CUSTOMER PERCEPTION TOWARDS THE USAGE OF TECHNOLOGY BASED BANKING WITH REFERENCE TO VIRUDHUNAGAR, TAMILNADU

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Abstract

The current banking scenario has changed tremendously in its operations. Unlike traditional banking, modern technology banking provides home banking where the customers need not visit its premises. All the banking transactions can be done through technology platform. BaNCS an Indian core banking solution is serving more than 30% of global population. Though technology the banking is moving to the height, branches remain as the nodal points for generating major volume of business in India. On the other side customers complaints are also increasing enormously. The risk associated with technology products are of serious concern of financial loss. As of June 2021, Transactions under unified payments interfaces (UPI) in India recorded a total of 2.8 billion digital payment transactions worth over five trillion Indian rupees. The launch of Unified Payments Interface (UPI) and Bharat Interface for Money (BHIM) by National Payments Corporation of India (NPCI) has made a magnificent transformation of retail payment environment in India. Increased competition among banks has pushed towards the innovative banking products and educating the customers to get the maximum benefits out of it. Using technology for banking services is becoming common and inevitable in urban centers but the spreading the technically competent environment in semi urban and rural areas is still challenging task. To understand the perception of customers in the semi urban and rural areas is important to sustain the user friendly environment. This paper aims to portray the perception of customers on which influence them towards the usage of technology based Banking and their satisfaction over the usage of technology based Banking.

Keywords: Digital Banking, ATM, Technology Banking, Fin tech, E Banking, Village Banking Technology

1. Introduction

Information technology has provided several ways to new innovations in the Indian Banking industry. Technology plays a crucial role in increasing the penetration, productivity and efficiency. The usage of telebanking, ATMs, internet banking, mobile banking, and e-banking has made it possible for the branches to operate on a 24 x 7 basis. These technology based products are helps to make the tasks easier and reached to maximum number of customers with efficient and cost effective manner(Jain M and Popli GS,2012). Awareness level on different technology based banking products and confidence over security are majorly encouraging customers to adopt the new mode of transaction. Customer satisfaction in Banking is the key factor in improving the client base. Adoption of digital banking is depending on the customer's satisfaction or dissatisfaction (Kumar N and Mehrotra R, 2022)Delivery of service in banking can be provided efficiently only when the back ground operations are efficient. Understand the customer perception towards e banking is necessary, because it will help researchers and practitioners to identify the trend and patterns of adoption of e banking. Banking customers get satisfied with the system when it provides them maximum convenience and comfort while transacting with the bank.(Singhal D and Padhmanabhan V, 2008).

Using technology for banking services is becoming common and inevitable in urban centers but the spreading the technically competent environment in semi urban and rural areas is still challenging task. Better infrastructure and customers intention to adopt and use the technology for banking services is at the nascent stage in many areas. The banks will be able to provide services more effectively if the access to technology in these locations can be identified.

2. Review of Literature

Tran, N. A. (2021) has studied to identify the major intention for utilising the technology based Banking services among young retail customers in Vietnam. The data for the study has collected from 525 young respondents under the age of 35 who are using or having opportunities to experience digital banking services. The study revealed that perceived ease of use and social influence has positively impacted on the intention of young people to use digital banking services. It is resulted in the intention to utilise the technology based banking services of young people in Vietnam.

Baghla, A. (2021) article entitled 'Role of IT in Indian Banking Sector with special reference to Rural Punjab'. The researcher set out to evaluate the current state of online banking in rural Punjab and to investigate potential ways for raising awareness among this population. The study was based on primary data and such data has collected from 300 respondents. The researcher analysed the primary data by using percentage analysis, chi-square test. The study found that all the three factors viz., perception, selection and motivation plays a vital role in developing more e-banking services in the rural segment of Punjab. The study concluded that the e-banking awareness of rural customers is not adequate to use those. The banks have to take appropriate awareness programs to educate the people about e-banking channels and their usage.

