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Factors influencing consumers' attitudes and the moderating role of social influence in the banking industry

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Abstract

It is now more important to comprehend customer attitude as digital transformation changes financial services around the world, particularly in hybrid banking environments. This research identifies the key factors reshaping consumers' attitudes and consumer behavioural intention within the Bangladeshi banking sector. The investigation also employs consumers' attitudes as mediators to examine the indirect impact of independent variables on consumers' behavioural intentions. Furthermore, the research also seeks the moderating role of social influence (SI) on the relationship between consumers' attitudes and consumer behavioural intentions. Partial least squares structural equation modelling (PLS-SEM) was applied to empirically analyse 398 fintech service users' responses. The research found that perceived usefulness (PU), perceived ease of use (PEU), perceived financial risk (PFR), and perceived security risk (PSR) have a direct, significant impact on consumers' attitudes. Consumers' attitudes are also positively correlated with consumer behavioural intention. Consumers' attitudes reveal a significant mediating relationship between PU, PEU, and consumer behavioural intention, but no mediation role between PFR, PSR, and consumer behavioural intention. Additionally, SI positively moderated the relationship between consumers' attitudes and consumers' behavioural intentions in the banking industry. This research provides insights for policymakers and stakeholders to develop new policies, mitigate risk, and enhance customer satisfaction to make them loyal to financial services. The study also sheds light on the customers' attitudes so that managers of the banks pay attention to the concentration of consumer needs and provide feedback to make loyal customers.

Keywords Consumers' attitudes, Consumer behavioural intention, Banking industry, Perceived risk, Financial technology

1 Introduction

Technological developments in financial services have shaped consumer perceptions of banking by allowing banks to draw in and keep customers with integrated offers [1]. Certain financial institutions offer distinctive services, including internet banking, which

contribute to the development of favourable consumer attitudes [2]. To foster a favourable attitude towards their banking sector, banks must reassure their consumers that their savings are secure. The reputation of a renowned bank may suffer if it is unable to satisfy the expectations of its customers [3, 4]. Additionally, various other elements influence whether customers have a substantial or unsubstantial opinion of the financial institutions, such as dependability and validity, service fees, managing objections, providing support on time, offering several kinds of goods, the working atmosphere, worker expertise, and so on. Hence, managers ought to employ caution when providing services to ensure that consumers will see them favourably [5].

The Bangladeshi banking sector has been playing a crucial role in fostering trade, increasing transactions among businesses, and increasing financial stability, which ultimately boosts economic growth within the nation. This banking sector has experienced huge modifications over the years, not only highlighting global trends but also addressing Bangladesh's distinctive socioeconomic challenges [6]. Due to technological advancement, changing customer preferences, and increasing competition, it has been crucial to understand the consumers' perceptions of bank services. With the help of emerging technology, the number of mobile banking and online banking users has increased [7, 8]. The banks are focusing on how easily customers can complete their financial transactions, which results in providing customers with automated teller machines (ATMs). It is a kind of customer relationship management (CRM) strategy that banks use to positively impact consumer attitudes in Bangladesh [9]. Apart from transactions, mobile banking users can also recharge mobile devices, make payments, save money, and donate money to execute social activities [10].

Previous studies extensively used the theory of reasoned action (TRA), the theory of planned behavior (TPB), the information systems success model (ISSM), the technology acceptance model (TAM), the uses and gratifications theory (U&G), and the unified theory of acceptance and use of technology (UTAUT) to explore FinTech adoption and mobile banking behavior. For example, Roh et al. [11] integrated the ISSM and TRA and used trust as a mediator, while Aggarwal et al. [12] and Igamo et al. [13] used FinTech adoption intention as a mediator. Salem et al. [14] combined TRA, TAM, and U&G theories to examine factors affecting customers' attitudes. Mansour et al. [15] only used TAM theory and determined its independent constructs (usefulness and ease of use) on attitude and behavioural intention on internet banking. Irimia-Diéguez et al. [16] used both TPB and TRA, and attitude played a mediating role. Karim et al. [17, 18] utilised TAM as a theoretical foundation and attitude as a mediator to examine its mediation role between FinTech services and consumers' loyalty intention. In terms of the moderation role, Che Hassan et al. [19] integrated TAM, TPB, and UTAUT theories and used self-efficacy as a moderator. While Singh et al. [20] employed only TAM theory, financial literacy was used to determine the moderating role. Trust was used as a moderator by Hassan et al. [21] and UTAUT as a model. Based on the research gap, the current study's main objective is to determine the factors of customer attitudes on their behavioural intention within the Bangladeshi banking sector. The investigation also employs consumer attitudes as mediators to examine the indirect effect of independent variables on consumers' behavioural intentions. Furthermore, the research also seeks the moderating role of social influence on the relationship between consumers' attitude and behavioural intention.

