# Mobile Banking Adoption in Rajshahi City: Key Factors Influencing Acceptance and Usage

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# Abstract

## Purpose

This quantitative study examines the factors influencing the acceptability of mobile banking in Rajshahi City, Bangladesh, using a positivist research approach.

## Design/methodology/approach

Data were collected through convenience sampling with a structured questionnaire consisting of four phases. The analysis was conducted using SPSS version 23 and Partial Least Squares Structural Equation Modeling (PLS-SEM) to achieve the study's objectives.

## Findings

The findings indicate that service quality, transaction speed, and ease of use positively influence customer satisfaction and loyalty. Conversely, dissatisfaction arises from the costs associated with credit card transactions and security concerns. By addressing these issues and optimizing costs, mobile banking experiences can be significantly improved.

## Originality/value

Policymakers can utilize the findings to develop policies that encourage the adoption of mobile banking and address any barriers identified by the study.

## Limitation/Future Research

Although the study has significant theoretical and practical implications, it is limited by a small sample size, focusing solely on a small town and using a cross-sectional design with primary data.

**Key Words: Mobile Banking, Satisfaction and Loyalty, Rajshahi City, Bangladesh**

## 1. Introduction

Traditionally, the banking sector has relied on a brick-and-mortar model, requiring clients to physically visit a branch and wait to obtain certain financial services (Nambiar & Bolar,2023; Saiz, 2020; Sulaiman et al., 2007). The banking industry has evolved from traditional banking to modern or branchless banking, in which banks can be addressed for services at any time and from any location (Sintha, 2021;Saleem & Rashid, 2011). The expansion of the information technology field has significantly affected the creation of adaptable and user-friendly banking services (Ali et al.,2023; Dixit & Datta, 2010). Although technology has revolutionized the design and distribution of financial services and transformed the way clients interact with their financial service providers, the growing usage of wireless telecommunications, for example, the proliferation of mobile devices such as cell phones, personal digital assistants (PDAs), and internet-enabled smartphones has significantly contributed to this transformation. Despite the rapid rise of several commercial wireless networks, the utilization of the mobile banking service falls well below the desired level, as indicated by Cruez et al. (2010), and remains underutilized, as noted by Huili & Chunfang (2011) and lower than expected (Luarn & Lin, 2005). The mobile banking market is still quite limited compared to the overall banking transaction market. (Souiden et al., 2021; Yang, 2009).

Mobile banking is an alternative to traditional banking through which banking services can be reached at the doorsteps of the deprived section of society (Hassan et al., 2024; Kandpal, 2024).

This method has put several critical financial functions in people's wallets. People can now effortlessly check their account balance, transaction history, and bank products and transfer funds via mobile phone anytime. Bangens & Soderberg (2008) describe mobile banking as financial services offered through mobile networks and conducted on a mobile phone. Mobile banking, a modern technological innovation, was implemented in Bangladesh on March 31, 2011. Dutch-Bangla Bank Limited (DBBL) has introduced a mobile banking service, extending its financial services to remote locations for the first time (Islam & Rahman, 2020). The Central Bank of Bangladesh has approved mobile banking services, including the acceptance of inbound international remittances, performing financial transactions using mobile wallets, business-to-private (B2P), private-to-private (P2P), government-to-private (G2P), and various other types of transactions(Dutch Bangla Bank Ltd). The success of the mobile banking business concept depends on the customers' acceptance level. So, the customers' acceptance levels of utilizing mobile banking should be known. The level of customer adoption of mobile banking is contingent

upon various factors, including the benefits, costs, risks, and trust associated with mobile banking. Measuring the proper level of client acceptability is challenging because the potential customers are high in number and different. The demand for mobile banking services varies among customers.

The motivation behind this study stems from the transformative impact of mobile banking on traditional banking practices, particularly in regions like Rajshahi City, Bangladesh. Historically, the banking sector relied heavily on brick-and-mortar models, requiring clients to visit branches for physical financial services. However, with the advent of mobile banking, financial services became accessible anytime, anywhere, revolutionizing the industry. Despite the evident benefits and the significant role technology plays in reshaping banking services, the full potential of mobile banking remains untapped, mainly in certain regions, including Rajshahi City. While the infrastructure for mobile banking exists, its adoption among customers is not uniform. This study aims to bridge this gap by investigating the current customer acceptance of mobile banking in Rajshahi City and identifying the factors influencing this acceptance.

By addressing research questions such as the extent of acceptability of mobile banking and the factors affecting it, the study seeks to provide valuable insights into the dynamics of mobile banking adoption in a specific geographical context. Understanding customer perceptions, preferences, and concerns regarding mobile banking is crucial for banks and policymakers to tailor their strategies effectively and enhance the uptake of mobile banking services. Ultimately, the study contributes to the advancement of financial inclusion and technological innovation in the banking sector, particularly in regions like Rajshahi City, where mobile banking has the potential to empower individuals and communities by bringing financial services to their doorstep.

While there are numerous studies on mobile banking, a dearth of research explicitly focuses on the acceptability of mobile banking services in Rajshahi City, Bangladesh. Despite the potential benefits and the availability of mobile banking infrastructure, understanding the extent to which customers in this specific locale embrace mobile banking remains largely unexplored. The absence of studies relating to Rajshahi district in Bangladesh indicates a gap in localized research. Mobile banking adoption patterns vary significantly based on socio-economic, cultural, and infrastructural factors specific to different regions. Therefore, conducting research tailored to the context of Rajshahi City is essential for gaining insights into the unique dynamics influencing mobile banking

acceptance in this area. While the passage mentions the importance of factors such as benefits, costs, risks, and trust in influencing mobile banking acceptance, there is a need for a more detailed exploration of these determinants within the context of Rajshahi City. Identifying the specific factors that drive or hinder mobile banking adoption in this region is crucial for designing targeted interventions and strategies to promote its usage. Addressing this gap can provide valuable insights for banks, policymakers, and researchers to enhance mobile banking uptake and promote regional financial inclusion. With this respect, the authors conducted this investigation to investigate the factors affecting the acceptability of mobile banking at Rajshahi City in Bangladesh and examine the extent of acceptability of mobile banking to the customers at Rajshahi City in Bangladesh.