Meher, B.K., et. al. (2021) has done a case study on the growth of MSMEs under the perspective of usage of Digital banking by MSMEs. The researchers sought to create a multiple regression model by taking into account the advantages of digital banking that help MSMEs grow. Using a questionnaire, the owners and managers of 454 MSMEs in the Bihar District of Katihar provided the primary data. The favourable factors were ease in accepting payments from customers or debtors; ease in making payments to suppliers/creditors; ease in managing the expenditure of business; saves time; not required to carry hard for business; no misappropriation or theft of cash; ease in applying and approval of short term loan or overdraft; and benefit of cash back or discount. The study found that the MSMEs are getting more convenient in accepting and making payments through e-banking. The bankers should educate their customers properly and have to provide properly updated information regarding the new developments in digital banking.

Ho and Lin (2010) created a multiple-item measure to gauge the effectiveness of internet banking services. In order to provide a framework that could be utilised to evaluate internet banking service, this research embraced the dimensions of electronic service quality (e-service quality) and customer-perceived service quality. Taiwan's internet banking users were employed as a sample in this study. Five characteristics and 17 elements on the measurement scale for gauging the calibre of online banking services were identified when factor analysis was applied. Customer service, online design, assurance, preferential treatment, and information provision should be the five aspects.

Jaruwachirathanakul and Fink (2005) attempted to identify the factors that encourage consumers to adopt internet banking services in Thailand. The study was based on the Decomposed Planned Behaviour. For the purpose of data collection a sample of 506 people was taken from 40 large companies in Bangkok. The study found that attitudinal factors that appeared to encourage the adoption of internet banking in Thailand most were Features of the web site‖ and Perceived usefulness, Further, most significant obstacle to adoption was a perceived behavioural control, namely External environment‖. The significant moderating factors were gender, educational level, income, internet experience and internet banking experience, but not age.

In the end study suggested that, it is essential for banks to facilitate encouragement and restrict impediment factors (Alamelu, K. Vimala, B. and Salini R. Chandran, 2020).

Boon and Yu (2003) attempted to recognize the key success factors in the operation of e-channels in the Malaysian banking scenario. Self administered questionnaire was distributed among target population of bankers in the Malaysian commercial banks. The findings of the study were based on the opinion of 112 respondents. Factor analysis was used to analyse the data. The study's findings indicated that the success of ATMs, PCs, and branch banking is primarily dependent on how well banks manage their operations. The study recommended that domestic commercial banks in Malaysian would have to enhance their operational management in order to succeed in using ATMs and PC Banking as their main e-channels.

3. Research gap

Existing studies are intended to study the factors influencing the behaviour of customers towards adopting the technology based banking services and strategies of banks such as technology banking initiatives to understand various digital banking products, knowing the customer's awareness level and challenges faced by them to adopt various digital banking products. Present study exclusively focused on the Virudhunagar district with equal distribution of respondents belongs to rural, semi urban and urban areas to ensure the reach of technology based banking in all areas and to identify the major factors which influencing the preference of customers towards technology based banking.

4. Objectives of the study

- The primary objective of the study is to identify the factors which are influencing the usage of technology based banking products and services among the customers in Virudhunagar district.
- To identify the satisfactory level of customers towards the usage of technology based banking products and services in Virudhunagar district.

5. Research Methodology

This study is based on primary data. Primary data collected for the study consists of customers' perception on the usage of technology based banking in Virudhunagar district, Tamilnadu. Total population in Virudhunagar district was 19.42 lacs as per 2011 census. Sample size of the study (385) was obtained by using Raosoft calculator. By using the proportionate random sampling method, the researcher has obtained responses from 150 customers each from Rural, Semi Urban and Urban centres. Interview schedule was used to conduct the study. Factor analysis is used in the study to identify the major significant factors for the preference towards the usage of technology based banking products and services among the sample customers in Virudhunagar district.

6. Analysis and results

6.1 Customers perception on Factors influencing the usage of technology based banking channels

There are many factors which influence the usage of technology based banking products/services. About 21 variables are considered for obtaining opinion from customers. Taking all 21 variables for further analysis is not necessary because respondents might have similar perception for one or two variables. To reduce the entire variables into individual groups based on their dimension, the factor analysis is used.

6.1.1 Kaiser-Meyer-Olkin Measure of Sampling Adequacy

KMO and Bartlett's test helps to measure the sampling adequacy for the factor analysis and to continue the further analysis.

