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Editorial Note

Born in a Peasant Family, Dr. A.D. Shinde was known as a visionary educationist. Inspite of being a Chartered Accountant, he spent most of his life as a teacher and administrator. He established Chh. Shahu Institute of Business Education and Research (SIBER) and was the patron of South Asian Journal of Management Research (SAJMR). The Institute imparts Master of Business Administration (MBA), Master of Computer Application (MCA), Master of Social Work (MSW), Master of Environment Management (MEM) and certain Diploma courses. In addition to these the M.Phil in Commerce and Management, Economics, Social Work and Sociology is also being offered. Now Dr. Shinde is not with us.

We can talk many imbibed quality in him. He was a visionary and led a modest life style. He inspired many people and strengthened their lives. He was a role model of many people.

I worked under his guidance for about a quarter century beginning of my earlier carrier till his departure. I found in him the thirst for research. He was also concerned about quality research and the outcome is South Asian Journal of Management Research.

He is also responsible for establishing Vasantraodada Patil Institute of Management Studies and Research, Sangli, College of Non-Conventional Vocational Courses for Women, Kolhapur, Dinkarrao Shinde College of Education, Gadhinglaj and Radhabai Shinde English Medium School, Kolhapur.

He had a clear goal and a vision and was able to manage the complex situation from time to time. He was equally able to influence the followers towards reaching the vision. His ability to articulate his vision towards development of the Institute needs to be remembered the most.

His aura of Charisma, and optimistic view helped him to develop the legend he left before the people. Leaders typically make the difference. We the editorial members, management body, faculties and non-teaching staff salute him. We pray for him. Let his soul rest in peace.

Dr. Babu Thomas
Editor

Customer Satisfaction and Quality Perceptions of Electronic Banking Channel Services: An Empirical Study

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Abstract
The customer satisfaction and perception of quality of services provided through the electronic banking channels such as ATM, internet banking services and tele banking services are found out and their relationships are explored in this study. The impact of customer satisfaction with these electronic banking channels on their adoption level and usage are examined. A survey research has been conducted on the retail bank customers of the sampled banks who were the users of these services. The findings showed that ATM services were widely adopted where as Internet banking and tele banking adoption and usage were in the introductory phase. It was found that the service quality affects customer satisfaction positively, which had an impact on the adoption levels and usage of these electronic banking services. However since ATM services were widely adopted the satisfaction level of its users did not have any significant impact on its adoption and usage. The managerial implications identified would help the bank managements to device policies to improve the quality, customer satisfaction and expedite the adoption of internet banking and tele banking services.

Key words: Adoption level; Customer satisfaction; Electronic banking; Service quality perception

1. Introduction

All banks in India have realized that, in the post-liberalization era in order to remain competitive and provide the best services to their customers they need to have the latest technology in place. Irrespective of their ownership status (public sector or private sector), almost all of them have given maximum importance to technological development and deployment, ATMs, plastic money, online collection and payment services, electronic fund transfer and clearing services, mobile ATMs, document management systems, smart cards, core banking solutions, branch networking and internet banking are all outcomes of their initiative of technological upgradation (Upadhyay, 2007). Banks world over have been effectively deploying information technology as a strategic resource to achieve speed, efficiency, cost reduction, customer service and competitive advantage. Technology-enabled products and delivery channels offer value to customers providing them with anywhere, anytime, anyway banking to customers. Even though these technological changes have been pioneered in India by New Private sector and foreign banks now even the traditional banks in the Public Sector and Old Private banks are increasingly pursuing technology.

1.1. Purpose of the study

This paper examines the relationships between customer satisfaction and perceptions of quality of services provided through the electronic banking channels such as ATM, internet banking and tele banking. Their relationship with the adoption and usage of these services are examined.

2. Literature Survey

2.1. Service Quality

Most comprehensive studies to date in service quality were conducted by Parasuram, Berry and Zeithmal (1985, 1988a, 1988b, 1990, 1991 and 1994a). They developed a conceptual model called the Gaps model of service quality which showed the various gaps that need to be managed by a service firm in order to provide quality service from its customers' view point.

Parasuram et al. (1988a) developed the definition of service quality as "the overall evaluation of a service firm that results from comparing that firm's performance with the customer's general expectations of how firms in that industry should perform". On the basis of this definition they developed a multi-dimensional service quality assessment instrument called SERVQUAL containing 22 variables divided into

five dimensions and the service quality was operationalised as the summated difference or disconfirmation between the customers' perception (P) and expectations (E) along these variables. This particular SERVQUAL scale has been extensively used in a number of studies covering different service settings.

