

Measurement of E-service Quality and its impact on E-Customer Satisfaction in Mobile Banking Industry

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Abstract- E-service quality and its measurement in financial institutions is important because of an increased usage of the mobile internet as a preferred mode of availing and using financial services. Institutions that are not willing to devote their maximum resources in improving e-service quality of their online platforms are bound to lag behind competition. India occupies the third largest user base of e-banking end-users after the USA and China despite having the least internet penetration. This research has made an attempt to evaluate e-service quality dimensions to measure customer satisfaction among mobile banking users of private banks in Kashmir. Existing research has shown retaining customers in online space is very difficult. Cochran's sampling technique was used to determine the number of respondents. Respondents were chosen from all the districts of Kashmir valley through online questionnaire. The survey consisted of 34 questions. Cronbach's alpha technique was employed to crosscheck the reliability of the questionnaire. The questionnaire used 5 point Likert scale. The Sampling technique used was non-probability random sampling. Data of 175 respondents was found to be reliable after adjusting for incomplete, fictitious and redundant responses. SPSS was employed to examine the data. Result findings indicated the service uptime, security, aesthetics, trust, customer service, learning curve and reliability are the main determinants of e-SQ among m-pay users. There was a significant effect of quality of services satisfaction of customers and their loyalty among m-pay users of private banks in Kashmir. This study will help Private Sector Banks in improving their designing and delivery of e-service quality of mobile banking to attract more customers and retain the existing ones in view of intense competition from other banks and e-wallet applications.

Keywords- e-Customer Satisfaction, m-pay, e-Service quality, Kashmir, loyalty.

I. INTRODUCTION

With most of the services e-delivered, a lot of management scientists have shifted their focus from traditional service quality measurement to e-service quality measurement. Internet accessibility has resulted in more service providers shifting their operations to World Wide Web. Due to increase in

mode and had been trying to go completely cash-less and paper-less. It is cheap, convenient and more efficient. Due to increased use, it became imperative to provide the best quality services in the online banking arena. Banking industry has witnessed changes at an unprecedented rate because of ever evolving competitive strategies. Innovation has been a major disruptor in banks which have been trying to

create a monopoly through traditional banking methods. Because banks want to cash on the mass market of the customer segment, the logical shift was to change from physical presence to online presence.

E-Service Quality means service quality which users experienced and perceived on their consumption of services on the internet. E-Service Quality had been developed recently because of the quintessential differences from normal service delivery. The scale needed to be modified every time when it came to measuring different kinds of electronically delivered services as the scale was not universally applicable to all electronically deliverable services. Customer satisfaction was a proven indicator of the strength of a company, its performance, its success, its brand value and its long term prospects.

A happy customer not only saved costs associated with attracting new customers but also the word of mouth marketing helped in attracting un-marketed customers as well. Increasing cross-selling reception, increasing referrals, purchase intentions, customer retention and reducing customer complaints were all a result of a satisfied customer. Any business which wanted to survive and succeed in this highly competitive market couldn't do so without providing the highest quality of service leading to increase in satisfied customers.

Mobile pay applications developed by Private Sector Banks gave its users the benefit of instant SMS, plus all other banking activities right in their pockets which attained higher levels of satisfaction among its customers and thus increased customer loyalty and at the same time saved administrative costs, less handling charges, and less number of physical business units. With the advent of mobile technology, wherein each customer has a personalized data device, the need was felt to provide banking services over mobile phones.

Year 2007 marked a radical shift with the pioneering iPhone launch which revolutionized the use of smart phones wherein banks could easily offer most of their services on the handheld device itself. Mobile Banking was a concept where many banking processes could operate right from one's handheld device. Customers could access their bank details and make transactions either through a browser or specialized apps available on app stores. Users could

do various transactions, create deposits, invest in schemes, download statements, transfer and receive cash, apply for OD or loans, do online shopping as well as make the bill payments and recharge their cellphones. It offered various benefits both to the institution as well as the user, for it saved the cost of the banks and offered instant hassle free service to users. Its mutual benefit included getting real time information about all the transactions thus increasing the safety of the account, real time updation of records and preventing banking frauds at the hands of hackers or other unscrupulous elements. Some of the limitations of mobile banking was its incompatibility with feature phones, lower internet penetration, e-illiteracy, safety concerns, unauthorized access, etc. Mobile banking couldn't develop in isolation; it could get a real boost only after e-literacy, and an increase in disposable income etc. will simultaneously improve.

