

Driving Financial Inclusion through Mobile Financial Services Adoption Intention in Bangladesh: Integrating Perceived Trust and Risk with UTAUT

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Abstract

Research purpose: Although research on mobile financial services (MFS) adoption intention is plentiful, how in an emerging economy like Bangladesh a holistic perspective of MFS adoption intention by combining users and non-users is infrequent, specifically when perceived trust and risk are integrated with UTAUT model. Henceforth, this research efforts to expose the factors affecting behavioral intention (BI) for Bangladesh by including both MFS users and non-users to apprehend the complete market spectrum.

Methodology: This deductive, quantitative study used a cross-sectional design and an integrated UTAUT framework. Data from diverse respondents representing both MFS users and non-users, collected via multistage mixed sampling technique and structured questionnaire survey, have been analyzed using Smart PLS 4.1.0.9 and SPSS version 26.0 software.

Findings: The results presented that behavioral intention is significantly impacted by performance expectancy, effort expectancy, social influence, trust and facilitating conditions. On the contrary, perceived risk is found to be statistically non-significant. The overall predictive relevance of the study is positive.

Originality/value: By incorporating trust and risk as fundamental antecedents, this study goes beyond simply testing UTAUT. By doing this, it develops a stronger socio-technical model that takes into consideration the high risks and trust issue involved in managing finances in a digital setting. A combined sample is used in this study. This offers a distinctive full-spectrum perspective of the state of financial inclusion and a more general result. To approve the model's out-of-sample predictive relevance, this study employs PLS predict, confirming that findings are robust for practical application in the MFS sector.

Research implications: This study provides a unified model for closing the financial inclusion gap by demonstrating the determinants for adoption intention using a combined sample.

Keywords: Mobile financial services, Financial inclusion, Adoption intention, UTAUT, Perceived trust, Perceived risk, Structural equation modeling

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1. Introduction

Financial inclusion is indispensable for economic development of any country but the state of it is not same all over the world (World Bank, 2013). To close the gap, fintech can help (Datta, 2024). In an effort to foster sustainable socio-economic growth, governments are concentrating on advancing financial inclusion (Sayed & Shusha, 2019). Accelerating financial inclusion through digital finance is one of the key strategies for the stability of the financial institutions and sustainable economic growth (Banna, 2020). Financial inclusion is not an option for any country rather it is vital. It helps people in their everyday life by granting access to credit, insurance, and savings service. Through inclusion, they can pursue long-term objectives and subsequently enhance their quality of life (Sharma & Changkakati, 2022).

Mobile financial service (MFS) is one of emerging technologies to facilitate financial inclusion, particularly in developing economies like Bangladesh. In Bangladesh, MFS functions as instrumental for achieving financial inclusion. At present, 13 MFS providers like bKash, Nagad, UPAY, MYCash, SureCash etc. are operating for solving financial activity related constraints (www.bb.org.bd, 2025). MFS encourages money mobility, macroeconomic and regional growth, ensures profitability and efficient use of resources for businesses (Akhter & Khalily, 2020). Bangladesh Bank, the central bank of the country is continuing its effort to ensure financial inclusion through 1.8 million distribution networks. In February 2025, the personal retail accounts has increased to 864 thousand, cash out transactions has rose to 31.09% compared to 30.08% of 2024 (www.bb.org.bd, 2025).

As per the global report of GSMA (2025), GDP growth of the world would have been impossible without using MFS. In a research of UNDP (2022), in developing markets, MFS contributes to GDP by reducing cost of business, providing access to credit for investment and connecting with financially excluded people. Despite this picture, still many people are financially excluded due to mistrust or fear of losing their hard-earned money (Malik & Sohail, 2025). For financial inclusion through MFS adoption intention, trust and risk play dominant role and those should be considered with due importance (Kumar et al., 2023; Yan et al., 2021).

Majority of MFS research was conducted based on only user's viewpoint of MFS adoption intention using UTAUT. As per the extant literature review (Hassan et al., 2022; Himel et al., 2021; Islam et al., 2025; Noor & Bhuiya, 2025; Siddik et al., 2014; Yan et al., 2021), there is dearth of integration-based research specially using both perceived trust and risk with UTAUT, and also by combining user and non-user as a diverse sample to get full market picture. Therefore, it is necessary to know whether integrated UTAUT model including trust and risk works for Bangladesh where risk and fraud occur frequently.

The primary purpose of the study is to extend the UTAUT model by adding trust and risk into it. Specifically, it intends to unveil the factors that can affect the combined behavioral intention of MFS users and non-users to accelerate the financial inclusion level of Bangladesh. The outcome of the study will help the regulators, service providers and academia to map the universal psychological and structural drivers of the MFS ecosystem. It will capture the complete spectrum of consumer sentiment in Bangladesh.

In line with the objectives, the study has been organized into a few sections. Section 2 presents the literature review, research framework, and hypotheses to provide insights into

existing scholarly work and how this study has been framed. In section 3, the methodology is presented, incorporating the data collection and analysis processes. In-depth analysis and results are presented in section 4. The next section (5) discussed the results found in the previous section in detail. In section 6, contributions to the theory and practice have been exhibited. The conclusion, limitations, and directions for future research are described in the final section of the paper.

2. Literature Review, Research Framework and Hypothesis Development

Over the years the mode of financial services has transformed from physical to digital based on demand of the consumers. There is competition among the firms regarding service delivery dynamism. In Bangladesh, financial technology like MFS is playing an unparalleled role that benefit both the firm and consumer by providing diverse need based services (Hassan et al., 2022). MFS have brought revolution in financial markets by ensuring financial inclusion (Akhter & Khalily, 2020; Dewasiri et al., 2025) and it has the potential to contribute toward sustainable economic growth of a nation (Priyo & Hazra, 2021).

