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Customer Satisfaction and Service Quality Perception of Technology Based Banking Services: A Study on Selected Public Sector Banks in India

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Abstract- In recent time, we have witnessed that the World Economy is passing through some intricate circumstances as bankruptcy of banking & financial institutions, debt crisis in major economies of the world and euro zone crisis. This poses some serious questions about the survival, growth and maintaining the sustainable development. The tempo of development for the Indian banking industry has been remarkable over the past decade. Indian banking industry has been striving hard to gain Business Excellence through Technology Based Banking Services (TBBS) from the use of computerisation in early 90's to Ru-pay card in 2013. Even, India has witnessed the rapid growth of ATMs and use of other tools of E- banking (RBI, 2013).

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Customer Satisfaction and Service Quality Perception of Technology Based Banking Services: A Study on Selected Public Sector Banks in India

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Abstract- In recent time, we have witnessed that the World Economy is passing through some intricate circumstances as bankruptcy of banking & financial institutions, debt crisis in major economies of the world and euro zone crisis. This poses some serious questions about the survival, growth and maintaining the sustainable development. The tempo of development for the Indian banking industry has been remarkable over the past decade. Indian banking industry has been striving hard to gain Business Excellence through Technology Based Banking Services (TBBS) from the use of computerisation in early 90's to Ru-pay card in 2013. Even, India has witnessed the rapid growth of ATMs and use of other tools of E- banking (RBI, 2013). The Indian government is keen to implement the direct benefit transfer using Aadhaar card. The bank accounts are being linked to the Aadhaar card and the transfer of subsidies will be facilitated by the TBBS. So it is necessary to know the Customer Service quality perception of the existing TBBS and its customer satisfaction so that the necessary improvement if any can be suggested to bankers. This is an empirical study where primary data has been collected through SSTQUAL the scale of Lin and Hsieh (2006). The scale has been administered on 250 customers of selected public sector banks from Indian Banking Industry, chosen on a convenient basis. The purpose of this paper is to evaluate the service quality of selected government owned banks, based on different levels of 'customers' perception regarding service quality. The study provides a practical application to measure service quality perception within TBBS in India. The current study includes an assessment model that might help bankers and researchers investigate customer perceptions of TBBS in India.

Keywords: Customer service quality perception, business excellence, Customer satisfaction, TBBS.

I. Introduction

Technology based banking services (TBBS) are banking services that need computer systems or machines to operate. The services include ATMs, telephone banking, SMS banking, mobile banking, Internet banking, online payment or merchant points of sale for processing payment transactions (Dimitriadis & Kyrezis, 2008; Lin & Hsieh, 2006; Zhu et al., 2002). Research has indicated that Customer Satisfaction (CSAT) correlates with profitability (Anderson, Fornell, & Lehmann, 1994; Wan, Luk, & Chow, 2004), loyalty (Fornell, 1992), and positive customer behavioral intentions (BI; Zeithaml, Berry, & Parasuraman, 1996). The current study involved examining the relationship between the perceived quality dimensions of technology-based banking services (TBBS) and CSAT and CBI toward TBBS. of ATMs in India has risen to 95686 in 2012 from 17642 in 2005, RBI 2012. And in public sector banks it has risen to 58000 in 2012 from 10000 in 2004. Consequently ATMs usage has also risen. Public sector banks are investing big sums in TBBS to gain business excellence. At this juncture it is meaningful to measure the customer service quality perception of technology based banking and satisfaction among customers of TBBS so that the necessary improvement can be done by the bank leaders in India.

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II. Review of the Literature

A review of the literature revealed extensive research regarding the nature of services, service quality dimensions influencing customer perceptions, SAT, and BI (Parasuraman, Zeithaml, & Berry, 1988; Seth, Deshmukh, & Vrat, 2005), although limited research exists on understanding customer perceptions of TBBS (Shamdasani, Mukherjee, & Malhotra, 2008). The conceptualization and measurement of service quality perceptions have been the most debated and controversial topics in the service marketing literature to date according to Brady and Cronin (2001). Brady and Cronin posited a multi-hierarchical model where service quality consists of dimensions and sub-dimensions. Brady and Cronin's suggested model combined previous models in service quality including SERVQUAL (Parasuraman et al., 1988), the Nordic model (functional, technical, and image) by Gronroos (1984), the three component model (Rust & Oliver, 1994), and the multilevel model (Dabholkar, Thorpe, & Rentz, 1996). Cronin was also a coauthor of the SERVPERF with Taylor (Cronin & Taylor, 1992). According to Brady and Cronin (2001), the importance of different dimensions depended on industry characteristics. Leaders of industries with low levels of customer–employee

interactions might concentrate only on a subset of the dimensions. The final hierarchical model included many aspects of service quality to cover a wide range of service industries and contexts. Hence, the original SERVQUAL remained a relevant research domain (Saravanan & Rao, 2007) and many researchers continued to use it (Chang, 2007).

