

A Comparative Analysis of Internet Mobile Banking Applications between Public and Non Public Sector Banks in India

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Abstract:

The mobile internet in India is growing in a remarkable phase; The Indian banks as an innovative approach have introduced mobile banking applications for the smart phone users. This article attempts to compare and analyze the mobile banking application provided by various banks, 35 nationalized banks be selected for the study and grouped under various sectors like public sector banks, old private sector banks, new private sector banks and foreign banks. Analytical research was followed in the article, the results showed that the new private sector banks are having greater satisfaction level compared to the other sectors and the old private sector banks are having lower satisfaction levels from the customers' viewpoint in the internet mobile banking platform.

Keywords: Mobile Banking Applications, Technology in Banking

Introduction:

The number of smart phone users in India is increasing in a tremendous phase, The mobile internet in India is also growing in a remarkable phase; the Internet and Mobile Association of India (IAMAI) and Indian Market research Bureau (IMRB) informed that there were 173 million mobile internet users in India in December 2014 and by June 2015 the number of mobile internet users will increase by 23 percentage and reach 213 million. The Indian banks as an innovative approach have introduced mobile banking applications for enhancing banking services towards their customers. These applications will ease the banking operations and also improves the customer's convenience towards banking. These applications were rated by the users based on the performance and other features of the application. This article attempts to compare and analyze the mobile banking application provided by various banks, and relate the performance of different sectors of the banks in the internet mobile banking platform.

Mobile Banking in India was introduced during the year 1999, since then the growth of mobile is in increasing phase. Internet and Mobile Association of India (IAMAI) and Indian Market research Bureau (IMRB) has predicted that the number of mobile internet users will grow in an overwhelming phase in the year 2015 and by June 2015 the number of mobile internet users will reach 213 million and addition of 3 crore people in just six months.

The IMRB also informed that the average monthly mobile bill has increased by 13 percentages to Rs 439. The proportion of the amount spent on mobile internet also increased from 45percentage in the previous year to 54percentagethis year. (BHARGAVA, 2015). IMRB and IAMEI also stated that the average monthly spend on mobile internet has gone up by 36percentage to Rs 235. These statistics show that the 21 crore Indians are having internet-enabled mobile by mid of the year 2015. This is roughly around 17percentage of the entire population of India is having internet enabled mobile and the average monthly expenditure of Indians on mobile internet is around Rs. 4900 crores.

RBI in a circular RBI/2013-14/116 (RBI, 2013 -14)has insisted the banks to make mobile banking easily available to all the users. The Reserve Bank of India asked banks to make the registration process for mobile banking services easy; it added that there is a slow pick-up of mobile banking services despite the high mobile density in the country. (The Hindu, 2014)

In a scenario, the rationale behind this article is that there is a huge opportunity for mobile internet banking. The mobile banking applications were acting as a bridge of communication between the banking customers and the bank as service providers.

Need for the study:

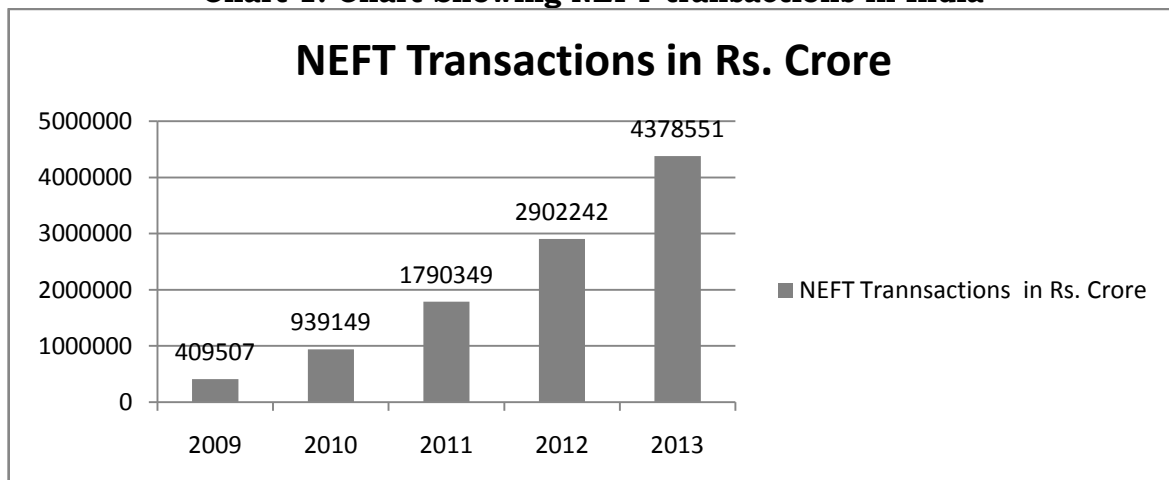
The Bank of international settlements (BIS) and Committee on Markets and Payments Infrastructure (CPMI) has analyzed the mode of transactions in India, in the Redbook of payment, clearing and settlement (Bank of International Settlements, 2014) it has released the value of interbank transfers in India, the value of NEFT transfers is increasing in an overwhelming phase, from the year 2009. The direct percentage increase while comparing the year 2009 and 2013 is 969 percent. This shows the mammoth increase in the internet based fund transfers in the past five years and in the near future, the mobile will occupy a considerable amount of space in the NEFT transactions.