A large number of MFS research have applied Unified Theory of Acceptance and Use of Technology (UTAUT, UTAUT2) in different form with some overlapping findings (Alalwan et al., 2017; Al-Saedi et al., 2020; Hassan et al., 2022; Migliore et al., 2022; Parajuli et al., 2024; Rahman et al., 2024). UTAUT is a model invented by Venkatesh et al. (2003) that offers empirical insights into how people embrace new technologies (B. Dash et al., 2023) by using performance expectancy, effort expectancy, social influence, and facilitating conditions constructs. In this growing digital world, business firms must understand the technology adoption process to stay competitive in the market (Taherdoost et al., 2024).

Many argue that adding some context-specific factors like trust (Parajuli et al., 2024) and risk (Tak & Panwar, 2017) with UTAUT may enhance the generalizability of MFS research. A very recent work (Noor & Bhuiya, 2025) in Bangladesh extended UTAUT2 as integration offers in-depth understanding of a country's socio-economic and emotional factors but this study added only trust. Hence, there remains a gap; to fulfill this scope, this research has integrated both trust and risk as direct antecedents with UTAUT. Moreover, MFS transactions have digital fraud threats and privacy consideration but consumers want risk-free and trustworthy service. In light of the highlighted theoretical gaps and practical needs, the conceptual framework has been suggested as following:

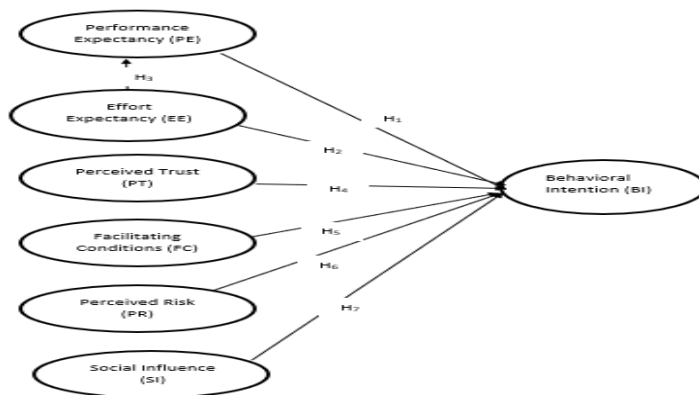


Figure 1: Research Framework, Source: (Alalwan et al., 2017; Venkatesh et al., 2003)

Behavioral Intention (BI): BI is the result of both an individual's attitude toward engaging in any behavior and his/her perceptions of what other people would expect him/her to behave in that circumstance (Ajzen & Fishbein, 1972). When a person has conscious plan to perform or not to perform any specific future activity, it denotes BI (Warshaw & Davis, 1985). BI is also reflected at the time when people instruct themselves to behave in a specific way (Triandis, 1980, as cited in Sheeran, 2002). It exhibits people's decisions to perform some definite actions (Sheeran, 2002).

Performance Expectancy (PE): It shows the degree to which a person thinks utilizing a specific technology would improve his or her performance (Venkatesh et al., 2003). Many of UTAUT based research used this construct. In Bangladeshi context, it directly affects the behavioral intention of the users (Hussain et al., 2019; Khan et al., 2021). Therefore, this research hypothesizes:

H₁: Performance expectancy positively affects behavioral intention.

Effort Expectancy (EE): It shows the easiness of the system to be used. Effort expectancy consists of three components: perceived ease of use from Technology Acceptance Model, complexity from Model of Personal Computer Utilization, and ease of use from Diffusion of Innovation Theory (Venkatesh et al., 2003). Some research found EE is positively linked to behavioral intention (Alalwan et al., 2017; Al-Saedi et al., 2020) whereas some study found negative effect on BI (Hassan et al., 2023; Hussain et al., 2019). The hypothesis of this study is:

H₂: Effort expectancy positively affects behavioral intention.

H₃: Effort expectancy positively affects Performance expectancy.

Perceived Trust (PT): In the context of MFS, perceived trust is the degree to which users think the service is dependable and secure enough to use positively (Al-Saedi et al., 2020). Trust in technology adoption can be understood in terms of its reliability, security, and data protection (Norng, 2022). For technology adoption, trust is a primary element (Almaiah et al., 2023; Al-Saedi et al., 2020; Hassan et al., 2022) though in some context it was found non-significant (Norng, 2022; Singh & Srivastava, 2018). When risk is lower or manageable, trust is established. If customers find MFS trustworthy, they repeat the service in future and vice-versa. Henceforth, the hypothesis is:

H₄: Perceived trust positively affects behavioral intention.

Facilitating Conditions (FC): The degree to which a person feels that an organizational and technological infrastructure exists to enable system use is known as a facilitating condition (Venkatesh et al., 2003). It means a person has technical and organizational support to assist the use of the system. Regarding MFS, having a mobile phone, proper network and knowledge etc. facilitate technology usage (Alalwan et al., 2017). Research found positive effect of FC on BI of MFS (Al-Saedi et al., 2020; Hassan et al., 2022, 2023). Henceforth, the hypothesis is:

H₅: Facilitating conditions positively affect behavioral intention.

Social Influence (SI): The degree to which a person feels that significant individuals think they should use the new method is known as social influence. SI plays an elaborate role in judgements about the acceptance of technology, and is influenced by a variety of dependent factors (Venkatesh et al., 2003, 2012). When any person senses like some persons think he or she should use the new system, it displays social influence. SI shows that if people in a

person's social circle have a positive attitude toward any specific technology, that person is more likely to embrace the technology (Okocha & Adibi, 2020). It has been a dominant factor in MFS adoption intention (Al-Saedi et al., 2020; Hassan et al., 2022, 2023; Hussain et al., 2019). Therefore, the hypothesis is:

H₆: Social influence positively affects behavioral intention.

