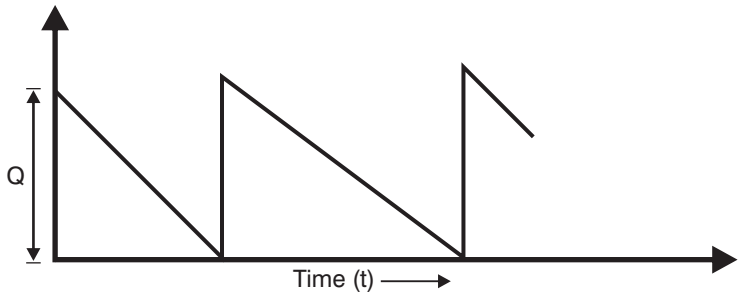
$T_c = \frac{ATQ}{2} + \frac{BX}{Q}$ .....(2)

The optimal order quantity Q_d as well as the optimal total cost T_c is obtained by finding the first order partial derivative of equation (2) and further obtaining the solution of the resultant equations which is given below:

The Optimal order quantity $Q_d^* = \sqrt{\frac{2BX}{AT}}$ .....(3)

Minimum total cost $T_C^* = \sqrt{2BAXT}$ .....(4)

The proposed model is shown in the figure 2.



Variation of Quantity 'Q' with respect to time

Figure 2: (Representation of Model)

MODEL IN FUZZY ENVIRONMENT:

In this model the holding costs as well as the ordering cost are assumed to be trapezoidal fuzzy numbers. In this case de-fuzzification is carried out by using signed distance method.

We assume that fuzzy holding cost is represented by and fuzzy ordering cost is represented by . Here we also consider an assumption that the demand and total time period are of constant nature.

The fuzzy total cost of the inventory system for the interval (0, T) is given by:

$\widetilde{T_{c_f}} = \frac{\tilde{A}TQ}{2} + \frac{\tilde{B}X}{Q}$ .....(5)

The fuzzy total cost is de-fuzzified by using the signed distance method which is further utilised to obtain the optimal order quantity .

Let = (a1, a2, a3, a4) and = (b1, b2, b3, b4) are trapezoidal fuzzy numbers in the LR form where a1, a2, a3, a4, b1, b2, b3, b4 are positive integers.

Substituting these values in equation (5) we get

$$\widetilde{T_{c_f}} = \left[\tilde{A} \otimes \frac{TQ}{2}\right] \oplus \left[\tilde{B} \otimes \frac{X}{Q}\right]$$

$$= \left[(a_1, a_2, a_3, a_4) \otimes \left(\frac{TQ}{2}\right)\right] \oplus \left[(b_1, b_2, b_3, b_4) \otimes \left(\frac{X}{Q}\right)\right]$$

$$= \left(a_1\frac{TQ}{2}, a_2\frac{TQ}{2}, a_3\frac{TQ}{2}, a_4\frac{TQ}{2}\right) \oplus \left(b_1\frac{X}{Q}, b_2\frac{X}{Q}, b_3\frac{X}{Q}, b_4\frac{X}{Q}\right)$$

$$= \left(a_1\frac{TQ}{2} + b_1\frac{X}{Q}, a_2\frac{TQ}{2} + b_2\frac{X}{Q}, a_3\frac{TQ}{2} + b_3\frac{X}{Q}, a_4\frac{TQ}{2} + b_4\frac{X}{Q}\right)$$

$\widetilde{T_{c_f}} = [r, s, t, u]$ (say) .....(6)

Here $A_L(\alpha) = [(s-r)\alpha + r]$

= r + (s – r) α

$$= a_1\frac{TQ}{2} + b_1\frac{X}{Q} + \left[\left(a_2\frac{TQ}{2} + b_2\frac{X}{Q}\right) - \left(a_1\frac{TQ}{2} + b_1\frac{X}{Q}\right)\right]\alpha$$

$$A_L(\alpha) = a_1\frac{TQ}{2} + b_1\frac{X}{Q} + \left[(a_2 - a_1)\frac{TQ}{2} + (b_2 - b_1)\frac{X}{Q}\right]\alpha$$

