

## **MOBILE BANKING SERVICE QUALITY AND CUSTOMER SATISFACTION: AN APPLICATION OF CARTER MODEL**

Muhammad Yar Khan, Department of Management Sciences, COMSATS University Islamabad, Wah Campus. Email: [muhammadyar@ciitwah.edu.pk](mailto:muhammadyar@ciitwah.edu.pk)

Anam Javeed, University of Wah. Email: [dr.anam.javeed@uow.edu.pk](mailto:dr.anam.javeed@uow.edu.pk)

Nasir Mehmood, University of Wah. Email: [nasir.mehmood@uow.edu.pk](mailto:nasir.mehmood@uow.edu.pk)

Wajid Khan, Preston University Kohat. Email: [wajiduomm@gmail.com](mailto:wajiduomm@gmail.com)

---

**Abstract.** *Mobile banking is one of the modern means of handy banking services. Using the Carter model, this study aims to find the nexus between customer satisfaction and mobile banking service quality among Pakistani users. The structured questionnaire has been administered to 400 mobile banking users in Rawalpindi, Islamabad and Wah Cantt. Simple random sampling was used to gather the respondents for data collection. The analysis shows that there exists a positive association between the dimensions of assurance, tangibility as well as responsiveness with customer satisfaction. However, there exists no relationship between empathy and reliability with customer satisfaction. This study fills up the gap in literature by providing insights from mobile banking sector of Pakistan. Furthermore, the model of the study can also be extended in different contexts with other dimensions. It will be better if banks develop their e banking services up to date by adapting to the latest changes in industry and technology. This particular study has a deep importance as it provides evidence from the developing nation of Pakistan. It has spread heading endeavour to explore the consumer loyalty in the keeping money industry of Pakistan by utilizing a vast example and progress measurable systems. The study has been conducted in the area of Rawalpindi and Islamabad however future researchers may expand the premises as well as add more variables to the model to gain deeper insights*

---

**Keywords:** Mobile Banking, Customer Satisfaction, Carter Model, Islamic Banks

### **Introduction**

The quality of the products as well services is a topic of sheer interest in the modern days. The quality can be defined on the basis of four dimensions namely fitness, value, compliance with the conditions and compliance with the

customer satisfactions (Amiri Aghdaie & Faghani, 2012). The quality of the services as well as products being provided in the banking sector has become a part and parcel of the business. The service quality is defined as the manner in which the needs of customers are fulfilled. On the flip side the satisfaction level of the customer can also be described as the level of delightedness of the customers with the level of the service. The satisfaction can be described as an effort to comply with the satisfaction level of the customers. Furthermore, it can be referred as the level of delightedness of the customer with the product or services. The banks and financial institutions are integral part of any society or nation. The flow of the money in the society is done through the central bank of the nation and it provides loans as well as liquidity to the businesses prevailing (Hau, Kim, & Kim, 2012).

For the advancement of an economy and the continuance of any nation, managing an account area is thought to be a principal spine. The banks are pondered as the most extreme convincing segment of mobile banking related division in any nation. Moreover, people are now more interested in performance of the life which should be standard exercises along with the help of the internet, and money saving is now too much improved the access of administration through descriptive factors of rivalry to an e-situation alongside the administrations of Internet managing an account. The need of Internet saving money has been examined to give attractive administrations to the clients who make them a pleasure. As a rule, the mobile banking has been found and utilized as a technique to get changes giving the administration, especially in the managing an administration ventures (Rod, Ashill, Shao, & Carruthers, 2009). In conventional banking, the major blemishes are comforts and working timings of the banks which are physical. Timings of branches are 8 hours and the clients who are dependent on physical banks have to sit tight for their turn, more specifically in the payments of bills. Another important drawback of bank is they need to close their banks on different occasions in which all offices are closed. Mobile banks are far better in this issue, as it is easy to use, clients don't have to wait for opening of bank or their turns. As upper hands of customary systems of branches are crumbling immediately, the mechanical web progression may useful for the change in the work of the bank, convey or contend (Sadeghi & Heidarzadeh Hanzae, 2010). The SERVQUAL instrument contains 5 particular measurements. Such measurements incorporate substantial quality, dependability, responsiveness, confirmation and sympathy. This instrument is broadly used in assessing the administration of particular administration associations, including banks. The quality of administration links with the banks ought to suggest the perfect administrations of saving money virtually to urge clients to move around utilization of internet managing account administrations. The administrations of mobile account management,