Subsequently various studies (Teas, 1993, 1994; Spreng and Olshavsky, 1992) found that the disconfirmation as a method of determining service quality has several conceptual, theoretical and measurement problems. They also argued that the model suffers from the problems with respect to measuring expectations, the confusion stems from the fact that expectations are dynamic (varying from time to time), then again when to measure it, before or after receiving the service. These problems with the disconfirmation model had made researchers to increasingly ignore expectations completely and measuring perceptions as an indicator of service quality (Jayawardhena, 2004). The studies by Andaleeb and Basu (1994) and Mittal and Lassar (1996) propound that this approach results in good predictive power of service quality. Babakus and Boller (1992) and Cronin and Taylor (1992) in their respective works compared the computed difference scores with perceptions and found that perceptions are a superior predictor of service quality than disconfirmation. This had lead to the designing of performance-only or perception only scale by Cronin (1994).

The studies by Dabholkar et al. (2000) also proved that the perception measures have higher predictive and explanatory power and have better indicative power in the cases of customer evaluation and intention. In addition they observed that perception could also allow an understanding of service quality at factor level and proposed all the dimensions of quality as antecedents, rather than components of service quality. It is found by Page and Spreng (2002) that performance only measure is more reliable and stronger indicator of service quality than expectations. Moreover in case of e-commerce, as found out by Santos (2003) expectations seem to be of lesser of a comparison standard and customers appear to use experience based standards. According to the study by Yang and Jun (2002) majority of consumers were found not to have a clear idea regarding what expectations they held for online services.

Taking into consideration the problems associated with the disconfirmation model of service quality and the fact that it was measured in an e-commerce environment, this study conceptualized and measured service quality as performance perceived by consumers.

2.1.1 Automated Service Quality (E -service quality)

Service quality involving face-to-face interactions between the service provider and the customer has well established definitions in the literature, but with the introduction of technology-enabled service delivery, the service quality concepts have to be suitably modified. Presently most of the literature focuses only on the service quality of those services delivered through websites as seen in the research by Parasuram et al. (2005) and Zeithmal (2002). In the current study a broader view of the e-service quality is considered so that it addresses the service quality of not only internet banking but also of those services delivered through the other technology-enabled banking delivery channels such as telephone banking and ATM banking services. Hence a broader definition of automated service quality or E-service quality has been considered in this research as proposed by Santos (2003), "as the consumers' overall evaluation and judgment of excellence and quality of e-service offerings in the virtual market place."

2.1.1.1. Two approaches for measuring automated service quality (E-service quality)

Researchers have relied upon mainly two types of approaches for developing the measurement models for automated service quality (Al-Hawari et al., 2005). In the first approach existing service quality theory is used as a basis for developing automated service quality measures (Yang & Jun, 2002; Zeithaml, 2002; Long and McMellon, 2004) So the dimensions and items generated to measure the automated service quality have their roots in the traditional service quality conceptualization.

In the second approach the focus is on technological interfaces and the quality of new categories of self-services technology (Santos, 2003; van Riel et al., 2001). In this approach new categories and measurement models for automated service quality has been formed which diverges from the traditional service quality constructs (Joseph et al., 1999; Joseph & Stone, 2003). These are propounded to be more appropriate to measure the determinants of service quality in which the customer interaction is with technology -enabled self-service delivery channels rather than interpersonal interaction with the service providers.

Every automated service delivery channel has its own attributes (Dabholkar, 1996) and hence it is required to separate out the individual attributes of every delivery channel or other compounding factors which affect the perception of quality.

However these two approaches have the following common factors such as reliability, ease of use, personalization, accessibility, accuracy, security and efficiency. So these factors are considered while developing appropriate items for measuring service quality of the services provided through each channel and the individual measurement items are discussed separately in the methodology section.

In the banking sector, as the delivery of the same services takes place through multiple channels, depending on their conveniences the customers tend to use these channels in a complimentary way. Hence the customer relationship and transactions can be managed by any one delivery channel or a combination of them (Patricio et al. 2003, Lang & Colgate 2003). The customers' assessment of the services through a particular technology-enabled delivery channel and their intention to use a particular delivery channel depends on their perceptions about the various attributes of that particular delivery channel (Dabholkar, 1996). That is, every different channel has its own attributes, which differ from the others, so it is important to measure the quality of each channel separately and not combine their attributes together in a generalized way. This will give a better picture of the service quality pertaining to the technology-enabled services delivered through these self-service automated delivery channels.

