IMPACT OF M-BANKING SERVICE QUALITY ON CUSTOMER SATISFACTION WITH ROLE OF TRUST AND CUSTOMER VALUE CO-CREATION INTENTIONS

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ABSTRACT

This paper investigates the impact of various dimensions of mobile banking service quality on customer satisfaction with the mediating role of customer value co-creation intentions in the banking sector of Pakistan. Theoretical foundations of this study lie in the Technology Acceptance Model (TAM) and Service-Dominant (S-D) logic. Data was collected using a questionnaire from a sample of 383 respondents from 25 banks. Mediation and moderation analyses were conducted to explore the role of trust in creating customer satisfaction through the mediating role of customer value co-creation. The findings demonstrated that m-banking service quality dimensions have a significant impact on customer satisfaction. Also, it was found that co-creation has a significant impact on customer satisfaction. Mediation analysis was conducted to see if co-creation mediates the relationship between m-banking service quality and customer satisfaction. There was found to be partial mediation between all dimensions of m-banking service quality and customer satisfaction. Moderation analysis was also conducted to check the role of trust. The findings revealed that trust moderates the relationship for only perceived ease of use of m-banking; however, trust doesn’t moderate the relationship for other dimensions of m-banking. This study will be beneficial for bank managers to adopt the strategies that help in co-creation by customers and hence enhance customer satisfaction in the existing competition for better services. This study will add to the existing literature by its novel findings and knowledge in the extended technology acceptance model.

Keywords: Customer Value Co-Creation; Mobile Banking; Customer Satisfaction; Technology Acceptance Model (TAM); Service-Dominant (S-D) Logic.

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INTRODUCTION

Banks are the backbone of the financial sector and acts as the engine to create the link between depositor and creditor. Banks play an intermediary role in between the lender and creditor. Customers play the role of king in any sector i.e., if the customers are not satisfied, they will not tend to use the services. Due to increased competition in the financial sector firms, banks are providing alternative services such as e-banking and m-banking (Choudrie, Junior, McKenna, & Richter, 2018; Glavee-Geo, Shaikh, & Karjaluoto, 2017). Mobile banking can be defined as the channel through which a customer is enabled to conduct transactions anytime and anywhere, using mobile devices in a less physical manner and at a lesser cost (Glavee-Geo et al., 2017; Singh & Srivastava, 2018). M-banking includes the services like payments of bills, checking account balance, transfer of money, and receiving notifications on mobiles, redeeming and issuing of certificates, which in results increases the competitive advantage (Laukkanen, 2016).

Developing a concept of co-creation in the minds of customers and bankers is now an emerging area in the field of banking sector and it is equally important for customers and bankers to understand that how co-creation intentions can result in different outcomes in terms of customer behaviors (Malik & Ahsan, 2019). In the current era of development, banks are more focused towards its customers to gain stronger competitive position by involving the customers and creating customer satisfaction (Mainardes, Teixeira, & da Silveira Romano, 2017). One of the ways to create satisfaction is co-creation. The banking organizations which give preference to their customer and focus on the needs of their customers, have the tendency to gather a greater pool of satisfied and loyal customers (Keshavarz & Jamshidi, 2018). The higher number of satisfied customers will result in increased financial stability in banks (Rashid, Yousaf, & Khaleequzzaman, 2017). Hence, it is important for organizations to develop such strategies which can result in increased customer satisfaction and profitability (Chen, Drennan, Andrews, & Hollebeek, 2018). This is possible by addressing the preferences of customers (Carù & Cova, 2015).

In the current era of technology, increased mobile usage have drawn the interest of research scholars towards m-banking and satisfaction of customers (Tam & Oliveira, 2017; Wangwacharakul, Medina, & Poksinska, 2021). Previous research work of Glavee-Geo et al. (2017) and Tam and Oliveira (2017) revealed that the earlier researchers have focused on the factors that induce the adoption of m-banking, however, only a few researchers have focused on
post adoption behaviors of m-banking (Boujaddaine & Taqi, 2021; Tam & Oliveira, 2017). Customer value co-creation intention is an understudied area in banking sector (Cambra-Fierro, Melero-Polo, & Sese, 2018; Mainardes et al., 2017). Thus, the aim of this research paper is to answer the following research questions by analyzing the links between variables.

1. Does the use of mobile banking services have any impact on customer value co-creation behaviors?
2. Does the use of mobile banking services have any impact on customer satisfaction?
3. Do trust beliefs moderate the relation between mobile banking services quality, co-creation, and customer satisfaction?

This research paper is an attempt to address the gap of post adoption behaviors of mobile banking such as trust, satisfaction, and commitment in the banking sector of Pakistan. This study will fill the gap of impact of m-banking service quality on customer satisfaction through the mediation of co-creation intentions and moderation of trust beliefs. Thus, this study will explore the co-creation through customers in banking industry from the viewpoint of m-banking service quality because it is considered as a new avenue for research in the field mobile marketing. In addition, this paper explores the moderating role of trust in demonstrating the behavior of customers in the context of banking.