## 2. Review of Literature and Hypotheses Development

Research on electronic banking has predominantly focused on Internet banking. Research on mobile banking is limited and tends to receive less attention (Suoranta & Mattila, 2004; Laukkanen & Pasanen, 2008; Puschelet al., 2010). Laurn & Lin (2005) examined the inclination of individuals to utilize mobile banking by employing the expanded Technology Acceptance Model (TAM). They polled 180 people in Taiwan and unearthed that self-efficacy factors, such as perceived financial cost, trustworthiness, convenience of utilization, and utility, positively influenced the intention to utilize mobile banking. On the other hand, Amin et al. (2008) employed a prolonged TAM with five components - perceived utility, perceived simplicity of use, perceived trustworthiness, information quantity, and pressure from norms to investigate mobile banking implementation. Majymder et al. (2013) revealed that people in Bangladesh are adopting e-banking, and the degree of acceptance is growing daily. People are increasingly overly reliant on e-banking for their daily banking operations. Furthermore, it tremendously impacts consumers' lifestyles, society, and the country's economy. Govender & Sihlali (2014) expand TAM for mobile services and incorporate other variables such as PV, PEOA, and T; the survey provides insights into the determinants that impact students' propensity to adopt mobile banking. The findings demonstrated that numerous factors positively influenced their intention to use m-banking independently but had less impact when taken collectively. According to regression analysis, the primary two factors - perceived value and trust - substantially impacted an individual's inclination to utilize mobile banking.

Shahnaz et al. (2016) have survey that from the standpoint of consumers, mobile phone operability, security/privacy, and service standardization are key challenges, and a wide range of customers were unconcerned about the utility of mobile banking compared to retail banking and online banking. Islam et al. (2019) found that customers outside Dhaka are not as psychologically prepared as Dhaka residents. However, other variables, including effort expectation, social influence, perceived legitimacy, and favorable settings, were reliable indicators of mobile banking use. As Shi Yu (2009) noted, adaptability can be important in utilizing or popularizing mobile banking. All factors are related to two key constructs: mobile banking's simplicity of use and usefulness. Banks should target mobile banking non-users with mobile experience to encourage adoption. Shanmugam et al. (2015) found in research that the primary services utilized by Internet banking consumers are online money transfers and bill payments. Furthermore, security in online banking remains a significant determinant of customers' hesitation to embrace Internet banking. The outcome indicates that UK users who have adopted Internet banking express high contentment with the offered services. Rahman et al. (2020) observed that a notable portion of mobile banking users is male and aged between 20-29. The study also revealed that 28% of the customers are highly satisfied. Uddin et al. (2014) found that the availability, time consumption, and security of the mobile banking service bKash positively correlate with client happiness. Nevertheless, the service charge is the sole element that negatively correlates with client satisfaction. Based on the above discussion, the researcher identified seven factors that cause mobile banking companies' customers to accept their services. The factors are service quality, perceived ease of usage, cost, information security and data privacy, social influence, trust and satisfaction, and loyalty. The researcher of this study uses customer satisfaction and loyalty variables to describe the acceptability.

Based on the reviewed literature and theoretical discussions, the study investigation is guided by the conceptual framework outlined below:

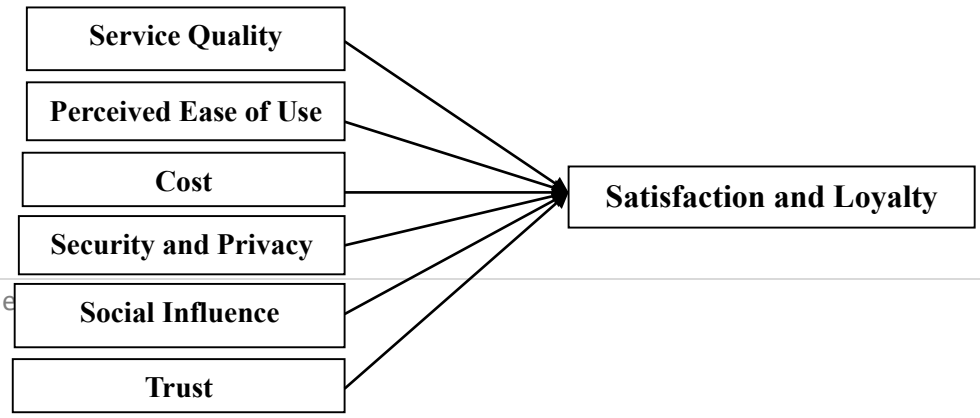

**Figure 1: Conceptual Framework of the Study**

### 2.1 Service Quality and Satisfaction-Loyalty

Service quality is vital in making a business successful in the competitive market**.** No single, universally recognized definition of service quality exists in the literature**.** As a multidimensional phenomenon, quality achieving service quality is unattainable without recognizing the critical components of quality. Within his work, Gronroos (2000) examines three aspects of service quality: the organization's mental model, service performance quality, and output technical quality. Carol and David (1999) identified four quality themes –excellence, value, adherence to standards, and surpassing expectations. Another scholar advocated two other themes- market perception and strategic quality. Physical attributes, interaction quality, and organizational attributes have been referred to as three measurements of service attributes by Lehtinen and Lehtinen (quoted in Harrison, 2000). We postulate that-