which ought to be offered fundamentally, incorporate convenience; saw handiness, unwavering quality, openness, security, protection and reaction (Yilmaz, Ari, & Gürbüz, 2018). Unwavering quality fundamentally alludes to the ability of playing out the guaranteed administrations accurately and also purposely. To the extent the Internet keeping money is concerned, the measurement of unwavering quality comprises of giving applicable data to the clients and also opportune and solid administrations. The responsiveness is related with the consistence of specialist co-ops to give assistance and moment administrations to the clients. This measurement comprises of giving reaction to the clients with respect to any of the questions identified with their online financial balances. The responsiveness measurement likewise incorporates comfort and simple availability of web based managing an account administrations. The measurement of affirmation is identified with the data and kindness of workers, also as their competency to pass on dependence and certainty (Tsai, Chien, & Cheng, 2018). Confirmation measurement is made out of dependable answers and reliable administrations, supporting the security of record, and additionally keeping up blunder free records. Sympathy alludes to the arrangement of minding and giving impossible to miss regard for the clients on singular premise. This measurement is related with giving the best advantages to the clients, understanding the specific needs of clients, giving helpful working hours and giving singular fixation to the clients. Consumer loyalty is depicted as an ability of association to finish enthusiastic, mental requirements of the clients who have potential. As per unique investigate identified with the state of mind of clients and their reception of web based saving money administrations, it has been watched that different determinants affect the viewpoints of clients in the appropriation of web based saving money administrations which incorporate demography, conduct and inspiration level (Hai, Tan, & Yuen, 2018). Be that as it may, when the appropriation of Internet saving money is broke down, the factors, for example, confide in, protection and security are portrayed as seriously huge variables from the perspective of clients. In prior time, many researchers identified with the acknowledgment and execution of Web managing an account by the clients have been led. A few specialists have performed the examination on what are the view of clients toward the reception of Internet saving money administrations; nonetheless, a portion of the scientists have assessed the consumer loyalty's level by seeing the measurements of Web managing an account benefit quality. In the Pakistan, just the causes are identified along with appropriation of Internet handling an account by the clients have been analyzed. This investigation endeavours to decide the connection between the level of consumer loyalty and Internet keeping money measurements benefit value in Pakistan, by utilizing it. This

study is sorted out in 5 segments in start, there is introduction; then literature review is done and then there is an experiment and its results are discussed. And in the last, conclusion and suggestions are also discussed.

## 2. Literature review

(Raza, Jawaid, & Hassan, 2015) carried investigation on customer satisfaction and users of online banking. The SERVQUAL instrument has been utilized by the specialists for the recognizable proof of these components (Levesque & McDougall, 1996). The factors incorporated into the examination are social execution, centre execution, substance, focused rates, empowering, future aims and consumer loyalty. The sample size of the investigation is 325 respondents. The consequences of the examination demonstrate that the highlights identified with benefit quality, which incorporate social execution, highlights and centre execution, exist in retail keeping money, and these affect consumer loyalties. It is proposed that directors should focus on correcting elements that are not taking part in fulfilling clients in merchandizing keeping money. An exploration on embracing the administrations of web based managing an account in Australia. This examination is fundamentally targeted to distinguish the variables which are deflecting clients in the reception of Internet managing account administrations. The examination test comprises of 500 repliers who incorporate both individual clients of the bank. They also include corporate employees. Factors are considered here are convenience, security, attention to on the web saving money and its favourable circumstances, accessibility of foundation and protection from change. (Nui Polatoglu & Ekin, 2001) investigate the acknowledgment of internet keeping money benefits by customers. Analysts have focused on the customers of Garanti Bank, according to their specimen estimate involves 150 respondents. The factors considered in this explore incorporate unwavering quality, availability, sparing of costs, saw hazard, security and security. The after effects of the exploration demonstrates that the clients are more fulfilled on unwavering quality, security, protection, availability and saw chance factors of on the web saving money, as they were getting a charge out of these administrations without confronting any unwavering quality issues.