Table 1: Table Showing NEFT transactions in India

Year	NEFT Transactions in Rs. Crore	Percentage increase
2009	409507	
2010	939149.03	129.34%
2011	1790349.578	90.64%
2012	2902242.331	62.10%
2013	4378551.709	50.87%

Source: BIS – CPMI Redbook September 2014

Chart 1: Chart Showing NEFT transactions in India



Source: Processed data from CPMI BIS Red Book

Literature Review

Tetard and Collan(2007)proposed “Lazy user Theory of Solution Selection. Lazy user model explains how an individual selects a solution to fulfill a need from a set of alternatives. The model starts from the user need and it is observed, the model expects that there is a clearly definable want and the user wants are satisfied, so there is a place for solution, product or a service.

The Lazy User Model could be related to the mobile banking application, the user of the application that is the bank customer will have certain needs for example transferring money to a friend through NEFT. The “User State” or the Customer’s situation is that he will be at work or he will be travelling and the available alternatives are calling customer service, transfer by logging in to his personal computer or use the mobile banking application; the customer selects the solution for the problem based on the minimum effort required.

Venkatesh (2003) in the article titled “User Acceptance of Information Technology: Toward a unified view” has proposed a model “Unified Theory of Acceptance and Use of Technology”. The author insisted attitude, behavioral intention, computer anxiety, effort expectancy, facilitating conditions, image, job relevance, objective usability,

output quality, performance expectancy, perceived ease of use, perceived enjoyment, perceived usefulness, perception of external control, result demonstrability, social influence, subjective norms, voluntariness as the factors that influence the usage behavior of the individuals and to explain the user intention towards information system.

Mariette Visser (2013) in the article titled “Evaluation of Management Information Systems: a study at a further education and training college” used an empirical testing of a newly designed evaluation tool and suggested that content, accuracy, format, ease of use and timeliness as the factors for evaluating the end user satisfaction in case of information system

Shobhna Gupta (2014) in her article titled “A Comparative study of the Performance of Selected Indian Private and Public Sector Banks” analyzed selected public and private sector banks and compared the net profits, nonperforming assets of the banks The results reveal that SBI performed better when compared to the other banks .The performance of BOB was not good when compared to the other banks in terms of Non-performing assets. In the private sector, HDFC Bank and ICICI Bank performed better among all the banks. As per the results, both public and private sectors perform equally well.

Research Methodology:

Analytical research is being followed in this article. The banks are analyzed based on the rating of the mobile banking application and other measurable and qualitative parameters by the customers.

Research Objective:

- To analyze the internet mobile banking application provided by various nationalized banks of India.

- To compare and contrast the internet mobile banking application based on sector wise classification of the banks such as public sector banks, old private sector banks, new private sector banks and foreign banks.
- To suggest various improvement measures for banks based on analysis and findings.

Data Collection:

The data used for the study is collected from research articles, journals, websites and magazines. Secondary data is used for the study. The data used by the author for rating the bank application is retrieved from the Google play application store.

The publically available data in the application store used were number of 5 star, 4 star, 3 star, 2 star and 1 star rating of the mobile banking application. Apart from this other essential data used are number of downloads, number of users who rated the application, number of recommendations for the mobile banking application, overall rating by the app store, memory space of the application occupied in the mobile, various options and features available in the mobile banking application and also some of the users comments about the satisfaction of mobile banking application.

The collected raw data is then compiled with the help of Microsoft Excel and was provided in a presentable and understandable manner.

Sampling Method and Sample Size:

There are 27 Public Sector Banks and 19 private sector banks and various foreign banks operating in India. Among these different types of banks 35 banks are providing android based mobile banking applications for smart phones. 35 banks that are using the mobile banking applications were taken for the study. Hence, it is a census method of study while considering the mobile banking application for the smart phone users.

