A Study Of Consumer Perception On The Use Of E-Technology In The Retail Banking Sector : A Comparative Study Of Public Sector And Private Sector Banks

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INTRODUCTION

Rapid changes in technology increased competition by new players; product innovations in the financial services environment have led to a market situation, where there is an intense battle for customer's satisfaction. Most of the initiatives regarding technology are aimed at providing better and more efficient customer service by offering multiple options to the customers. In order to rise up to the expectations of the consumers, it is necessary to enhance the understanding of consumer behavior patterns.

NATURE OF PUBLIC AND PRIVATE SECTOR BANKS

The use of technology in banking is actually reducing cost per transaction for the customer, which is apparent from the fact that large IT investments are being made by new-generation private sector banks. Banks that use technology more intensively are more productive and have higher productivity. Private sector banks have recorded growth in personal loan category at 67%[1], while public sector banks recorded a growth at 26.84%[1]. On the other hand, the public sector banks traditionally have been handling large base of small clients, and hence, their operations include large volumes of transactions, where average value of each transaction is low. Still, public sector banks are dominating in the retail banking sector. Some important characteristics of both sectors of banks are compared below:

PUBLIC SECTOR BANKS	PRIVATE SECTOR BANKS
1. Low value per transaction**.**	**1**. High value.
2. Large number of transactions.	**2.** Small number of accounts.
3. High processing cost**.**	**3.** High acquiring cost.
4. Less use of IT.	**4**. High use of technology tools.
5. Average age of employee is higher.	**5.** Average age of employee is lower.

Based on the existing level of computerization of public sector banks and availability of technological infrastructure on one hand, they are tapped in the computerization process of the vast number of geographically scattered branches, and on the other front, they are facing acute competition from new generation private banks, resulting in the erosion of their business profits and market share. Excessive and unskilled manpower is the main threat to public sector banks. Private sector banks provide competitive environment for its workforce by motivating them. They have lesser, but more productive and technically sound employee force.

APPRAISAL OF USER PERCEPTION & E-BANKING

Bank is a commercial entity, so new generation banking has adopted internet banking and other technical infrastructure in order to increase customer loyalty and provide greater reach to customers. Technical innovation in

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[1] R.K.Uppal, Rimpi Kaur (2007), *"Banking in new millennium"*.

banking is mainly based on the internet and online banking, which is often described as E-learning. The Internet is often described as a *'network of networks'* born in 1970s. With the popularity of PCs, it has presented an opportunity and challenge for the banking industry for new development of online banking. Most of the customers /users have heard a lot about online banking, but probably, have not tried it. We still pay our bills by depositing cheques at our bank branch due to individual preferences. Online banking is not out to change our money habits, but it gives the option of replacing time consuming traditional banking with e-banking. The potential consumers of today have much more knowledge and opinion about software solutions than what customers had in the past. Online banking is one of the important aspects of change in the banking technology from traditional to the modern areas. There has been a paradigm shift in global banking after e-banking became the mode of delivery. It offers various services such as mobile banking, e-mail banking, ATMs, Electronic Data Interchange (EDI), Electronic Fund Transfer, etc. For consumer perception, authentication within the internet application is critical because it creates many doubts in the minds of consumers about safety of personal data.

❁ **E-banking**[2]: It is the use of a computer to retrieve & process banking data & to initiate transactions directly with a bank via telecommunication network (Even the internet).

OBJECTIVES OF THE STUDY

1. To identify factors affecting consumer preferences for use of technology in retail banking.
2. To assess the relative importance of these factors in terms of consumer perception.
3. To compare the consumer perception in terms of different technology provided by public/private sector banks.
4. To evaluate the areas of strength and weaknesses of public/private sector banks in terms of technology offered to customers.
5. To suggest remedial measures for future growth of E channels in retail banking.

SCOPE OF THE STUDY

❁ The study is specific to Bhavnagar, a popular city & district of Gujarat.
❁ The study is related to consumer perception towards the use of technology offered by banks.
❁ The study includes the different factors affecting consumer satisfaction and modern technology provided by banks such as convenience and reliability.

NEED FOR THE STUDY

In the new millennium, the growth of the Internet & commerce is changing everyday, so all the banking transactions also need to be performed electronically, i.e. whether it is to pay bills, transfer your funds, to check balance, to get advice or to apply for loans. On the other side, technology is popular because of less cost of operation, increase in banking habits & number of transactions, lack of time with customers, improvement in customer services, etc. However, individual differences, computer literacy, personality and demographic variables reflect the users' intention to adopt E-banking. Hence, there is a need to fill this gap that though e-technology is provided by the bank, whether it is used effectively by customers? Why some people have not accepted the technology fully, though it provides many advantages to banking customers? This research paper attempts to fill this gap of perceived usefulness & perceived ease of use, by identifying various factors, which will increase the usage of technology among the customers in India.

HYPOTHESIS (ALTERNATE H_1)

There is a significant difference in the consumer perception on use of technology offered by public sector banks and private sector banks.