The clients additionally detailed that they are utilizing web based saving money administrations as a result of its availability and accommodation (Raza & Hanif, 2013). Be that as it may, the variable of sparing of expenses has not been considered as an acknowledgment of internet keeping money utilization from the viewpoint of clients. The after effects of the investigation prescribe that on the grounds that the clients are fulfilled on all factors of web based saving money gave by the bank, the administration is ought to become centred around creating upgrades in administrations with innovation progression. The

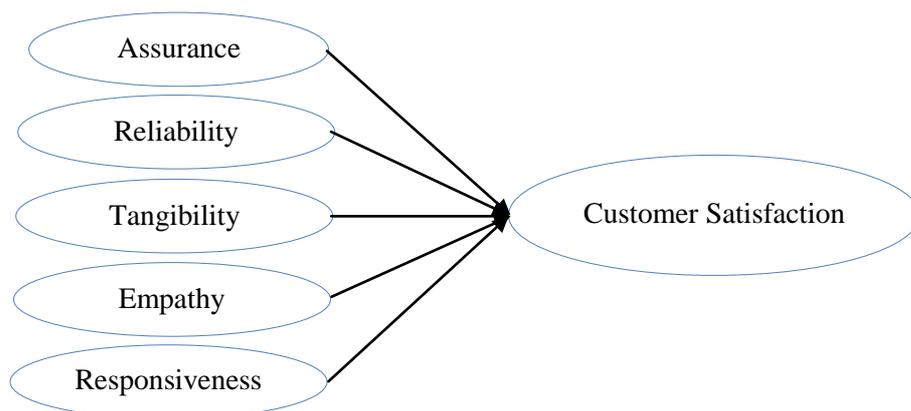
information gathering for this examination has been finished by thinking about 180 respondents. The after effects of the investigation uncover that clients are happy with the measurements of unwavering quality, substantial quality and affirmation.

Due to the mechanical progression, the clients have begun to concentrate on the outline and substance of internet saving money Web destinations. The managing account administrations are extremely solid, that are consumed by the customers and exact data may be extracted by online banks. In this study, it is given that, administration of these banks need to do programs regarding configuration for development of administration which focus on the needs and requirements of customers. To understand these problems, they need to form their structures more efficient to provide them opportunity for saving money. It has been seen from the outcomes that clients are happy with the variables of opportuneness, configuration, exactness and convenience, while the factor of substance prompts the disappointment of clients. As per the reactions of clients, it has been broke down that the data gave by internet saving money Web destinations is extremely restricted, and it isn't as per their necessities.

It has been proposed by the scientists that administrators should concentrate on the strategies which are useful in the improvement of consumer loyalty by enhancing the substance factor with respect to web based managing an account administrations (Khan, Javeed, & Khan, 2018). Researchers investigate administration nature of saving money through internet. Furthermore, its accentuation on the level of fulfillment of their customers in AUS. The suggestions of the examination demonstrate that the administration of banks ought to assess their execution independently, in relationship with the e-benefit quality. The administration of web based managing an account ought to likewise require being cognizant about the part and hugeness of the administrations which have been given expectedly to energize persisting associations with the clients. Studies have analysed the relationship between administration nature of keeping money of internet and consumer loyalty in NZ by utilizing the tool. Specimen consists of 300 respondents and they are the loyal customers of these banks. Consequences of examining the measurements of administration nature of keeping money online have both encouraging and demonstrative association with consumer loyalty.

Researchers examined consumer loyalty and saving money by use of internet benefits (Sadeghi & Heidarzadeh Hanzabee, 2010). Factors of protection and security additionally affect consumer loyalty, however their effect is slightest. It has been suggested that to investigate an immediate relationship among the instructive level of clients and how much the electronic

administrations of banks are utilized by the clients, the learning and anxiety of clients can be definitive variables to raise how much clients utilize these administrations, and how constantly they are utilizing it. Ankit (2011) has decided the components of web based saving money which affect consumer loyalty in India. Kadir, Rahmani, and Masinnaei (2011) the impact of administration nature of Internet relying upon the fulfillment level of clients in Malaysia. Raza and Hanif (2013) decide the parts which affect receiving internet managing an account among the inside and outside clients with regards to Pakistan. The factors of the exploration are seen value, comfort, web based saving money data, saw hazard, administrative help and protection and security.



Following are the hypotheses under investigation of this study

- H<sub>1</sub>: Assurance shows a positively significant impact on customer satisfaction.
- H<sub>2</sub>: Reliability shows positive and significant nexus with customer satisfaction.
- H<sub>3</sub>: Tangibility shows a positively significant impact on customer satisfaction.
- H<sub>4</sub>: Empathy shows a positively significant impact on customer satisfaction.
- H<sub>5</sub>: Responsiveness shows a positively significant impact on customer satisfaction.

### 3. Methodology

A self-administered questionnaire was floated among the mobile banking service users of various banks in the region of Rawalpindi, Islamabad and Wah Cantt. Simple random sampling was used in order to collect the data. For carrying out analysis SPSS was used because of its proven power of prediction in studies of social sciences.