Limitations:

The study is done during the time Dec 2014 to Jan 2015. The data used for the study were collected during this time. Hence the study is having temporal limitation.

The internet mobile banking applications were provided by various organizations, among this the study concentrated only on the Google Play store. Therefore, the study is limited to the operating system users that are compatible with the Google Play Services.

The study is limited to the research tools used in the study like chi square test, one way ANOVA, ratio analysis and Pearson correlation.

Analysis

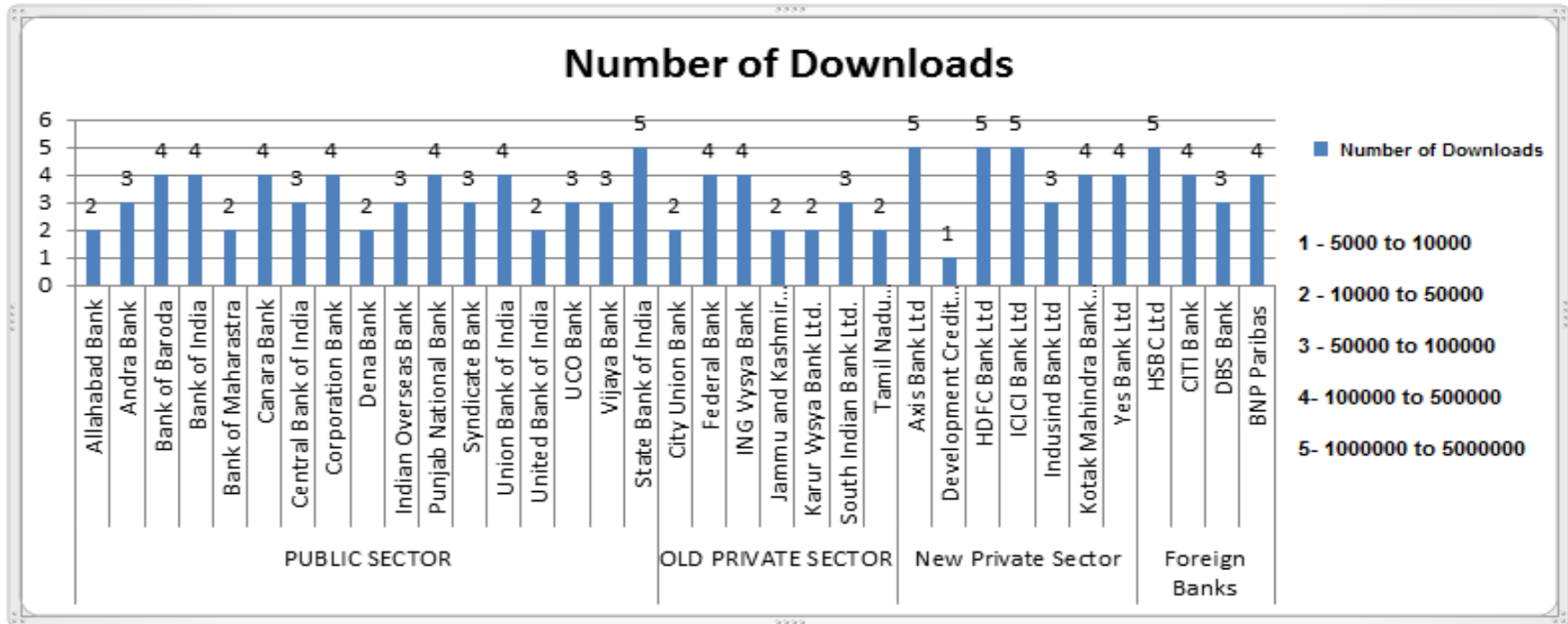
Table 2: Table Showing Banks and the rating of Mobile Banking Application