REVIEW OF LITERATURE

India's growing population, with immense potential, has established itself as a buyer's hub, where there is a huge market potential for different products and services offered by the retail banker. It is a wake-up call for the retail

[2] R.K.Uppal, N.K.Jha (2008), *"Online banking in India"*.

banking segment due to the opening up of the economy and the entry of foreign banks with new-generation private sector banks. With the advent of new technology, there is more integration of global word and financial market economy.The impact of IT on bankers' performance is very significant for Indian banks. A study shows that it is very effective for improving productivity and profitability. There is a rising demand for the IT budget. There is parametric & stochastic frontier approach to measure productivity due to input levels and technology efficient level of output (Chakbrathi & Chavla, 2005).According to Verma, Gupta & Sharma (2007), Public sector banks have initiated the process of technological advancement by computerization of branch operations, but new generation private banks have well focused business vision, with technology integral component in it.Most of the initiatives regarding technology are aimed at meeting customer's expectations by offering multiple options at lower cost (R. K. Uppal, 2008). It is a well researched fact that uses of technology in banking is actually reducing cost per transaction. The need for the hour is that, public sector banks should adopt technology and caution approach in order to fight effectively with the new-generation private sector banks (T. M. Bhasin, 2003) .

Recent studies have shown that different e-channels like ATMs, debit, credit cards, tele-banking, mobile banking, smart cards, etc. are changing the concept of banking. Private Banks are attracting the customer by various such facilities; even public sector traditional banks have initiated this process of transformation. Further, this paper suggests measures for improvement of efficiency in the Indian nationalized banks (Uppal & Rimpi Kaur , 2007).

Ravikumar Jain & Satish 2007 have recognized that banking industry allover the world has greatly benefited by the ongoing IT revolution. They have cited several articles focusing on IT interventions in the global banking sector. They have also mentioned emerging trends in IT with mobile banking. Their study mentioned different risks and challenges involved in IT enabled banking, with exponential growth of cyber crimes, banking online has several drawbacks that can prove to be detrimental in the development of online banking . He also advocated certain tips for the use of safe online banking experience, such as antivirus programmes, avoiding the use of online banking in the internet cafes, etc. There are different dimensions of paperless banking in a globalized scenario, with various advancements in technology. Dr. R.K. Uppal and Dr. Mishika Jha took initiative to mention different benefits provided by internet banking, infrastructure, and to analyze the role of online banking in the Indian context. Maniappan G.P. (2002) examined the impact of IT and other banking reforms on output of banks. He studied the paradigm shift in the banking sector by effective remedial measures such as reduction in NPAs, sound capital base, etc. Shroff, F.T. (2007) analyzed the application of technology & product innovations in the Indian banking structure, with comparative examples of the banking sector in other countries of the world. Shastri (2001) suggested the use of ATMs & introduction of IT more than in the past. According to him, technology has brought changes in the functioning of the banks & thereby, saves a lot of time & efforts. Further, technology also brings some challenges for banks about consumer satisfaction.

Thus, it can be concluded from the brief review that most of the study is related to IT revolution for banks & retail banking in general. However, the present study is an attempt to study E-banking & IT revolution from the point of view of customer perception offered by public and private sector Indian banks.

METHODOLOGY

For the current study, responses were gathered through a questionnaire on a sample size of 100, chosen on the basis of convenience sampling from two public sectors, and two private sector banks in the Bhavnagar, city of Gujarat, situated in the western region of India, with diverse economic population. The survey was conducted in the month of April-May 2010. State Bank of India & Dena Bank represent the public sector banks, while AXIS Bank and ICICI Bank represent private sector banks. The sample size of 100 was divided equally, as 50 from two public sector & 50 from two private sector banks.25 customers represented each bank from different branches randomly selected from Bhavnagar city. This is an analytical study based on primary data collected, and self administered by the researcher. Secondary data were collected from various published and unpublished sources such as bank documents, brochures, magazines, manuals, journals and the Internet.

DATA ANALYSIS AND FINDINGS

The perception and satisfaction of bank customers was evaluated on the basis of 25 parameters. The degree of perception towards the use of technology was quantified by using 5-point Likert scale. Each parameter was identified for the study and is based on the following dimensions :

1. Monetary Transactions: Refers to different monetary transactions offered by banks using e-channels.

2. Efficiency: The second dimension is identified with effective & efficient services provided to customers using e-channels.

3. Financial Services: The third dimension is associated with different financial services offered by banks due to the use of online technology by banks.