***H1: Service quality of mobile banking is positively associated with satisfaction -loyalty***

### 2.2 Perceived ease of usage and satisfaction -loyalty

Perceived simplicity of usage denotes the degree or scope of utilizing a particular thing without minimum effort. The Technology acceptance model (TAM) hypothesizes that the magnitude of technology use is influenced by the perceived level of simplicity in operation (Davis, 1989). In marketing and information technology sectors, the use of perceived ease is consistent with finding new products or systems. Perceived ease of use results in positive productivity as it increases perceived usefulness (Vanketish & Davis, 2000). Past literature showed that there was a favorable correlation between the perceived simplicity of usage and positive attitude or satisfaction (Chang & Wang, 2008; Stoel & Lee, 2003). We propose that-

***H2: Perceived ease of usage of mobile banking is positively related to satisfaction -loyalty***

### 2.3 Cost and Satisfaction-loyalty

The correlation between the cost and satisfaction-loyalty regarding mobile banking is complex and multifaceted. On the one hand, cost can substantially impact determining contentment and loyalty (Yang & Peterson, 2004). Customers who perceive paying too much for mobile banking services may be less satisfied and less likely to remain loyal to their bank (Colgate & Lang, 2001). Conversely, customers who feel they are getting good value for their money are more likely to be satisfied and loyal (Anderson & Srinivasan, 2003). However, the relationship between cost and satisfaction-loyalty is not always straightforward. Other factors, such as the level of excellence of the mobile banking service, customer service, and convenience, can substantially impact determining the contentment of customers and loyalty. For example, a bank may offer relatively expensive mobile banking services. However, if those services are of high quality and are delivered with exceptional customer service, customers may still be satisfied and loyal (Javalgi & Moberg, 1997). Based on the past research findings, we postulate –

***H3: Cost of mobile banking is positively related to satisfaction-loyalty***

### 2.4 Security –Privacy and satisfaction –loyalty

Security and privacy are crucial considerations that can significantly impact the satisfaction and loyalty of mobile banking customers (Malan, 2017) and Customers place significant importance on security issues while engaging in financial transactions due to the inclusion of monetary assets (Mukhtar, 2014). If customers feel that their personal and financial information is at risk of being compromised or if they have concerns about the security of their mobile banking app, they are less likely to continue using the app and may switch to a competitor. The continued growth of e-banking relies on the security and privacy considerations of the services. Once the security and privacy concerns are addressed, the future of E-banking holds excellent potential for success. The future of electronic banking will entail a seamless user experience, where individuals may communicate with their banks without any concerns while banks work under a unified system (Rahman et al., 2012). On the other hand, if customers feel that their information is secure and their privacy is respected, they are more likely to continue using the mobile banking app and may even recommend it to others. This can lead to heightened customer satisfaction and devotion. (Lin et al. 2012). Besides, convenience, availability, understanding, suitability, uninterrupted power supply, and internet connectivity of mobile banking are indispensable for the success of the mobile

banking industry (Bhuiyan & Rahman, 2013). Perceived risks (expect security risk), convenience (except access from any place, ease of use), and comparative advantages (except cost of operating account, instant transaction) are the determinants influencing the acceptance of mobile banking services by mobile users in Bangladesh. This investigation would have provided better applications if it had not been limited to the city branches. Still, it can be concluded that mobile banking service providers willing to provide risk-free, convenient, cost-effective services shall gain substantial market share (Reyan, 2015). We postulate-

***H4: Security and Privacy of mobile banking is positively related to satisfaction-loyalty.***

**2.5 Social Influence and Satisfaction –loyalty**

Customers are likely to be influenced by the opinions and experiences of their social network when making decisions about which banking company to use and whether to remain loyal to their current provider (Palmer & Koenig-Lewis, 2009; Nitzan & Libai, 2011; Rapp et al., 2013). Positive social influence, such as word-of-mouth recommendations from friends and family, can increase customer satisfaction and loyalty toward a banking company (File & Prince, 1992; Salehnia et al., 2014; Naeem, 2020). This is because people tend to trust the opinions of those they know and respect, and are more inclined to hold a favorable opinion of a corporation if it is recommended to them by someone they trust. On the other hand, negative social influence, such as negative reviews or complaints from friends and family, can decrease customer satisfaction and loyalty (Naeem, 2020; Blodgett et al.,1993). Negative reviews and complaints can create a negative perception of the banking company and lead customers to consider switching to a different provider. Based on the literature we hypothesized that,

***H5: Social influence of mobile banking is positively associated with satisfaction-loyalty.***

**2.6 Trust and Satisfaction –loyalty**

Customers who trust their mobile banking providers are more likely to be satisfied with their services and remain loyal to them (Hamidi & Safareeyeh, 2019; Ofori et al.,2018). When customers trust their mobile banking providers, they are more likely to have confidence in the security of their financial information and transactions (Koenig-Lewis et al., 2010; Kim et

al.,2009). This sense of security can lead to higher satisfaction, as customers are less likely to worry about the safety of their money and personal information. In contrast, if customers do not trust their mobile banking providers, they may feel anxious or uneasy about using their services, leading to lower satisfaction levels (Falk et al.,2007; Hocutt, 1998). Furthermore, trust is closely linked to loyalty in the mobile banking industry. Customers who trust their mobile banking providers are more likely to remain loyal to them over time, even in the face of competitive offerings (Barnes & Corbitt, 2003). This is because they have confidence in the reliability and security of their mobile banking provider, and they are unlikely to switch to a different provider unless there is a significant reason to do so. Talukder et al. (2014) asserted that clients prefer utilizing a system that exhibits reliability and trustworthiness regarding its efficiency and operational methodology. We postulate the following hypothesis.