2.2. Customer Satisfaction

According to Rust and Oliver, (1994) the definition of customer satisfaction in the services literature is given as "customer satisfaction is a summary of cognitive and affective reaction to a service incident (or sometimes to a long term service relationship). Satisfaction (or dissatisfaction) results from experiencing a service quality encounter and comparing that encounter with what was expected".

Oliver's (1993) model says that consumer satisfaction is a consumer's fulfillment response and that satisfaction judgments are influenced both positive and negative, affective or emotional responses and cognitive disconfirmation.

2.2.1. Relationship between service quality and customer satisfaction

As far as service quality is concerned there is a general agreement that it is a construct which is different from customer satisfaction and many researchers are endorsing the definition put forth by Bitner and Hubert (1994), which says that service quality is "The consumers' overall impression of the relative inferiority/superiority of the organization and its services".

Rust and Oliver (1994) have identified some of the key aspects that distinguish service quality from customer satisfaction. They are:

(a) The expectations for quality are based on ideals or perceptions of excellence, while a large number of non-quality issues go into the formation of satisfaction evaluations such as needs, perceptions of fairness and so on.

(b) In order to have satisfaction judgment one should have experience with the service or provider while to have quality perceptions prior experience is not required.

Researchers are having divergent views regarding the linkage between service quality and customer satisfaction. Some of the findings suggest that customer satisfaction with a given experience would influence an overall evaluation/attitude about service quality over time (Bitner, 1990; Parasuram et al., 1988). However study by Oliver, (1993) has shown that service quality would be an antecedent to customer satisfaction whether measured in a transaction specific or over the time mode. In this particular study customer satisfaction is taken as an antecedent to service quality.

2.2.2 Measurement of customer satisfaction

The customer's overall satisfaction of the organization is based on all the experiences of the customer with that organization. It can occur at different levels in a firm, like satisfaction with the different channels of service, with different aspects of each service and so on (Sureshchandar et al., 2002b).

In order to measure customer satisfaction different researchers have used different types of scales, single item and multi-item scales (Al-Hawari et al. 2006). For instance Cronin and Taylor (1992), had defined and measured customer satisfaction using a one-item scale asking customers overall satisfaction. But other researchers (Sureshchander et al 2002, Danaher and Haddrel, 1996) are of the opinion that customer satisfaction is multidimensional in nature so a single item scale fails to capture the complexity of customer satisfaction. The present study has mostly used multi-item scales to measure customer satisfaction except in two cases where single item measures have been used in the interest of maintaining the parsimony of the research instrument.

2.2.3 Adoption level measurement

Literature says that relationship duration and interaction frequency has been found to be good predictors of relationship development (Levinthal

and Fichman, 1988). Frequency and duration of use of the internet banking by the respondents had also been used by Eriksson et al. (2005) to measure the usage of internet banking in their study. In view of these the respondents' frequency of usage and duration of usage have been asked and a composite score calculated taking their summated scores to develop a measure for adoption level (extent of adoption).

3. Research Methodology

The primary data for the study used a self-completion questionnaire delivered personally to the respondents to be filled up at a later stage and returned to the researcher or his representative either collected by hand or mailed back as the case may be. A brief introductory note was also included along with the questionnaire stating the purpose of the study and giving assurance of confidentiality and anonymity as recommended in the literature (Bryman and Bell, 2003).

A multi-phase sampling design has been done for the study in which the geographical locations was first fixed, followed by the banks from which the respondents were sampled and finally the sampling of the population of interest in the study. Hence when selecting the geographical locations care was taken so that the locations selected had an adequate representation of the users of internet banking and tele banking. Such locations had to be selected so that it had the probability of having fairly segment of users of these services. Therefore the study was limited to metro banked centre, Bangalore city and sampled urban banked centres Mangalore and Udupi cities in Karnataka.

The *population* for the study was the banking customers in the selected cities belonging to nine selected banks who were having an annual income of more than rupees one lakh and above, who were using at least one of the electronic banking channels and aged above eighteen years. The income condition was not kept applicable for the student category as they could be non-income earners but at the same time represent a potential group of electronic banking users. The income condition was kept because for utilizing banking services extensively a reasonable earning capacity is a prerequisite.

Of the nine banks whose customers were sampled four were from the public sector (State Bank of India(SBI), Canara Bank, Syndicate Bank and Corporation Bank), three were from the private sector (ICICI Bank, HDFC Bank and AXIS Bank) and two were from the foreign bank group (Citi Bank and ABN Ambro Bank). Among the public sector banks, SBI was selected for the study as it was the largest bank in this sector; Canara Bank was selected as it was the 'lead bank' in Bangalore area and was also headquartered here; Syndicate Bank was the 'lead bank' in the Mangalore as well as Udupi area, headquartered in Udupi; Corporation Bank was selected since it was headquartered in Mangalore. ICICI bank, HDFC bank and AXIS bank were number one, number two and number three banks respectively business wise in the private sector. Citi Bank was the largest foreign operating in the country, while ABN Ambro bank was the only foreign bank which had branches both in the selected metro and urban 'banked centres'.