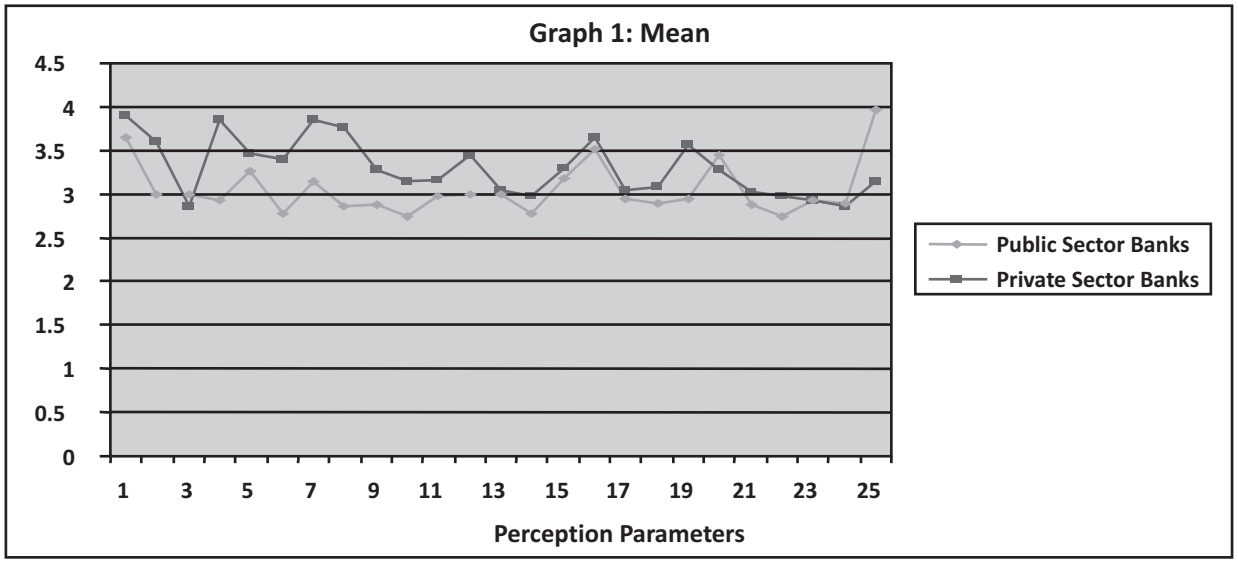
4. Reliability: The dimension reliability takes into consideration the dependability of online services offered.

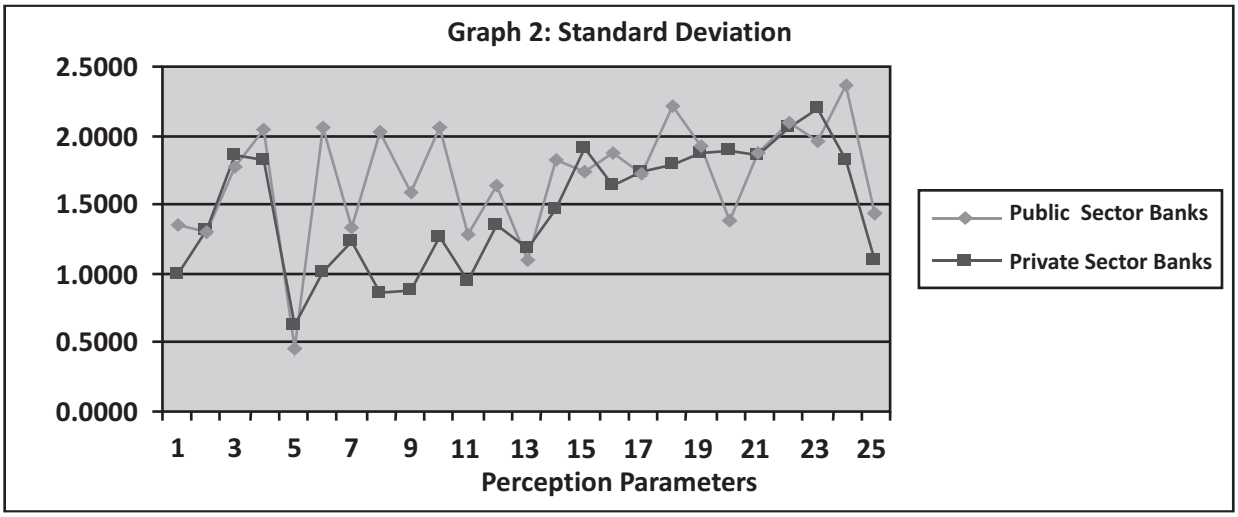
5. Motivation: It is associated with efforts taken by banks to encourage use of technology among bank customers. The parameters have been quantified by calculating mean scores, standard deviation, and coefficient of correlation, with regard to public and private sector banks (Table 1).

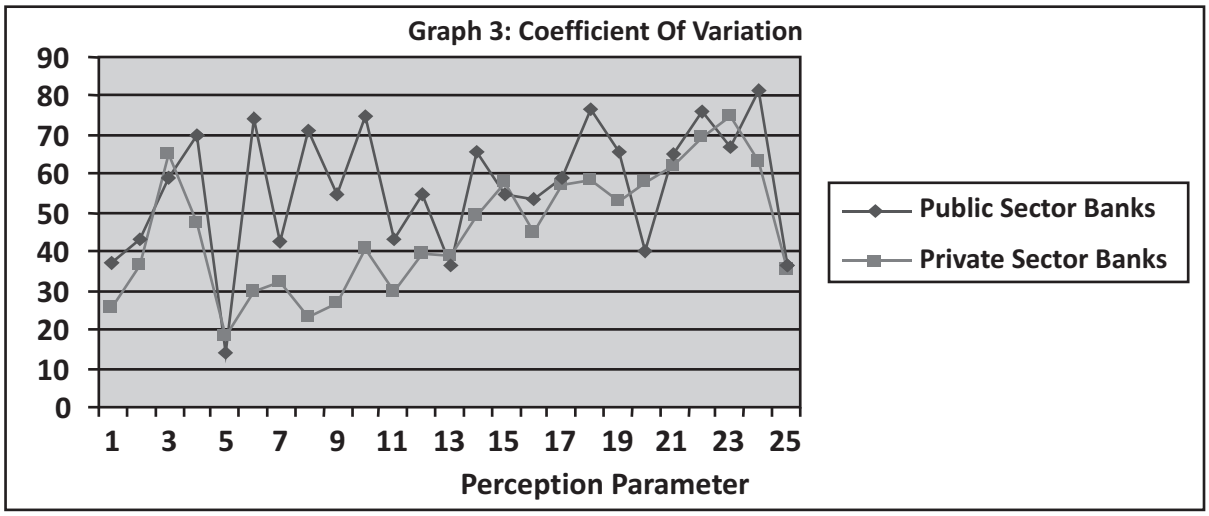
Correlation analysis indicates the relationship between public and private sector banks. The relative measures for