#### 4. Estimations and results

This section shows the analysis carried out on the collected data. Brief explanation is also provided with each of the output.

##### 4.1.1. Descriptive Statistics

Table 1 shows the descriptive analysis of the data. The mean and standard deviation values are under the acceptable range and consistent with the previous literature (Khan, Awan, Saleem, & Javeed, 2017; Khan, et al., 2018). The sample size of 400 respondents was taken in order to generalise the results over the entire population.

Table 1 *Descriptive Statistics (N=400)*

	Mean	Std. Deviation
Cs	4.22	0.55947
com	4.2181	0.44961
Ass	4.0644	0.40293
Rl	4.2181	0.44961
Tan	4.1465	0.56462
Em	3.88	0.912
Res	3.6844	0.55231

##### 4.1.2. Correlations

Furthermore table 2 shows the correlation among the variables under investigation. It can be seen evidently that no such major issue of correlation exists among the variables and results are in line with literature (Javeed, Sany Sanuri, & Ismail, 2018; Khan, et al., 2017).

Table 2 *Pearson Correlations*

	cs	com	ass	rl	tan	em	res
<b>Cs</b>	1.000						
<b>Com</b>	0.319	1.00					
<b>Ass</b>	0.355	0.25	1.00				
<b>Rl</b>	0.319	1.00	0.25	1.00			
<b>Tan</b>	0.477	0.36	0.39	0.36	1.00		
<b>Em</b>	0.076	0.05	0.00	0.05	0.08	1.00	
<b>Res</b>	0.456	0.41	0.26	0.41	0.45	0.20	1.00

### 4.1.3. Reliability

Reliability of any instrument is vital before using it in the study. Similarly, reliability of the instrument has been checked with Cronbach's Alpha. It shows that either the instrument is reliable to use in this research (Berriman et al., 2005; Javeed, et al., 2018). The overall score of 0.695 shows that this instrument is reliable to be used and in line with studies of same nature with respect to geography (Javeed, Mohd Mokhtar, Lebai, & Khan, 2017).

Table 3: *Reliability Statistics*

Cronbach's Alpha	N of Items
.695	7

Moving on further, table 4 shows the item total statistics where no values show any major deviation and all the values are under tolerable range. (Khan, et al., 2017) find the similar findings in similar geographical studies therefore these values are considered to be acceptable.

Table 4: *Item-Total Statistics*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Com	24.21	4.49	0.57	0.63
Ass	24.36	4.98	0.35	0.68
Rl	24.21	4.49	0.57	0.63
Tan	24.28	4.25	0.52	0.63
Em	24.55	4.49	0.12	0.80
Res	24.74	4.18	0.57	0.62
Cs	24.21	4.32	0.49	0.64

For instance, the value of alpha if item deleted is 63%, which is far below from the overall value of cronbach which is about 70%. Therefore, it can be concluded that the used instrument is reliable for the conducting the study (Javeed, et al., 2017).

### 4.1.4. Regression Analysis

Table 5 *Regression Analysis*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.83	0.30		2.75	0.01
	Ass	0.23	0.06	0.16	3.58	0.00

RI	0.09	0.06	0.07	1.60	0.11
Tan	0.27	0.05	0.27	5.42	0.00
Em	0.00	0.03	0.00	-0.06	0.95
Res	0.27	0.05	0.27	5.37	0.00

Customer satisfaction is considered as dependent variable however assurance, reliability, tangibility, empathy and responsiveness are considered as independent variables. As depicted by the table, assurance shows a positively significant impact on customer satisfaction. On similar basis tangibility and responsiveness also show a positively significant relationship with customer satisfaction. It can also be seen that the reliability and empathy do not show any significant relationship with customer satisfaction.

### **5. Conclusion and Policy Implications**

The essential motivation behind this exploration is to decide the connection between client fulfillment and mobile banking. This investigation likewise plans to discover what factors significantly affect expanding consumer satisfaction. The sample of 400 respondents was taken in order to carry out analysis in the study. Descriptive analysis was used in order to get an overall picture of the results and variables. Furthermore, correlation test was applied to check out that either any variable is highly dependent on other variable or not. Cronbach's alpha was used to check out the reliability of the items and in order to test the hypotheses multiple linear regression is used. It could be seen that only reliability and empathy did not show any relationship with customer satisfaction while all other variables had a significantly positive relationship. According to the results obtained from the study it can be suggested that the executives of the banks controlling mobile banking services need to concentrate more on the planning which would elevate the level of delightedness of the clients. The responsible personals also need to upgrade their service level.