The development of technology-based services (TBS) has triggered further research on what constitutes better service quality in TBS (Dabholkar, 1994; Meuter, Bitner, Ostrom, & Brown, 2005; Parasuraman, Zeithaml, & Malhotra, 2005; Zhu, Wymer, & Chen, 2002). Lin and Hsieh (2006) provided a model and a survey instrument to examine service quality within TBS and indicated that functionality, enjoyment, security, assurance, design, convenience, and customization constitute service quality dimensions within self-service technologies (SSTQUAL) associated with CSAT and CBI. While these dimensions are general to TBS across industries, no research has included an evaluation of the service quality of TBS in the banking industry. Lin and Hsieh called for further research in the area of service quality of TBS in the banking industry. Lin and Hsieh (2006) described seven dimensions (functionality, enjoyment, security, assurance, design, convenience, and customization) that constitute customer expectations of service quality within self-service technologies. The current quantitative correlational research design involved an examination into whether a relationship exists between perceived service quality as employed in TBBS within Indian public sector banks and customer satisfaction (CSAT) and customer behavioral intentions (CBI) as a response to TBBS.

III. Significance of the Study

The research study provided original contributions to fill two main knowledge gaps. First, the study contributed to current and future research by comparing and contrasting related literature. Second, the study provided a practical application to measure service quality within TBBS in India. The current study included an assessment model that might help bankers and researchers investigate customer perceptions of TBBS.

Previously researchers have operationalized service quality by developing assessment scales such as SERVQUAL (Parasuraman et al., 1988), WebQual (Loiacono, Watson, & Goodhue, 2002), SITEQUAL (Yoo & Donthu, 2001), and E-S-QUAL (Parasuraman et al., 2005). The current study confirmed a TBBSQUAL model to help bankers in India to monitor and assess TBBS. The research findings from the study made it feasible for public sector bankers in India to be able to identify shortfalls of service quality and allocate resources to prevent and improve customer perceptions and behaviors toward TBBS.

IV. Research Objectives

1) To measure which public sector bank has highest level of customer satisfaction among selected banks.
2) To establish a relationship between customer satisfaction and TBBS quality dimensions.
3) To establish a relationship between TBBS quality dimensions, customer satisfaction and customer's behavioral intentions.

V. Research Methodology

This is a descriptive empirical study. The data collection instrument was a structured questionnaire as suggested by Lin and Hsieh (2006).). Lin and Hsieh (2006) provided a model and a survey instrument to examine service quality within TBBS and indicated that functionality, enjoyment, security, assurance, design, convenience, and customization constitute service quality dimensions within self-service technologies (SSTQUAL) associated with CSAT and CBI.

a) Sample and data collection

Data was collected through personally administered survey from 250 customers of five banks selected from public sectors on the basis of number of ATMs and branches from banking industry in India. 50 customers from each bank were included through convenience sampling method. The selection of the customers depended upon two conditions, first the customer should have a debit/credit/smart card and second, he has used any one of the TBBS in last 30 days. The data was collected using survey instrument developed by Lin and Hsieh (2006) on 7-point liker scale from ATMs, branches of selected banks and from malls in NCR region in India.

VI. Analysis and Findings

The collected data has been analyzed by using SPSS version 21. The survey asked the respondents about their demographics such as age, gender, years with current bank and awareness level of TBBS. Over 50% of the sample is under the age of 40 years, and only 13% of the sample is over the age of 60 years.

Table 1 : shows each age group with the count and percentage of the total sample

Table 1 : Age Distribution

Age	<20 Years	20-40 Years	40-60 Years	>60 Years
Count	24	116	77	33
%	9.6	46.4	30.8	13.2

Table 2 : The sample included 90 females and 160 males

Table 2 : Gender

Name of Bank	Female	Male	Total
SBI	20	30	50
PNB	14	36	50
CB	20	30	50
UBI	22	28	50
BOB	14	36	50
Count	90	160	250
%	36	64	100

Table 3 : Experience with selected banks (Years)

Years with selected bank	<5 years	5-10 years	10-15 years	>15 Years	Total
Count	106	66	45	33	250
%	42.4	26.4	18	13.2	100

Table 3. shows customer's years of experience in using TBBS of selected banks. Over 55% of the respondents from the sample have been using services of the selected banks for more than 5 years. And 13.2 % from the sample have been using services of the selected banks for more than 15 years. This shows the interest and suitability or trust of customers for public sector banks.