Also $A_R(\alpha) = u - (u-t)\alpha$

$$= a_4\frac{TQ}{2} + b_4\frac{X}{Q} - \left[\left(a_4\frac{TQ}{2} + b_4\frac{X}{Q}\right) - \left(a_3\frac{TQ}{2} + b_3\frac{X}{Q}\right)\right]\alpha$$

$$A_R(\alpha) = a_4\frac{TQ}{2} + b_4\frac{X}{Q} + \left[(a_4 - a_3)\frac{TQ}{2} + (b_4 - b_3)\frac{X}{Q}\right]\alpha$$

Defuzzifying $\overline{T}_{cf}$ in equation (10) by applying the method of signed distance, we get:

$$d\left(\widetilde{T_{c_f}}(\tilde{A}, \tilde{B}), 0\right) = \frac{1}{2}\int_0^1 [A_L(\alpha) + A_R(\alpha)]d\alpha$$

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$$= \frac{1}{2}\int_0^1 \left\{ a_1\frac{TQ}{2} + b_1\frac{X}{Q} + \left[(a_2 - a_1)\frac{TQ}{2} + (b_2 - b_1)\frac{X}{Q}\right]\alpha + a_4\frac{TQ}{2} + b_4\frac{X}{Q} + \left[(a_4 - a_3)\frac{TQ}{2} + (b_4 - b_3)\frac{X}{Q}\right]\alpha \right\}$$

$$= [a_1 + a_2 + a_3 + a_4]\frac{TQ}{2} + [b_1 + b_2 + b_3 + b_4]\frac{X}{Q}$$

$$= F(p) \quad \text{.....(7)}$$

The value of F(p) is minimum where $\frac{dF(p)}{dp} = 0$, and also $\frac{d^2F(p)}{dp^2} > 0$.

The economic order quantity is obtained by putting $\frac{dF(p)}{dp} = 0$

Economic order quantity $Q_d^* = \sqrt{\frac{2X}{T}\frac{(b_1 + b_2 + b_3 + b_4)}{(a_1 + a_2 + a_3 + a_4)}}$ .....(8)

The minimum value of F (p) is obtained when Q = Q_d* and is given by:

$$F(p)^* = [a_1 + a_2 + a_3 + a_4]\frac{T\,Q_d^*}{2} + [b_1 + b_2 + b_3 + b_4]\frac{X}{Q_d^*} \quad \text{.....(9)}$$

ILLUSTRATIVE EXAMPLE

For better explanation of concepts we consider the example of a bakery manufacturing different types of products like biscuits, cakes, pastries, burgers, pizzas etc. We consider the manufacturing of a burger. The ordering cost is taken to be Rs. 20 per piece; the holding cost is Rs. 12 per piece. The total number of units ordered is 500. Total time span in this case is 6 days. We consider this model in both crisp and fuzzy environments and obtain the following results:

For crisp system:

Ordering cost B = Rs. 20

Holding cost A = Rs. 12

X = 500

Total time T = 6 days

Substituting these values in equations (3) and (4) we get the total cost TC = Rs. 1200 and the economic order quantity Q_d = 16.67 units.

For fuzzy system:

Ordering cost $\overline{B}$ = (15, 18, 22, 24)

Holding cost $\overline{A}$ = (8, 10, 14, 16)

X = 500

Total time T = 6 days

Substituting these values in equations (8) and (9) we get the total cost F(p) = Rs. 1192.47 and the economic order quantity Q_d = 16.56 units.

Thus from the above example which has been considered in both crisp and fuzzy environment we observe that the total cost of production of the burger is lower in case of fuzzy environment as compared to the crisp environment. It can be concluded that the fuzzy environment helps in lowering the cost of production for any model of the inventory system.

CONCLUSION

In this paper for defuzzification of the ordering cost and holding cost we have applied the method of signed distance the economic order quantity has been calculated for both the crisp as well as the fuzzy environments. The results have been defuzzified by the application of trapezoidal fuzzy number. From this study we conclude that in case of the fuzzy environment the total cost of production decreases as compared to the crisp system. in crisp system the total cost of production is higher as compared to the fuzzy system. Thus fuzzy system is advantageous over the crisp system. this model can be further generalised to any sector as it facilitates in reduction of the total cost of production.

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