Perceived Risk (PR): MFS consumers may always have a mindset of the potential loss. They are anxious of losing their money or information. They prefer to adopt risk-free technologies. To attract them, marketers must reassure that every precaution has been taken to make the services safe (Kumar et al., 2023). Though generally risk is a key driver of MFS adoption intention (Almaiah et al., 2023; Alrawad et al., 2023; Norng, 2022), there is exception for some context (Al Nawayseh, 2020; Belanche et al., 2022). Therefore, the hypothesis looks like:

H₇: Perceived risk negatively affects behavioral intention.

3. Methodology

3.1 Research Design

This explanatory research used a positivist philosophy and deductive reasoning process. Through a cross-sectional design and with a structured questionnaire this research surveyed 560 respondents consisting of both existing users and non-users.

3.2 Measurement

This explanatory research made a survey on a five-point Likert scale where value 1 and 5 respectively means strongly disagree and strongly agree for the statements. The items of the constructs have been developed based on the literatures except one new item of social influence. Same questionnaire items with a bit different wording were used for the groups. The questionnaire was written in English language at first, but later translated into and collected in Bengali to confirm that everyone understands the proper meaning of each construct.

3.3 Pre-Testing and Pilot Survey

Initially the questionnaire was pre-tested with seven respondents to get the idea about wording, sequence, clarity of the questionnaire. After receiving feedback, necessary adjustments were made. Furthermore, a pilot study with thirty respondents were conducted which helped to ensure sampling adequacy, reliability and validity of the research instrument (Himel et al., 2021).

3.4 Sampling Procedure and Data Collection

Stratified multistage mixed sampling method, which combines both probability and non-probability, was used in this study. This was applied because data were collected through multiple levels of the administrative hierarchy. Probability sampling (simple random) was used at macro level for selection of geographical area and administrative units. On the other hand, at the micro level non-probability sampling (convenience) was used for selecting respondents.

Primarily two districts-Dhaka and Rajshahi were selected. To maintain balance, the districts were then stratified into rural and urban areas (researcher assumed upazila as rural and city corporation as urban). Regarding rural area, from each district two upazilas were chosen (Paba and Puthia in Rajshahi, Savar and Keraniganj in Dhaka). Again, from each upazila

two unions were selected. Similarly, in the urban section, data was collected from Dhaka (both North and South) and Rajshahi City Corporation, focusing on different wards/ areas presented in the appendix 2.

For generalizability of the research, probability sampling is preferred to non-probability. But it requires a complete sample frame consisting of current list of every member of the population. In Bangladesh, there is no available national or provider-level data base of users and non-users for MFS. Hence, in the last stage, non-probability (convenience) sampling method was used to select the respondents. This sampling process aligns with previous research (Alalwan et al., 2017; Al-Jabri & Sohail, 2012; Noor & Bhuiya, 2025; Yen & Wu, 2016). Data was gathered from several agent points, markets, bus stops, train terminals, and other locations to guarantee unpredictability. In order to gather a variety of responses, data was also collected in the morning, afternoon, evening, and occasionally even at night.

Through 'Web Power' software this study required minimum sample size as 98. A total of six hundred and forty (640) research questionnaires were distributed using a self-administered procedure. Out of those, six hundred and one (601) were returned back by the respondents, of which twenty-two (22) were incomplete, nineteen (19) showed straight lining answers. So, finally five hundred and sixty (560) questionnaires comprising of 280 for user and 280 for non-user were used for this research.

3.5 Research Method

This quantitative research used the partial least squares based structural equation modeling (PLS-SEM) technique to analyze data because PLS-SEM gives better result compared to CB-SEM in terms of variance explained in the dependent variable, item retention, prediction and discussion (G. Dash & Paul, 2021; Hair et al., 2019; Hair Jr et al., 2017). SmartPLS version 4.1.0.9 software was utilized for data analysis through measurement and structural model. At first the measurement model (reliability and validity) and then research hypotheses in structural model were evaluated by analyzing path coefficients. Lastly, predictive power was examined by PLS predict, CVPAT-LV and MV summary. Besides it, IBM-SPSS version 26.0 was also used to analyze respondent-specific data, identify outliers, missing values etc.

4. Analysis and Results

4.1 Geographical, Demographic and Socio-Economic Profile

The participant's geographical, demographic and socio-economic profiles are shown in appendix 2. Dhaka district accounts for 54.8% of respondents, while Rajshahi is 45.2%. The sample is perfectly balanced between users and non-users, urban and rural living environments (50% each). Regarding gender, 71.4% are male, 28.6 % are female from whose 67% married, 32.7% unmarried and 0.4% divorced respondents with maximum age range 25-34 years. 28.7% respondents are below SSC, 15.4% did not go to school while a good portion (55.9%) are educated. Regarding occupation, business and students occupy the highest portion (23.4% and 23.03% respectively) followed by others category (21.6%) such as rickshaw puller, tea shop owner, cake seller, day laborer, house maid etc. Majority of the respondents' monthly family earning is between Tk.20,000-29,000 with four family members (37.5%).

4.2 Common Method Bias (CMB)

This research applied Harman's single-factor test to detect common method bias. This test is very popular and done through unrotated factor analysis. If one factor accounts for more than 50% of the variance, it is considered as CMB (Podsakoff et al., 2003). Through unrotated factor analysis, this study found single factor test as 16.33%. Therefore, CMB problem does not exist here.