Table 1

KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	3101.423
	df	231
	Sig.	.000

Source: SPSS output based on primary data

Before going for factor analysis suitability of data for the purpose of factor analysis has to be tested. KMO test and Bartlett's test are two such tests. Value of KMO of 0.855 indicates that a factor analysis is useful for the present data. Bartlett's test of Sphericity indicates whether the correlation matrix is an identity matrix, which would indicate that the variables are unrelated. The significance level gives the result of the test. Here, the significant value is less than <0.001 which shows that there is a high level of correlation between variables. The resultant value of KMO test and Bartlett's test indicate that the present data is useful for factor analysis.

6.1.2 Communalities

Communality table shows that the variance of each variable. Variance level of below 0.40 shall not be considered for analysis. The following table shows the variance shared by each item used in the study.

Table 2

Communalities

S.No	Name of Variables	Initial	Extraction
1	Hassle Free 24 X 7 Banking	1	0.6085559
2	Instant transactions/ Funds Transfer	1	0.6215795
3	Convenience to get service and manage finance	1	0.6686531
4	Secured transaction	1	0.5743632
5	Easy access	1	0.6353836
6	Status symbol	1	0.5063342
7	Reward Points	1	0.579662
8	Cost effective	1	0.5304971
9	Relevant and detailed information in seconds	1	0.5200412
11	Time Management	1	0.6712826
12	More convenient than in-branch banking	1	0.6818854
13	More reliable than in-Branch banking	1	0.6066957
14	To understand financial position and take better investment decisions immediately	1	0.5800479
15	Like to use new technologies	1	0.7230702
16	Airport Lounge Access	1	0.6599784
17	Online Offers/benefits	1	0.5348657
18	Proximity problem(Distance)	1	0.5984656
19	Always trying to sell any of their/TP products	1	0.6265479
20	Quality of services	1	0.6341793
21	Dependency reduction	1	0.5474338

Source: SPSS output based on primary data;

Every variable in the communality initially is expected to share 100% variance. Hence initially every item is having value 1.00 which means 100% variance share by each item. The extraction value is ranging from 0.506 to 0.723 which shows that minimum variance share of item after extraction is 50.6% and maximum variance share after extraction is 72.3%.

6.1.3 Total Variance Explained

The next step in the process is to decide about the number of factors to be derived. The thumb rule is factors which are having 'Eigen values' greater than unity can be taken. The Component matrix further rotated orthogonally using Varimax rotation algorithm for convenience and the factors are reduced to six. After the rotation all the statements are loaded on the six factors. The results so obtained have been given in the tables separately along with factor loadings.

Table 3

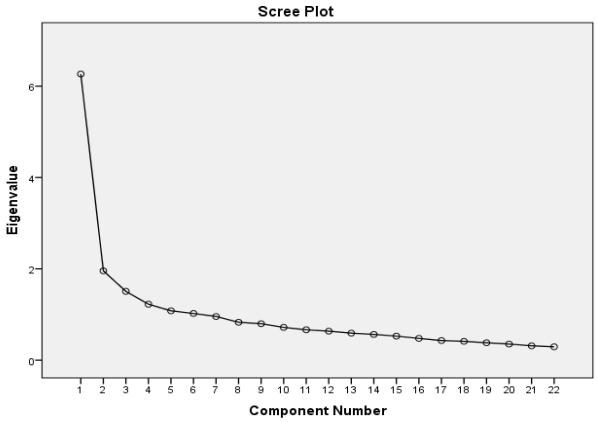
Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.265	28.478	28.478	6.265	28.478	28.478	2.542	11.555	11.555
2	1.957	8.895	37.373	1.957	8.895	37.373	2.458	11.173	22.727
3	1.507	6.851	44.224	1.507	6.851	44.224	2.370	10.774	33.501
4	1.225	5.569	49.793	1.225	5.569	49.793	2.086	9.481	42.982
5	1.080	4.911	54.704	1.080	4.911	54.704	1.930	8.772	51.755
6	1.022	4.646	59.350	1.022	4.646	59.350	1.671	7.595	59.350
7	0.956	4.347	63.696						
8	0.830	3.772	67.468						
9	0.798	3.628	71.096						
10	0.718	3.262	74.358						
11	0.665	3.022	77.380						
12	0.635	2.885	80.265						
13	0.591	2.689	82.953						
14	0.564	2.564	85.517						
15	0.527	2.393	87.911						
16	0.477	2.166	90.077						
17	0.430	1.954	92.031						
18	0.412	1.874	93.905						
19	0.381	1.732	95.637						
20	0.353	1.603	97.239						
21	0.314	1.428	98.667						
22	0.293	1.333	100						