S. No	Sector of Banks	Bank	5 Star	4 Star	3 Star	2 Star	1 Star
1	Public Sector	Allahabad Bank	428	141	77	57	124
2		Andra Bank	495	221	131	75	208
3		Bank of Baroda	2912	1029	628	405	1203
4		Bank of India	1436	530	351	184	468
5		Bank of Maharashtra	262	109	45	12	37
6		Canara Bank	1389	568	395	271	675
7		Central Bank of India	799	275	145	108	303
8		Corporation Bank	1348	670	385	161	243
9		Dena Bank	277	78	40	24	53
10		Indian Overseas Bank	245	89	77	62	291
11		Punjab National Bank	2524	914	512	305	782
12		Syndicate Bank	664	258	147	70	177
13		Union Bank of India	1947	796	402	259	579
14		United Bank of India	298	92	66	42	91
15		UCO Bank	666	221	104	86	110
16		Vijaya Bank	556	255	121	67	152
17		State Bank of India	41138	16561	5659	2512	3254
18	Old Private Sector	City Union Bank	504	195	138	79	186
19		Federal Bank	1316	482	237	148	400
20		ING Vysya Bank	2060	939	326	189	372
21		Jammu and Kashmir Bank Ltd.	245	53	36	35	118
22		KarurVysya Bank Ltd.	324	155	90	63	144
23		South Indian Bank Ltd.	728	235	120	51	163
24		Tamil Nadu Mercantile Bank Ltd.	318	96	50	27	64
25		New Private Sector	Axis Bank Ltd	22185	9294	3492	1762
26	Development Credit Bank Ltd		101	29	21	12	20
27	HDFC Bank Ltd		37072	16062	5151	1936	2600
28	ICICI Bank Ltd		30481	13611	5438	2388	6617
29	Indusind Bank Ltd		429	181	116	61	281
30	Kotak Mahindra Bank Ltd		16012	6010	1287	437	756
31	Yes Bank Ltd	939	414	258	135	352	
32	Foreign Banks	HSBC Ltd	15347	6390	3546	1889	4989
33		CITI Bank	4708	2512	893	448	873
34		DBS Bank	1756	767	393	239	823
35		BNP Paribas	1778	829	333	200	451

Source: Data retrieved and Compiled from Google Play Application Store

The banks that were providing mobile banking application for their customers who are using smart phones and the ratings of those mobile banking applications by the customers is shown in the table. From the table it is clear that 17 public sector banks, 7 old private sector banks, 6 new private sector banks and 4 foreign banks were providing such facilities to their customers.

Chart 2: Chart Showing Number of Downloads of Mobile Banking Applications



The above chart shows the number of downloads of the mobile banking application, the number of downloads is given as a categorical data. Where 1 represents downloads ranging from 5000 to 10000 and 2 represents downloads from 10000 to 50000 and so on. Among the number of down loads State Bank of India, Axis Bank Ltd, HDFC Bank, ICICI Bank Ltd, HSBC Bank tops the list and the Development Credit Bank holds the 35th position among the banks. Also among the average downloads the New private Sector banks tops the list, as per average downloads the order being New private sector bank> Foreign Banks> Public Sector Banks> Old private sector banks.

Table 3: Table Showing Sector Wise Analysis of Mobile Banking Application

	Average Downloads	Average Recommendations for application	Average ratio of recommendations to number of raters of the application	Average ratio of number of recommendations to the number of downloads	Mean Weighted average of ratings	Average 5 star rating
Public Sector Banks	315882.35(III)	1654.65 (III)	0.41 (II)	0.0067 (III)	1663.35(III)	3375.53 (III)
Old private	113571.43(IV)	418.14 (IV)	0.31 (IV)	0.0059 (IV)	397.30(IV)	785 (IV)
New Private	1383214.29(I)	10509.14 (I)	0.32 (III)	0.0069 (II)	7558.78(I)	15317 (I)
Foreign Banks	918750.00(II)	4763.25(II)	0.44 (I)	0.0115 (I)	3135.33(II)	5897 (II)

Table 4: Table Showing Sector wise Analysis of Mobile Banking Application Leaving SBI