The financial sector in Bangladesh is rapidly digitising, but little is known about how customers behave while dealing with conventional banks as compared with FinTech firms or mobile wallet systems. Bangladeshi consumers function in an atmosphere of collectivism, where family, peers, and community norms have a big impact on financial decisions, in contrast to many Western environments where individual decision-making predominates. Social impact is a crucial but sometimes disregarded component in determining behavioural intention because of this socially integrated decision-making context. Although earlier research has looked closely at FinTech adoption employing theories like TAM and UTAUT, these investigations usually concentrate on technology-centric platforms like exclusively digital products, agent banking, and mobile wallets. Bangladesh's mainstream banks, on the other hand, are hybrid organisations that provide both traditional and digital services. As such, they have particular difficulties in integrating legacy systems with changing customer demands. Guidance for digitisation initiatives in the traditional banking industry requires a comprehension of how customers develop attitudes toward these organisations and how those views are transformed into behavioural intentions.

The study provides several research contributions. Firstly, the research integrated three popular theories— technological acceptance model, perceived risk theory, and social influence theory—to develop a comprehensive framework. This integrated framework effectively demonstrates the complexity of customer attitudes within the banking sector. A thorough viewpoint that has not been thoroughly examined in prior research is offered by this interdisciplinary method. Secondly, the study employs consumers' attitudes as the mediator between the perceived usefulness, perceived ease of use, perceived financial risk, perceived security risk, and consumer behavioural intention. This explains how consumer attitudes affect technology acceptance and risk reduction methods. Thirdly, in developing countries such as Bangladesh, social conditions strongly shape decision-making. Incorporating social influence as a mediator provides new insights into how pressure from friends, family, and colleagues affects individual behaviour. Finally, this research offers insights for policymakers and stakeholders to develop new policies, mitigate risk, and enhance customer satisfaction to make them loyal to financial services.

2 Theoretical foundation and hypothesis development

2.1 Theoretical foundation

The theoretical background is the crucial part of the research, which shows a structured framework by entailing relevant variables and synergies among the indicators. In this study, the technological acceptance model (TAM) [22], perceived risk theory (PRT) [80], and social influence theory (SIT) [23] are used to develop a comprehensive framework.

2.1.1 Technological acceptance model (TAM)

TAM theory [22] is derived from the TRA and TPB models. However, perceived usefulness (PU) and perceived ease of use (PEU) are the two external or independent variables consisting of 12 questions in the two measurements. Attitude, behavioural intention (BI), and actual use are sometimes used as dependent variables or mediators based on the research requirements. Due to flexibility, the theory is modified in different ways by

adding new constructs. However, this study's main theory is the TAM. PU, PEU, attitude, and BI are adapted from the TAM in this research.

2.1.2 Perceived risk theory (PRT)

Risk perception theory is employed to evaluate the consumer's perceptions, including beliefs, attitudes, and feelings [80]. It plays a critical role in finding the reasons why consumers do not decide to purchase the products [24]. This theory helps business leaders improve their products and services by conducting empirical research based on this model [25] since it entails different risks, such as functional risk, physical risk, social risk, psychological risk, and time risk. This research uses just financial risk and social risk to examine the consumer's attitudes towards Bangladesh banking services. These two types of risks are perceived by the majority of technology users in developing countries [17, 18, 26], including Bangladesh. For this reason, this investigation employs them to examine consumers' attitudes and BI towards banking services.