Source: SPSS output based on Primary data

Total variance contributed by first component is 28.478, by second component 37.373, by third component 44.224, by fourth component 49.793, by fifth component 54.704, by sixth component 59.350. The Eigen value for a given factor measures the variance in all the variables which is accounted by that factor. It is also clear that there are total six distinct components having eigen values greater than 1 from the given set of variables. Eigen value for factor 1 is 6.265, for factor 2 is 1.957, for factor 3 is 1.507, for factor 4 is 1.225, for factor 5 is 1.080 and for factor 6 is 1.022.

The Scree plot shows the components as the X axis and the corresponding Eigen values as the Y axis. First six components are considered whose Eigen values are 6.265, 1.957, 1.507, 1.225, 1.080 and 1.022. It is clear that 6.265 is the maximum eigen value, hence this factor is most significant followed by other factors.



Since all these six factors are having Eigen value greater than 1 and sharing maximum variance hence they are essential for analysing the factors influencing for using technology based banking.

6.1.4 Rotated Component Matrix

Rotated component matrix illustrates the variables under six factors and their factor loading in the Table 5.24

Table 4

Rotated Component Matrix

Factors	Components	Item Description	Rotated Loading
I	Convenience Factors	Convenience to get service and manage finance	0.706
		Easy access	0.694
		Secured transaction	0.701
II	Effective service factors	Relevant and detailed information in seconds	0.573
		Hassle Free 24 X 7 Banking	0.708
		Instant transactions/ Funds Transfer	0.571
		To understand financial position and take better investment decisions immediately	0.648
		Status symbol	0.545
III	Time Management Factors	More convenient than in-branch banking	0.808
		Time Management	0.777
		More reliable than in-Branch banking	0.738
IV	Independent usage factors	Always trying to sell any of their/TP products	0.507
		Online Offers/benefits	0.563
		Dependency reduction	0.576
V	Cost and Quality factors	Quality of services	0.761
		Proximity problem(Distance)	0.677
		Cost effective	0.487
VI	Technology and attractive offers	Like to use new technologies	0.791
		Airport Lounge Access	0.635
		Reward Points	0.548

Source: SPSS output based on Primary data

From the rotated component matrix it is clear that the first factor is having three statements, second factor is having five statements, third, fourth, fifth and sixth factor having three statements each. Based on the statements included into the factors are named as follows;

1. Convenience
2. Effective service quality
3. Time Management
4. Independence in usage
5. Cost Benefit and Quality
6. Technology and attractive offers

Factor I – Convenience

Variables	Description	Rotated Loading	% of Variance	Eigen value
V3	Convenience to get service and manage finance	0.706	28.478	6.265
V5	Easy access	0.694		
V4	Secured transaction	0.701		

The Eigen value of factor I (Convenience) is 6.265 with 28.478% of variance. The variables are related to convenience of the customers in using technology based banking products. Factor I has very high significant loading on the variable Convenience to get service and manage finance (0.706) and Secured transaction (0.701) and moderately high loading on the variable Easy access (0.694).

Factor II – Effective service quality

Variables	Description	Rotated Loading	% of Variance	Eigen value
V9	Relevant and detailed information in seconds	0.573	8.895	1.957
V1	Hassle Free 24 X 7 Banking	0.708		
V2	Instant transactions/ Funds Transfer	0.571		
V14	To understand financial position and take better investment decisions immediately	0.648		
V6	Status symbol	0.545		

The Eigen value of factor II (Effective service quality) is 1.957 with 8.895% of variance. The variables are related to Effective service quality in using technology based banking products. Factor II has very high significant loading on the variable Hassle free 24X7 banking (0.708) moderately high loading on the variables Relevant and detailed information in seconds (0.573), Instant transactions/ Funds Transfer (0.571), Status symbol (0.545) and To understand financial position and take better investment decisions immediately (0.648).