From the discussions with the bank officials and pilot study results it was found that adoption ATMs among the bank customers were not a problem and that almost everyone had opted for it. The customers were sampled randomly from the partial list of customer databases of users as well as non-users of internet banking and tele banking provided by the banks. The intention of the sampling was to get a representative sample of users and non-users of those technology-enabled banking self-services, such as internet banking and tele banking for which the adoption among bank customers were a problem.

The suggestion which Sudman, (1976) gave about the sample size cited by Thronton and White (2001) was used as a guideline for determining sample size. This suggestion states that the sample size should be large enough so that each major category of break downs should have 100 units or more and minor categories of break downs should have 20 to 50 units. Another guideline followed in selecting the sample size for this particular study is that given by Alreck and Settle (2004) which states that for a survey research if the population is 10,000 or more usually a sample size of between 200 to 1000 respondents are considered adequate by most experienced researchers to give reasonable results. In addition an examination of the sample sizes and methods of sample selection in similar empirical studies pertaining to technology-enabled banking self-services are looked into (Rugimbana, 1995; Lockett and Littler, 1997; Sathye 1999; Tan and Teo, 2000; Al-Ashban and Burney, 2001; Thornton and White, 2001; Howcraft et al., 2002; Kolodinsky et. al., 2004 and Laforet and Li, 2005) and it was found that the sample sizes ranged from 128 to 801.

The final usable sample size obtained in the study was 553 of which 300 were from the metro banked centre and 253 were from the urban banked centres. The responses from the public sector, private sector and foreign banks were 254, 228 and

71 respectively. These were deemed to be as per the above mentioned guidelines and were considered adequate for the study.

4. Research Instrument

The survey instrument/questionnaire was designed and developed after an extensive literature review, close consultation with experts in the banking area (both practitioners and researchers) and inputs from two focus group discussions.

In order to measure the customer satisfaction of the ATM services a three-item scale is used. The items include overall satisfaction with the ATM of the respondent's bank, the respondent's satisfaction with the reliability of the ATM to provide transactions and the satisfaction with the accessibility of the ATMs. The satisfaction was measured on a five point scale with 5 being highly satisfied and 1 being highly dissatisfied. Similarly a three-item scale was also used to measure the satisfaction of the users of internet banking regarding the internet services offered by the respondents' 'most frequented bank'. Tele-Banking satisfaction was measured using a single-item five point scale with 1 being 'highly satisfied' and 5 being 'highly dissatisfied'.

The ATM service quality is measured on a performance based seven item scale which consists of the customer perception regarding easiness of usage, usefulness of the functions provided, easiness to use and operate, security of operation, convenience of location, safety of location, and its complaint resolution. The performance of the items are rated using a five-point Likert type scale with 1 equals strongly disagree and 5 equals strongly agree. These items given below have been modified and adapted from studies by Al-Hawari et al. (2005).

The customer perception regarding the service quality of the internet banking services offered by the respondents' "most frequented bank" has been measured using an 8-item scale modified and adapted from the studies by Jun and Cai (2001), Al-Hawari et al (2005) and Jayawardhena (2004). It consists of items pertaining to the adequacy of information on bank website, security of bank's internet transactions, reliability of services provided through internet banking including error free transactions, attractiveness of website and clarity of instructions, ability of bank's website to carry out a wide range of transactions, the complaint resolution ability, accuracy of query responses and easiness of website navigation, including downloading. A five point scale was used with 1 being strongly disagree and 5 being strongly agree.

Tele banking service quality perception was measured using a 6-item scale to capture the tele-banking services provided in an automated interactive response system mode as this type of tele-banking is the one which come under the self-service categorization. These items which were adapted from the studies of Al-Hawari et al., (2005) and Joseph and Stone (2003) included statements such as pleasant musical background, reasonable number of voice prompts, short waiting time, clear instructions, service reliability and ample options. Again a five point scale was used with 1 being strongly disagree and 5 being strongly agree.

In addition to the above measures the frequency of usage of each electronic banking channel and duration of usage of them by the respondents are measured. The adoption levels of each technology-enabled self-service such as ATM services, internet banking services and tele banking services are measured using a composite variable which is a summated score of the frequency of usage and duration of usage of the respective services.