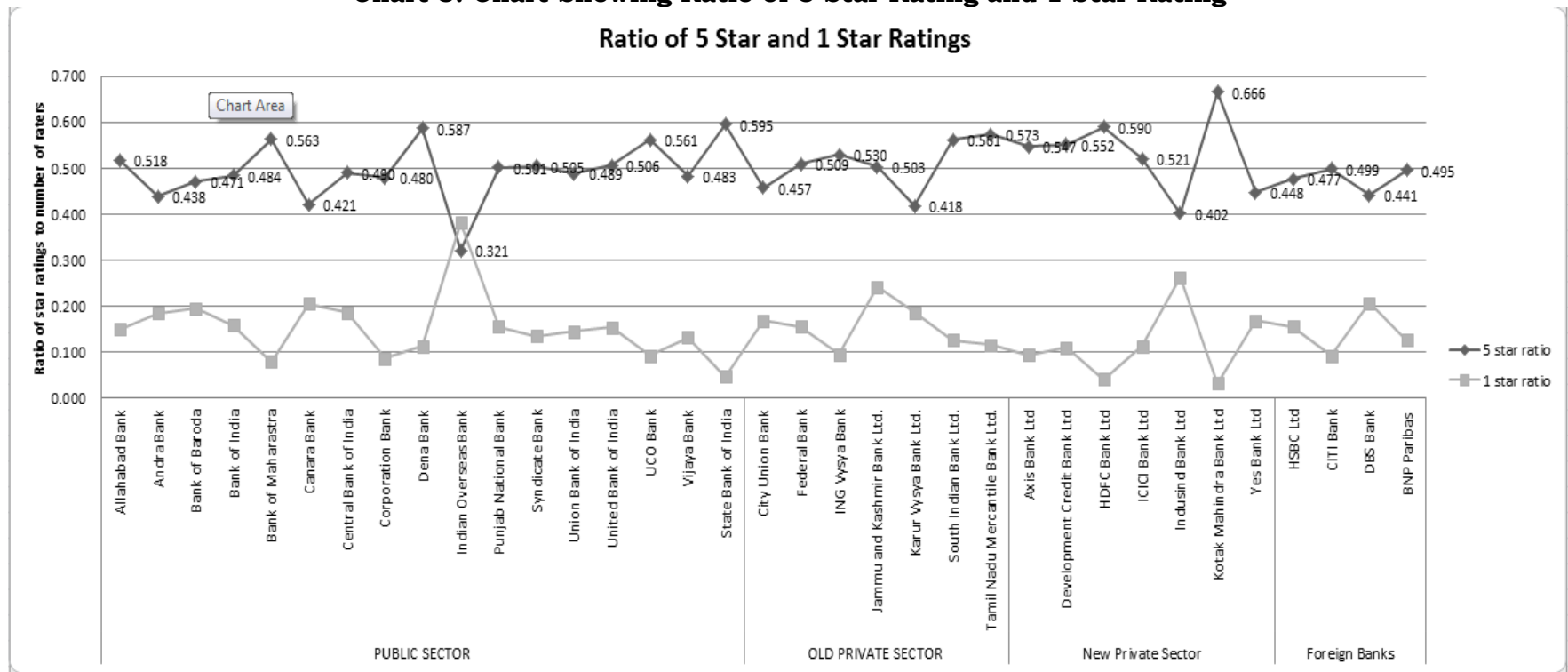
	Average Downloads	Average Recommendations for application	Average ratio of recommendations to number of raters of the application	Average ratio of recommendations to the number of downloads	Mean Weighted average of ratings	Average 5 star rating
Public Sector Banks leaving SBI	148125.35(III)	870.185 (III)	0.42 (II)	0.0068 (III)	1663.35(III)	3375.53 (III)
Old private	113571.43(IV)	418.14 (IV)	0.31 (IV)	0.0059 (IV)	397.30(IV)	785 (IV)
New Private	1383214.29(I)	10509.14 (I)	0.32 (III)	0.0069 (II)	7558.78(I)	15317 (I)
Foreign Banks	918750.00(II)	4763.25(II)	0.44 (I)	0.0115 (I)	3135.33(II)	5897 (II)

The above table shows sector wise analysis of the mobile banking application. The comparison done with the help of average number of people who recommended the application, average ratio of number of people who recommended

the application to the average number of people who actually rated the application, average ratio of number of recommendations to the total number of downloads of the application mean weighted average of the application and average 5 star rating of the application.