Table 4 : Awareness Level of TBBS in selected Public Sector Banks

ONLY ATM	99
ATM & NET BANKING	021
ATM & MOBILE BANKING	08
ATM & NET BANKING & MOBILE BANKING	019
ATM & USE OF CARD FOR PAYMENT	007
ATM & NET BANKING & USE OF CARD FOR PAYMENT	018
ATM & MOBILE BANKING & USE OF CARD FOR PAYMENT	03
USAGE OF ALL TBBS	075
TOTAL	250

Table 4 indicates the level of awareness among customers about TBBS. All customers have awareness about ATMs and around 53% of the sample has awareness about the use of net banking. 42% of the sample is aware about the use of Mobile Banking.

a) Customer satisfaction

Respondents were asked three questions pertaining to the CSAT (customer satisfaction).

Table 5

NAME OF THE BANK	CUSTOMER SATISFACTION
STATE BANK OF INDIA (SBI)	5.45
PUNJAB NATIONAL BANK (PNB)	5.15
UNION BANK OF INDIA (UBI)	5.64
CANARA BANK (CB)	5.66
BANK OF BARODA (BOB)	5.55

As shown in Table 5, the survey results reflected that at least 90 % of the respondents were in agreement with "Overall, I am satisfied with the TBBS offered by the bank." As per the analysis using arithmetic mean of all three statements of CSAT it was found that Canara Bank's customer are the most satisfied with TBBS offered by the said bank than the other four public sector banks, followed by Union Bank of India (Table 5).

b) Predicting customer satisfaction using TBBS dimensions

A linear multiple regression analysis with stepwise method was used to analyze the relationship among customer satisfaction (CSAT), and customer service quality perception (CSQP). The multiple regression analysis indicated that the service quality dimensions of Enjoyment, Customization, Design and Functionality (independent variables) combined together appear to explain CSAT with r = 0.712, r- square = 0.506 and adjusted r-square = 0.50. The regression model fit the data with an F test = 62.850 that is significant at the $p<0.01$ level (Table 6).

Table 6 : Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	105.274	4	26.318	62.850	.000
Residual	102.594	245	.419		
Total	207.868	249			

Predictors: (Constant), ENJ, CUS, DES, FUN

The service Security, Convenience and Assurance did not contribute to the fitness of the model, so it was not included in the regression results.

Table 7

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			VIF
(Constant)	.510	.321		1.588	.114	
ENJ	.314	.070	.286	4.496	.000	2.006
CUS	.268	.067	.259	4.008	.000	2.076
DES	.159	.058	.162	2.745	.007	1.732
FUN	.171	.067	.152	2.543	.012	1.775

The Table 7 includes the beta weights (slope) of each variable and a constant (intercept) of the service quality dimensions associated with TBBS. The independent variables in combination can predict CSAT of TBBS offered by selected Public Sector Banks in India. The result of the regression model indicated a low level of multicollinearity (Table 7).

The bank leader in public sector banks might use the following formula to estimate the CSAT:

CSAT = 0.51+ 0.31 Enjoyment + 0.27 Customization + 0.16 Design + 0.17 Functionality + error

When predicting CSAT, assurance did not add to the combined model because service provider's higher reputation might increase customer expectations of the service provider, making the gap between service expectations and service perception very high. Expectation-Disconfirmation theory indicates that a high gap between perceptions and expectations might lead to a decrease in customer satisfaction (Oliver, 1980).

c) Predicting customer behavioral intentions using tbbs dimensions

Customer behavioral intentions (CBI) refer to customer feeling towards TBBS for repeat purchase and to recommend the TBBS to use. A linear regression analysis was conducted to predict customer behavioral intentions (CBI) towards TBBS in terms of service quality dimensions. The multiple regression analysis seemed to indicate that service quality dimensions of Customization, Design, Assurance and functionality combined together significantly explained CBI towards TBBS with r = 0.7, r-square = 0.47 and adjusted r-square = 0.46. The regression model and each of the independent variables mentioned appeared to be significant at the $p<0.01$ level (Table 8).

Table 8 : ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	120.695	4	30.174	55.241	.000
Residual	133.825	245	.546		
Total	254.520	249			

Predictors: (Constant), CUS, DES, ASS, FUN

Table 9

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			VIF
(Constant)	.198	.370		.534	.594	
CUS	.291	.072	.255	4.029	.000	1.861
DES	.257	.069	.236	3.730	.000	1.862
ASS	.219	.069	.193	3.193	.002	1.698
FUN	.201	.072	.161	2.769	.006	1.585

The regression model fit the data with an F-test = 55.241 that is significant at the $p<0.01$ level. Service security, enjoyment and convenience did not seem to contribute to the fitness of the model so they are not included in regression results. Table-9 includes the beta weights (slope) of each variable and a constant (intercept) of service quality dimensions associated with TBBS.