Table 1: Statistical Responses Of Consumer Perception

		Mean	Mean	Std.Dev.	Std.Dev.	Coeff.Var.	Coeff.Var.
NO.	PARAMETER	Public sector	Private sector	Public sector	Private sector	Public sector(%)	Private sector(%)
	MONETARY TRANSACTIONS						
1	Bills Payment	3.64	3.9	1.3529	0.9950	37.17	25.51
2	Updated Information	3	3.6	1.2961	1.3115	43.2	36.43
3	Accessible	3	2.86	1.7664	1.8602	58.88	65.04
4	Transfer Of Funds	2.92	3.84	2.0380	1.8260	69.8	47.55
5	Receive Alerts	3.26	3.46	0.4609	0.6232	14.14	18.01
	EFFICIENCY						
6	Convenience	2.78	3.4	2.0571	1.0198	74	29.99
7	Customer Correspondence	3.14	3.84	1.3343	1.2387	42.49	32.26
8	Timeliness	2.86	3.76	2.0348	0.8616	71.15	22.92
9	Cost Effective Service	2.88	3.28	1.5829	0.8727	54.96	26.61
10	Network Coverage	2.74	3.14	2.0524	1.2729	74.91	40.54
11	E-Shopping	2.98	3.16	1.2805	0.9457	42.97	29.93
12	Technical Efficiency	3	3.44	1.6371	1.3588	54.57	39.5
13	Mobile banking	3	3.04	1.0954	1.1825	36.51	38.9
	FINANCIAL SERVICES						
14	Loan Application	2.78	2.98	1.8307	1.4696	65.85	49.31
15	On-Line Trading	3.18	3.3	1.7342	1.9053	54.54	57.74
16	Demat Account	3.52	3.64	1.8787	1.6341	53.37	44.89
17	Tax Advisory Services	2.94	3.04	1.7310	1.7431	58.88	57.34
18	Insurance	2.9	3.08	2.2159	1.7982	76.41	58.38
	RELIABILITY						
19	Accuracy	2.94	3.56	1.9278	1.8779	65.57	52.75
20	Privacy	3.44	3.28	1.3879	1.8872	40.35	57.54
21	Hidden Cost	2.88	3.02	1.8723	1.8654	65.01	61.77
	MOTIVATION						
22	Personal contact programme	2.74	2.98	2.0910	2.0687	76.31	69.42
23	Advertisement	2.92	2.92	1.9580	2.1894	67.05	74.98
24	Demo At The Counter	2.9	2.86	2.3643	1.8167	81.53	63.52
25	Goodwill	3.96	3.14	1.4417	1.1047	36.41	35.18







correlation between two types of banks is given by Karl Pearson's coefficient of correlation(r) (Table 2).

The Graphs 1- 3 have been drawn up to facilitate the comparison.The Z test has been adopted to test the significance of

Table 2: Correlation Analysis -Response Of Consumer Perception		
NO.	**PARAMETER**	**CORRELATION (r)**
	MONETARY TRANSACTIONS	
1	Bills Payment	0.85
2	Updated Information	0.74
3	Accessible	0.5
4	Transfer Of Funds	0.67
5	Receive Alerts	0.61
	EFFICIENCY	
6	Convenience	0.5
7	Customer Correspondence	0.62
8	Timeliness	0.46
9	Cost Effective Service	0.56
10	Network Coverage	0.6
11	E-Shopping	0.53
12	Technical Efficiency	0.84
13	Mobile Banking	0.67
	FINANCIAL SERVICES	
14	Loan Application	0.85
15	On-Line Trading	0.97
16	Demat Account	0.98
17	Tax Advisory Services	0.88
18	Insurance	0.81
	RELIABILITY	
19	Accuracy	0.62
20	Privacy	0.88
21	Hidden Cost	0.95
	MOTIVATION	
22	Personal Contact Programme	0.75
23	Advertisement	0.89
24	Demo At The Counter	0.77
25	Goodwill	0.72
*Refer To Annexure 1		

co-efficient of variation percentages (Table 3).

PARAMETER WISE INTERPRETATION OF DATA

1. Payment Of Bill: Bill payment through e-channels is very popular among the customers of private sector banks. This is evident from the fact that the mean scores of the private sector banks is 3.9 times higher than it is for the public sector banks (3.64). The standard deviation regarding payment of bill being 1.3529 (for public sector) & 0.9950 (for private sector) seems to be different. This is further confirmed by the coefficient of variation, which is 37.17% & 25.51% respectively. There is a high positive correlation in the consumer perception pattern, which means consumer perceptions vary in the same direction for both public and private sector banks.