The current research contributes in several ways. Firstly, this study attempts to investigate empirically, whether service quality of m-banking plays a role in increasing co-creation of customers in Pakistani banking industry. Secondly, it specifically investigates the role of trust as a moderator and co-creation as a mediator in shaping customer satisfaction. The banking sector of Pakistan was specifically selected because it is a developing country and is going through multiple digital developments. Therefore, this research will add in the literature of bank marketing while creating awareness about co-creation and m-banking service quality.

**LITERATURE REVIEW**

Quality of m-banking service can be described as assessments made by the m-banking users concerned with the aspects of mobile banking (Arcand, PromTep, Brun, & Rajaobelina, 2017). Previous studies that investigated the dimensions of service quality of electronic banking, emphasized on the dimensions like, website design, perceived usefulness of services, security and
privacy, reliability and perceived ease of use (Jun & Palacios, 2016). Other studies also focused on the hedonic values created by using m-banking e.g. perceived enjoyment (Arcand et al., 2017). The present study focuses on investigating of the impact of m-banking service qualities i.e., perceived ease of use, usefulness, security and privacy and perceived enjoyment on customer value co-creation intentions.

After an extensive review of 46 studies covered by Tam and Oliveira (2017), they concluded that the m-banking adoption is the most widely examined variable (38%), usage of mobile banking (37%). Therefore, there lies a gap of examining post adoption behaviors of m-banking. Accordingly, this study will bridge this gap by examining co-creation intentions and its links with m-banking service quality and customer satisfaction. This study proposes that increasing the service quality will increase customer value co-creation intentions and ultimately the satisfaction. The theoretical foundation of this study lies in technology acceptance model (TAM) and service dominant (S-D) logic. TAM is derived from the theory of reasoned action (TRA) (Fishbein & Ajzen, 1977). TRA tends to elucidate the link between attitude and behavior in social psychology. This theory explains that actions of a person, whether favorable or not, are based on his/her behavioral intentions (Fishbein & Ajzen, 1977). The original theory of reasoned action consisted of two variables i.e., perceived ease of use and usefulness (Davis, 1989). However, many authors have extended the TAM to perceived security (Singh & Srivastava, 2018) and perceived enjoyment (Pagani, 2004). This study uses extended TAM to boost the explanatory power of the model.

The other theory which can explain the relationships between the variables of this paper is S-D logic. With the widespread of application S-D logic, the value co-creation idea has become widespread in the field of marketing (Vargo & Lusch, 2014). According to this logic, the co-creation of value occurs between customers and providers due to interactions, exchange of knowledge and skills (Vargo & Lusch, 2014). Co-creation can be defined as the behavior by any person to add/co-create the value and add in the integration process (Laud & Karpen, 2017). The viewpoint of value co-creation is vastly increasing in the banking sector (Formisano, Fedele, & Calabrese, 2018). Co-creation by customers not only allows customer participation but also adds to the value of services of banks (Prahalad & Ramaswamy, 2004a, 2004b).

Carranza, Díaz, Sánchez-Camacho, and Martín-Consuegra (2021) conducted a study on banking sector. The basis of this study lied in the theoretical foundations of TAM. The study revealed that perceived ease of use as well as perceived usefulness puts a significant impact on customer value
co-creation. Similar results were disseminated through the studies of Salimon, Yusoff, and Mokhtar (2017) and Zhang, Lu, and Kizildag (2018) that hedonic motivation to adopt m-banking increases co-creation by customers. Hence, the following hypothesis was created:

**H1: M-banking Service Quality puts a significant impact on Co-Creation Intentions.**

When there is an intention to co-create the value, the customer will tend to show different behaviors, such as satisfaction. Malik and Ahsan (2019) conducted a study in banking sector. The results of the study showed that co-creation positively influences customer satisfaction, i.e., the more the intention of value co-creation; the more will be the customer satisfaction. Similar results were shown in the study of Chen, Yang, and Leo (2017), i.e., the positive the word of mouth, the more will be customer satisfaction. Based on these studies, the third hypothesis is:

**H2: Customer Value Co-Creation Intention puts a significant impact on Customer Satisfaction.**

Mainly the customer satisfaction in the banking sector lies in perceived ease of use as well as perceived usefulness (Tam & Oliveira, 2017). M-banking has become an important tool in increasing customer satisfaction now-a-days (Nwoko, Eze, & Maduka, 2021). Moreover, many studies revealed a positive relationship between internet banking and customer satisfaction (Hamzah, Lee, & Moghavvemi, 2017; Hossain, Xiaoyan, & Rahman, 2019). Based on the given empirical studies the third hypothesis is follows:

**H3: M-Banking Service Quality puts a significant impact on Customer Satisfaction.**

Trust also plays an important role in co-creation because when the customers have any fear about security or privacy issues, then the customer would not be able to participate in creating values but if the customer has trust in the services of bank then the customer will be able to engage in the activities like co-creation (Malaquias & Hwang, 2019; Zhou, 2011). Trust can be defined as the willingness to do confidence in the activities of partner to which he relies on (Hennig-Thurau & Klee, 1997). Previous studies have focused on the role of trust in purchase intentions and customer retention (Langat, Bonuke, & Kibet, 2021), but this study will explore the role of trust in value co-creation intentions because if a customer trusts in the services, then the customer will be able to influence co-creation. Andaleeb (1995) in his study revealed the moderating role of trust in various customer behaviors and intentions to cooperate. Alsaad, Mohamad, and Ismail (2017) and Alam, Al Karim, and Habiba (2021) also conducted a study and stated that moderating role of trust should be considered in electronic commerce. A study was also conducted by Mostafa (2020) in which
the moderating role of trust was studied in customer value co-creation. The results revealed that some of the dimensions of trust moderate the relationship between m-banking and customer value co-creation. Based on the discussion, the fourth hypothesis is devised as follows:

**H4:** Trust moderates the relationship between M-Banking and Customer Value Co-Creation Intentions.

The figure below demonstrates the conceptual framework formulated for this study. The model demonstrates the relationship between study variables and corresponding hypotheses:

**CONCEPTUAL FRAMEWORK**

![Figure 1. Conceptual Framework](image-url)

- **M-Banking Service Quality**
  - Perceived ease of use
  - Perceived usefulness
  - Perceived security/privacy
  - Perceived enjoyment

- **Trust Beliefs**
  - Benevolence
  - Integrity
  - Competence

- **Customer Value Co-Creation**
  - Information Seeking
  - Information Sharing
  - Responsible Behavior
  - Feedback
  - Advocacy
  - Helping
  - Tolerance

- **Customer Satisfaction**
METHODOLOGY

To test the hypotheses, the study was conducted in banking sector of Pakistan. Quantitative study design was used, and the study was cross-sectional in nature. The population of study comprised of several banks. Data was collected from the customers of public and private banks and data was collected from only those persons who used mobile to conduct the transactions. Total banks were 25 banks including five public sector commercial banks, 20 private banks. Convenience sampling technique was used but it was made sure that the customer uses m-banking to conduct the transactions. Data was collected from 383 respondents because when the population is unknown, then the ideal sample size is 383 (Sekaran & Bougie, 2019). Data was collected using questionnaire containing 57 items. Questionnaire had two parts, i.e., demographics and statements. Data was analyzed using SPSS 20 and the analysis for mediation and moderation was conducted using Process by Hayes in SPSS 20.

Measures

The study used the scales that are already well established and was taken from the instruments of prior studies. Questionnaire consisted of 57 items. The overall reliability of the questionnaire was 0.918. However, to check the discriminant and convergent validity, correlational analysis and factor analysis were conducted.

Reliability Test and Validity Test

Table 1 shows the value of overall reliability of the instrument. The overall reliability of the instrument which contained 57 items was 0.918.

| Cronbach's Alpha | No. of Items |
|------------------|--------------|
| .918             | 57           |

Table 1. Reliability Statistics

Source: Study Analysis

Table 2 shows the reliability of constructs. The cut-off of 0.7 and above is generally used for reliability (Christmann & Van Aelst, 2006). From the table 2 we can see that all the individual constructs have the reliability more than 0.7.
Table 2. Construct Reliability

| Sr. No | Constructs | No. of items | Construct Reliability |
|--------|------------|--------------|-----------------------|
| 1      | MBSQ       |              |                       |
|        | MBSQ_POU   | 4            | 0.821                 |
|        | MBSQ_PUS   | 4            | 0.847                 |
|        | MBSQ_PENJ  | 4            | 0.860                 |
|        | MBSQ_SS    | 5            | 0.801                 |
| 2      | TRU        |              |                       |
|        | TRU_BEN    | 3            | 0.803                 |
|        | TRU_COM    | 4            | 0.826                 |
|        | TRU_INT    | 4            | 0.831                 |
| 3      | CCVI       |              |                       |
|        | CVCCI_AD   | 3            | 0.775                 |
|        | CVCCI_FD   | 3            | 0.843                 |
|        | CVCCI_INTH | 4            | 0.807                 |
|        | CVCCI_IS   | 3            | 0.822                 |
|        | CVCCI_IR   | 4            | 0.827                 |
|        | CVCCI_ISH  | 4            | 0.805                 |
|        | CVCCI_ITT  | 3            | 0.821                 |
| 4      | CS         | 5            | 0.875                 |

Total 57

Source: Study Analysis

KMO & Bartlett’s Test

Table 3 demonstrates the values for KMO and Bartlett’s test. In general, the threshold for this is that the value of KMO should be greater than 0.50 and p-value should be less than 0.05 (Mathur & Dhulla, 2014). In the given scenario the values for KMO are ranging from 0.555 to 0.761. Also, the value for Bartlett’s test is less than 0.05 in all the cases.