There is still an ongoing debate going on in the literature about the applicability of physical SQ measurement scales into the digital sphere. Many studies have found that there is a positive co-relation among better e-services and satisfaction of customers, retention and their loyalty. Electronic-Service quality can be measured with either the customer being satisfied or dis-satisfied. Instruments like Likert scale can help us measure the degree of either of the two.

II. LITERATURE REVIEW

m-banking is electronically powered application which uses internet as medium to help bank customers perform transactions related to the banks(Kim, 2012). m-banking is a very convenient platform and medium thorough which customers are able to manage their finances which is completely paperless (Karjaluoto et al., 2002). Service quality of mobile based banking consist of 4 dimensions which include Convenience and Efficiency.

Responsiveness, Reliability, and security and assurance(Sharma & Malviya, 2011). Convenience and Efficiency deals with the use and implementation of electronically delivered services, convenience of facilities provided to the customers which help the customers in completing the transactions efficiently(Toor et al., 2016). The next dimension suggest that the online service related to banking requests from customers like honesty,

trustworthiness and reliability for every service provided every time. (Hammoud et al., 2018). The 3rd dimension which is Security and Assurance suggest how secure the transactions are and how safely the data of customers is stored with servers in the banks(Hammoud et al., 2018). The last dimension deals with the feedback mechanism of a banking application provided online over a handheld device(Toor et al., 2016). The fact is that most of the earlier researchers done regarding service quality of a tech platform is about internet based service quality(Collier & Bienstock, 2006; Santos, 2003).

The service quality is much easier understood only when a comprehensive and overall evaluation of the particular service is done. It should also check to what extent does the service meet the expectations and perceptions of online customers (Al-jazzazi & Sultan, 2017). A banking customer is satisfied only when his expectations from the services are matched by the perceptions they derive after witnessing the services provided by the bank(Jamal & Naser, 2002).

Loyalty of a customer will depend on the ease with which a customer does transactions with the bank. It will also have a direct impact on the profitability of the bank. We can say that the profits of a bank is directly proportional to how much the customers are satisfied(Hallowell, 1996). It becomes imperative on the banks to find such avenues in the market as to continuously improve their service quality so that they can continuously and reliably attain, monitor and maintain their customer satisfaction (Golec, 2018). Banks can improve their customer satisfaction by understanding the nuances of service quality (Twaissi & Al-Kilani, 2015) .

Loyal customers are best marketers, and loyalty can also result in attracting new customers because of customer references(Nyadzayo & Khajehzadeh, 2016). A consumption of service or a product leads to a feeling of pleasure resulting in satisfaction (Kotler & Keller, Marketing Management | Pearson, n.d.). Quality of services leads directly to customer satisfaction(Anderson & Sullivan, 1993).

If the perception of customers regarding the services of the banks are high, banks consider their marketing strategy as successful. (Parasuraman et al., 1985) were the first among management scientists which established a strong connection between the satisfaction of customers and quality of services.

III. RESEARCH METHODOLOGY

1. Objectives of the Study

- To determine the level of expectation and perception of customers' service quality in four dimensions: assurance, efficiency, reliability and responsiveness.
- To measure the gap score between the expectation and perception of customers towards service quality of mobile banking.
- To measure the impact of quality of services of m-banking on customer's loyalty towards private sector banks in J&K.

2. Hypothesis

H0: Service Quality of m-banking had no impact on satisfaction of customers in private sector banks in Kashmir.

H1: Service Quality had a significant impact on Satisfaction of customers in private sector banks in Kashmir.

3. Sampling Technique

Primary sources were used to collect the data. The survey instrument used in this research was based on 17 questions over 4 dimensions. Online survey questionnaire was used for this purpose. A total of 385 survey-sheets were emailed to banking customers having accounts in different private banks in Kashmir. The Cochran formula was used to determine the number for large population assuming it to be 5000 with $p=0.5$ (variability was maximum), the desirable 95% confidence level was achieved with $\pm 5\%$ precision. 195 responses were received in correct order and 175 were chosen for final data analysis. After descriptive analysis was done, it was found out that it represented people across all ages and professions, the data was found to be quite the representation of the true population.