***H6: Trust is positively related to satisfaction -loyalty***

## 3. Methodology

This study follows the positivist research paradigm and utilizes a quantitative approach. This section outlines the research paradigm, design, study area, population, sampling methods, questionnaire design, data collection procedures, and qualitative data processing. The research involved a cross-sectional survey design, meaning data was collected at a specific time.

The target population for this study consists of customers who use mobile banking services in Rajshahi City, Bangladesh. Since there is no specific data on the population size, it is considered to be infinite. The study employs a non-probability sampling approach because it is impractical to include every individual in the sample (Etikan et al., 2016). Specifically, the researchers have chosen a convenience sampling strategy to gather the sample for this investigation. Due to time and budget constraints, this approach was selected over simple random sampling. For this study, three listed banks and one government institution were chosen as sample sources (Table 1). The customers of these four organizations who utilize mobile banking services make up the population of this investigation.

**Table 1: Showing the sample institutes of the study**

| S. N. | Name of the Sample institutes | Instruments |
|---|---|---|
| 1. | Brac Bank Ltd. | BKash |
| 2. | Islami Bank Bangladesh Limited | Mcash |

| | | |
|---|---|---|
| 3. | Dutch Bangla Bank Ltd. | Rocket |
| 4. | Bangladesh Postal Academy | Nagad |

**Source: Authors' Compilation**

This investigation employed a methodical questionnaire consisting of questions with limited response options to conduct the survey. The Likert scale is a commonly used psychometric measure for evaluating individuals' responses to their ideas and attitudes toward a specific topic (Dimitrov, 2014). The questionnaire aimed to assess the elements and variables utilizing a 7-point Likert scale. Many researchers have employed a 7-point Likert scale with a central zero value. Hair (2015) and Nuruzzaman (2013) proposed that one might decide on an odd or even number when making size divides. Seven (7) constructs and forty-four (44) observed variables are present in the conceptual model (Figure 1). The survey questionnaire is divided into three pieces. Section A consists of 12 items pertaining to the respondents' demographic characteristics. Section B consists of seven structures: 7 items relating to service quality, 5 items relating to perceived ease of use, 5 items relating to cost, 7 items relating to security and privacy, 4 items relating to social influence, 3 items relating to trust, 3 items relating to satisfaction and loyalty. The 7-point Likert scale encompassed the following response options: '1' (vigorously disagree), '2' (disagree), '3' (somewhat disagree), '4' (neutral), '5' (somewhat agree), '6' (agree), and '7' (vigorously agree). All the constructs are regarded as reflecting. In this study, a total of 40 questionnaires were issued to consumers, of which a total of 28 surveys were received, resulting in a 70% probability of reaction. These 28 inquiries were eliminated from the final sample test. The study utilized Statistical Package for Social Science (SPSS) version 23 to evaluate the internal coherence of the survey instrument questions. The collected data during the pilot test showed the alpha coefficient values in Table 2.

**Table 2: Summarizes the Internal Consistency Reliability for Each Measure**

| Constructs | Items | Cronbach's Alpha |
|---|---|---|
| Service Quality | 7 | 0.847 |
| Perceived Ease of Use | 5 | 0.834 |
| Cost | 6 | 0.755 |
| Security and Privacy | 7 | 0.886 |
| Social Influence | 4 | 0.836 |
| Trust | 3 | 0.827 |
| Satisfaction and Loyalty | 3 | 0.789 |

**Source: Prepared by Researchers'**

After getting satisfactory results on reliability, the researcher finalized the questionnaire for distribution to the target respondents. The researchers collected data using physical methods and an online Google form over a period of four months. A grand number of 295 questionnaires were

distributed to the potential respondents in this study. The researcher personally gave the questionnaire to potential responders. 295 questionnaires were distributed in total, with 35 being sent electronically through a Google Form hyperlink distributed to recipients' email, WhatsApp, and Facebook Messenger. There were 260 surveys distributed throughout the face-to-face data-gathering session. We have a valid 200 questionnaires for analysis purposes. The investigation utilizes structural equation modeling (SEM) using the PLS 4 instrument to analyze the data and accomplish the study's objectives.

This investigation utilizes the structural equation modeling (SEM) strategy to examine the collected data, as suggested by Chin (1998), Gefen, Straub, and Boudreau (2000), and Nuruzzaman (2013). Given that this study involves reflective items, the most suitable choice for data analysis would be Partial Least Squares (PLS) (Gefen et al., 2000; Fornell & Bookstein, 1982). Therefore, PLS is employed to analyze the surveyed data for this investigation.

To perform data analysis using PLS-SEM, it is essential to construct a model that is grounded in theories and concepts. One must indicate the position of external or internal constructions (Hair et al., 2014). The conceptual research model of the investigation defines service quality (SQ), perceived ease of usage (PAU), cost (CST), security and privacy (SP), social influence (SI), and trust (TST) as exogenous categories, functioning as independent variables. On the other hand, satisfaction and loyalty (SL) proxied for the acceptability of mobile banking to customers is an endogenous construct, acting as a dependent variable of this study. The evaluation of the measuring model is conducted by examining the connection between the indicators and the underlying variables (Bagozzi & Yi, 1988; Monecke & Leisch, 2012; Uddin, 2021).