4.3 Measurement Model Assessment

It stipulates how latent variables are assessed by their observed indicators. It is also called as the outer model and must meet certain evaluation requirements in order to be valid and reliable. This study used reflective model and takes into account every requirement to be a good one. The very first step for evaluation is to check the item's loading. Loadings > 0.708 are advised since they show that the construct provides sufficient item reliability and it explains majority of the indicator's variance (Hair et al., 2019). In this analysis, seventeen items out of the thirty had strong factor loadings. Five items have loading above 0.60 which is also acceptable (Chen et al., 2023; Hassan et al., 2023; Nnko & Haule, 2023).

The second evaluation step is to assess reliability by using composite reliability. All the calculated values are satisfactory (> 0.8). To evaluate each construct's convergent validity by average variance extracted (AVE) is the third step (Hair et al., 2019). The minimum acceptable value of AVE is 0.50 which is also met in this analysis.

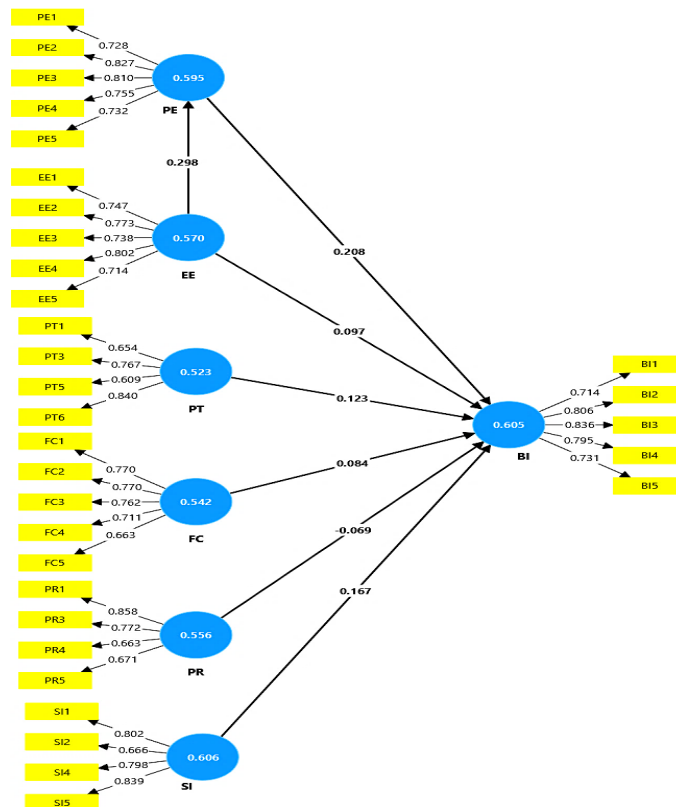


Figure 1: Measurement model (Source: Field Survey, 2025)

Note: Item deleted= PT2,4; PR2,6; SI3 for low factor loading.

Table 1: Cronbach Alpha, rho_a, and rho_c (CR) and AVE

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BI	0.836	0.842	0.884	0.605
EE	0.812	0.817	0.869	0.570
FC	0.792	0.811	0.855	0.542
PE	0.829	0.836	0.880	0.595
PR	0.756	0.866	0.832	0.556
PT	0.704	0.768	0.812	0.523
SI	0.788	0.823	0.860	0.606

The 4th step of assessment is to check discriminant validity that displays how a construct is empirically different from other constructs within the model (Hair et al., 2019). To measure this validity, Fornell-Larcker criterion, Heterotrait-Monotrait ratio (HTMT), and Cross loadings are generally used. All the values were satisfactory.

Table 2: Fornell-Larcker Criterion

	BI	EE	FC	PE	PR	PT	SI
BI	0.778						
EE	0.229	0.755					
FC	0.218	0.247	0.736				
PE	0.326	0.298	0.261	0.771			
PR	-0.065	0.007	-0.019	0.043	0.745		
PT	0.202	0.135	0.150	0.133	-0.111	0.723	
SI	0.280	0.203	0.213	0.319	0.060	0.109	0.779

Table 3: Heterotrait and Monotrait Ratio

	BI	EE	FC	PE	PR	PT	SI
BI							
EE	0.272						
FC	0.253	0.295					
PE	0.385	0.359	0.320				
PR	0.105	0.102	0.086	0.102			
PT	0.246	0.181	0.222	0.209	0.195		
SI	0.326	0.232	0.263	0.366	0.108	0.136	

4.4 Structural Model Assessment

By using the explanatory power and statistical significance of the path coefficients, the structural model was assessed (Hassan et al., 2022). But before that variance inflation factor (VIF) was calculated to detect whether any multicollinearity exists. This research has achieved satisfactory score regarding multicollinearity as the VIF are <3 (Hair et al., 2019).

Table 4: VIF Assessment

	VIF
BI1	1.823
BI2	2.277
BI3	2.119
BI4	1.814
BI5	1.671
EE1	1.651
EE2	1.690
EE3	1.580
EE4	1.734
EE5	1.398
FC1	1.712
FC2	1.489
FC3	1.443
FC4	1.535
FC5	1.391
PE1	1.597
PE2	2.084
PE3	1.866
PE4	1.645
PE5	1.509
PR1	1.399
PR3	1.683
PR4	1.557
PR5	1.300
PT1	1.231
PT3	1.412
PT5	1.300
PT6	1.447
SI1	1.692
SI2	1.434
SI4	1.579
SI5	1.620