Table 3. KMO & Bartlett’s Test

| Constructs | Kaiser-Meyer-Oklin Measure of Sampling Adequacy | P-Values | Eigenvalues |
|------------|-----------------------------------------------|----------|-------------|
| MBSQ_POU   | 0.717                                         | 0.000    | 2.613       |
| MBSQ_PUS   | 0.566                                         | 0.000    | 2.854       |
| MBSQ_PENJ  | 0.565                                         | 0.000    | 2.918       |
| MBSQ_SS    | 0.701                                         | 0.000    | 2.899       |
| TRU_BEN    | 0.645                                         | 0.000    | 2.157       |
| TRU_COM    | 0.677                                         | 0.000    | 2.672       |
| TRU_INT    | 0.672                                         | 0.000    | 2.731       |
| CVCCI_AD   | 0.608                                         | 0.000    | 2.158       |
| CVCCI_FD   | 0.729                                         | 0.000    | 2.287       |
| CVCCI_INTH | 0.556                                         | 0.000    | 2.541       |
| CVCCI_IS   | 0.721                                         | 0.000    | 2.245       |
| CVCCI_IR   | 0.761                                         | 0.000    | 2.672       |
| CVCCI_ISH  | 0.647                                         | 0.000    | 2.596       |
| CVCCI_ITT  | 0.630                                         | 0.000    | 2.229       |
| CS         | 0.555                                         | 0.000    | 3.452       |

Source: Study Analysis
Table 4 shows the value of factor loadings for each of the items, the percentage of variance explained and also the sources of individual constructs.

**Table 4.** Constructs, Factor Loadings, and % of Variance

| Constructs | Sources | Factor Loadings | % of Variance Explained |
|------------|---------|-----------------|-------------------------|
| MBSQ_POU   | Agarwal and Karahanna (2000) | | 65.324 |
| MBSQ_POU1  | 0.825   |                  |                         |
| MBSQ_POU2  | 0.756   |                  |                         |
| MBSQ_POU3  | 0.912   |                  |                         |
| MBSQ_POU4  | 0.727   |                  |                         |
| MBSQ_PUS   | Agarwal and Karahanna (2000) | | 71.349 |
| MBSQ_PUS1  | 0.826   |                  |                         |
| MBSQ_PUS2  | 0.910   |                  |                         |
| MBSQ_PUS3  | 0.874   |                  |                         |
| MBSQ_PUS4  | 0.761   |                  |                         |
| MBSQ_PENJ  | Pikkarainen et al. (2004) | | 72.938 |
| MBSQ_PENJ1 | 0.836   |                  |                         |
| MBSQ_PENJ2 | 0.908   |                  |                         |
| MBSQ_PENJ3 | 0.883   |                  |                         |
| MBSQ_PENJ4 | 0.784   |                  |                         |
| MBSQ_SS    | Pikkarainen et al. (2004) | | 57.972 |
| MBSQ_SS1   | 0.767   |                  |                         |
| MBSQ_SS2   | 0.898   |                  |                         |
| MBSQ_SS3   | 0.796   |                  |                         |
| MBSQ_SS4   | 0.747   |                  |                         |
| MBSQ_SS5   | 0.558   |                  |                         |
| TRU_BEN    | McKnight et al. (2002) | | 71.887 |
| TRU_BEN1   | 0.910   |                  |                         |
| TRU_BEN2   | 0.779   |                  |                         |
| TRU_BEN3   | 0.850   |                  |                         |
| TRU_COM    | McKnight et al. (2002) | | 66.803 |
| TRU_COM1   | 0.662   |                  |                         |
| TRU_COM2   | 0.919   |                  |                         |
| TRU_COM3   | 0.851   |                  |                         |
| TRU_COM4   | 0.816   |                  |                         |
| TRU_INT    | McKnight et al. (2002) | | 68.263 |
| TRU_INT1   | 0.849   |                  |                         |
| TRU_INT2   | 0.828   |                  |                         |
| TRU_INT3   | 0.787   |                  |                         |
| TRU_INT4   | 0.839   |                  |                         |
| CVCCI_AD   | Yi and Gong (2013) | | 71.949 |
| CVCCI_AD1  | 0.800   |                  |                         |
| CVCCI_AD2  | 0.924   |                  |                         |
| CVCCI_AD3  | 0.816   |                  |                         |
| CVCCI_FD   | Yi and Gong (2013) | | 76.236 |
| CVCCI_FD1  | 0.877   |                  |                         |
| CVCCI_FD2  | 0.877   |                  |                         |
| CVCCI_FD3  | 0.865   |                  |                         |
| CVCCI_INTH | Yi and Gong (2013) | | 63.628 |
| CVCCI_INTH1| 0.663   |                  |                         |
| CVCCI_INTH2| 0.866   |                  |                         |
| CVCCI_INTH3| 0.882   |                  |                         |
| CVCCI_INTH4| 0.757   |                  |                         |
| CVCCI_IS        | Yi and Gong (2013) | 74.838 |
|-----------------|---------------------|--------|
| CVCCI_IS1       | 0.879               |        |
| CVCCI_IS2       | 0.853               |        |
| CVCCI_IS3       | 0.863               |        |
| CVCCI_IR        | Yi and Gong (2013)  | 66.798 |
| CVCCI_IR1       | 0.702               |        |
| CVCCI_IR2       | 0.900               |        |
| CVCCI_IR3       | 0.850               |        |
| CVCCI_IR4       | 0.804               |        |
| CVCCI_ISH       | Yi and Gong (2013)  | 64.912 |
| CVCCI_ISH1      | 0.852               |        |
| CVCCI_ISH2      | 0.946               |        |
| CVCCI_ISH3      | 0.748               |        |
| CVCCI_ISH4      | 0.645               |        |
| CVCCI_ITT       | Yi and Gong (2013)  | 74.303 |
| CVCCI_ITT1      | 0.727               |        |
| CVCCI_ITT2      | 0.917               |        |
| CVCCI_ITT3      | 0.927               |        |
| CS              | Sikdar and Makkad (2015) & Toor et al. (2016) | 69.042 |
| CS1             | 0.801               |        |
| CS2             | 0.856               |        |
| CS3             | 0.794               |        |
| CS4             | 0.901               |        |
| CS5             | 0.797               |        |