First, the structural model must be evaluated, followed by an assessment Regarding the measuring model. This study investigates the suggested associations between observed variables and the fundamental constructs in the study framework (Santosa, Wei & Chan, 2005; Azizah, 2011). The measurement model is assessed using estimates of effect magnitude ($f^2$); the variables of interest are the coefficient of determination ($R^2$), cross-validated redundancy ($Q^2$), and path coefficient (Hair et al., 2018).

**Table 3: Showing the demographic information of the respondents**

| Variable | Characteristics | Frequency | Percentage | Total Percentage |
|---|---|---|---|---|
| Designation | Teacher | **15** | **7.5** | |
| | Banker | 19 | 9.5 | |

| | | | | |
|---|---|---|---|---|
| | Govt. Employee | 16 | 8.0 | 100 |
| | Non-govt. employee | 17 | 7.5 | |
| | Businessman | 32 | 18.0 | |
| | Student | 49 | 24.5 | |
| | Others | 52 | 26.0 | |
| | Missing | 3 | 1.7 | |
| Gender | Male | 125 | 62.5 | 100 |
| | Female | 75 | 37.5 | |
| Age | Less than 21 years | 17 | 8.5 | 100 |
| | 21-30 | 112 | 56.0 | |
| | *31-40* | 49 | 24.5 | |
| | 41-50 | 16 | 8.0 | |
| | More than 50 | 6 | 3.0 | |
| Location (Division) | Centre of RCC | 87 | 43.8 | 100 |
| | North of RCC | 20 | 10 | |
| | South of RCC | 23 | 11.6 | |
| | East of RCC | 35 | 17.6 | |
| | West of RCC | 35 | 17.6 | |
| Level of Education | Under to S.S.C | 18 | 9.00 | 100 |
| | S.S.C | 8 | 4.00 | |
| | H.S.C | 43 | 21.5 | |
| | Hon's | 69 | 34.5 | |
| | Masters | 52 | 26.0 | |
| | PhD | 10 | 5 | |
| Length of relationship | Less than 1 years | 15 | 7.5 | 100 |
| | 1-2 years | 49 | 24.5 | |
| | 3-5 years | 67 | 33.5 | |
| | more than 5 years | 65 | 32.5 | |
| | Missing | 5 | 2.5 | |

The location is divided into 5 categories namely the center of RCC, North of RCC, south of RCC, East of RCC, and west of RCC. It is observed that 43.8% of data were collected from the centre of the RCC location. 10%, 11.6%, 17.6%, and 17.7% of the respondents are located north of RCC, south of RCC, east of RCC, and west of RCC, respectively.

### 3.1 Convergent validity

The factor analysis is illustrated by the items and loadings in Table 4: The loadings of the items reflect the model.

**Table 4: Outer Loading -Cross Loading Matrix**

| | Cost | Perceived ease of usage | Customer contentment and Fidelity | Security and privacy | Social Influence | Service quality | Trust |
|---|---|---|---|---|---|---|---|
| CST1 | 0.660 | | | | | | |
| CST2 | 0.790 | | | | | | |
| CST3 | 0.823 | | | | | | |
| CST4 | 0.544* | | | | | | |
| CST5 | 0.634 | | | | | | |
| PAU1 | | 0.839 | | | | | |
| PAU2 | | 0.605 | | | | | |
| PAU3 | | 0.552* | | | | | |
| PAU4 | | 0.683 | | | | | |
| PAU5 | | 0.743 | | | | | |
| SAL1 | | | 0.866 | | | | |
| SAL2 | | | 0.873 | | | | |
| SAL3 | | | 0.761 | | | | |
| SI1 | | | | | 0.700 | | |
| SI2 | | | | | 0.741 | | |
| SI3 | | | | | 0.839 | | |
| SI4 | | | | | 0.776 | | |
| SP1 | | | | 0.617 | | | |
| SP2 | | | | 0.678 | | | |
| SP3 | | | | 0.840 | | | |
| SP4 | | | | 0.815 | | | |
| SP5 | | | | 0.660 | | | |
| SP6 | | | | 0.154* | | | |
| SP7 | | | | -0.359* | | | |
| SQ1 | | | | | | 0.683 | |
| SQ2 | | | | | | 0.571* | |
| SQ3 | | | | | | 0.663 | |
| SQ4 | | | | | | 0.716 | |
| SQ5 | | | | | | 0.632 | |
| SQ6 | | | | | | 0.721 | |
| SQ7 | | | | | | 0.488 | |
| TST1 | | | | | | | 0.922 |
| TST2 | | | | | | | 0.943 |
| TST3 | | | | | | | 0.919 |

**Source: Smart PLS 3.2.9 Output**

(CST= Cost, Pau= Perceived ease of use, SAL= Satisfaction and Loyalty; SP= Security and privacy; SI= Social Influence, SQ=Service Quality, TST= Trust).

The determination of convergent validity involves evaluating the loading of each block of indicators (Osman & Sentosa, 2013). External loads should be more than 0.70, indicating that the indicators exhibit a higher correlation with their corresponding latent variable (LV) than the correlation attributable to measurement error. According to Chin (1988), having a lower limit between 0.50 and 0.60 in an exploratory investigation may be suitable. The cross-loading matrix in this analysis demonstrates the convergent validity, as indicated in Table 4, which meets the conditions indicated in Table 6.