2. Updated Information: Private sector banks more effectively provide updated information on various monetary transactions through e-channels as compared to public sector banks. The mean score of the private sector banks is 3.6,

Table 3: Z Test Analysis -Response Of Consumer Perception		
NO.	**PARAMETER**	**Z value**
	MONETARY TRANSACTIONS	
1	Bills Payment	2.586*
2	Updated Information	1.198
3	Accessible	0.702
4	Transfer Of Funds	2.634*
5	Receive Alerts	1.691
	EFFICIENCY	
6	Convenience	5.511*
7	Customer Correspondence	1.918
8	Timeliness	6.453*
9	Cost Effective Service	4.643*
10	Network Coverage	4.035*
11	E-Shopping	2.491*
12	Technical Efficiency	2.237*
13	Mobile Banking	0.448
	FINANCIAL SERVICES	
14	Loan Application	2.01*
15	On-Line Trading	0.402
16	Demat Account	1.215
17	Tax Advisory Services	0.188
18	Insurance	1.875
	RELIABILITY	
19	Accuracy	1.523
20	Privacy	2.446*
21	Hidden Cost	0.362
	MOTIVATION	
22	Personal Contact Programme	0.668
23	Advertisement	0.788
24	Demo At The Counter	1.742
25	Goodwill	0.243
*Refer To Annexure 2		

whereas, that of the public sector bank is 3, with a difference of 30 basis points. It indicates that private sector banks are more accurate in providing recent and new information to their customers. The standard deviation of the public sector banks is 1.2961, which is slightly lower than the private sector banks, i.e. 1.3115. This is further stressed by the coefficient of variation, which is 43.2% (public sector) & 36.43% (private sector). There is a moderately high positive correlation in consumer perception pattern.

3. Accessible: In terms of accessibility of e-channels, both public and private sector banks are almost similar. The public sector banks seems to score very marginally over the private sector banks; i.e. mean score of the public sector bank is 3, whereas, the private sector bank scored 2.86. The standard deviation being 1.7664 & 1.8602 respectively does not seem to be divergent. This is this is further confirmed by the coefficient of variation, which is 58.88 % (public sector) & 65.04% (private sector). There is positive correlation in the consumer perception pattern.

4. Transfer Of Funds: With reference to *'Transfer of funds'* using e-channels, private sector banks are perceived to be

better than public sector banks. It is comparatively much easier to transfer funds through e-channels in private sector banks. This is evident from the fact that the mean score of the private sector bank is 3.84,which is higher than that of the public sector banks , which scored 2.92.The standard deviation regarding payment of bill being 2.0380 (for the public sector) & 1.8260 (for the private sector) seems to be different. This has been emphasized by the coefficient of variation, which is 69.8% & 47.55% respectively. There is a moderately high positive correlation in the consumer perception pattern.

5. Receiving Alerts: Now-a-days, banks are sending important transaction alerts to their regular customers regarding payment of bill, premium, via e-mail or mobile, etc. The mean score of the public sector bank is 3.26, which is marginally lower than the private sector banks' score of 3.46, with a difference of 10 basic points. The standard deviation being 0.4609 & 0.6232 respectively does not seem to be significantly divergent, which is confirmed by the coefficient of variation, which is 14.14 % (public sector) & 18.01% (private sector). There is moderately high positive correlation in the consumer perception pattern.

6. Convenience: Regarding this parameter, private sector banks are perceived to be much better than public sector banks. Location of ATMs is well selected by private sector banks, which offer maximum convenience to their customers. It is reflected in mean scores of private sector banks, which is 3.4 over 2.78 mean score of the public sector banks. The standard deviation concerning the rating pattern is 1.0198 (private) & 2.0571 (public) , indicating a high degree of divergence. This has been confirmed by the coefficient of variation, which is 74 % (public sector) & 29.99% (private sector). There is a positive correlation in the consumer perception pattern.

7. Customer Correspondence: There is a major difference in terms of instant feedback provided by banks using e-channels, i.e. through E-mail/mobile banking. The mean score of the public sector bank is 3.14, which is lower than the private sector banks, which is 3.84, with a difference of 35 basic points. The standard deviation being 1.3343 &1.2387 respectively, does not seem to be significantly divergent, the coefficient of variation is 42.49% (public sector) & 32.26% (private sector). There is a moderately high positive correlation in the consumer perception pattern.

8. Timeliness: The private sector banks appear to provide better time saving services while operating accounts, i.e. majority of the customers of private banks are of the opinion that e-channels are time saving, while operating their accounts regularly. It is evident from the mean score of private sector banks, which is 3.7 over 2.86 mean score of the public sector banks. The standard deviation is 0.8616 (private) & 2.0348 (public), showing a high degree of divergence, which is confirmed by coefficient of variation, which is 71.15% (public sector) & 22.92% (private sector). There is a positive correlation in the consumer perception pattern.

9. Cost Effectiveness: With regard to the cost-effectiveness of the debit and credit card services, private sector banks are scoring high as compared to the public sector banks. Further, there are reasonably high charges of services in public sector banks. The mean score of the private bank is 3.28, which is comparatively higher than the public sector i.e. 2.88. It is further confirmed by standard deviation, which is 0.8727 & 1.5829 respectively. The coefficient of variation is 54.96% (public sector) & 26.61% (private sector), which is showing a high positive correlation in the consumer perception pattern.