Approximate percentage of use of each electronic channel for the conduction of the overall banking transactions were also asked to form the use percentage of each of these electronic banking channels.

5. Results

5.1 Demographic profile of the respondents

The sample population comprised of 56.2% males and 33.8% females indicating that men might use the electronic banking services more than women. Out of the respondents 100% were using ATMs, 68.2% were using internet banking services and 32.9% were using tele banking services. More than 98% of the respondents have graduation or higher qualifications, which again shows that it is the educated category of the population who has widely adopted electronic banking channels. The median income of the respondents were between Rs 3 to 4 lakhs per annum which was much higher than the annual per capita income of Karnataka, Rs 34, 250 for 2006-07.

5.2 ATM Satisfaction and Service quality

ATM satisfaction level is measured using a 3-item scale as discussed earlier. The reliability coefficient was 0.83 which is above the acceptable limit of 0.7 as recommended by Nunally and Bernstein (1994). As mentioned earlier service quality was measured on a performance only basis using a 7-item scale which had a Cronbach alpha reliability coefficient of 0.77 which was above the recommended limit of 0.7.

5.2.1 Relationships among service quality perceptions, satisfaction levels, adoption levels and

use percentage of ATMs and resulting implications

From correlation table 1 it is found that there exists significant correlation between ATM service quality and ATM satisfaction level at 99% confidence level since the p-value is less than 0.01, but however the strength of the correlation is only medium level (correlation co efficient r = 0.462). From the literature it is found that service quality is considered as an antecedent of customer satisfaction (Oliver, 1993 and Spreng and Mackoy, 1996). So here also it is seen that as the service quality increases customer satisfaction also increases in case of ATMs.

ATM service quality has weak significant relationships with ATM adoption level ATMAD and ATM use percentage, but as the correlation strengths are 0.112 and 0.1 respectively the strength of correlation is found to be negligible. ATM satisfaction levels are found to have no significant correlation with ATM Adoption level and ATM use percentage. This means both the service quality and satisfaction levels are not having any effect on adoption level and usage in the case of ATMs. The reason for this could be that, as ATMs are widely adopted, and the usage of ATMs have become habitual , the consumers tend to use this service irrespective of their satisfaction levels and quality perceptions. When usage of something becomes habitual the consumers tend to use it automatically with little cognitive or mental processing (Triandis, 1980).

In order to find out the extent of relationships among the earlier variables simple regression analysis with independent and dependent variables as shown in the table 2 is conducted. The table shows the important values such as R-square, standardized beta coefficient β and t-values corresponding to the three simple regression models which are analysed. R-square values explain the variation of the dependent variable as a result of the corresponding independent variable. It is found that ATM service quality is able to explain upto 21.5%

Table 1: Correlation between ATM customer satisfaction with: ATM service quality, ATM adoption levels and ATM use percentage

		ATM Total Satisfaction	ATM Service Quality	ATM Adoption Level ATMAD	ATM Use Percentage
ATM Total Satisfaction	Pearson Correlation	1.000	.462**	.055	-.039
	Sig. (2-tailed)		.000	.196	.371
	N	553	553	553	532
ATM Service Quality	Pearson Correlation	.462**	1.000	.112**	.100
	Sig. (2-tailed)	.000		.008	.021
	N	553	553	553	532
ATM Adoption Level ATMAD	Pearson Correlation	.055	.112**	1.000	-.002
	Sig. (2-tailed)	.196	.008		.963
	N	553	553	553	532
ATM Use Percentage	Pearson Correlation	-.039	.100*	-.002	1.000
	Sig. (2-tailed)	.371	.021	.963	
	N	532	532	532	532

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

Table 2: Simple regression analysis among ATM customer satisfaction with ATM service quality, ATM adoption levels and ATM use percentage

Independent Variable	Dependent Variable	R-square value	Standardized Beta Coefficient β	t-value	Sig.
ATM Service Quality	ATM Customer Satisfaction	0.215	0.463	6.7	0.000
ATM Customer satisfaction	ATM Adoption Level	0.003	0.056	1.33	0.186
ATM Customer Satisfaction	ATM percentage of use	0.002	-0.045	-1.04	0.299

(since R-square is 0.215) variation of ATM Customer satisfaction in a significant manner as seen from the significance level of t-value which is found to be less than 0.01showing statistical validity at 99% confidence level.