### 3.2 Construct reliability and authenticity

**Table 5: Construct reliability and authenticity**

| Dimensions | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| COST | 0.767 | 0.780 | 0.852 | 0.593 |
| PAU | 0.707 | 0.715 | 0.836 | 0.63 |
| SAL | 0.783 | 0.802 | 0.873 | 0.697 |
| SAP | 0.78 | 0.782 | 0.852 | 0.538 |
| SI | 0.768 | 0.78 | 0.85 | 0.587 |
| SQ | 0.702 | 0.700 | 0.814 | 0.522 |
| TRST | 0.920 | 0.927 | 0.949 | 0.862 |

**Source: Smart PLS 3.2.9 output**

Acceptable R square values, valid construct reliability, and significant path coefficients indicate a strong model fit PLS (Gefen & Boudreau, 2000). Cronbach's alpha values are the internal consistency indicator ranging from 0 to 1. A value over .70 is commonly acceptable, and it is seen that the values are equal to or greater than the accepted threshold. Exploratory study often

considers composite dependability values amidst 0.60 and 0.70 as permissible. However, higher levels of investigation generally require values between 0.70 and 0.90. Values above 0.90 (and certainly more significant than 0.95) are undesirable (Hair et al., 2016). Table 5 demonstrates that values for composite dependability have achieved the valid requirements. The average variance extracted (AVE) is another popular statistic utilized to estimate the convergent authenticity of the construction level. A score of 0.50 or higher for the AVE suggests that, on average. Conversely, an AVE of less than 0.50 indicates that, on average, the items retain more error than the variation explained by the framework. (Hair et al., 2016) and Table 5 shows that the average variance extracted has achieved the requirements.

### 3.3 Discriminant Validity Test

**Table 6: Discriminant Validity - Fornell-Larcker criterion**

| | COST | PAU | SAL | SAP | SI | SQ | TRST |
|---|---|---|---|---|---|---|---|
| COST | **0.77** | | | | | | |
| PAU | 0.09 | **0.794** | | | | | |
| SAL | 0.38 | 0.487 | **0.835** | | | | |
| SAP | 0.395 | 0.174 | 0.481 | **0.734** | | | |
| SI | 0.281 | 0.383 | 0.567 | 0.482 | **0.766** | | |
| SQ | 0.31 | 0.494 | 0.492 | 0.335 | 0.491 | **0.723** | |
| TRST | 0.351 | 0.415 | 0.63 | 0.598 | 0.609 | 0.48 | **0.928** |

**Source: Smart PLS 3.2.9 Output**

Fornell and Larcker (1981) propose that discriminant validity can be established by comparing the square root of the average variance extracted (AVE) for each latent variable with the correlation coefficients among the latent variables. If the AVE value exceeds the correlation values, discriminant validity is confirmed. Hair et al. (2016) suggest a method for assessing discriminant validity that involves comparing the square root of the AVE for each construct with its correlations

to all other constructs in the model. Discriminant validity is further evaluated by analyzing cross-loadings and examining the correlation between the AVE's first-order constructs and the square root (Chin, 1998; Fornell & Bookstein, 1982). The correlation coefficient (R) is a statistical measure that quantifies the degree of correlation between variables, with values ranging from -1.00 to +1.00. This coefficient indicates the strength and direction of the relationship between the variables. Table 6 presents the discriminant validity for each construct, meeting the Fornell-Larcker criteria.

### 3.4 Evaluation of Structural Model

#### 3.4.1 Multicollinearity

Once the measurement model has been assessed, it is necessary to analyze the structural model, relying mainly on multiple regression analysis. The first phase of the model quantification involves evaluating the structural model constructs to see whether there is a significant issue of high multicollinearity.

**Table 7: Showing the Variance Inflation Factor (VIF)**

| Variables | VIF | Variables | VIF | Variables | VIF |
|---|---|---|---|---|---|
| CST1 | 1.372 | SI1 | 1.763 | SQ1 | 1.357 |
| CST2 | 1.805 | SI2 | 1.403 | SQ3 | 1.316 |
| CST3 | 2.192 | SI3 | 2.141 | SQ4 | 1.354 |
| CST5 | 1.301 | SI4 | 1.57 | SQ6 | 1.329 |
| PAU1 | 1.344 | SP1 | 1.275 | TST1 | 3.312 |
| PAU4 | 1.353 | SP2 | 1.377 | TST2 | 3.759 |
| PAU5 | 1.516 | SP3 | 2.45 | TST3 | 3.117 |
| SAL1 | 1.744 | SP4 | 2.428 | | |
| SAL2 | 1.944 | SP5 | 1.46 | | |
| SAL3 | 1.455 | | | | |

**Source: Smart PLS 3.2.9 output**

To evaluate the adequacy of the structural model for analyzing reflective constructions, it is crucial to have variance inflation factor (VIF) values that are below 5.0. This will help avoid issues related to multicollinearity (Hair et al., 2014). Table 7 displays the VIF results, which indicate that the

items are not troublesome when evaluating the structural model. Upon analyzing the measurement model, it becomes imperative to assess the structural model, utilizing multiple regression analysis. To measure the structural model, the commencing stage involves assessing the constructions of the structural model to see whether there is a significant issue of high multicollinearity. To ensure that the items are not affected by excessive multicollinearity and are appropriate for evaluating the structural model, the items' variance inflation factor (VIF) values should be below 5.0. This guideline is particularly relevant for indicators of reflective constructs (Hair et al.,2014). The VIF values within the scope of this research, ranging from 1.275 to 3.759, indicate that the elements do not pose difficulties in evaluating the structural model.

### 3.4.2 Predictive Relevance

In the assessment of predictive relevance, specifically Q2, cross-validated redundancy is employed as a way of conducting a reflective model. The value of $Q^2$ is specifically utilized to evaluate the reflectively modeled endogenous factor, as stated by Geisser in 2012.