10. Network Coverage: The private sector banks are perceived to be better in providing network coverage over the public sector banks. This is evident from the fact that the mean score of the private bank is 3.14, whereas, that of the public sector banks is 2.74, with a difference of 20 basic points, which is not very significant. Most of the public sector banks are facing poor network coverage, which ultimately affects their service quality. The standard deviation being 1.2729 & 2.0524 respectively, does not seem to be significantly divergent, this has been further emphasized by the coefficient of variation at 40.54% (private sector) & 74.97% (public sector). There is a positive correlation in the consumer perception pattern.

11. E - Shopping: With respect to e-shopping, private banks are scoring slightly better than the public sector banks. The mean score of the private banks is 3.16, whereas that of public sector is 2.98. Even customers of private banks are availing more online shopping services than the public sector bank customers. The standard deviation of 0.9457 (private) & 1.2805 (public) shows a marginal degree of divergence, which is affirmed by the coefficient of variation, which is 29.93% (private sector) & 42.97% (public sector). There is a positive correlation in the consumer perception pattern.

12. Technical Efficiency: It is the common complaint with regard to technical efficiency of ATMs and smart cards in public sector banks, customers are facing many technical problems while operating ATM cards & other services through e-channels in the public sector banks. Regarding this parameter, private sector banks have an advantage over the public sector. The mean score is 3 (public) & 3.44 (private), there is a difference of 22 basis points. The standard deviation is 1.3588 (private) & 1.6371 (public), indicating a moderate degree of divergence, which has been emphasized by the coefficient of variation, which is 54.57% (public sector) & 39.5% (private sector). There is a high degree of positive correlation in the consumer perception pattern.

13. Mobile Banking: Both the sector banks are showing almost similar response from their respective customers towards the use of mobile banking. Private bank customers are better in the use of latest technology, than public sector bank customers. However, the use is limited and restricted. Mean score of public sector banks is 3, whereas that of the private sector banks is 3.04. The standard deviation being 1.0954 & 1.1825 respectively, does not seem to be divergent. The coefficient of variation is 36.51% (public sector) & 38.9% (private sector). There is a high degree of coefficient of variation in consumer perception pattern.

14. Loan Application: The private sector banks are slightly better regarding effective processing of loan applications using e-channels as highlighted by the mean score of 2.98 (private) & 2.78 (public). There is a difference of 10 points, indicating moderate difference. The standard deviation 1.4696 & 1.8307 respectively indicates slight divergence, which is proven by the coefficient of variance - 49.31% & 65.85% respectively. There is a very high degree of positive correlation in the consumer perception pattern.

15. Online Trading: E-channels are very useful for conducting on-line buying and selling of shares and other securities. It can effectively provide updated and accurate market news and analysis. In this context, there is no significant difference between the public and private banks. The mean score is 3.18 (public) & 3.3 (private), there is a difference of 6 basis points. The standard deviation is 1.9053 (private) & 1.7342 (public), indicating slight divergences, which has been confirmed by coefficient of variation at 54.54% (public sector) & 57.74% (private sector). There is almost perfect positive correlation in consumer perception pattern.

16. Demat Account: Demat account is a very common facility provided by both the sector banks to their customers through e-channels. Majority of the customers of both the sector banks are making use of this facility. Hence, there does not seem to be any significant difference between public and private sector banks. The mean score is 3.52 (public) & 3.64 (private), there is a difference of 6 basis points. The standard deviation being 1.8787 & 1.6341 respectively does not seem to be divergent. The coefficient of variation is 53.37% (public sector) & 44.89% (private sector). There is positive correlation in consumer perception pattern.

17. Tax Advisory Services: With regard to tax advisory services, private bank customers are making better use of tax consultancy than public sector bank customers. However, the difference is slightly higher than the public sector banks. The mean score of the public sector banks is 2.94, whereas, that of the private sector banks is 3.04. The standard deviation is 1.7310 & 1.7431 respectively, which is slightly divergent , further affirmed by the coefficient of variation, which is 58.88% (public sector) & 57.34% (private sector). There is a high degree of positive correlation in consumer perception pattern.

18. Insurance: In the 21st century, insurance is a very popular financial service provided even by banks through e-channels. In this area also, the private sector banks are performing better, as more customers are availing insurance facility from private banks through e - channels. The public sector banks have a mean score of 2.9 & the private sector banks have a score of 3.08, with a difference of 9 points in favor of private banks. The standard deviation being 2.2159 & 1.7982 respectively, which shows slight divergence. The coefficient of variation is 76.41% (public sector) & 58.38% (private sector). There is a high positive correlation in the consumer perception pattern.

19. Accuracy: With regard to accurate and error free information, private banks are perceived to score better than public sector banks. This is evident from the mean score of public sector banks, which is 2.94, whereas private sector banks earned a score of 3.56.The standard deviation is 1.9278 & 1.8779 respectively, which is slightly divergent, further affirmed by the coefficient of variation, which is 65.57% (public sector) & 52.75% (private sector). There is a moderately high degree of positive correlation in the consumer perception pattern. Hence, private bank e-channels are more reliable.