Non-probability random sampling technique was used to gather data. The questionnaire comprised three sections: The first section asked respondents to fill their demographic data. The next section consisted of 34 questions spread over four dimensions of service quality: assurance, efficiency, reliability and responsiveness. The third section contained questions regarding loyalty of bank

customers due to their satisfaction with mobile banking services. The questions regarding the perceptions and expectations of mobile banking customers was measured using a Likert Scale based on 5 points which ranged from 1 (which meant strongly disagree) to 5 (which meant strongly agree). The four dimensions of service quality were the taken by this research to be independent variables whereas customer satisfaction was taken as the dependent variable.

4. Statistical Techniques Used

- Cronbach's Alpha (Reliability Analysis): This technique was used to test the reliability of data. 0.60 and above is considered as acceptable.
- Descriptive statistics: We measured the mean and standard deviation of each of the 17 variables twice pre and post usage of mobile banking.
- Paired Sample t-test: This comparative test was applied to the data to compare the t-value of questions before and after service delivery.
- GAP Analysis: We measured the Gap score of each of the 17 variables in pairs. The formula used was Gap = Perception-Expectation. Average across every dimension was also measured which gave us a fair idea whether the customer was satisfied with the overall quality of a service dimensions. A positive gap signified a satisfied customer while a negative gap indicated the scope of improvement for banks.
- Pearson's Correlation Technique.

IV. ANALYSIS AND INTERPRETATION

1. Cronbach's Alpha

Table 1

Expectations		Perceptions	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.772	17	.939	17

Cronbach's alpha is a statistical technique used to measure the reliability of data and internal consistency. It measures the average co-variance between different items, their frequency of items, the variance etc. Cronbach's alpha default across the dimensions which measure above .60 is acceptable (Marley and George- 2003). Our reading on the scale was above 0.7 and 0.9 on expectations and

perceptions respectively. It confirmed that our instrument is valid and reliable.

2. Pearson's Correlation

Table 2

		Service Quality	Customer Satisfaction*
Service Quality (Independent Variable)	Pearson Correlation	1	.795**
	Sig. (2-tailed)		.000
	N	198	198
Customer Satisfaction (Dependent Variable)	Pearson Correlation	.795**	1
	Sig. (2-tailed)	.000	
	N	175	175

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

We used Pearson's Correlation to examine the relation between Customer Satisfaction (Dependent Variable) and Service Quality (Independent variable). Pearson Co-relation measured at 0.75 which meant there existed a significant co-relation between the two variables in our data. $R(196) = .795$, $P = 0.001 < 0.05$ meant that a significant positive relationship existed between Service quality and satisfaction of customers among mobile bank users in Private Banks in J&K. It was observed that dependent variable significantly correlated with independent variable.

3. Demographic Data

Table 3

Education	Frequency	Percent	Income Level	Frequency	Percent
Less than 12th	11	6.3	Below 10000	33	18.9
UG	78	44.6	10000-20000	43	24.6
PG	69	39.4	20000 and Above	99	56.6
Above PG	17	9.7	Total	175	100.0
Total	175	100.0	Profession	Frequency	Percent
Gender	Frequency	Percent	Student	35	20.0
Male	110	62.9	Housewife	23	13.1
Female	65	37.1	Professional	103	58.9
Total	175	100.0	Not Working	14	8.0
Age	Frequency	Percent	Total	175	100.0
15-25	32	18.3	Frequency of using m-pay Services	Frequency	Percent
25-35	37	21.1	Once a month	26	14.9
35-45	58	33.1	More than once a month	85	48.6
45-55	22	12.6	Frequently	64	36.6
55 and Above	26	14.9	Total	175	100.0
Total	175	100.0			

A total of 175 replies were selected through a cross section of the population. 62% of the respondents were male while as 37% were females. Education data shows that most of the people who used mobile banking services were qualified. Around 44% were graduates while as 39% were post graduates. Less than 7 % of the users were less educated. It implied that the customers were educated enough to use and understand mobile banking. 59% of the users

were professionals working while only 8% were non-professionals. Most of the users had an income of more than 20,000 and above which implied that the customers had some disposable income through which they could use premium options in mobile banking as well like online shopping etc. The enrollment varied evenly with age which confirmed the reliability of our sample selection. The response validity could also be affirmed to be valid as most of the customers used the mobile banking service frequently.