2.1.3 Social influence theory (SIT)

Kelman [23] developed the framework of social influence theory (SIT) for understanding the circumstances that govern when social influence results in a shift in conduct or outlook. This theory was formulated during major political and social changes, including anti-war demonstrations and civil rights campaigns. The paradoxical phenomenon that individuals might follow social conventions and regulations regardless of whether they recognised their legality was highlighted by the socio-political shift [27]. Internalisation, identification, and compliance are the three components of the theory. Another interesting thing that can be described by the theory is users' perceptions of any system. People might be positively and negatively influenced by their family members, friends, and relatives regarding using any systems that can highlight individuals' attitudes [28]. Our study uses this theory, taking into account social influence as a mediator between consumer attitudes and consumers' behavioural intentions. Social influence is one of the crucial predictors affecting the users' attitude and behaviour toward the acceptance of any service, product, or technology. Nowadays, Bangladeshi people ask about their known faces or check reviews online regarding making decisions towards purchasing the service [9, 29].

2.1.4 Theoretical integration

While prior FinTech research has used TAM or PRT separately, few have combined the technological, risk, and social aspects into a single, cohesive model. This study combines perceived risk aversion (PRT), technology acceptance (TAM), and culturally embedded social influence (SIT) to expand on previous frameworks. This tri-theoretical framework is particularly relevant in collectivist societies like Bangladesh, where adoption decisions are shaped by normative pressures from friends and family, alongside perceived risk and utility. Therefore, the concept contributes to the literature by illuminating how social impact either reinforces or erodes the relationships between technology, risk, and attitude in hybrid banks.

2.2 Hypotheses development

2.2.1 Perceived usefulness (PU) and consumers' attitudes

According to TAM theory, perceived usefulness (PU) is a user's subjective assessment of and conviction in the effectiveness of putting certain technology into practice [22]. It is an indicator of how much an individual thinks utilising a technology would increase their efficiency. From the Pakistan perspective, using 411 respondents, Zahid et al. [30] concluded that perceived usefulness has a substantial influence on customer attitudes regarding purchasing dairy products. Tiwari et al. [81] researched ChatGPT adoption, where 375 students participated in the survey. They found that perceived usefulness positively influenced the students using ChatGPT. Arghashi and Yuksel [31] validate the TAM theory in their research, revealing a significant link between perceived usefulness and Augmented Reality customers. Thus, the researchers proposed the following hypothesis:

H1: PU has a significant effect on consumers' attitudes in the banking industry.

2.2.2 Perceived ease of use (PEU) and consumers' attitudes

Perceived ease of use (PEU) is an especially significant and frequently predicted indicator in the assessment of mobile banking adoption. PU and PEU have been recorded as the two main determinants of the adoption of the new system. They both are significant and trustworthy variables of individuals' attitudes and intentions regarding the new system. Based on TAM theory, Davis [22] suggested that PEU improves attitude towards new solutions, which in turn accelerates willingness to use. Various research studies validated that PEU is the crucial factor in having a predictable capacity for using any technology [32]. Tiwari et al. [81] found a favourable effect of PEU on students' attitudes towards using ChatGPT. Prastiawan et al. [33] also found a strong connection between PEU and mobile banking users. Therefore, the following hypothesis has been proposed:

H2: PEU has a significant effect on consumers' attitudes in the banking industry.

2.2.3 Perceived financial risk (PFR) and consumers' attitudes

According to risk theory, risk plays a significant role in the users' attitudes. When an individual perceives that the technology or service has substantial risks, they try to avoid it [24]. However, perceived financial risk (PFR) is the concept that a specific sum of money can be lost or required to enable something to work correctly. Hence, financial risk is considered the most significant indicator influencing consumption over any other risks related to components. In research on online purchasing, Maignan and Lukas [82] argued that financial risk is a kind of customer anxiety that is the possible total loss and is a significant deterrent to buying. Zielke and Dobbelstein [34] defined financial risk as the possibility of losing money invested due to the probability that a good or service may need to be repaired. To mention the previous study, Quan et al. [35] showed the considerable impact of financial risk on attitudes within the hotel sector. Chusan et al. [36] also found a strong connection between financial risk attitude and financial behaviour. A study conducted by Babalola [37] concluded that perceived financial risk or distress has an unfavourable impact on consumer attitudes. Hence, the following proposition is proposed:

H3: PFR has a significant effect on consumers' attitudes in the banking industry.