20. Privacy: The public sector banks appear to provide better safety and security of data and personal information provided by customers. This is evident from the mean score of the public sector banks, which is 3.44, whereas private sector banks got a score of 3.28, with a difference of 8 in favor of public sector banks. The private sector does not ensure privacy and efficiency as public sector banks. The standard deviation is 1.3879 & 1.8872 respectively; it is further affirmed by the coefficient of variation, which is 40.35% (public sector) & 57.54% (private sector). There is a high degree of positive correlation in the consumer perception pattern.

21. Hidden Cost: Most of the customers agreed that the private sector banks charge more hidden costs while dealing through e-channels, as highlighted by the mean score of 3.02 (private) & 2.88 (public), there is a difference of 7 points, indicating moderate difference. The standard deviation 1.8654 & 1.8723 respectively indicates slight divergence, which is proved by the coefficient of variance 61.77 % (Private) & 65.01% (public) respectively .There is a very high degree of positive correlation in the consumer perception pattern.

22. Personal Contact Programme: The private sector banks score over the public sector banks with regard to this parameter. They are conducting more effective personal contact programme than the public sector banks. However, the difference is marginal. The mean score of public sector banks is 2.74, whereas, the score of the private sector banks is 2.98, with a difference of 12 base points. The standard deviation is 2.0910 & 2.0687 respectively; it is further confirmed by the coefficient of variation, which is 76.31% (public sector) & 69.42% (private sector). There is a high degree of positive correlation in the consumer perception pattern.

23. Advertisement: Advertisement about the technical expertise of a bank is well placed by both the banks to make their customers aware about e-channels. Hence, there does not seem to be any difference between public and private sector banks. The mean score is 2.92 (public) & 2.92 (private), with equal base points of 146. The standard deviation being 1.9580 & 2.1894 respectively does not seem to be divergent. However, the coefficient of variation is 67.05% (public sector) & 74.98% (private sector), which shows a slight difference. There is a moderately high positive correlation in the consumer perception pattern.

24. Demo At The Counter: Sometimes, demo about e-banking is provided at the counter to the new customers, who are not so tech savvy. On this front, the public sector banks are scoring marginally better than the private sector banks, with the difference of 2 points. This is evident from the mean score of public sector banks, which is 2.9, whereas private sector bank scored 2.86. The standard deviation is 2.3643 & 1.8167 respectively; it is further affirmed by the coefficient of variation, which is 81.53% (public sector) & 63.52% (private sector). There is a high degree of positive correlation in the consumer perception pattern.

25. Goodwill: It is a well known fact that with more use of technology, banks are earning a good reputation in the market. And it is accepted by majority of the private bank customers, with a mean score of 3.14. However, the public sector bank customers are of the opinion that poor technical service will negatively affect their goodwill in the market. It is evident from the mean score of public sector banks, which is 3.96, with a difference of 41 base points. The standard deviation being 1.1047 (private) & 1.4417 (public) respectively, seems to be divergent. Further, the coefficient of variation is 35.18% (private sector) & 36.41% (public sector).But there is almost perfect positive correlation in the consumer perception pattern.

DATA ANALYSIS

The above parameter wise analysis indicates the positive perception for private sector banks regarding better use of technology. Though public sector banks are scoring high in accessibility, Privacy and demo at the counter to their customers, private banks score over all other parameters.

- After statistical analysis, it shows a significant difference in the mean score between two types of banks, specifically with respect to following parameters: Transfer of Funds, Convenience, Customer Correspondence, Timeliness, Accuracy, Updated Information, Cost Effective Services, Network Coverage, Technical Efficiency.
- Further difference has been observed in the standard deviation and co-efficient of variation in the rating pattern between two types of banks, particularly for the following parameters; Bill Payment, Customer Correspondence, Transfer of Funds, Convenience, Timeliness, Cost Effective Services, Network Coverage, E-Shopping, Tech-Efficiency, Loan Application, Insurance, Accuracy, Goodwill.
- It indicates that public sector banks are not using technology aggressively because of partial computerization,

whereas, new private sector banks have 100% of their business computerized. Several transactions, which are routine in nature, such as payment of bills, transfer of funds, online trading, demat account etc.; private sector banks are scoring better than public sectors in these areas.

❁There was a high degree of divergence in the standard deviation and co-efficient of variance with respect to the parameters : Transfer of Funds, Convenience, Timeliness, Cost Effective Services, Network Coverage- for public sector banks. Due to this wide variation of responses, the public sector banks need to tackle these issues as per the customers' requirements.

❁However, the public sector banks are perceived to be better than their private sector counterparts with regards to the following parameters: Accessible, Privacy, and Demo at the Counter.

❁There was a high degree of divergence in terms of S.D. and co-efficient with regards to the parameters: Receiving alerts, Mobile Banking, Online Banking, and Advertisement- for private sector banks, though the mean score was much higher than that scored by the public sector banks. This is another area where private banks need to attend and accordingly deal with customers.

❁The coefficient of correlation was calculated to understand whether the customer perception on use of technology is same across public and private sector banks. After calculation of r, testing of correlation using PE indicates that the co efficient of correlation is accepted (Annexure 1).