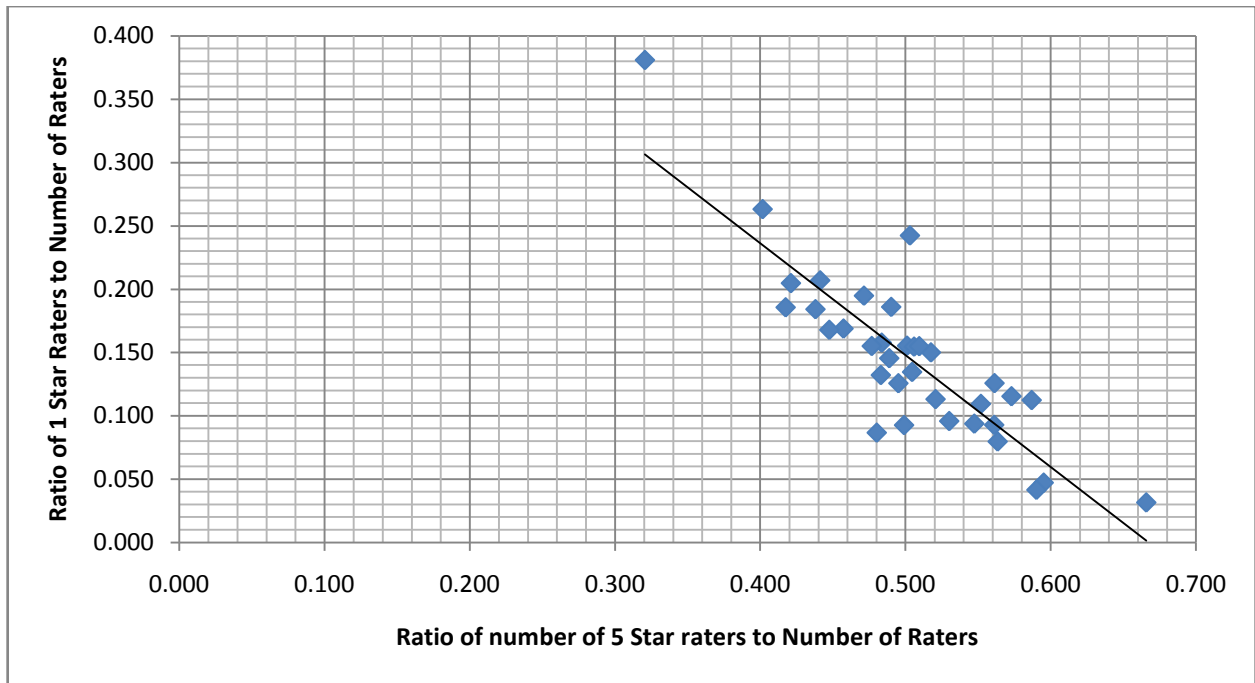
From the above tables it is clear that New Private sector banks are performing consistently well in all types of measurable parameter. The next table has removed the State Bank of India which is an excellent performer in the mobile banking application in a point of view that removing state bank of India will have an impact in the public sector banks. Removing SBI has reduced the average scores of public sector banks to a greater extent but there is no change in the ranking. This shows that the gap between the third and the fourth rank that is the public sector and the old private sector banks is too high so that even after a drastic change in the average of public sector banks the ranks remain unchanged.

Chart 3: Chart Showing Ratio of 5 Star Rating and 1 Star Rating



The above chart shows the ratio of 5 star and 1 star ratings of the mobile banking application to number of raters of the application. From the chart, it is evident that the five star rating of the banking applications were inversely proportional to the 1 star rating. It is inferred that more the lovers (5 star rating) of the mobile banking applications less the haters (1 star rating) and vice versa.

Chart 4: Chart Showing Correlation of 5 Star rating to 1 star rating



The above chart shows ratio of number of 5 star ratings to the number of raters in X axis and the ratio of 1 star number rating to the number of raters in Y axis. The following formula was used to calculate the 5 star and 1 star ratio for the banks

5 star ratio = Number of 5 star ratings / Total Number of raters for the application

1 star ratio = Number of 1 star ratings/ Total Number of raters for the application

For analyzing the 5 star rating and 1 star rating Pearson correlation value is being used there is a perfect negative correlation between 5 star rating and 1 star rating and the correlation coefficient value is -0.86. and the significant value is less than 0.01. Hence it is proven that more the haters (1 star) of the application less the lovers (5 star) of the application and vice versa.

Table 5: Table Showing Weighted Average of Ratings

S.No	Sector of Banks	Bank	Weighted Average of star rating	Rank as per weighted average of rating	Mean Rank
1	PUBLIC SECTOR	Allahabad Bank	211.53	27	19.76
2		Andhra Bank	274.00	24	
3		Bank of Baroda	1504.87	8	
4		Bank of India	745.93	15	
5		Bank of Maharashtra	129.47	32	
6		Canara Bank	774.60	14	
7		Central Bank of India	403.27	19	
8		Corporation Bank	742.67	16	
9		Dena Bank	127.87	33	
10		Indian Overseas Bank	148.47	31	
11		Punjab National Bank	1280.27	9	
12		Syndicate Bank	340.67	21	
13		Union Bank of India	1014.80	11	
14		United Bank of India	148.73	30	
15		UCO Bank	320.53	22	
16		Vijaya Bank	296.60	23	
17		State Bank of India	19812.60	1	
18	OLD PRIVATE SECTOR	City Union Bank	270.53	25	23.28
19		Federal Bank	661.00	17	
20		ING Vysya Bank	1052.27	10	
21		Jammu and Kashmir Bank Ltd.	115.53	34	
22		Karur Vysya Bank Ltd.	185.33	28	
23		South Indian Bank Ltd.	347.00	20	
24		Tamil Nadu Mercantile Bank Ltd.	149.47	29	
25		Axis Bank Ltd	11059.80	4	
26	New Private Sector	Development Credit Bank Ltd	48.53	35	13.42
27		HDFC Bank Ltd	18102.20	2	
28		ICICI Bank Ltd	15637.07	3	
29		Indusind Bank Ltd	241.33	26	
30		Kotak Mahindra Bank Ltd	7306.07	6	
31		Yes Bank Ltd	516.47	18	
32		Foreign Banks	HSBC Ltd	8113.33	
33	CITI Bank		2535.73	7	
34	DBS Bank		955.20	12	
35	BNP Paribas		937.07	13	