The results of the other two simple regression tests show that R-square values are having negligible values at 0.003 and 0.002 which are also statistically non-significant as seen from the sig. levels (greater than 0.05) of t-values. These results show that the corresponding ATM customer satisfaction doesn't affect ATM adoption and ATM use percentage in a significant manner. The same results have been corroborated by the earlier correlation analysis shown in table 1 and therefore the implications mentioned earlier hold good. Therefore it is found that ATM service quality has a significant impact on its customer satisfaction. But since the ATMs have been widely adopted the consumer behavior in ATM usage has become habitual so the customers will continue using it, despite their satisfaction level with them as it is found that customer satisfaction with ATM services is not found to have significant impact in neither their adoption nor usage.

5.3. Internet banking satisfaction and service quality

Internet banking customer satisfaction is important construct which measures how satisfied the users are with the internet banking services. It determines the adoption levels and continued usage of the internet banking services. The perceptions regarding the quality of services through internet banking is expected to be an antecedent of customer satisfaction with it and it might in turn have an influence on the adoption level and use percentage of internet banking.

A 3-item scale as discussed was used to measure the satisfaction level of the users of the internet banking services and its reliability co efficient was 0.85 which was above the recommended limit of 0.7.

The service quality of internet banking was measured by means of customer perception along an 8-item scale whose items were adapted from the literature pertaining to customer perception of internet banking service quality (Jun and Cai (2001), Long and McMellon (2004), Yang & Jun (2002) used by Al-Hawari et al (2005) in their study. The Cronbach's Alpha coefficient is found to be above 0.7 which is the acceptable level according to

Table 3: Correlations among service quality perceptions, satisfaction levels, adoption levels and use percentage of internet banking

		Internet banking Satisfaction	Internet Banking Service Quality	Internet banking adoption level IBAD	Internet Banking Use Percentage
Internet banking Satisfaction	Pearson Correlation	1.000	.643 **	.338 **	.245 **
	Sig. (2 -tailed)	.	.000	.000	.000
	N	377	377	377	377
Internet Banking Service Quality	Pearson Correlation	.643 **	1.000	.216 **	.113 *
	Sig. (2 -tailed)	.000	.	.000	.029
	N	377	377	377	377
Internet banking adoption level IBAD	Pearson Correlation	.338 **	.216 **	1.000	.704 **
	Sig. (2 -tailed)	.000	.000	.	.000
	N	377	377	531	531
Internet Banking Use Percentage	Pearson Correlation	.245 **	.113 *	.704 **	1.000
	Sig. (2 -tailed)	.000	.029	.000	.
	N	377	377	531	553

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

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

Nunnally, 1994. These items have been validated in the study done by Al-Hawari et al. (2005).

5.3.1. Relationships among service quality perceptions, satisfaction levels, adoption levels and use percentage of internet banking and their implications

From table 3 it found that there is significant correlation between the internet banking service quality and customer satisfaction at 99% confidence level (since sig. level is less than 0.01) and the strength of correlation denoted by correlation co efficient r = 0.643 is on the higher side. So it can be interpreted that as the service quality perception increases the customer satisfaction also increases. The literature says that service quality is an antecedent of customer satisfaction (Oliver, 1993; Spreng and Mackoy, 1996). From table 3 it is also found that the customer satisfaction is significantly correlated with internet banking adoption (correlation coefficient r = 0.338) and internet use percentage (correlation coefficient r = 0.245) at 99% confidence level. Hence it can be inferred that the customer satisfaction affects both adoption levels and use percentage although to a milder extent, since the strengths of correlation coefficients are mild. Thus it can be concluded that the internet banking service quality impacts customer satisfaction which in turn positively affects the adoption levels and usage of internet banking. When customer is having a good service quality perceptions his/her satisfaction levels tend to be higher, the more the customer satisfaction the more will be the adoption level as their will be more repeat usage and more duration of usage. This translates into higher use percentage of internet banking.

The implication is that the banks should strive to improve the service quality levels of their internet banking along with the factors mentioned like having a website with required information, reliable and secure transactions, clear instructions, enabling wide number of transactions, good complaint resolution, smooth navigation through the website and so on. With the improvement in quality banks can achieve better satisfaction among its customers thereby increasing their adoption levels.

Regression analysis is done in order to find the extent of relationships between the constructs pertaining to internet banking. Three regression model results are shown in table 4 namely those between

1) Internet banking service quality and Internet banking customer satisfaction
2) Internet banking customer satisfaction and internet banking adoption level
3) Internet banking customer satisfaction and internet banking use percentage.