**Table 8: Showing Predictive Relevance**

| Variables | SSO | SSE | $Q^2$ (=1-SSE/SSO) |
|---|---|---|---|
| COST | 800 | 800 | |
| PAU | 600 | 600 | |
| **SAL** | **600** | **396.837** | **0.339** |
| SAP | 1000 | 1000 | |
| SI | 800 | 800 | |
| SQ | 800 | 800 | |
| TRST | 600 | 600 | |

**Source: Author's calculation from survey data**

A $Q^2$ value above zero signifies that the external constructions own predictive significance for the internal constructions (Hair et al., 2011). The blindfolding method is used to compute the value, excluding every seventh data point for the indicators. The model is deemed to possess forecast significance based on the collected data. To be more precise, the $Q^2$ value for the specific variable SAL in this study is 0.339, which exceeds zero. This suggests that the model possesses a reasonable degree of predictive significance.

### 3.5 Testing of goodness of fit

The collective impact of external variables on the internal variable is demonstrated by this study's coefficient of determination (R2). The smallest value of R2 is 0, whilst the highest value is 1. Hair et al. (2017) define R2 values of 0.75, 0.50, and 0.25 as representing high, moderate, and poor levels of correlation, respectively, when it comes to endogenous variables. The investigation revealed an $R^2$ value of 0.533 for the variable SAL, indicating that the exogenous variables SQ, PAU, COST, SAP, SAP, and TRST collectively account for 53.3% of the variation in SAL.

**Table 9: R square and Adjusted R Square**

| | R Square | R square adjusted |
|---|---|---|
| Satisfaction and Loyalty | 0.533 | 0.518 |

**Source: Smart PLS 3.2.9 Output**

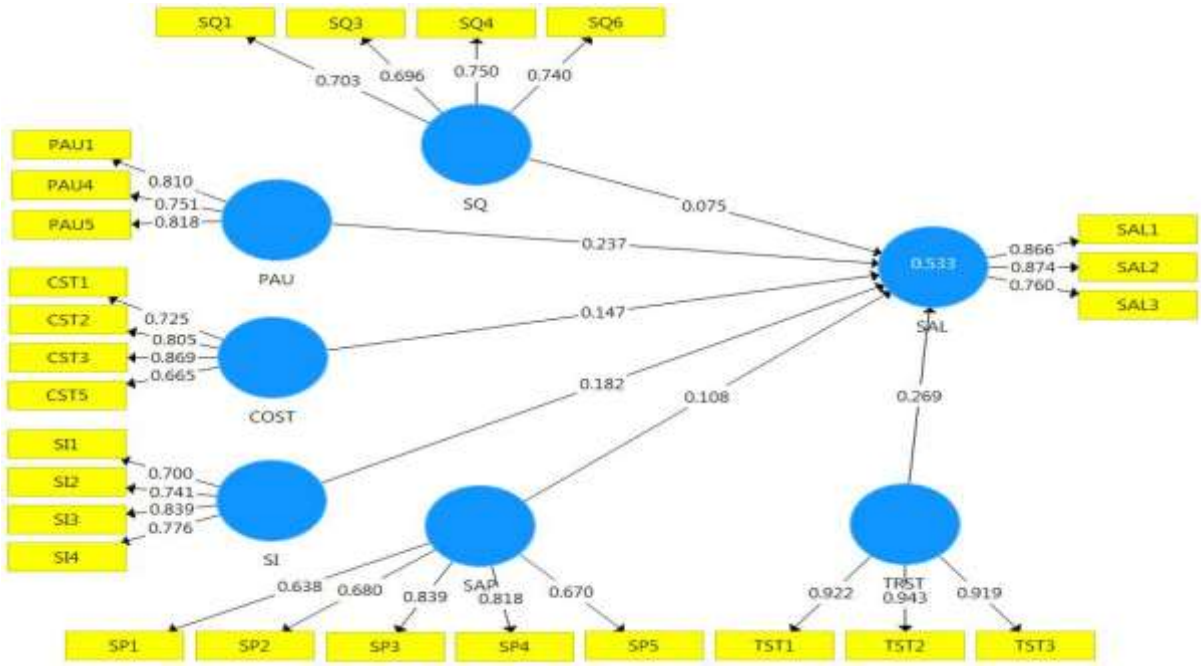


**Figure 2: Structural modeling representing outer loading, path coefficients, and R-square.**

### 3.6 Path coefficient and hypothesis testing

The findings of hypothesis testing are condensed in the subsequent Table.

**Table 10: Table showing the results of hypothesis testing**

| H | Relation | Sample mean | Stand. Dev. | t -values | P-values | $f^2$ | Decision |
|---|---|---|---|---|---|---|---|
| Ha1 | SQ→SAL | 0.083 | 0.065 | 1.149 | 0.251 | 0.007 | Rejected |
| Ha2 | PAU→SAL | 0.236 | 0.078 | 3.025 | **0.002** | 0.082 | **Accepted** |
| | COST→SA | | | | | | |
| Ha3 | L | 0.149 | 0.054 | 2.727 | **0.006** | 0.037 | **Accepted** |
| Ha4 | SI→SAL | 0.18 | 0.093 | 1.95 | 0.051 | 0.039 | Rejected |
| Ha5 | SAP→SAL | 0.116 | 0.057 | 1.907 | 0.057 | 0.014 | Rejected |
| Ha6 | TRST→SAL | 0.259 | 0.098 | 2.749 | **0.006** | 0.070 | **Accepted** |

**Note: p <0.05, as determined by 5000 bootstrapping in a two-tailed test**

Table 10 displays the regression outcomes of the research hypotheses. It has been noted that service quality, social influence, and security and privacy do not significantly affect the satisfaction and loyalty of mobile banking customers in Rajshahi City, Bangladesh. However, perceived ease of usage, cost, and trust substantially influence customer satisfaction or loyalty at a 1% significance level.