2.2.4 Perceived security risk (PSR) and consumers' attitudes

A probable perceived decline in prestige or brand as a result of buying a specific item or brand. Perceived security risk (PSR) represents a significant component of perceived risk as it considers the loss of personal information and finances of the consumers. Fraud, phishing, and malware are common threats to financial service users. Risk theory posits that sustainable engagement with a product decreases when users realise the potential losses that can occur [24]. By using a sample size of 413 within Turkey, Arslan et al. [38] concluded that social risk negatively affected the attitude of private label customers. From the online group buying perspective, Suki and Sukib [39] have not found the impact of risk on consumer attitudes. Hong et al. [83] found a significant relationship between risk and consumers' attitudes toward online shopping. In a research study conducted on drone food delivery services within the Indian context, Mathew [40] found a significant and negative relationship between risk and consumer attitude. Hence, we propose the following hypothesis:

H4: PSR has a significant effect on consumers' attitudes in the banking industry.

2.2.5 Consumers' attitudes and behavioural intention (BI)

The relationship between consumer attitude and behavioural intention (BI) is a common relation in the TAM, TPB, and TRA. Thus, TAM theory suggests that consumer attitude is one of the crucial predictors of BI. A positive attitude helps to shape strong BI towards the products, services, or technology that make loyal customers of the specific products, services, or technology [22, 87]. Several empirical research studies have used this relationship, either considering the combined or isolated theory. Within the online delivery services, by using a 224-sample size, Yeo et al. [41] found a significant impact on food consumers' attitudes towards behavioural intention. Cao et al. [42] researched AI adoption and collected data from 269 UK business managers. They concluded that consumer attitudes have a significant impact on AI adoption in the business sector. From the Malaysian perspective, Chen et al. [43] also found a significant impact on consumer attitudes towards behavioural intention during the COVID-19 pandemic. Hwang et al. [44] also found that attitude can enhance customers' behavioural intentions.

H5: Consumers' attitudes have a significant effect on consumers' BI in the banking industry.

2.2.6 Mediating role of consumers' attitudes

A customer's views, emotions, and intentions regarding any products or systems are all part of their attitude. Individual preferences and perceptions are influenced by this factor, which is shaped by their prior encounters and relations. Consumer attitudes are crucial for business leaders to understand the motivation of consumers. By understanding consumers' attitudes, businesspeople can take necessary measures and boost their performance. Our adapted theories in this study have a significant relationship with consumer attitudes. For example, TAM theory suggests that positive attitudes result in strong behavioural intentions using any technology [22]. According to PRT theory, when users realise any potential risks towards any product or service, they pause from leveraging it [24]. While SIT theory posits that being influenced by family, relatives, and peers sometimes causes consumers to change their attitude towards any technology or

service [23]. Several previous studies employed attitude as a mediator in their study. In a research study conducted on purchasing green products in Greece, Riskos et al. [45] found that consumer attitudes played a significant role in green product purchases and ecolabel engagement. Li et al. [46] also investigated research on measuring the impact of consumers' attitudes on users' innovativeness and green food adoption by using collected data from 103 respondents. They found that consumer attitudes played a role in the variables. Ho Nguyen et al. [47] examined research for understanding the consumer's online shopping purchase intention. They concluded that consumer attitudes have a substantial effect on the relationship between purchase intention and advertising. Within the mobile banking perspective, Prastiawan et al. [33] found that attitudes mediate positively between SI and actual use. Thus, this research also employs consumer attitude as a mediator to examine the effects of independent variables on consumers' BI, and the following hypotheses are proposed:

H6: Consumers' attitudes mediate the relationship between PU and consumers' BI in the banking industry.
H7: Consumers' attitudes mediate the relationship between PEU and consumers' BI in the banking industry.
H8: Consumers' attitudes mediate the relationship between PFR and consumers' BI in the banking industry.
H9: Consumers' attitudes mediate the relationship between PSR and consumers' BI in the banking industry.