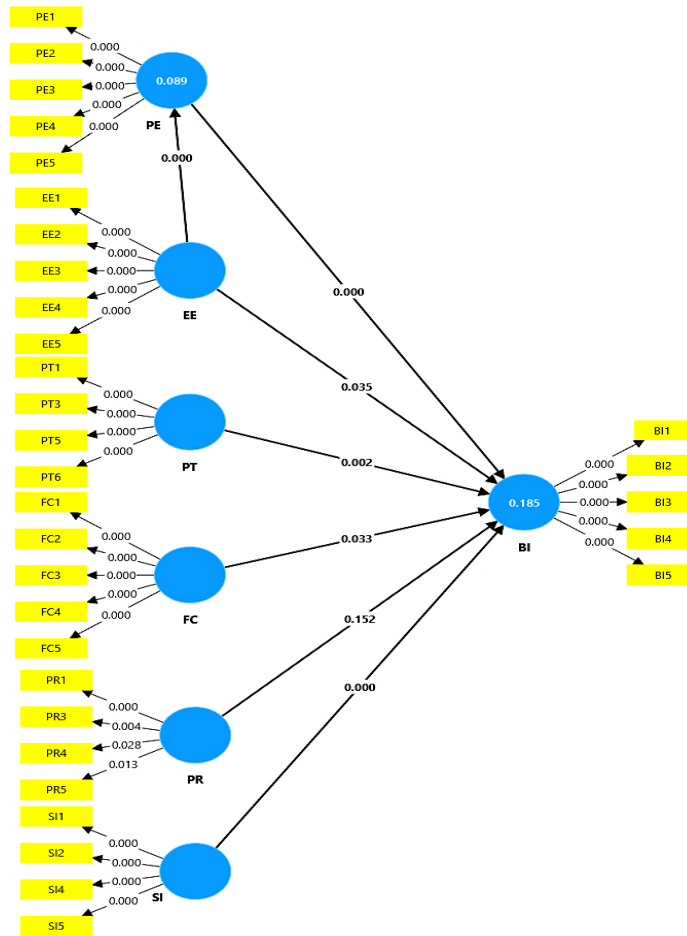


Figure 2: Structural Model

Table 5: Coefficient of Determination, R^2 and Effect Size, f^2

	f-square	R^2
EE → BI	0.010	BI - 18.5%
EE → PE	0.097	PE- 8.9%
FC → BI	0.008	
PE → BI	0.043	
PR → BI	0.006	
PT → BI	0.018	
SI → BI	0.030	

Table 5 shows the model's explanatory capacity in terms of the coefficient of determination (R^2) which is derived from bootstrapping ($n = 5,000$). The above result demonstrates positive explanatory power; it accounts for 18.5% of behavioral intention in Bangladesh. Moreover, f^2 analysis showed that performance expectancy is the principal component in influencing BI (4.3%), followed by SI (3.0%), PT (1.8%), EE (1.0%), and PR (0.6%). It demonstrates how incorporating the new concept of trust and risk have contributed towards BI. Remarkably, EE contributes the most to PE.

Table 6: Path Coefficient - Direct Relationship

Hypo-thesis	Relation-ships	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (O/STDEV)	P values	Remarks
1	PE -> BI	0.208	0.207	0.045	4.654	0.000 ***	Accepted
2	EE -> BI	0.097	0.094	0.046	2.110	0.035 **	Accepted
3	EE -> PE	0.298	0.303	0.045	6.616	0.000 ***	Accepted
4	PT -> BI	0.123	0.129	0.039	3.158	0.002 ***	Accepted
5	FC -> BI	0.084	0.089	0.039	2.133	0.033 **	Accepted
6	SI -> BI	0.167	0.171	0.042	3.996	0.000 ***	Accepted
7	PR -> BI	-0.069	-0.082	0.048	1.432	0.152	Rejected

Note: Two-tailed tests. ***accepted at < 0.01, **accepted at < 0.05.

Table 6 represents that PE, EE and PT, FC and SI have statistically significant positive effect on BI. This infers that H_1 , H_2 , H_4 , H_5 and H_6 are validated in this context. Interestingly, EE has the most significant effect on PE meaning H_3 is also accepted.

On the contrary, PR does not significantly affect BI which means H_7 is not supported. While not formally hypothesized, a post-hoc analysis was conducted to test the indirect path (EE -> PE -> BI) and it found partial mediation effect. This expresses that in Bangladesh, EE has a noteworthy effect on BI through PE (Alalwan et al., 2017).

Table 7: Post-Hoc Analysis: Specific Indirect Effect

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P-values	Remarks
EE -> PE -> BI	0.062	0.063	0.018	3.426	0.001	Partial Mediation

Table 8: Confidence Interval

Relationship	Original sample (O)	Sample mean (M)	2.5%	97.5%
EE -> BI	0.097	0.094	0.006	0.186
EE -> PE	0.298	0.303	0.214	0.391
FC -> BI	0.084	0.089	0.011	0.168
PE -> BI	0.208	0.207	0.119	0.295
PR -> BI	-0.069	-0.082	-0.157	0.059
PT -> BI	0.123	0.129	0.052	0.208
SI -> BI	0.167	0.171	0.090	0.252

Confidence interval shows the precision/uncertainty about any study result for making inferences about the population (Altman, 2005). The confidence interval results indicate that out of the seven hypotheses, six exhibit statistically significant relationships, as their corresponding 95% confidence intervals do not contain zero and their confidence interval values are positive. Only risk became non-significant because confidence interval contains both positive and negative value. It infers that in Bangladesh, perceived risk does not reliably predict intention in this sample (Bird, 2002). Moreover, in predicting BI, PE emerged as the most substantial, followed by SI, PT, EE, and FC.