From the table it is found that there is statistically significant relationship between internet banking service quality and customer satisfaction and the about 41% percentage of variation in customer satisfaction is influenced by the service quality in this case as evident from the R-square value of the corresponding regression model. The regression models shows that there is significant relationship between internet banking satisfaction and adoption level as well as that between internet banking customer satisfaction and internet banking use percentage. Thus the earlier implications which stated that better the service quality better will be the customer satisfaction and better customer satisfaction will lead to more adoption and usage of internet banking.

5.4 Tele banking services customer satisfaction and service quality

Customer satisfaction and service quality perceptions of the customers are important as they are likely to influence the adoption levels and in turn the extent of usage of it. More over these two variables are also interrelated since from the literature (Oliver, 1993 and Spreng and Mackoy, 1996) the service quality is an important antecedent of the formation of satisfaction.

Table 4: Simple regression analysis among Internet banking satisfaction levels with Internet banking service quality, Internet banking adoption levels and Internet banking use percentage

Independent Variable	Dependent Variable	R-square value	Standardised Beta Coefficient β	t-value	Sig.
IB* Service Quality	IB Customer Satisfaction	0.412	0.642	16.15	0.000
IB Customer satisfaction	IB Adoption Level	0.124	0.353	7.3	0.000
IB Customer Satisfaction	IB percentage of use	0.076	0.276	5.54	0.000

* IB – Internet Banking

The customer satisfaction of the users of tele banking services was measured using a single-item scale similar to the one used by Cronin & Taylor(1992). The perception regarding the service quality of tele banking services have been measured using perception of performance on a six-item five point Likert scale with the end points 5 taken as 'Strongly Agree' and 1 taken as 'Strongly Disagree'. The items of telephone banking were originally developed by Joseph and Stone (2003) and subsequently used by Al-Hawari et al (2005). It has been adapted from the study by Al-hawari et al. (2005) in which its reliability and validity had been proven.The 6-item scale used for measuring the service quality perception of internet banking had Cronbach alpha coefficient of 0.78 which was above the recommended value of 0.7 (Nunnally, 1994).

5.4.1 Relationships among service quality perceptions, satisfaction levels, adoption levels and use percentage of tele banking and their implications

A Pearson correlation test is done to find out the pairwise relationships among the service quality perceptions, customer satisfaction, adoption levels and use percentage of the tele banking services. It is found that there is significant positive correlation between service quality perception and customer satisfaction in tele banking services at 99% confidence level since it is significant at 0.01. The strength of correlation is also high at correlation coefficient r = 0.803 showing that as the service quality perception increases the customer satisfaction level also increases. This implies that for users to have high satisfaction level and high level of service quality is a pre requisite, as mentioned earlier the literature reveals that the service quality is an important antecedent of customer satisfaction. There is significant positive correlations at 99% confidence levels between customer satisfaction and adoption, with relatively high strength of correlation r = 0.707, which implies that for the adoption levels to be high the customer satisfaction levels should also be high. Customer satisfaction is also having a significant correlation with the use percentage with r = 0.33.

The service quality is also having significant correlation with adoption and use percentage as can be seen from the table 5.

Implication of these findings are that a high level of customer satisfaction and a high level of tele banking service quality are required to achieve a high level of tele banking adoption and usage. So also the service quality perception is having a positive relationship with the customer satisfaction with tele banking services. Therefore the banks have to maintain high level of service quality through maintenance of good performance along the tele banking factors which impacts the quality such as reliable service, ample options, clear instructions, short waiting time and so on.

Table 5: Correlations between satisfaction, service quality, adoption and usage of tele banking services

		TB Satisfaction	TB Service Quality	Tele Banking Adoption level TBAD	Tele Banking Percentage
TB Satisfaction	Pearson Correlation	1.000	.803 **	.707 **	.333 **
	Sig. (2-tailed)	.	.000	.000	.000
	N	182	182	182	173
TB Service Quality	Pearson Correlation	.803 **	1.000	.689 **	.227 **
	Sig. (2-tailed)	.000	.	.000	.003
	N	182	182	182	173
Tele Banking Adoption level TBAD	Pearson Correlation	.707 **	.689 **	1.000	.771 **
	Sig. (2-tailed)	.000	.000	.	.000
	N	182	182	518	501
Tele Banking Percentage	Pearson Correlation	.333 **	.227 **	.771 **	1.000
	Sig. (2-tailed)	.000	.003	.000	.
	N	173	173	501	532

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

Table 6: Simple regression analysis among Tele banking satisfaction levels with Tele banking service quality, Tele banking adoption levels and Internet banking use percentage

Independent Variable	Dependent Variable	R-square value	Standardised Beta Coefficient β	t-value	Sig.
TB* Service Quality	TB Customer Satisfaction	0.645	0.803	18.07	0.000
TB Customer satisfaction	TB Adoption Level	0.5	0.707	7.3	0.000
TB Customer Satisfaction	TB percentage of use	0.11	0.33	4.63	0.000

* TB – Tele Banking

Similar to the one for internet banking three regression model results are shown in table 6 namely those between:

1) Tele banking service quality and Tele banking customer satisfaction
2) Tele banking customer satisfaction and Tele banking adoption level
3) Tele banking customer satisfaction and Tele banking use percentage.