4. Gap Analysis

Table 4

	Perception	Expectation	Gap
Assurance and Security	4.1657	3.6457	0.52
	4.2457	3.4514	0.7943
	2.3714	3.7943	-1.4229
	4.1943	3.7143	0.48
Total	3.744275	3.651425	0.09285
Efficiency & Convenience	3.7371	2.6229	1.1142
	3.4743	2.6571	0.8172
	4.2286	2.9771	1.2515
	4.16	3.2229	0.9371
	4.0457	2.7829	1.2628
	2.4743	3.4114	-0.9371
Total	3.6866667	2.945716667	0.74095
Reliability	4.2057	3.1486	1.0571
	3.9771	2.7943	1.1828
	3.7029	2.7314	0.9715
	3.9943	3.0686	0.9257
Total	3.97	2.935725	1.034275
Responsiveness	2.3257	2.8743	-0.5486
	2.7143	3.2057	-0.4914
	2.2	3.6457	-1.4457
Total	2.41333333	3.2419	0.82857

The average of the GAPS of all four dimensions is 0.82 which was quite significant. It signifies that the customers using mobile banking in private sector financial institutions in Kashmir were highly content and satisfied with the delivery of service. The quality of service had exceeded the expectations of customers by a very large margin.

Table 5

Assurance and Security	Paired Differences				
	Perception Mean	Expectation Mean	t-test	Significance	GAP Score (P-E)
A1.I will feel safe while doing my mobile banking transactions	4.1657	3.6457	-5.861	.000	0.52
A1.I felt safe while doing my mobile banking transactions	4.2457	3.4514	-8.862	.000	0.7943
A2. I have complete trust in my bank's services made available through mobile.	2.3714	3.7943	16.346	.000	-1.4229
A2. I had complete trust in my bank's services made available through mobile.	4.1943	3.7143	-5.730	.000	0.48
A3.I will be sure bank does not misuse my personal information.					
A3.I was sure bank did not misuse my personal information.					
A4. I feel confident in sharing my sensitive financial information while doing the mobile banking transaction.					
A4. I felt confident in sharing my sensitive financial information while doing the mobile banking transaction.					
Total	3.744275	3.651425			0.09285

Table 5 indicated that the overall satisfaction with the assurance and sense of security while using the internet to make financial transactions was high at

3.74. The gap between the expectations and the perceived service delivery was 0.092 which was not huge but significant. It meant that the banks have been able to reassure their clients that the transactions they made over their mobile devices were safe and hack-proof. Customers were satisfied with the overall safety mechanism of the mobile banking applications. A2 had the highest satisfaction (.79 gap score) while A3 had the lowest satisfaction within the dimension (-1.4).

A1. Positive Gap (0.52) indicated that in spite of popular perception, the customers of mobile banking in private banks in J&K felt that the applications were safe to use and didn't result in loss of any data or money.

A2. Positive Gap (0.79) indicated that the trust in mobile banking was because of the reputation of the bank associated with it.

A3. Negative Gap (-1.4) indicate that the customers were not sure that the bank used the information obtained through apps to call them into buying other services like insurance and credit card etc.

A4. Positive Gap (0.48) indicated that the customers had the utmost trust that the bank will not misuse any of my confidential information related to my passwords like details of credit card and debit card entered through mobile banking app to insiders or outsiders.

The significance value was $p < .001$ which was less than .005. Evaluating the t-test, we rejected the null hypothesis as we had found enough evidence that there was a considerable effect of quality of services on satisfaction levels of customers of mobile banking in private banks of J&K.