Source: Study Analysis
Correlational Analysis

Table 5 presents the results for correlational analysis between the variables. The value of correlation ranges from -1 to +1. From the table, we can see that there was no issue of multicollinearity.

**Table 5. Correlations**

|                | TRU_BEN | TRU_COM | TRU_INT | MBSQ_POU | MBSQ_PUS | MBSQ_PENJ | MBSQ_SS | CVCC_I_AD | CVCC_I_FD | CVCC_I_INTH | CVCC_I_IS | CVCC_I_IR | CVCC_I_SH | CVCC_I_ITT |
|----------------|---------|---------|---------|----------|----------|-----------|---------|-----------|-----------|--------------|-----------|-----------|-----------|-----------|
| TRU_BEN        | Pearson Correlation Sig. (2-tailed) | .286** | 1       | .174**   | .140     | .250**    | .034    | .034      | .508**    | .479**       | .350**    | .302**    | .320**    | 1         |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| TRU_COM        | Pearson Correlation Sig. (2-tailed) | .508** | 1       | .374**   | .322**   | .374**    | .000    | .000      | .356**    | .306**       | .250**    | .250**    | .277**    | 1         |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| TRU_INT        | Pearson Correlation Sig. (2-tailed) | .350** | .479**  | .322**   | .251**   | .251**    | .000    | .000      | .277**    | .277**       | .250**    | .250**    | .277**    | .958**    |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| MQ_POU         | Pearson Correlation Sig. (2-tailed) | .034   | .231**  | .153**   | .030     | .222**    | .250**  | .502      | .000      | .003         | .555      | .000      | .000      | .352**    |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| MQ_PUS         | Pearson Correlation Sig. (2-tailed) | .231** | .153**  | .030     | .222**   | .250**    | .502    | .000      | .003      | .555         | .000      | .000      | .000      | .352**    |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| MQ_PENJ        | Pearson Correlation Sig. (2-tailed) | .153** | .030    | .222**   | .250**   | .250**    | .502    | .000      | .003      | .555         | .000      | .000      | .000      | .352**    |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| MQ_SS          | Pearson Correlation Sig. (2-tailed) | .034   | .231**  | .153**   | .030     | .222**    | .250**  | .502      | .000      | .003         | .555      | .000      | .000      | .352**    |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| CVCC_I_AD      | Pearson Correlation Sig. (2-tailed) | .160** | .347**  | .528**   | .618**   | .178**    | .145**  | .047      | .047      | .145**        | .178**    | .145**    | .047      | 1         |
|                | N       | 383     |         | 383      | 383      | 383       | 383     | 383       | 383       | 383          | 383       | 383       | 383       | 383       |
| Source: Study Analysis |
|-----------------------|
| **Correlation is significant at the 0.01 level (2-tailed).** |
| *Correlation is significant at the 0.05 level (2-tailed).* |
| N | Pearson Correlation | Sig. (2-tailed) |
|---|---------------------|-----------------|
| **CVCCI_F** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .491** | .183** | .274* | .076 | .531** | .552** | -.193** | .228** | 1 |
| **CVCCI_IN** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .214** | .493** | .651* | .473** | .393** | .333** | -.062 | .516** | .256** | 1 |
| **CVCCI_IS** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .072 | -.276** | .459* | -.162** | -.202** | -.240** | .324** | -.368** | -.165** | -.512** | 1 |
| **CVCCI_IR** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .426** | .513** | .605* | .569** | .639** | .566** | -.192** | .594** | .256** | .657** | -.463** | 1 |
| **CVCCI_IS** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .203** | .485** | .536* | .665** | .333** | .260** | -.177** | .693** | .113* | .547** | -.317** | .679** | 1 |
| **CVCCI_IT** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .373** | .338** | .182* | .210** | .467** | .412** | -.043 | .149** | .232** | .514** | -.192** | .344** | .188** | 1 |
| **CS_MQ** | **N** | **383** | **383** | **383** | **383** | **383** | **383** | **383** |
| **TH** | .515** | .198** | .222* | .025 | .784** | .799** | -.307** | .103* | .320** | .281** | -.346** | .515** | .088 | .376** | 1 |