2.2.7 Moderating role of social influence (SI)

Social influence theory emphasises that an individual's perception can be affected by other users' opinions regarding the necessity of using the technology that is available to them [48]. For example, a potential consumer may be influenced by their family members and friends as well [4]. The interconnected impact of SI, including openness, subjective norm, and image, is pertinent to enhancing comprehension of the intention to adopt [49]. Prior literature did not find social influence as a mediator, though other factors were used. For example, Merhi et al. [50] took into account age and gender as mediators and found their significant impact on consumer behavioural intention. Jadil et al. [51] concluded that the sample size of respondents moderates the relationship between facilitating conditions and usage intention. Alomari and Abdullah [52] used financial literacy as a moderator among the students of Saudi Arabian public universities to use cryptocurrency. They concluded that financial literacy serves as the critical moderator between the dependent (behavioural intention) and independent variables. The moderating role of SI is examined in the limited previous studies.

Social influence modifies this interaction through strengthening it in socially integrated environments, in contrast to mediating factors that indicate how attitudes result in intention [89]. For example, people with good attitudes are more inclined to translate such attitudes into behavioural intention when friends or family support online banking [90]. On the other hand, even positive sentiments might not result in adoption without such support. Therefore, it is hypothesised that SI moderates rather than mediates the ATT–BI association and proposes the following hypothesis:

H10: Social influence (SI) positively moderates the relationship between consumers' attitudes and consumers' BI in the banking industry.

3 Methodology

3.1 Study design

This research involved a survey of factors affecting consumers' attitudes towards their behavioural intentions of bank service users all over the country. We collected the data from the bank customers in Bangladesh using the convenience sampling method. Convenience sampling was used because experiential research in emerging nations frequently faces practical limits like time, accessibility, and financial restrictions. Although the sample's representativeness may be limited by this non-probability approach, it made it possible to get immediately available and contextually rich data from actual banking customers who are actively using digital services [4]. In order to increase demographic variability and allay worries about generalizability, the sample was selected from a variety of branches and service locations in various urban areas. This method increases the precision and comprehensiveness of participants' answers by giving them the freedom to finish the survey whenever it is most convenient for them [53]. Additionally, when participants have any queries, it enables researchers to provide prompt explanations, which lowers confusion and enhances the data quality. The data collection period ranges from October 2024 to December 2024. Since the investigation applied a non-intrusive quantitative technique with anonymised data, ethical approval appeared unnecessary. We collected data using social media platforms, negating the need for official ethics committee permission. A total of 408 respondents' data were collected; after a proper revision, 10 respondents' data were excluded due to invalidity and unreliability, and finally, 398 participants' responses were included for data analysis and data cleaning. Siddiqi [54] suggests that the minimum sample size should be 300 for SEM analysis. Since our sample size is 398, it meets the minimum requirements. By integrating three theories, including TAM, PRT, and SIT, and their invaluable items (refer to Fig. 1), the Partial Least Squares-Structural Equation Modelling (PLS-SEM) software (SmartPLS 4.0.8.9), following the methodological recommendation of [91–93], is used to investigate the factors affecting Consumers' Attitude towards consumers' behavioural intention of FinTech service users.

3.2 Participants

Table 1 presents the demographic characteristics of the respondents. The majority of participants in this study are male (69.6%). 54.4% of participants are aged between 20

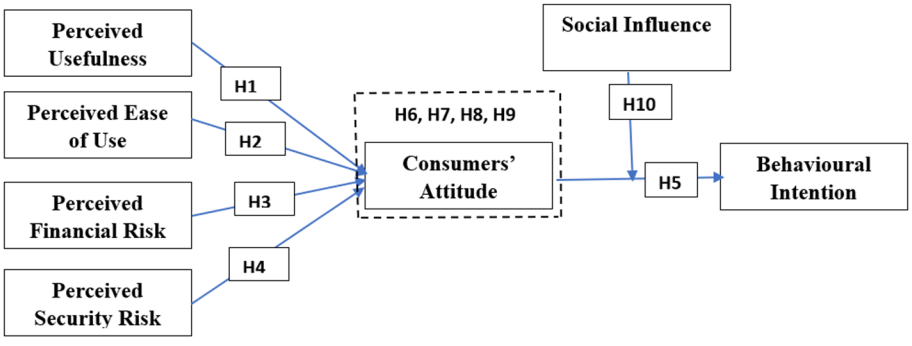

Fig. 1 Proposed research framework. Source: Authors' work.