Table 6

Efficiency & Convenience	Paired Differences				
	Perception Mean	Expectation Mean	t-test	Significance	GAP Score (P-E)
A5. Mobile Banking helps in saving time as against physically going to a branch or an ATM.	3.7371	2.6229	-11.840	.000	1.1142
A5. Mobile Banking helped in saving time as against physically going to a branch or an ATM.	3.4743	2.6571	-9.240	.000	0.8172
A6.Mobile Banking will make transactions easier e.g., transferring funds, bill payment etc.	4.2286	2.9771	-13.731	.000	1.2515
A6.Mobile Banking made transactions easier e.g., for example transferring funds, bill payment etc.	4.16	3.2229	-11.981	.000	0.9371
A7. It is very clear and easy to interact with banking systems through a mobile handset.	4.0457	2.7829	-14.347	.000	1.2628
A7. It was very clear and easy to interact with banking systems through a mobile handset.	2.4743	3.4114	-10.919	.000	-0.9371
A8. Mobile Banking will create a positive experience for me					
A8. Mobile Banking created a positive experience for me					
A9.Mobile banking will enable me to complete transactions quickly					
A9.Mobile banking enabled me to complete transactions quickly					
A10.It will be easy to look for banking information while using mobile banking.					
A10.It was easy to look for banking information while using mobile banking.					
Total	3.6866667	2.945716667			0.74095

Table 6 indicated that the overall satisfaction with the efficiency and convenience of mobile banking applications was high at 3.68. The gap between the expectations and the perceived service delivery was at 0.74 which was very significant. It means that the mobile banking apps of these banks were easy to use and were user friendly with all the latest features available. Customers were satisfied with the overall layout, learning curve and user friendliness of the applications. A9 had the highest satisfaction (1.26 gap score) while A10 had the lowest satisfaction within the dimension -0.93).

A5. Positive Gap (1.11) indicated that the customers felt that using mobile banking apps will save them time as compared to going to Branches/ATMS.

A6. Positive Gap (0.81) indicated that the customers felt that using mobile banking apps made transactions easier to make as compared to physical processes.

A7. Positive Gap (1.25) indicated that the customers felt that the layout was simple to understand and there were clear instructions in required languages to make the use of these applications easier. There was no steep learning curve and no ambiguity in using the mobile banking applications.

A8. Positive Gap (0.93) indicated that the customer felt that use and ease of mobile banking was so convenient that it created a positive image of banks in their eyes and added the feel good factor to it.

A9. Positive Gap (1.26) indicated that the customers were sure that it was easier to undertake transactions through mobile banking rather than through any other means.

A10. Negative Gap (-0.93) indicated that the customer did not feel that it was easier for them to confirm all details regarding their account through the app. They felt that talking to a customer representative at the bank was a better option to request additional information. They felt that not all information was available on the application and its use was limited even though revolutionary.

The significance value was $p < .001$ which is less than .005. Evaluating the t-test, we rejected the null hypothesis as we had found enough evidence on the fact that there existed a considerable impact of quality of service on efficiency and convenience

among customers while using mobile banking in private banks of J&K.

Table 7

Reliability	Perception Mean	Expectation Mean	Paired Differences		
			t-test	Significance	GAP Score(P-E)
A11. My mobile banking transactions will be processed accurately	4.2057	3.1486	-13.772	.000	1.0571
A11. My mobile banking transactions were processed accurately					
A12. Banks provides me accurate records of all my transactions while using m-banking.	3.9771	2.7943	-14.039	.000	1.1828
A12. Banks provides me accurate records of all my transactions while using m-banking.					
A13. My mobile banking will meet my expectations	3.7029	2.7314	-12.082	.000	0.9715
A13. My mobile banking met my expectations					
A14. Instant email/SMS is sent to my accounts/numbers by the banks while using m-banking.	3.9943	3.0686	-10.341	.000	0.9257
A14. Instant email/SMS is sent to my accounts/numbers by the banks while using m-banking.					
Total	3.97	2.935725			1.034275

Table 7 showed that the overall satisfaction from the reliability dimensions of the banks in Srinagar was high at 3.97. The positive gap between perception and expectation at 1.03 indicated that service delivery exceeded the expectations of customers using mobile banking. Mobile Banking Customers were satisfied with the overall reliability of these web applications. A12 had the highest satisfaction (1.18) while A14 had the lowest satisfaction (0.92) within the dimension.