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Respondents’ Demographics

Table 6 is showing the demographics of respondents. Demographics included bank type, gender, age group and education. There were a total of 203 males and 180 females who used mobile banking. Bank customers were categorized into public bank customers and private bank customers. Most of the respondents had the qualification above bachelors.

Table 6. Respondents’ Demographics

| Variables     | Category   | Frequency |
|---------------|------------|-----------|
| Banks         | Public     | 176       |
|               | Private    | 207       |
|               | Total      | 383       |
| Education     | <Bachelors | 40        |
|               | Bachelors  | 73        |
|               | Masters    | 170       |
|               | PhD        | 30        |
|               | Others     | 70        |
|               | Total      | 383       |
| Gender        | Male       | 203       |
|               | Female     | 180       |
| Age           | 18-25      | 25        |
|               | 26-35      | 144       |
|               | 36-45      | 155       |
|               | 46 and above | 57     |
| Using m-banking | <1 year | 41        |
|                | 1-3 years  | 88        |
|                | 4-6 years  | 74        |
|                | 7 years and above | 82 |
|                | Total      | 383       |

Source: Study Analysis

Regression Analysis

Baron and Kenny (1986) established four steps to confirm mediation. According to Baron and Kenny (1986) these four steps include the estimation of path a (estimation of impact of independent variable on mediating variable), path b (estimation of impact of mediating variable on dependent variable variable) and path c (estimation of impact of independent variable on dependent variable) and last step is to confirm whether mediation is full or partial. Path a includes the estimation of effect of independent variable on mediating variable, path b includes the estimation of effect of mediating variable on dependent variable. Path c includes the estimation of effect of independent variable on dependent variable. Final step is to confirm whether mediation is full or partial i.e., if path c is insignificant, there will be full mediation, however, if path c is significant then there will be partial mediation (Baron & Kenny, 1986). Regression analyses were conducted to estimate paths a, b, and c. The table 7 shows the regression analysis. From table 7, we can see the values
for path a. All dimension of m-banking service quality place a significant impact on CVCCI. The beta values are showing the change in dependent variable due to independent variables. The value of R square is 0.594 and the value of adjusted R square is 0.590 which means that 59% of the change in the dependent variable is due to mobile banking service quality dimensions. The value of F is 138.162 and p value is 0.000, which means that model is good fit. The effect of perceived ease of use as well as perceived usefulness is significant. Same relations are supported through literature (Malik & Ahsan, 2019; Maqableh, Hmoud, & Jaradat, 2021). Thus, H1 was supported.

Table 7. Regression Analysis

| Model | Unstandardized Coefficients | Standardized Coefficients | T | Sig. |
|-------|----------------------------|---------------------------|---|------|
|       | B                          | Std. Error                | Beta | 17.367 | .000  |
| (Constant) | 2.013 | .116 | .488 | 14.015 | .000  |
| MBSQ_POU | .243 | .017 | .488 | 14.015 | .000  |
| 1 | MBSQ_PUS | .551 | .064 | 1.004 | 8.580 | .000  |
| MBSQ_PENJ | -.318 | .061 | -.604 | -5.203 | .000  |
| MBSQ_SS | .017 | .016 | .035 | 1.036 | .030  |

a. Dependent Variable: CVCCI

R^2=0.594
Adjusted R^2=0.590
F value=138.162, p=0.000

Table 8 presents the regression analysis of CVCCI on CS i.e., path b. From the table, it is evident that CVCCI puts a positive significant impact on customer satisfaction. The value of R^2 is 0.411 and the value of adjusted R^2 is 0.409 which means that one nit change in CVCCI brings 40.9% change in customer satisfaction. The value of F is 265.531 and p value is 0.000 which means model is good fit. The same findings are reported in the study of Malik and Ahsan (2019). So, H2 was also supported.