Table 1 Demographic profile of the respondents

	Frequency	%	Cumulative %
Gender			
Male	277	69.6	69.6
Female	121	30.4	100.0
Total	398	100.0	
Age			
20–29	217	54.4	54.4
30–39	146	36.8	91.2
40–49	23	5.8	97.0
50 and above	12	3.0	100.0
Total	398	100.0	
Educational Level			
Bachelor	138	34.7	34.7
Masters	215	54.0	88.7
Doctorate	40	10.0	98.7
Others	5	1.3	100.0
Total	398	100.0	
Occupation			
Student	181	45.5	45.5
Service holder	159	39.9	85.4
Self-employed	48	12.1	97.5
Others	10	2.5	100.0
Total	398	100.0	
Experience in FinTech service			
Yes	398	100.0	100.0
No	0	0.0	

Source: Authors' work

and 29. Approximately 54.0% of respondents possess a master's degree, while 45.5% are professionally engaged as students. All respondents possess proficiency in FinTech innovation.

3.3 Measures

Appendix 1 represents the measurement scales at a glance of this study. The items have been somewhat modified based on the research objectives. This study uses a 7-point Likert scale to measure all items. Two constructs, PU and PEU, are from an existing study [22], and each construct has 5 items. SI is the component of SIT [55], which is employed, and it has 4 items. Here, SI is used as a moderator. Two constructs, such as PFR [56–58] and PSR [59, 60], help in understanding customers' potential risk towards FinTech service use. Customers' BI [61, 88] and customers' attitude [22] are used as dependent variables and mediators, respectively, and they contain 4 items each.

4 Results and analysis

4.1 Evaluation of common method bias (CMB)

Common Method Bias (CMB) poses a possible issue in survey research, as it may exaggerate or distort the observed connections among variables [84, 94]. To address this issue, the authors applied the full collinearity (FC) test, and the full collinearity (FC) test showed that the variance inflation factor (VIF) results are below the 3.3 threshold and fell between 1.418 and 3.024 (refer to Table 2) [62]. In addition, Harman's single-factor test showed that the first factor only explained 39% of the overall variance, which

Table 2 Assessment of convergent validity and internal consistency

Variables	Items	Loadings	CR	AVE	VIF
Attitude	ATT1	0.801	0.914	0.727	1.418
	ATT2	0.869			
	ATT3	0.878			
	ATT4	0.859			
BI	BI1	0.774	0.900	0.693	2.986
	BI2	0.845			
	BI3	0.875			
	BI4	0.832			
PEU	PEU1	0.696	0.881	0.599	1.657
	PEU2	0.783			
	PEU3	0.810			
	PEU4	0.808			
	PEU5	0.765			
PFR	PFR1	0.939	0.973	0.900	3.024
	PFR2	0.966			
	PFR3	0.946			
	PFR4	0.943			
PSR	PSR1	0.957	0.979	0.920	3.015
	PSR2	0.967			
	PSR3	0.955			
	PSR4	0.956			
PU	PU1	0.783	0.906	0.659	1.586
	PU2	0.785			
	PU3	0.836			
	PU4	0.844			
	PU5	0.808			
SI	SI1	0.814	0.883	0.654	1.756
	SI2	0.827			
	SI3	0.806			
	SI4	0.786			

Source: Authors' work

Note: VIF = Variance inflation factor, AVE = Average variance extracted, CR = Composite reliability

is much lower than the critical threshold of 50% [85, 86]. These findings indicate that the CMB issue did not pose a difficulty in this study.

4.2 Evaluation of measurement model

This study adhered to the parameters established by Hair et al. [63] to evaluate internal consistency reliability and convergent validity. Multiple metrics were utilized [95], such as factor loadings, composite reliability (CR), and average variance extracted (AVE). Table 2 presents the results, demonstrating that all items exhibited loadings exceeding the recommended threshold of 0.708 (except PEU1 = 0.696), as proposed by [64]. Furthermore, the analysis revealed that all constructs were above the suggested thresholds of 0.70 for CR and 0.50 for AVE. However, PEU1 = 0.696 is also conditionally accepted because the CR and AVE value of PEU exceeded the threshold value recommended by [64]. As a result, the study successfully demonstrated the constructs' internal consistency and convergent validity (refer to Table 2).

In addition, the study utilised the Heterotrait-Monotrait (HTMT) ratio method to assess discriminant validity. All HTMT values fell below the advised threshold of 0.90 (refer to Table 3) [63]. This finding demonstrates satisfactory results for discriminant validity.