A11. Positive Gap (1.05) indicated that the customers felt that the applications won't commit any computing or reporting error while making the transactions.

A12. Positive Gap (1.18) indicated that the banking applications accurately summarized and generated reports, statements and summaries of the individual as well as collective transactions over a long period of time. They felt that the apps have the options to clearly identify particular transactions by entering any field of transaction details.

A13. Positive Gap (0.97) indicated that the customers were confident that these applications served their basic purpose and met their minimum expectation. Also they were confident that these applications were regularly updated.

A14. Positive Gap (0.92) indicated that the customers received transactions related to SMS/emails regularly after each transaction made through their registered mobile banking application.

The significance value was $p < .001$ which is less than .005. Evaluating the t-test, we rejected the null hypothesis as we had found enough evidence that quality of service has a considerable effect on satisfaction of customers across all variables of Reliability.

Table 8

Responsiveness	Perception Mean	Expectation Mean	Paired Differences		
			t-test	Significance	GAP Score(P-E)
A15. All my problems regarding mobile banking is quickly resolved by the bank.	2.3257	2.8743	6.321	.000	-0.5486
A15. All my problems regarding mobile banking is quickly resolved by the bank.					
A16. The bank corrects any mistakes on their side, quickly and immediately upon notice.	2.7143	3.2057	4.534	.000	-0.4914
A16. The bank corrected any mistakes on their side, quickly and immediately upon notice.					
A17. The bank responds immediately with clarification messages if my transaction fails.	2.2	3.6457	17.963	.000	-1.4457
A17. The bank responded immediately with clarification messages if my transaction fails.					
Total	2.41333333	3.2419			-0.82857

Table 8 showed that overall satisfaction from the responsiveness (2.41) of the mobile banking in private banks in Kashmir was medium at 2.41. The negative gap between perception and expectation at 0.82 indicated that service delivery was less than the expectations of customers of mobile banking applications. Customers were not satisfied with the overall responsiveness of mobile banking applications in Srinagar. A16 had the highest satisfaction (-0.49) while A17 had the lowest satisfaction (-1.14) within the dimension.

A15. Negative Gap indicated that the banks took a lot of time in resolving any problem related to use of the mobile banking application. Customer service executives were not able to satisfy the customers regarding technical issues.

A16. Negative Gap indicated that the banks took a lot of time in correcting problems arising out of the use of mobile banking applications citing various reasons.

A17. Negative Gap indicated that the banks were not able to correctly report the mis-transactions in time and usually took a lot of calls to the technical staff and even physical applications at branches to rectify the mistakes.

V. CONCLUSIONS AND RECOMMENDATIONS

This research concluded that the quality of service in mobile banking in private banks in Kashmir had a significant relationship with the satisfaction and loyalty of customers. This research positively correlates with the literature of review which was made to check the research gap. It was found out those four dimensions on which this research was undertaken had considerable influence on customers choosing mobile banking and continuing with the same service. The service quality factor which had the most impact on customer satisfaction was reliability. Customer satisfaction was high in every dimension except in responsiveness. Customers felt that banks were not responsive enough when faced with a glitch regarding the mobile app. Regular bankers and customer executives were not aware of the technicalities of the application and thus were unwilling or unable to help the customers. The technical team staff was also very less accessible to a common customer.

The loyalty factor in mobile banking was the most attractive mode of this technological innovation. It was very convenient and cheap for any bank to develop a robust, a user friendly, reliable and safe application on the mobile which could replace the entire physical infrastructure of a bank spanning over thousands of physical branches. Investment and innovation in mobile banking could make a small bank compete with behemoths in the financial industry if their online products were marketed right and provided value and highest service quality and uptime.

Customer loyalty could be achieved with minimum presence and interference of staff. Use of Artificial Intelligence could further reduce the human footprint of any small bank and boost their customer base using online means. Thus retaining a customer online become very cheap and convenient for any modern bank. Limitation of investing in mobile banking is easy access to customers to shift and divert to other online platforms/e-wallets if the bank didn't upgrade/update its mobile platforms regularly. Customer feedback, quick implementation of technology and innovation can help retain customers.

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