Table 9: Confidence Interval Bias-corrected

Relationship	Original sample (O)	Sample mean (M)	Bias	2.5%	97.5%	Remarks
EE -> BI	0.097	0.094	-0.002	0.011	0.192	Significant
EE -> PE	0.298	0.303	0.005	0.203	0.380	Significant
FC -> BI	0.084	0.089	0.005	0.005	0.160	Significant
PE -> BI	0.208	0.207	-0.001	0.122	0.299	Significant
PR -> BI	-0.069	-0.082	-0.013	-0.121	0.124	Non-Significant
PT -> BI	0.123	0.129	0.006	0.043	0.196	Significant
SI -> BI	0.167	0.171	0.003	0.082	0.245	Significant

4.5 Predictive Relevance (Q^2)

To understand the predictive relevance of the model, PLS predict is calculated which is a practical and simple method to assess PLS path models' out-of-sample predicting ability. If values > 0, the model has predictive relevance (Shmueli et al., 2019). Regarding this study, BI has 11.8% and PE 8.1% predictive relevance which infers that this model has forethought. It exhibits that in future this model can help predicting MFS adoption intention. Subsequently, stakeholders (like policymakers, MFS providers, or central banks) may take specific steps to uplift financial inclusion.

Table 10: Predictive Relevance (Q^2)

	Q^2 predict	RMSE	MAE
BI	0.118	0.945	0.710
PE	0.081	0.965	0.715

PLS predict LV summary

Table 11: Predictive Relevance: PLS Predict-MV summary

	Q^2 predict	PLS-SEM_RMSE	PLS-SEM MAE	LM_RMSE	LM_MAE	IA_RMSE	IA_MAE
BI1	0.061	1.160	0.966	1.167	0.952	1.197	1.010
BI2	0.071	1.084	0.883	1.101	0.882	1.125	0.940
BI3	0.086	1.015	0.778	1.031	0.789	1.062	0.834
BI4	0.088	1.025	0.833	1.028	0.820	1.073	0.902
BI5	0.050	0.961	0.713	0.972	0.722	0.986	0.691
PE1	0.050	0.800	0.522	0.789	0.552	0.821	0.480
PE2	0.044	1.015	0.740	0.970	0.737	1.038	0.783
PE3	0.061	1.113	0.914	1.043	0.848	1.149	0.974
PE4	0.030	0.961	0.722	0.946	0.733	0.975	0.754
PE5	0.057	0.978	0.737	0.953	0.732	1.008	0.786

When the model shows predictive power, PLS RMSE (or MAE) values must be compared to the naive Linear model (LM) benchmark. Because evidence of systematic biases can be understood by looking at the prediction error distribution in addition to knowing the optimal prediction statistic (Shmueli et al., 2019). Here, compared to LM, PLS-SEM has high predictive power because all of the BI construct's indicators RMSE in PLS-SEM is < RMSE in LM (Shmueli et al., 2019). But then again for predicting PE, Linear model has performed better.

4.6 CVPAT-LV Summary

Table 12: CVPAT-LV Summary

	PLS loss	IA loss	Average loss difference	t value	p value
BI	1.105	1.190	-0.085	3.262	0.001
PE	0.958	1.007	-0.050	2.898	0.004
Overall	1.032	1.099	-0.067	3.761	0.000

The purpose of CVPAT is to compare two developed models directly based on how well they predict the indicators of all the dependent latent variables at the same time. It determines if any other alternative model like simple average method has significantly higher prediction accuracy than the established model for practical use and easier decision-making (Chin et al., 2020; Liengaard et al., 2021). The above results indicate that for both BI and PE, simple average method's error is more than PLS-SEM error, and this difference is statistically significant. So, this model is better at guess work what a new person will say than just using the average answer.

5. Discussion

This article intended to measure the aspects that can influence the Bangladeshi people to adopt MFS for enhancing financial inclusion by integrating perceived trust and risk with UTAUT model. The outcome shows performance expectancy, effort expectancy, perceived trust, facilitating conditions and social influence contributes positively towards behavioral intention. The result of effect size exhibits that the most substantial construct is social influence. It means people follow the endorsements of their familiar persons or social network in making their financial technology adoption decision.

The strongest positive association between performance expectancy and intention specifies that respondents think MFS technology is beneficial. They can accomplish tasks more quickly than they could with traditional methods. The result of PE is similar to the research findings of Kumar et al. (2023). Regarding EE, people think that MFS is easy to use, it does not require too much effort. EE result is supported by the findings of Alalwan et al.(2017), Al-Saedi et al. (2020), Migliore (2022), Noor & Bhuiya (2025). In Bangladesh, social influence is significant for intention, suggesting that respondents are likely to follow their friends and family who can effectively motivate them to adopt MFS. The result of SI aligns with findings of Hassan et al. (2023), Migliore et al. (2022), Noor & Bhuiya (2025).

In this context, this study demonstrates that respondents have necessary facilitating supports to use MFS (high-speed internet, compatible devices, or technical help) and facilitating conditions are positively affecting their intention. Hassan et al. (2023), Migliore (2022) and Noor & Bhuiya (2025) have found the same result about facilitating conditions. The positive result of trust shows a very signifying finding. Bangladeshi people trust MFS providers. It implies that showing only technical features of MFS is not sufficient to increase usage rather trust is equally important, respondents must have trust on that. As MFS handles financial matters and personal information, there is no way to compromise with trust. This result also matches with the result of Al-Saedi et al.(2020), Noor & Bhuiya (2025), Rahman et al.(2024).

The non-significant result of perceived risk implies that the perceived benefits of using MFS overweighs the associated risk of MFS. In this context, people are more concerned about the value they would receive than the risk they would face. Another possible reason may be people are risk taker; they also feel necessity to use it for their tasks. So, risk is not making any barrier for Bangladeshi people to use MFS. They know how to overcome any problem and they have the trust that there would not be any problem in future. This finding is similar to the research of Al-Saedi et al. (2020), Belanche et al. (2022), Hassan et al. (2022) but opposite to Alrawad et al. (2023).