Table 3 Assessment of discriminant validity using HTMT

	ATT	BI	PEU	PFR	PSR	PU	SI
ATT							
BI	0.850						
PEU	0.537	0.599					
PFR	0.076	0.076	0.268				
PSR	0.111	0.105	0.280	0.924			
PU	0.506	0.538	0.739	0.109	0.182		
SI	0.491	0.409	0.563	0.255	0.242	0.434	

Source: Authors' work

Table 4 Assessment of the structural model

Hypothesized Relationship	Std. Beta	Std. Error	*p*-values	VIF	R^2	$f2$	Q^2	Decision
H1: PU ->ATT	0.255	0.07	000	1.685	0.256	0.152	0.213	Accepted
H2: PEU ->ATT	0.308	0.08	000	1.737		0.174		Accepted
H3: PFR ->ATT	0.066	0.112	0.027	4.034		0.123		Accepted
H4: PSR ->ATT	-0.043	0.115	0.035	4.025		0.112		Accepted
H5: ATT ->BI	0.723	0.096	000	1.518	0.541	0.751	0.246	Accepted
H6: PU ->ATT ->BI	0.185	0.056	000					Accepted
H7: PEU ->ATT ->BI	0.223	0.067	000					Accepted
H8: PFR ->ATT ->BI	0.048	0.081	0.277					Rejected
H9: PSR ->ATT ->BI	-0.031	0.082	0.353					Rejected
H10: SI x ATT ->BI	0.011	0.059	0.042					Accepted

Source: Authors' work

4.3 Evaluation of structural model

Since the PLS-SEM evaluation of path coefficients relies on regression analyses [96, 97], the collinearity issue needs to be assessed in the first step. Table 4 demonstrated that all constructs' VIF values were less than 5 [63], suggesting that the current structural model did not have a collinearity problem.

The bootstrapping technique with 5000 subsamples was used to assess the structural framework and test the 10 hypotheses based on the advice provided by Becker et al. (2023) [65]. The results in Table 4 show the significance of the relationship between PU and ATT (β = 0.255; p-value = 000), PEU and ATT (β = 0.308; p-value = 0.000), PFR and ATT (β = 0.066; p-value = 0.027), PSR and ATT (β = -0.043; p-value = 0.035), ATT and BI (β = 0.723; p-value = 000), confirming all the direct relationships hypothesized in H1 to H5.

Next, the study indicated that ATT has a significant role in mediating the relationship between PU and BI (β = 0.185; p-value = 0.000), PEU and BI (β = 0.223; p-value = 0.000). Hence, H6 and H7 were supported. On the other hand, ATT did not mediate the relationship between PFR and BI (β = 0.048; p-value = 0.277, PSR and BI (β =-0.031; p-value = 0.353). Therefore, H8 and H9 were not supported (refer to Table 4). The moderation effect was tested using a two-step approach recommended by Becker et al. (2023) [65]. The result showed a significant moderated effect of SI x ATT on BI (β = 0.011; p-value = 0.042). Hence, H10 was supported. Thus, the relationship between ATT and BI results appears to be stronger when SI is high.

The framework exhibited a weak explanatory power in terms of coefficient of determination (R^2) values, with PU, PEU, PFR, and PSR collectively explaining 25.6% of the variance in ATT. Furthermore, ATT exhibited moderate explanatory power and accounted for 54.1% of the variance in BI (refer to Table 4) [66].

The effect size ($f2$) was examined to assess the significance of each path (refer to Table 4). The effect size ($f2$) of ATT ($f2 = 0.751$) exhibited the largest effect size on BI. In explaining ATT, a medium effect was found on PU ($f2 = 0.152$) and PEU ($f2 = 0.174$), while a small effect was found on PFR ($f2 = 0.123$) and PSR ($f2 = 0.112$) [69].

Finally, the PLSpredict procedure was applied to measure the predictive relevance of the model [67]. The Q^2_predict values for the endogenous constructs in Table 4 were more than zero, indicating that the model is predictively relevant [68]. We used Shmueli et al. (2019) and Shojaee et al. (2025) [70, 98] guidelines to extend our prediction technique, resulting in strong predictive relevance (PLS-SEM_MAE < LM_MAE for all ATT and BI items). As a result, the proposed model has predictive validity for exhibiting the prognosis of the target population by taking into account the key target constructs, namely attitude and behavioural Intention in the banking industry, which are expected to occur when new observations are projected.