The above table shows the ranking of various banks based on the weighted scores of the different star ratings. The mean rankings of the different sector were compared. The average ranking of the foreign banks were 9.25, the next better rank was obtained by new Private Sector banks with average ranking of 13.42, third rank was secured by public sector banks with average ranking score of 19.76 and the fourth rank was obtained by old private sector banks with average rank of 23.28.

Chi Square Test of Hypothesis

H0: There is no significant difference between sector of the banks and their star ratings

H1: There is significant difference between sector of the banks and their star ratings

Table 6: Table Showing number of star ratings of the applications

	5 Star ratings	4 star Ratings	3 star Ratings	2 star ratings	1 star ratings
Public Sector Banks	57384	22807	9285	4700	8750
Old private	5495	2155	10148	592	1447
New Private	107219	45601	15763	6731	14422
Foreign Banks	23589	10498	5165	2911	7136

Table 7: Table showing critical chi square value

Degrees of Freedom	12
Chi Square Value	37709.83
Critical Value at 5% level of significance	21.03

Inference:

The calculated chi square value is much greater than the critical value. Hence, the null hypothesis is rejected. That is the ratings for the mobile banking application differ with respect to the sector of the banks. The difference between observed and expected is higher in case of 4 star ratings of foreign banks. The expected four-star rating for foreign banks is 2213 and the observed 4 star ratings for foreign banks is 10498, the chi square value for four star ratings of the foreign banks is 28452. This shows that the four star ratings of the foreign banks is exceptionally more than the expected value. There is a huge difference in case of five star ratings of the old private sector banks., The expected 5 star ratings for old private sector banks is 10620 and the observed is 5495. The chi square value for five star ratings of the old private sector banks is 2472. This shows that customers are not willing to rate five star ratings for old private sector banks.

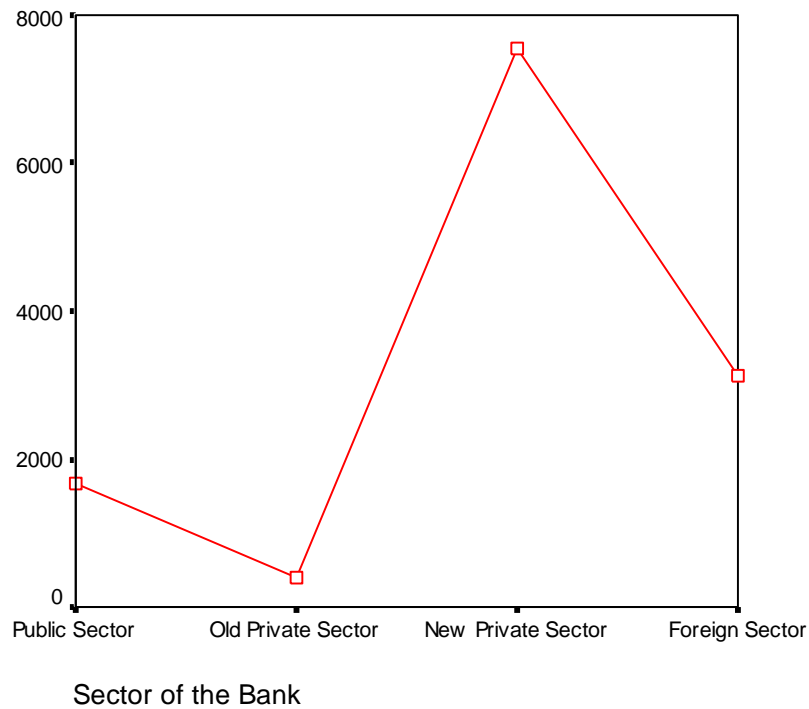
Table 8: Table showing descriptive statistics of various sectors of the Banks

	N	Mean weighted average	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Public Sector	17	1663.34588	4695.828589	1138.905722	-751.02639	4077.71816	127.870	19812.60
Old Private Sector	7	397.30429	342.264380	129.363776	80.76253	713.84604	115.530	1052.270
New Private Sector	7	7558.78143	7618.907814	2879.676477	512.46693	14605.09593	48.530	18102.20
Foreign Banks	4	3135.33250	3402.220746	1701.110373	2278.35992	8549.02492	937.070	8113.330
Total	35	2757.45171	5307.626001	897.152539	934.21839	4580.68504	48.530	19812.60

Table 9: Table showing the significant value of ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	221282764.63	3	73760921.546	3.105	.041

Chart 5: Chart Showing the Means Plot Diagram of Mean weighted average Scores



Inference

The weighted average score of the star ratings were compared using one way ANOVA test.