6. Implications

6.1 Theoretical Implications

The current study represents one of the contributing studies which has integrated risk and trust with UTAUT for examining MFS adoption intention in a developing country like Bangladesh. As UTAUT (Venkatesh et al., 2003) is a very popular theory measuring technology acceptance, this study chose to use that as a baseline model. But the study has explained more than the basic model by incorporating two contextual drivers for Bangladeshi market named as trust and risk.

6.2 Practical Implications

The statistical findings of this study provide insights for the service providers and regulators. Given that PE is the primary motivator, marketing campaigns ought to shift their emphasis from showcasing only artistic features to highlighting functional benefits. At the same time, the strong link between EE and PE implies that if MFS using process is complicated, people will use it less. As people give importance on trust, providers must ensure the trust by taking proper measures like awareness campaigns, cyber security initiatives, digital literacy programs, and consumer protection mechanisms. Though perceived risk was not significant, that should not be ignored totally. Companies should keep in mind that people are influenced by their social network, hence they should motivate their existing users that they refer their MFS utility to their familiar persons.

7. Conclusion, Limitations and Future Research Directions

The empirical outcomes successfully align with the research objective of identifying the drivers of MFS adoption intention for financial inclusion in Bangladesh. It validated the UTAUT model by integrating trust and risk with it and found positive predictive relevance. Here, traditional drivers like PE, EE, SI, FC are playing the vital role. The newly added construct perceived trust has been proved significant that infers Bangladeshi people give importance on trust and reminds the service providers to build trust for the people. According to traditional financial logic, risk is a major reason for which people avoid MFS. However, this result and recent market trends indicate that perceived risk is no longer a barrier in adoption process. This picture can be attributed to the rise of digital ecosystems for financial sectors in Bangladesh that works for both user and non-users. Through social media, newspaper, awareness programs people come to know about MFS. Especially younger, tech-savvy individuals are increasingly trusting these services which can be a green signal to financial inclusion dynamics.

While the model has predictive ability, the explanatory power for BI is only 18.5%. It means 81.5% variance in BI for Bangladesh is still unsolved. It may indicate cultural and socio-economic

context of Bangladesh, heterogeneity of the sample and need of additional variables to include in the model. This explanatory power means that the predictors in the model are a good start, but most of the decision-making process is still undecided. It shows that behavioral intention for MFS adoption in this context is a complex, multi-faceted concept. Researchers should jump making more multifaceted frameworks by integrating other models, group basis comparison, longitudinal studies to understand BI.

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Appendix 1: List of variable items with sources

Construct	Items	Measurement Indicators	Source
Behavioral Intention	BI1	I would frequently use MFS in future.	(Himel et al., 2021)
	BI2	I would like to continue using MFS.	
	BI3	I intend to use MFS beyond money transfer.	(Batucan et al., 2022; Park & Chen, 2007)
	BI4	I intend to recommend others to use MFS.	(Himel et al., 2021)
	BI5	My attitude toward use of MFS is always positive.	(Alalwan et al., 2017)
Performance Expectancy	PE1	MFS enables me to make transactions more quickly.	(Al-Saedi et al., 2020; Venkatesh et al., 2003, 2012)
	PE2	MFS is useful for my work.	
	PE3	MFS use increases my productivity.	
	PE4	MFS helps to develop my work process.	(Venkatesh et al., 2003)
	PE5	MFS increases my chances of achieving important things.	(Venkatesh et al., 2012)
Effort Expectancy	EE1	My interaction with the system is clear.	(Venkatesh et al., 2003, 2012)
	EE2	MFS usage gradually makes me skilled for transaction.	
	EE3	Learning to operate the system is easy for me	
	EE4	I find the system easy to use.	
	EE5	Using MFS does not require a lot of mental effort.	(Batucan et al., 2022)
Social Influence	SI1	My familiar and important persons think that I should use the system.	(Venkatesh et al., 2012, 2003)
	SI2	My familiar persons have been helpful in the use of MFS.	(Venkatesh et al., 2003)
	SI3	Those who use MFS have got benefit from it.	(New)
	SI4	People whose opinions I value suggest me to use MFS.	(Al-Saedi et al., 2020; Venkatesh et al., 2012)
	SI5	People who influence my behavior think that I should use mobile financial service.	(Venkatesh et al., 2012, 2003)
Facilitating Conditions	FC1	I have the necessary resources (mobile) to use MFS	(Venkatesh et al., 2012, 2003)
	FC2	I have the necessary knowledge to use MFS.	
	FC3	My MFS does not conflict with other systems/apps I use in mobile.	
	FC4	MFS Company and others provide necessary help when I face any problems.	
	FC5	I will be aware of using MFS for transaction.	(Batucan et al., 2022)
Perceived Trust	PT1	I believe that all the transactions data are kept confidential.	(Al-Saedi et al., 2020)
	PT2	I believe that I would get an immediate confirmation message when the transaction is completed.	
	PT3	MFS is reliable.	
	PT4	I think MFS is concerned with the present and future interests of the users	(Lee & Chung, 2009)
	PT5	MFS keeps its promises to the customers.	
	PT6	MFS system is trustworthy	(Al-Saedi et al., 2020)
Perceived Risk	PR1	Providing personal information for MFS is risky	(Al-Saedi et al., 2020)
	PR2	Other people might access my data unofficially.	
	PR3	I fear that the PIN code may be lost.	
	PR4	During using MFS, internet connection may be lost suddenly.	(Laukkanen, 2016)
	PR5	During using MFS, I might tap the wrong information.	
	PR6	Overall, adopting the MFS platform has little advantage compared to traditional financial services.	(Al Nawayseh, 2020)