## 4. Findings and Discussions

The above Path coefficient and hypothesis testing table presents the results of a hypothesis testing analysis, specifically examining the relationship between various independent variables (SQ, PAU, COST, SI, SAP, and TRST) and a dependent variable (SAL). The hypothesis testing results suggest that the relationship between service quality satisfaction and loyalty is not statistically significant ($p = 0.251$). This indicates insufficient evidence to support the notion that service quality directly affects satisfaction and loyalty. This finding contradicts earlier research, demonstrating a positive relationship between service quality, satisfaction, and loyalty (Arcand et al.,2017). The analysis reveals a significant positive relationship between perceived availability of resources and satisfaction and loyalty ($p = 0.002$). This suggests that employees who perceive a greater availability of resources or opportunities are more likely to exhibit higher levels of satisfaction and loyalty. This finding is consistent with previous studies that emphasize the importance of perceived availability and access to resources in determining satisfaction and loyalty levels (Yang, 2009). The results reveal a significant positive relationship between cost satisfaction and loyalty ($p = 0.006$). This implies that higher perceived costs, such as financial investment or effort, are associated with higher satisfaction and loyalty. This finding is consistent with literature suggesting that employees may expect higher satisfaction and loyalty in return for bearing higher costs (Luarn & Lin, 2005). The analysis suggests that the relationship between system interactivity, satisfaction, and loyalty is not statistically significant ($p = 0.051$). This indicates insufficient evidence to support a direct influence of system interactivity on satisfaction and loyalty levels. This finding contrasts with some prior research, which found a positive relationship between system interactivity and satisfaction and loyalty (Yamoah, 2013). The results indicate that the relationship between system aesthetics, satisfaction, and loyalty is not statistically significant ($p = 0.057$). This suggests that there is no direct association between the visual appeal of a system and employee satisfaction and loyalty levels. This finding is inconsistent with some previous studies that have suggested a positive relationship between system aesthetics and satisfaction and loyalty outcomes (Ronda & Gracia, 2022). The analysis reveals a significant positive relationship between trust satisfaction and loyalty ($p = 0.006$). This implies that higher levels of trust in the organization or system are associated with higher satisfaction and loyalty. This finding supports existing literature

highlighting the role of trust in shaping satisfaction, loyalty, and organizational outcomes (Kim et al.,2009). Overall, the discussion integrates the findings from the hypothesis testing with relevant literature to provide a nuanced understanding of the relationships between various factors and satisfaction and loyalty levels. It highlights areas of agreement and divergence with previous research and underscores the implications of these findings for theory development and managerial practice.

## 5. Implications of the Study

Understanding the factors influencing mobile banking acceptance can inform policymakers about the need for targeted interventions to promote financial inclusion in Rajshahi City. Policymakers can use the findings to design policies that incentivize the adoption of mobile banking and address any barriers identified by the study. Banks and financial institutions can use the insights from the study to tailor their mobile banking offerings to meet better the needs and preferences of customers in Rajshahi City. This includes optimizing mobile banking interfaces, introducing relevant features, and developing marketing strategies that resonate with the local population. The study can also guide technological advancements in mobile banking platforms to address specific challenges or concerns identified by customers in Rajshahi City. This may involve enhancing security measures, improving user experience, or expanding the range of services offered through mobile banking applications. Mobile banking has the potential to enhance financial inclusion by providing access to banking services to underserved populations. By understanding the level of acceptability and the factors influencing mobile banking adoption in Rajshahi City, stakeholders can work towards closing the financial inclusion gap and empowering individuals and communities with greater financial access and literacy. This study contributes to the academic literature by addressing the gap in localized research on mobile banking acceptance in Rajshahi City, Bangladesh. It enhances our understanding of the dynamics of mobile banking adoption, especially in areas with distinct socio-economic and cultural contexts. The implications of this study are significant for various stakeholders, including policymakers, banks, technology developers, and researchers. It can potentially drive positive changes in the mobile banking landscape in Rajshahi City and beyond.

## 6. Conclusions

The study aims to evaluate the degree of customer acceptance of mobile banking services in Rajshahi City, Bangladesh, and to analyze the influence of acceptance criteria on customer contentment and devotion. The convenience sampling strategy is employed to pick the institution and the respondents for the investigation. An organized survey covering four phases is prepared and used to collect data. The utilization of the positivist research paradigm and cross-sectional methodology is relevant to this investigation. Some statistical tools, for example, standard deviation, mean, minimum, and maximum, are utilized to determine the level of acceptance of mobile banking services. The data, including measurement and structural models, is examined using the PLS-SEM. The findings of this study indicate that customer satisfaction and loyalty are positively influenced by service quality, transaction speed, and ease of use. At the same time, dissatisfaction arises from credit card transaction costs and security concerns. The study suggests that addressing these issues and optimizing costs can improve mobile banking experiences. However, this research work is also confined to some limitations, such as a small sample size, covering only a small town, using primary data only with a cross-sectional design, etc. This research study is not exempt from constraints. This section addresses the constraints and potential future paths of the investigation. Firstly, this study is based on only a tiny town of a developing country the study focuses on Bangladesh, which limits the generalizability of the results to other regions of the world. Future research could explore different economies globally. This study relied solely on primary data collected through survey instruments; future studies may benefit from incorporating both primary and secondary data sources to enhance the rigor of the findings. One limitation of this study is the relatively small sample size of 200 respondents, which restricts our understanding of the entire population. Additionally, the perceptions gathered were based solely on customer feedback; future research could involve other stakeholders as well. This study is a cross-sectional investigation, and it may be beneficial to conduct future research using longitudinal data.

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