Table 8. Regression Analysis (CVCCI - CS)

| Model | Unstandardized Coefficients | Standardized Coefficients | T | Sig. |
|-------|-----------------------------|---------------------------|---|------|
|       | B                          | Std. Error                | Beta | 6.494 | .000  |
| 2 | (Constant) | 2.111 | .325 | .299 | 6.121 | .000  |
| CVCCI | .493 | .081 | .299 | 6.121 | .000  |

a. Dependent Variable: CS

R^2=0.411, Adjusted R^2=0.409
F value=265.531, p =0.000

Table 9 exhibits the direct impact of m-banking service dimensions on customer satisfaction i.e., path c. From the table we can see that the value of R^2 is 0.703 and the value of adjusted R^2 is 0.700 which means that independent variables bring a change up to 70% in dependent variable. The value
of F is 224.144 and p value is 0.000 which means that model is good fit. Also, we can see that all of the dimensions are putting a significant impact on customer satisfaction which indicates that higher the m banking service quality, higher will be the satisfaction. Similar findings are reported in prior literature (Malik & Ahsan, 2019). So, H3 was also supported.

Table 9. Direct Effects

| Model       | Unstandardized Coefficients | Standardized Coefficients | T     | Sig. |
|-------------|-----------------------------|---------------------------|-------|------|
|             | B                           | Std. Error                | Beta  |      |
| (Constant)  | 2.216                       | .163                      | 13.568| .000 |
| MBSQ_POU    | -.190                       | .024                      | -.232 | -.791| .000 |
| MBSQ_PUS    | .362                        | .090                      | .400  | 4.000| .000 |
| MBSQ_PENJ   | .392                        | .086                      | .452  | 4.556| .000 |
| MBSQ_SS     | -.087                       | .022                      | -.113 | -3.881| .000 |

a. Dependent Variable: CS

$R^2=0.703$

$Adjusted R^2=0.700$

$F value=224.144, p=0.000$

Mediation Analysis

Mediation analyses were also conducted to see if customer value co-creation mediates the relationship between mobile banking service quality and customer satisfaction. In mediation, final step is to confirm whether mediation is full or partial i.e., if independent variable puts a significant impact on dependent variable, there will be partial mediation, however, if the impact of independent variable on dependent variable is insignificant, and path a and b are significant, then there will be full mediation (Baron & Kenny, 1986). From Table 10 we can see that all the four dimensions of mobile banking service quality partially mediates the relationship between mobile banking service quality and customer satisfaction because m-banking dimensions have a direct impact on customer satisfaction as well as the mediating impact is also supported. Similar findings were reported in the study of Malik and Ahsan (2019) but the impact of e banking services was checked on customer satisfaction through the mediation of co-creation.
Table 10. Mediation Analysis

| Paths                  | Effect | SE     | T       | P       | LLCI    | ULCI    | Type of mediation |
|------------------------|--------|--------|---------|---------|---------|---------|-------------------|
| MBSQ_POU→CS           | -0.2326| 0.0509 | -4.5678 | 0.000   | -0.3328 | -0.1325 |                  |
| MBSQ_POU→CVCCI→CS     | 0.1795 | 0.0191 | 24.5338 | 0.000   | 0.1427  | 0.2179  | Partial           |
| MBSQ_PUS→CS           | 0.8252 | 0.0336 | 24.5338 | 0.000   | 0.7591  | 0.8913  |                  |
| MBSQ_PUS→CVCCI→CS     | 0.0479 | 0.0117 | -0.0262 | 0.999   | -0.0694 | -0.0231 | Partial           |
| MBSQ_PENJ→CS          | 0.7409 | 0.0301 | 24.5798 | 0.000   | 0.6816  | 0.8001  |                  |
| MBSQ_PENJ→CVCCI→CS    | -0.0202| 0.0075 | -0.0262 | 0.999   | -0.354  | -0.0060 | Partial           |
| MBSQ_SS→CS            | -0.2269| 0.0361 | -6.2770 | 0.000   | -0.2979 | -0.1558 |                  |
| MBSQ_SS→CVCCI→CS      | -0.0325| 0.0158 | -0.0262 | 0.999   | -0.654  | -0.0047 | Partial           |

Source: Study Analysis

Moderation Analysis

One of the objectives of the study was to check the moderating role of trust on customer satisfaction through the mediation of customer value co-creation intentions. From the table we can see the values of upper and lower bounds. The thumb rule is that 0 should not fall in the range of upper and lower bound. From the table 11, it is evident that trust is moderating the relationship between m-banking perceived ease of use and customer satisfaction through the mediation of customer value co-creation. However, trust is not moderating the relationship between other dimensions of m-banking and customer satisfaction through the mediation of CVCCI. These findings are also reported in the study of Mostafa (2020). So, H4 was supported only for one dimension of m-banking i.e., perceived ease of use because trust moderated only for perceived ease of use.