The regression analysis results indicate that when combining service quality dimensions, four dimensions might operate positively together to predict CBI towards TBBS of selected PSB in India. These dimensions accounted for only 46% of the variability in CBI. Bank leaders in PSB might use the following formula to estimate CBI:

CBI= 0.20 + 0.30 Customization + 0.26 Design + 0.22 Assurance + 0.20 Functionality + error

d) Predicting customer behavioral intentions using CSAT and TBBS dimensions

Ajzen (2005) indicated a customer's attitude towards a behavior determined customer intentions. Because a customer has a positive attitude toward a service, the customer's intentions would be positive. For this reason, the regression model was conducted to address CBI as a function of CSAT and TBBSQUAL dimensions. The results generated a better fit model that explained customer behavioral intentions with r = 0.766, r-square = 0.587 and adjusted r-square= 0.588 and F-test = 116.6 at $p<0.01$(Table 10).

Table 10 : ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	149.436	3	49.812	116.609	.000
Residual	105.084	246	.427		
Total	254.520	249			

Predictors: (Constant), CSAT, ASS, DES

The model included CSAT, Service Assurance and Design. All other service quality dimensions are not significantly related with model. Table 11 includes the beta co-efficient of the model.

Table 11

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			VIF
(Constant)	-.157	.316		-.497	.620	
CSAT	.562	.054	.508	10.322	.000	1.441
ASS	.270	.057	.238	4.764	.000	1.484
DES	.192	.059	.176	3.276	.001	1.728

These findings seemed to agree with the literature that service quality is an antecedent of CSAT and CBI. When CSAT is added to the regression model of predicting CBI in terms of TBBSQUAL, CSAT accounted 0.50 while the next predictor was approximately 0.23 in standardized terms. The model indicates that CSAT and service quality dimensions are able to explain 60% of variability of CBI (Strong Relationship) where as service quality dimensions alone are able to explain only 47% of CBI variability (medium relationship; creswell 2008)

That's why customer satisfaction (CSAT) shapes customer's attitude, which determines the behavioral intentions in selected PSBs. Service assurance, which represents the bank's reputation, shapes the subjective norms that determine CBI. Public Sector Bank leaders might use the following formula to estimate CBI in terms of CSAT and service quality dimension associated with TBBS.

$$CBI = -0.15 + 0.56\ CSAT + 0.27\ Assurance + 0.22\ Design + error.$$

Customer satisfaction seems to be the major determinate of CBI. This finding seemed to confirm a path relationship similar to the original research on the relationship between service quality, CSAT and CBI discussed in literature (Alkibsi 2011, Cronin & Taylor, 1992; Lin & Hsieh, 2006; Parasuraman et al., 1988).

VII. Conclusion

TBBS have been a critical component of service delivery in the banking industry (Dabholkar, 1996; Meuter et al., 2000). As per the analysis it can be said that all the selected public sector banks are competing each other on providing the better TBBS. From the current research it is found that Canara Bank's customer are most satisfied with TBBS offered by the said bank than the other four public sector banks, followed by Union Bank of India. The research indicated that the service quality dimensions of Enjoyment, Customization, Design and Functionality combined together appear to explain customer satisfaction in selected public sector banks India. The service Security, Convenience and Assurance did not contribute to the fitness of the model. So bank leaders are suggested to work hard on Enjoyment, Customization, Design and Functionality aspects of the services to make customers satisfied.

The current research seemed to indicate that service quality dimensions of Customization, Design, Assurance and functionality combined together to explain customer behavioral intentions towards TBBS. Ajzen (2005) indicated a customer's attitude toward a behavior determined customer intentions. Because a customer has a positive attitude toward a service, the customer's intentions would be positive. For this reason, the regression model was conducted to address CBI as a function of SAT and TBBSQUAL dimensions. These findings seemed to validate the literature that service quality is an antecedent of CSAT and CBI. The model indicates that Customer Satisfaction and service quality dimensions are able to explain 60% of variability of Customer Behavioral Intentions. That is why customer satisfaction (CSAT) shapes customer's attitude, which determines the behavioral intentions in selected PSBs. Service assurance, which represents the bank's reputation, shapes the subjective norms that determine Customer Behavioral Intentions towards TBBS.

VIII. Limitations of the Study

The current research study was limited to customers of selected public sector banks in Indian banking industry which constitutes public, private and foreign sector banks, who agreed to participate voluntarily within the time available to conduct the study. The examination included customer perceptions of TBBS service quality, CSAT, and CBI.

The use of non-probability sampling was a limitation. Because of the inability to access customer databases to perform a probability sampling, a convenience sampling technique was necessary.

The sampling procedure included the application of a quota sampling technique to add an element of control to the generalizability of the findings over the population. According to Neuman (2006), quota sampling is an enhanced form of convenience sampling. Convenience sampling helped to ensure that qualified participants were among the target population

who fit the sampling frame. Many researchers have used convenience sampling when measuring service quality and SAT (Kaynak, 2005; Alkibsi, 2010; Padhy, P., & Swar, B. 2009).

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