Appendix 2: Respondents' geographical, demographic and socio-economic profile

Particulars	Frequency	Percentage	Particulars	Frequency	Percentage
Geographical Profile					
Name of the District			Name of the Upazila/City Corporation		
Dhaka	307	54.8	Paba upazila	59	10.50
Rajshahi	253	45.2	Puthia upazila	66	11.80
Using Status			Savar upazila	75	13.40
			Keraniganj upazila	80	14.30
User	280	50.0	Dhaka North City Corporation	79	14.10
Non-User	280	50.0	Dhaka South City Corporation	73	13.00
Present Living Place			Rajshahi City Corporation	128	22.90
Urban	280	50			
Rural	280	50			
Name of the Area/Union					
Pathalia, Savar	37	6.6	Dhaka North Area, Karwan bazar and adjacent	40	7.1
Birulia, Savar	38	6.8	Dhaka North Area, Mirpur and adjacent	39	7.0
Hazratpur, Keraniganj	40	7.1	Dhaka South Area, Dhaka University, Nilkhet and adjacent	33	5.9
Jinjira, Keraniganj	40	7.1	Dhaka South Area, Rajarbag Police Lines and adjacent	40	7.1
Belpukuria, Puthia	21	3.8	Boalia Thana Area, RCC	30	5.4
Baneshwar, Puthia,	45	8.0	Rajpara Thana Area, RCC	31	5.5
Darshanpara, Paba	30	5.4	Shahmakhdum Thana Area, RCC	32	5.7
Borgachi, Paba	29	5.2	Motihar Thana Area, RCC	35	6.3
Demographic and Socio-Economic Profile					
Age			Gender		
Under 18 years	28	5.0	Male	400	71.4
18-24 years	118	21.1	Female	160	28.6
25-34 years	182	32.5	Marital Status		
35-44 years	98	17.5	Married	375	67.0
45-54 years	67	12.0	Unmarried	183	32.7
55-64 years	53	9.5	Divorced	2	0.4
> 65 years	14	2.5	Education		
Occupation			Did not go to school	86	15.4
Business	131	23.40	Below SSC	161	28.7
Govt. Service	32	5.71	SSC	71	12.7
Private Service	68	12.14	HSC	73	13.0
Student	129	23.03	Degree/Hons.	91	16.3
Housewife	79	14.10	Masters	78	13.9
Others	121	21.60			
			Monthly Income		
Family Members			Below Tk. 20,000	136	24.3
One	8	1.4	Tk.20,000-29,000	181	32.3
Two	32	5.7	Tk.30,000-39,000	113	20.2
Three	107	19.1	Tk. 40,000-49,000	61	10.9
Four	210	37.5	Tk.50,000 or above	69	12.3
Five	116	20.7			
More than five	87	15.5			

Source: Survey result, 2025

Appendix 3: Cross loading

	BI	EE	FC	PE	PR	PT	SI
BI1	0.714	0.145	0.176	0.233	-0.088	0.173	0.167
BI2	0.806	0.189	0.219	0.225	-0.088	0.148	0.175
BI3	0.836	0.208	0.193	0.258	0.004	0.133	0.280
BI4	0.795	0.228	0.194	0.311	0.015	0.160	0.244
BI5	0.731	0.105	0.052	0.228	-0.119	0.179	0.213
EE1	0.112	0.747	0.223	0.218	0.154	0.015	0.083
EE2	0.178	0.773	0.223	0.240	0.004	0.152	0.166
EE3	0.166	0.738	0.176	0.184	-0.033	0.086	0.141
EE4	0.232	0.802	0.206	0.224	-0.043	0.165	0.196
EE5	0.163	0.714	0.110	0.251	-0.029	0.067	0.165
FC1	0.137	0.110	0.770	0.197	-0.012	0.044	0.205
FC2	0.194	0.249	0.770	0.152	-0.062	0.116	0.147
FC3	0.195	0.214	0.762	0.263	0.053	0.042	0.181
FC4	0.125	0.121	0.711	0.211	-0.032	0.183	0.160
FC5	0.121	0.174	0.663	0.128	-0.028	0.219	0.082
PE1	0.201	0.233	0.227	0.728	0.024	0.076	0.211
PE2	0.285	0.223	0.197	0.827	-0.017	0.111	0.296
PE3	0.287	0.256	0.194	0.810	0.081	0.040	0.275
PE4	0.238	0.185	0.185	0.755	0.022	0.117	0.191
PE5	0.233	0.248	0.209	0.732	0.050	0.176	0.242
PR1	-0.071	-0.003	0.019	0.024	0.858	-0.110	0.055
PR3	-0.039	-0.012	-0.082	0.037	0.772	-0.147	0.001
PR4	-0.018	0.043	0.020	0.123	0.663	-0.139	0.040
PR5	-0.039	0.021	-0.024	0.004	0.671	0.045	0.080
PT1	0.122	0.060	0.086	0.030	-0.018	0.654	0.051
PT3	0.146	0.075	0.109	0.067	-0.108	0.767	0.092
PT5	0.075	0.137	0.105	0.152	-0.095	0.609	-0.001
PT6	0.201	0.130	0.134	0.145	-0.099	0.840	0.122
SI1	0.211	0.195	0.141	0.240	0.062	0.103	0.802
SI2	0.128	0.051	0.124	0.097	0.048	0.059	0.666
SI4	0.224	0.158	0.190	0.320	0.109	0.009	0.798
SI5	0.273	0.188	0.193	0.279	-0.014	0.150	0.839