### **References**

- Amiri Aghdaie, S., & Faghani, F. (2012). Mobile banking service quality and customer satisfaction (application of SERVQUAL model). *International Journal of Management and Business Research*, 2(4), 351-361.
- Ankit, S. (2011). *Factors Influencing Online Banking Customer Satisfaction and their Importance in Improving overall Retention Levels: An Indian Banking Perspective*. Paper presented at the Information and Knowledge Management.

- Berriman, M., Ghedin, E., Hertz-Fowler, C., Blandin, G., Renauld, H., Bartholomeu, D. C., et al. (2005). The genome of the African trypanosome *Trypanosoma brucei*. *Cience*, 309(5733), 416-422.
- Hai, H., Tan, K., & Yuen, Y. (2018). Factors influencing business of mobile telecommunication service providers in Vietnam. *Management Science Letters*, 8(5), 393-404.
- Hau, Y. S., Kim, G., & Kim, B. (2012). Antecedents of user satisfaction in the context of mobile data services: the moderating role of variety and rate of usage. *International Journal of Mobile Communications*, 10(6), 617-636.
- Javeed, A., Mohd Mokhtar, S. S., Lebai, I., & Khan, M. Y. (2017). Perceived Product Quality: Role of Extrinsic Cues. *Journal of Managerial Sciences*, 11(3), 195-220.
- Javeed, A., Sany Sanuri, B. M. M., & Ismail, B. L. O. (2018). Conceptualizing the relation between halal logo, perceived product quality and the role of consumer knowledge. *Journal of Islamic Marketing*, 9(4), 727-746.
- Kadir, H. A., Rahmani, N., & Masinaei, R. (2011). Impacts of service quality on customer satisfaction: Study of online banking and ATM services in Malaysia. *International Journal of Trade, Economics & Finance*, 2(1), 1-9.
- Khan, M. Y., Awan, T., Saleem, N., & Javeed, A. (2017). The Impact of Islamic Governance Mechanisms on Corporate Governance Compliance and Disclosure. *Journal of Managerial Sciences*, 11(3), 399-414.
- Khan, M. Y., Javeed, A., & Khan, W. (2018). Capital Structure Determinants of Islamic and Conventional Banks of Pakistan. *Sarhad Journal of Management Sciences*, 4(2), 264-274.
- Levesque, T., & McDougall, G. H. (1996). Determinants of customer satisfaction in retail banking. *International Journal of Bank Marketing*, 14(7), 12-20.
- Nui Polatoglu, V., & Ekin, S. (2001). An empirical investigation of the Turkish consumers' acceptance of Internet banking services. *International Journal of Bank Marketing*, 19(4), 156-165.
- Raza, S. A., & Hanif, N. (2013). Factors affecting internet banking adoption among internal and external customers: a case of Pakistan. *International Journal of Electronic Finance*, 7(1), 82-96.
- Raza, S. A., Jawaid, S. T., & Hassan, A. (2015). Internet banking and customer satisfaction in Pakistan. *Qualitative Research in Financial Markets*, 7(1), 24-36.
- Rod, M., Ashill, N. J., Shao, J., & Carruthers, J. (2009). An examination of the relationship between service quality dimensions, overall internet banking

- service quality and customer satisfaction: A New Zealand study. *Marketing Intelligence & Planning*, 27(1), 103-126.
- Sadeghi, T., & Heidarzadeh Hanzaee, K. (2010). Customer satisfaction factors (CSFs) with online banking services in an Islamic country: IR Iran. *Journal of Islamic Marketing*, 1(3), 249-267.
- Tsai, M.-C., Chien, Y.-Y., & Cheng, C.-C. (2018). Upgrading service quality of mobile banking. *International Journal of Mobile Communications*, 16(1), 82-115.
- Yilmaz, V., Ari, E., & Gürbüz, H. (2018). Investigating the relationship between service quality dimensions, customer satisfaction and loyalty in Turkish banking sector: An application of structural equation model. *International Journal of Bank Marketing*, 36(3), 423-440.

## Appendix

### Frequency Tables

Frequencies of the gender, age group and academic qualification are shown below.

#### Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	300	75	75	75
	2	100	25	25	100
	Total	400	100	100	

#### Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	228	57	57	57
	2	93	23.3	23.3	80.3
	3	65	16.3	16.3	96.5
	4	14	3.5	3.5	100
	Total	400	100	100	

#### Academic Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	5.5	5.5	5.5
	2	253	63.3	63.3	68.8
	3	116	29	29	97.8
	4	9	2.3	2.3	100
	Total	400	100	100	