From table 6 it is found that there is statistically significant relationship between tele banking service quality and customer satisfaction and the about 64.5% percentage of variation in customer satisfaction is influenced by the service quality in this case as evident from the R-square value (0.645) of the corresponding regression model. Similar to the case of internet banking, other two regression models in the table show that there is significant relationship between tele banking customer satisfaction and adoption level as well as those between tele banking customer satisfaction and tele banking use percentage. Thus in case of tele banking services also better service quality will lead to better customer satisfaction and which in turn will result in more adoption and usage of this service by bank customers.

6. Conclusions and managerial implications

In this study perceptions pertaining to service quality and customer satisfaction of the services through the electronic banking channels were found out for ATM services, Internet banking services and tele banking services. The relationships between service quality, customer satisfaction and their effects on adoption levels and electronic banking usage levels were analyzed.

It was found that service quality perceptions are significantly and positively correlated with satisfaction levels for all the electronic banking services namely ATM services, internet banking services and tele banking services. The customer satisfaction levels were found to influence the adoption levels and the extent of usage of internet banking and tele banking. Whereas it was not a significant factor in the adoption and usage of ATM services whose adoption and usage were wide spread.

The adoption levels of internet banking and tele banking services were found to be low among the bank customers since only a minority of them has adopted these services. So for the banks there is an urgent need to improve the adoption and usage levels of banking services through internet banking and tele banking. In order to improve the adoption levels and usage of these electronic banking self-services, the banks have to put efforts to improve both service quality and satisfaction levels. So banks are suggested to improve the quality of services provided through these electronic banking channels. For instance, in case of internet banking, service quality can be ensured by banks through the development of a website containing all the required information, high level of security providing error free transactions, having attractive website, with ample menu options, effecting fast complaint resolution, accurate query response, and providing website with easy navigation and download capabilities. Likewise, for providing quality services through tele banking, the prerequisites are reliability of service, clear instructions, multiple menu options, pleasant musical background and reasonable number of voice prompts.

Appendix

Table A1: Multi-item scale for measuring ATM satisfaction

Items	Cronbach Alpha
Overall Satisfaction with ATM of your bank	0.834
Satisfaction with the Reliability of ATM to do transactions	
Satisfaction with the accessibility of ATM	

Table A2: Multi-item scale for measuring ATM service quality

ATM Items	Adapted from	Cronbach Alpha
Learning to use ATM was easy for me	Al-Hawari et al., 2005	0.77
Functions provided by the ATM of my bank are very useful for doing my banking		
ATM machine is easy to use and operate		
I feel secure in conducting my banking business through ATMs		
ATM is conveniently located		
ATM is located in safe locations		
The complaint resolution of my bank's ATM is fast and satisfactory.		

Table A3: Three-item scale for measuring internet banking satisfaction

Items	Cronbach's alpha
Overall Satisfaction with internet banking of your bank	0.854
Satisfaction with the Website contents	
Satisfaction with the accuracy of services	

Table A4: Multiple-item scale for measuring service quality perceptions towards internet banking services

Items	Adapted from	Cronbach's Alpha
The bank's website contains all the required information to conduct my banking.	Al-Hawari et al., (2005).	0.854
The bank's internet transactio ns are secure.		
The Internet banking is reliable as it provides error free transactions		
The bank's website is attractive with clear instructions		
The bank's internet banking facility enables me to carry out a wide range of transactions.		
The comp laint resolution of my bank's internet banking is fast and satisfactory.		
The bank is very accurate in their responses to my queries/requests.		
Navigating the Bank's website is easy and it can be downloaded fast		

Table A5: Multi-item scale for measuring tele banking service quality

Items	Adapted from	Cronbach's Alpha
The bank's tele banking service has pleasant musical background.	Al -Hawari et al. (2005), Joseph & Stone (2003)	0.783
The bank's tele banking service has reasonable number of voice prompts.		
The bank's tele banking service has short waiting time.		
The bank's tele banking service provides clear instructions.		
The bank's tele banking service is reliable.		
The bank's tele banking service provides ample options.		

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