Table 11. Moderation Analysis

| Path                   | Index | SE     | LLCI    | ULCI    | Results      |
|------------------------|-------|--------|---------|---------|--------------|
| MBSQ_POU*TRU→CVCCI→CS | -0.705| 0.0241 | -0.1209 | -0.0262 | Supported    |
| MBSQ_PUS*TRU→CVCCI→CS | 0.0061| 0.0121 | -0.191  | 0.0296  | Not Supported|
| MBSQ_PENJ*TRU→CVCCI→CS| 0.0133| 0.0069 | -0.0004 | 0.0268  | Not Supported|
| MBSQ_SS*TRU→CVCCI→CS  | 0.0325| 0.0186 | -0.0008 | 0.0721  | Not Supported|

Source: Study Analysis

Furthermore, table 12 below indicates the summary of findings. From the table it is evident that H1, H2 and H3 are supported, however, H4 is supported only for one dimension of m-banking i.e., perceived ease of use.
Table 12. Summary of Findings

| Sr. No | Hypothesis                                                                 | Findings                                      |
|--------|-----------------------------------------------------------------------------|-----------------------------------------------|
| H1     | M-banking service quality puts a significant impact on co-creation intentions | Supported                                    |
| H2     | Customer value co-creation intention puts a significant impact on customer  | Supported                                    |
|        | satisfaction                                                                 |                                               |
| H3     | M-banking service quality puts a significant impact on customer satisfaction | Supported                                    |
| H4     | Trust moderates the relationship between m-banking and customer value co-     | Supported for only one dimension of m-banking  |
|        | creation intentions                                                          | i.e., perceived ease of use (MBSQ_POU)        |

*Source: Study Analysis*

**DISCUSSION**

The objective of this paper was to know if m-banking service quality increases CVCCI and in turn customer satisfaction in the banking sector of Pakistan. This study contributes in many ways; firstly, it uses extended TAM an m-banking service quality. Secondly, it explores the unique relationships between m-banking service quality dimension and CVCCI through the moderation of trust in a developing country like Pakistan. Due to Covid’19, customers are shifted to use m-banking services frequently, so, it was important to explore if m-banking can contribute to co-creation.

The findings of the study demonstrated that all the m-banking dimensions put a significant impact on customer value co-creation however, perceived usefulness puts the highest impact. It means that managers need to focus on usefulness because the customer will use the services if it will be useful to customers and hence will help in value creation of services of bank (Carranza et al., 2021; Galdolage, 2021; Ngo, Kohda, & Huynh, 2021). These findings are also reported in the study of Mostafa (2020). Also, it was found that co-creation helps in shaping the customer behavior i.e., customer satisfaction. Similar, findings were reported in the study of Malik and Ahsan (2019) and Gligor and Maloni (2021). From the study, it was also revealed that m-banking directly increases customer satisfaction and also through the mediation of co-creation. It means that if banks focus on such strategies which can help in increasing co-creation, will be helpful for bank and it will lead to financial stability. Other researchers also explored the relationship between e-banking, m-banking and customer satisfaction, and similar findings were reported by researchers (Arcand et al., 2017; Malik & Ahsan, 2019; Pandey & Kumar, 2021).

Another objective of the study was to explore the role of trust. It was found that trust played a moderating role only in case of perceived ease of use however this role was not supported in other cases which shows that trust doesn’t really help in co-creation. These findings are in line with the
study of Yoon and Lee (2019) who reported that trust don’t play a moderating role in co-creation. This study contributes a lot because Pakistani banking sector is going through technological shifts due to Covid’19 situation and increasing competition.

**STUDY LIMITATIONS**

Like other research studies, this study is not free from limitations. Data was collected only from one country; other researchers may focus on collecting data from multiple countries. Also, convenience sampling technique was used due to Covid’19 situation. Future researchers are encouraged to use random sampling technique. In this study, only one behavioral outcome was studied i.e., customer satisfaction. Other researchers are encouraged to explore more behavioral outcomes of customers. Current study used quantitative method. Future researchers may use qualitative techniques as well to report interesting findings.

**IMPLICATIONS AND FUTURE RECOMMENDATIONS**

This paper is an innovative study to move beyond the well-studied adoption of mobile banking to a longer-term effect of customer involvement with mobile banking which is customer value co-creation. This study used the extended TAM, and the results supported the inevitability of extended TAM in the context of Pakistan. This study confirmed that hedonic as well utilitarian factors are important in shaping the behavior of customers while adoption of m-banking. The findings of this paper are important because it adds in the literature that how extended TAM can lead to customer value co-creation with mediating role of customer satisfaction and moderating role of trust in the context of mobile banking.

This study will contribute a lot because developing economies are facing a shift in their services due to uncertainties. This study puts several contributions for bank managers, marketers and tends to open new avenues for co-creation through customers. This study laid the foundation that banking industry needs to invest in m-banking platforms and bank marketing. This study states that banks should focus on the overlooked area of m-banking i.e., enjoyment and should produce such m-banking services which can be used as well as enjoyed by their customers. Also, the banks need to focus on building trust for their customers and should address their security and privacy concerns.
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