Factor III– Time Management

Variables	Description	Rotated Loading	% of Variance	Eigen value
V12	More convenient than in-branch banking	0.808	6.851	1.507
V11	Time Management	0.777		
V13	More reliable than in-Branch banking	0.738		

The Eigen value of factor III (Time Management) is 1.507 with 6.851 % of variance. The variables are related to effective time management in using technology based banking products. Factor III has very high significant loading on the variable More convenient than in-branch banking (0.808), Time management (0.777) and More reliable than in branch banking (0.738).

Factor IV – Independence in Usage

Variables	Description	Rotated Loading	% of Variance	Eigen value
V17	Always trying to sell any of their/TP products	0.507	5.569	1.225
V19	Online Offers/benefits	0.563		
V21	Dependency reduction	0.576		

The Eigen value of factor IV (Independence in usage) is 1.225 with 5.569 % of variance. The variables are related to independence in using technology based banking products. Factor IV has moderate high significant loading on the variable trying to sell any of their/TP products (0.563), online offers/benefits (0.507) and Dependency reduction (0.576).

Factor V – Cost Benefit and Quality

Variables	Description	Rotated Loading	% of Variance	Eigen value
V20	Quality of services	0.761	4.911	1.080
V18	Proximity problem(Distance)	0.677		
V8	Cost effective	0.487		

The Eigen value of factor V (Cost benefit and quality) is 1.080 with 4.911 % of variance. The variables are related to Cost benefit and quality of technology based banking products. Factor V has very high significant loading on the variable Quality of services (0.761) and moderate significant loading on the variables Proximity problem (0.677) and cost effective (0.487).

Factor VI – Technology and attractive offers

Variables	Description	Rotated Loading	% of Variance	Eigen value
V15	Like to use new technologies	0.791	4.646	1.022
V16	Airport Lounge Access	0.635		
V7	Reward Points	0.548		

The Eigen value of factor VI (Technology and attractive offers) is 1.022 with 4.646 % of variance. The variables are related to Technology and attractive offers in using technology based banking products. Factor VI has very high significant loading on the variable Like to use new technologies (0.791) and moderate significant loading on the variables Airport Lounge Access (0.635) and Reward points (0.548).

Hence from the study it is highlighted that most preferred services under each factors are Convenience to get service and manage finance under convenience factor, Hassle Free 24 X 7 Banking under Effective services quality,More convenient than in-branch banking under Time management factor, Dependency reduction under Independence in usage factor,Quality of services under Cost benefit and quality factor and Like to use new technologies under Technology and attractive offers factors.

6.2 Customer satisfaction in the technology based banking services

6.2.1 Cluster Analysis on Overall Opinion of customers about Technology based Banking Services

"Cluster analysis or clustering is the task of grouping a set of objects in such a way that objects in the same group (called a cluster) are more similar (in some sense or another) to each other than to those in other groups (clusters) (Everit et.al 2010).

K-Means cluster analysis has been employed to categorize overall opinion on technology based banking services into three different groups. The results are shown in Table 5.

Table 5

Overall opinion of customers about Technology based Banking Services – Final Clusters

Overall Opinion	Final Cluster			ANOVA	
	1	2	3	F value	Sig
The bank provides updated technology regularly for Technology based banking	5.0	4.0	3.0	2.676	.070
Dual Checking control is not possible	4.0	1.0	1.0	16.931	.000
Dependency on Banker has been reduced	2.0	2.0	2.0	5.228	.006
Features are good but not proper assistance from banker	4.0	1.0	2.0	17.439	.000
Detailed Accurate and instant financial information provided	1.0	4.0	2.0	15.174	.000
Information content and texts are easy to understand and to execute	1.0	3.0	1.0	973.769	.000
Technology based banking is problem free and cost effective	1.0	3.0	1.0	466.854	.000
Very low incidents of Error	1.0	3.0	1.0	427.761	.000
Feel like secured that even a banker does not know my transaction	1.0	4.0	3.0	14.699	.000
The bank provides financial security and confidentiality	1.0	4.0	3.0	14.689	.000
Investment can be done directly and can be monitored any time	1.0	3.0	1.0	1281.074	.000
Being technology based is seen as a Status of Literacy	1.0	3.0	1.0	1280.122	.000
Lack of knowledge in Technology may lead to lose Money	1.0	4.0	1.0	37.886	.000
In absence of Internet or connectivity feeling helpless	1.0	2.0	5.0	167.609	.000
Delay in solving complaints	1.0	2.0	5.0	55.700	.000
Mean	3.8	3.4	5.0		
Number of Cases	196	134	120		