Out of the given 25 parameters, there was almost perfect positive correlation for 3 parameters, a moderately positive correlation for 11 parameters, and very high positive correlation for 11 parameters. This indicates that a significant difference exists in the consumer perception on use of technology between two types of banks.

❁ Service charges of e-channels should be reasonable, which makes it more cost effective, such as ATMs are most cost effective as compared to debit/credit cards.

❁ The banks should set up ATMs at convenient locations and should ensure that they are in good operating condition, in order to encourage maximum usage.

❁ The banks should disclose full information to the customers with respect to service charges, interest, penalty, if any etc. , and there should not be any hidden charges for the use of e-channels.

❁ Bank should make e-channels popular by providing innovative products such as, loan through e-channels to customers, online market news, analysis and trading, tax consultancy and online insurance facility.

❁ Improvement in technical efficiency and better network coverage is very essential for successful use of e-channels. It is through such measures that the common problems faced in case of public sector banks, particularly in far off places, can be addressed.

CONCLUSION

Retail banking is a mass market banking, where individual customers' diverse needs are fulfilled at the local level i.e. by providing multiple products. It has been facilitated by growth of banking technology and automation of banking process. From the study, it can be concluded that both banks are appearing to provide attention towards customer expectation with multiple ranges of products using innovative technology.

❁Key areas of *strength*, as observed in case of *Public Sector Banks* are: Accessible, Privacy, and Demo at the Counter.

❁The area of *significant improvement* possible, applies to the following areas: Transfer of funds, Convenience, Timeliness, Cost Effective Services, and Network Coverage.

❁On the other hand, key areas of strength in *Private Sector Banks* are: Bill Payment, Customer Correspondence, E-Shopping, Technical Efficient Services, Loan Application, Insurance, Accuracy, and Goodwill.

❁The area where improvements are required are with reference to: Receiving Alerts, Mobile Banking, Online Trading, and Advertisement.

It is evident that most of the customers prefer e-channel with time and cost utility. They are not fully aware about the operational part of e-channels. After realizing the potential of e-banking, banks will have to change in order to grab the opportunity and to face the challenges posed by technology. Though the number of customers using technology may not be large, it is just a matter of time and efforts inculcated by banks to make e-technology popular among customers. Other customers will also want to adopt technology in banking transactions over a period of time as personal contact programme, advertisement, and demo at the counter is provided by banks. It makes the use of technology popular, easier and cheaper. From the study, it can be inferred that there is a positive perception on the use of technology by both

bank customers, however, public sector banks have to make their services more effective to meet the customers' need in the era of computerization and technology. There is no doubt that the public sector banks have initiated the process of technology advancement with risk free , safe and secure technology environment for banking transactions , however, they will have to make further considerable efforts to meet customer needs in competition with new generation private sector banks. It is the right time for customers to get affordable and convenient electronic banking services.

ANNEXURES

ANNEXURE 1

Formula for Probable Error (PE) of Karl Pearson's coefficient of correlation :

$$PE = 0.6745 \times \frac{(1-r^2)}{\sqrt{n}}$$

where r = coefficient of correlation
n = number of items paired

For testing of Karl Pearson's correlation coefficient 6PE should not be greater than correlation coefficient.

NO.	PARAMETER	PE
	MONETARY TRANSACTIONS	
1	Bills Payment	0.0262
2	Updated Information	0.0432
3	Accessible	0.0711
4	Transfer Of Funds	0.0525
5	Receive Alerts	0.0598
	EFFICIENCY	
6	Convenience	0.0711
7	Customer Correspondence	0.0583
8	Timeliness	0.0754
9	Cost Effective Service	0.0652
10	Network Coverage	0.0609
11	E-Shopping	0.0684
12	Technical Efficiency	0.0286
13	Mobile Banking	0.0525
	FINANCIAL SERVICES	
14	Loan Application	0.0266
15	On-Line Trading	0.0048
16	Demat Account	0.0038
17	Tax Advisory Services	0.0217
18	Insurance	0.0325
	RELIABILITY	
19	Accuracy	0.0585
20	Privacy	0.0210
21	Hidden Cost	0.0089
	MOTIVATION	
22	Personal Contact Programme	0.0410
23	Advertisement	0.0205
24	Demo At The Counter	0.0384
25	Goodwill	0.0465

ANNEXURE 2

Testing of hypothesis by conducting Z test as per following formula:

$$Z = \frac{CV_1 - CV_2}{\sqrt{(CV_1^2/2n_1) + (CV_2^2/2n_2)}}$$

Where, CV is coefficient of variation for public and private sector banks respectively. n_1 and n_2 are respective sample sizes. At 5% level of significance in 2 tailed tests, the table value is 1.96. The value of z for each parameter has been calculated in Table 3.

*significant difference (above 1.96) has been observed in the case of following parameters. In all other cases, there is no significant difference between two types of banks because it does not exceed z value of 1.96 at 5% level of significance.

NO.	PARAMETER	Z value
1	Bills Payment	2.586*
2	Transfer Of Funds	2.634*
3	Convenience	5.511*
4	Timeliness	6.453*
5	Cost Effective Service	4.643*
6	Network Coverage	4.035*
7	E-Shopping	2.491*
8	Technical Efficiency	2.237*
9	Loan Application	2.01*
10	Privacy	2.446*

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