It was found that there is significant difference between the sector of the banks and their weighted average score of ratings. The Means plot diagram shows that New Private Sector Banks> Foreign Sector Banks> Public Sector Banks> Old Private Sector Banks.

Findings

Among the number of down loads State Bank of India, Axis Bank Ltd, HDFC Bank, ICICI Bank Ltd, HSBC Bank tops the list and the Development Credit Bank holds the 35th position among the banks. Also among the average downloads the New private Sector banks tops the list, as per average downloads the order being New private sector bank> Foreign Banks> Public Sector Banks> Old private sector banks

New Private sector banks are performing consistently well in all types of measurable parameters like average downloads of mobile banking application, average recommendations of the application, mean weighted average of ratings and average 5 star ratings.

The State Bank of India performs exceptionally well among the banking when compared to the weighted average of star ratings. Hence, the banking sector was compared after removing SBI from the public sector group. Removing SBI has reduced the average scores of public sector banks largely but there is no change in the ranking. This shows that the gap between the third and the fourth rank that is the public sector and the old private sector banks is too high so that even after a drastic change in the average of public sector banks the ranks remain unchanged.

The 5 star rating and one star ratings of the mobile banking application is indirectly proportional to each other. The Pearson Correlation value of the 5 star rating and 1 star rating is -0.86. This shows that more the lovers (5 star rating) of the mobile banking applications less the haters (1 star rating) and vice versa.

The mean rankings of the different sector were compared. The average ranking of the foreign banks were 9.25, the next better rank was obtained by new Private Sector banks with average ranking of 13.42, third rank was secured by public sector banks with average ranking score of 19.76 and the fourth rank was obtained by old private sector banks with average rank of 23.28.

The chi square test of significance shows that there is difference between the sector of the banks and the star ratings of their mobile banking applications.

The one way ANOVA test shows that there is significant difference between the sector of the banks and their mean weighted average score of ratings. The Means plot diagram shows the following order of performance and customer satisfaction level according to different sector of banks.

New Private Sector Banks> Foreign Sector Banks> Public Sector Banks> Old Private Sector Banks.

Suggestions:

From the analysis it is clear that, the new private sector banks and foreign banks are doing exceptionally well when compared with the public sector banks and the old private sector banks in the internet mobile banking platform

It is advisable to create bench-marking information within the Industry and to maintain the standard in case of internet mobile banking.

For the open-ended question about the performance of the application the customers responded differently for different sectors of the bank.

The State Bank of India has maximum features when compared with the other banks and most of the comments about it were positive, “APP is best, e pass book is a great addition” is one of the comments made by the user of SBI internet mobile banking application.

Public Sector Banks:

Most of the public sector banks are having major features in the internet mobile banking like account information, NEFT transfer, IMPS person to person transfer, cheque services etc; But the problem with the mobile banking applications of the public sector is that customers are fed up with the performance of it. The users are complaining about that the application is not working asking for improvement in the application.

Old Private Sector Banks:

In case of internet mobile banking application of the old private sector banks the customers are claiming for better features like IMPS and the application should support android new version. These issues could be handled if the application is updated from time to time.

New Private Sector Banks:

The users of the new private sector banks were just satisfied with the mobile banking application and for retaining the customers just satisfaction is not enough, the new private sector banks should think of moving their customers from “Just Satisfied” to “Customer Astonishment”

Foreign Banks:

The internet mobile banking applications of foreign banks are user friendly but there are certain minor issues that need to be addressed such as “gallery closes unexpectedly, app not suitable for certain smart phones” etc. These technical issues could be handled with the help of Information Technology team of the banks.

Conclusion:

“The Competitors are not enemies. They are the one who make us understand where we are weak” - Sathguru.

The saying fits for the banking industry also. Knowing the strengths and weakness of the banks will make them competitive. Survival of the fittest being the born instinct of individual species, the same instinct holds good for financial institutions like banks also. Compete or die, perform or perish all these quotes could be introduced in the banking arena as a part of building a healthy competition between the different sectors of the banks. This article analyzed the mobile banking application of different sectors of the bank and compared and contrasted the banks with the help of ratings done by the users of the application. The results were discussed and the banks were rated according to the weighted average score. This article would bring a ray of light in to the new era of banking that is the mobile banking.

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