Source: SPSS Output based on Primary data

Table 5 shows the final clusters and ANOVA results of customers' overall opinion on Technology based banking services. The number of respondents in the first cluster is 196 who agreed that 'Technology based banking services are problem free and offer more Satisfaction'. 134 customers in the second cluster have agreed that 'Technology based banking services are prone to few problems and offer more satisfaction' and in the third cluster 120 customers have agreed that 'Technology based banking services are create more numbers of problems and offer no satisfaction'. Respondents are users and they belong to different banks and they opined about their satisfactory with their services. for the better understanding, clusters have been segmented with respect to their bank groups. Bank group wise representation helps to identify the proportion of customers who satisfied with the technology based banking and who are not and it is discussed as follows.

6.2.2 Bank group wise representation of clusters

Customer segmentation based on the cluster analysis is further represented by the bank group viz., SBI, Other PSBs, OPSBs and NGPSBs. Bank group wise opinion on the Clusters namely "Technology based banking services are problem free and offer more satisfaction", "Technology based banking services are prone to few problems and offer more satisfaction" and "Technology based banking services are create more number of problems and offer no satisfaction" is give in the Table 6 as follows.

Table 6

Overall opinion of customers towards Technology based Banking Services – Bank group wise

Bank Group	Technology based banking services are problem free and offer more satisfaction	Technology based banking services are prone to few problems and offer more satisfaction	Technology based banking services are create more number of problems and offer no satisfaction	Total
SBI	54 (40)	47 (35)	33 (25)	134
Other PSBs	55 (45)	27 (22)	39 (32)	121
OPSBs	55 (51)	28 (26)	24 (22)	107
NGPSBs	32 (36)	32 (36)	24 (27)	88
Total	**196**	**134**	**120**	**450**

Source: Computed by the researcher based on the primary data

Figures in parenthesis denotes the percentage value Results from the table indicate that, opinion of customers towards the satisfaction of using technology based banking has varied between bank groups. It can be summarised that majority of users from SBI, Other PSBs, OPSBs and NGPSBs have agreed that Technology based banking is problem free and services from these banks are satisfactory. Even though majority of users having satisfied with their technology products but moderate number of users have not satisfied and they highlighted the technology banking services becomes more complicate which leads to the problems. With compared to the other bank groups, 32% of users of other PSBs have dissatisfied with their technology products and the major reason quoted as the inefficient and poor maintenance of the platforms.

7. Conclusion

Indian banks have witnessed a significant opportunity to accelerate their technological platform during the Covid 19 pandemic. The growth of banking sector is mainly driven by digital banking platforms and growing adoption of advanced technology among the customers segment including growing number of small and medium sized enterprises. Present study highlights the significant factors influencing the usage of technology based banking in Virudhunagar district in Tamilnadu. The study identified that the significant factors are Convenience, Service quality, Time Management, Independence in usage, Cost Benefit and Quality and Technology and attractive offers. The study highlighted that the significant benefits of technology based Banking are Convenience to get service and manage finance, Hassle Free 24 X 7 Banking,More convenient than in-branch banking, Dependency reduction, Quality of services and Like to use new technologies and these benefits are the most influential factors for adopting the technology based banking in Virudhunagar district. Customers are highly satisfied with the Deposit services, online enquiry, investment advisory services, anywhere banking and bill payment services. The bank specific opinion of customers highlights that the customers who using the technology banking products and services of SBI and Private sector banks are more satisfied than the Other Public sector banks. Major factors for their dissatisfactions are Reasonableness of cost, security of transactions, user friendliness and promptness in attending grievances.

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