5 Discussion

This research examines the factors affecting consumers' attitudes towards their behavioural intentions of bank service users all over the country. This research determines both direct and indirect effects.

PU has a positive impact on consumer attitudes. It means that consumers of the banking industry are satisfied with the technology-based performance, and they can fulfil their demands. PU enhances individual perception of the value of technology, which results in favourable feelings and more pleasure. Arghashi and Yuksel's [31] and Tiwari et al.'s [81] results support this outcome. The study also found that PEU has a positive effect on customer attitude. This is because financial technology is easy to use and effortless, which motivates consumers to use it more and more. This finding is aligned with the study of Prastiawan et al. [33] and Tiwari et al. [81]. PFR positively influences individual attitudes since it motivates customers to take into account the advantages of embracing financial services. Trust can be increased by reducing the risk to the consumers. If people believe the possible gains of the product exceed its downsides, this cognitive evaluation frequently leads to a more positive attitude towards it. Previous studies like Chusan et al. [36] and Quan et al. [35] found similar results. The attitude towards FinTech service is positively influenced by PSR when individuals understand that reducing these challenges fosters dependability and confidence. Since it demonstrates a dedication to security, people may have a more positive attitude regarding adopting systems when they realise security risks have been effectively controlled. Our finding is validated by Hong et al. [83]. The research also reveals that consumer attitudes have a favourable impact on consumer behavioural intention since a good attitude signifies faith, contentment, and the real worth of financial services. Users are inclined to form an intense desire to acquire or keep utilising financial items or technological devices because they perceive them as advantageous and user-friendly. Hwang et al. [44] and Cao et al. [42] reported similar outcomes in their studies.

The study also investigated the mediating role of consumer attitudes among the indicators. For example, it has been found that consumers' attitudes mediate the relationship between PU and consumers' BI in the banking industry. Customers' attitudes are favorably impacted when they believe that financial services are valuable, and this reinforces their BI to use the service. This result underlines how attitude plays a crucial role

in influencing users' behaviour in the banking sector through a working psychological connection between BI and PU. Riskos et al. [45] found the same result within this connection. Consumers' attitude significantly mediates the relationship between PEU and consumers' BI in the banking industry. It is because customers are more inclined to embrace utilising financial services when they believe them to be user-friendly, which stimulates a favourable mindset. This indicates how crucial attitude is in spanning the divide between PEU and BI to use banking services. This finding is associated with the outcomes of Nguyen et al. [47] and Li et al. [46]. Unfortunately, consumer attitudes do not play a significant role in the PFR and PSR on BI in the banking industry. PFR and PSR may have a direct effect on BI, irrespective of customer opinions. The idea that PFR and PSR may individually discourage or encourage users highlights the necessity of resolving concerns about risks head-on rather than depending on shifting attitudes to affect BI.

The study reveals that SI plays a significant moderating role between consumers' attitudes and BI to use banking services. It means that an individual's propensity to employ a financial service is more strongly affected by their favourable attitude when they believe their family members, friends, or relatives adopt and use the service. From the banking perspective, this impact implies that social indicators increase the association between consumers' attitudes and BI, increasing the possibility that customers will act on their positive views. Merhi et al. [50] and Jadil et al. [51] found similar outcomes in their research.

6 Conclusion and implications

Due to technological advancements, the banking industry environment and consumers' interests have changed day by day. Banks are now busy understanding consumers' perceptions and attitudes so that they can make loyal customers by providing the best services to the banking service users. However, the study aims to investigate the factors of consumer attitudes on consumer behavioural intention within the Bangladeshi banking sector. The study also employs consumers' attitudes as mediators to determine the indirect impact of independent variables on consumers' behavioural intentions. Furthermore, the research also seeks the moderating role of consumer attitudes and consumer behavioural intention. Partial least squares structural equation modelling (PLS-SEM) was used to empirically analyse 398 fintech service users' datasets. The research found that PU, PEU, PFR, and PSR have a direct, significant impact on consumers' attitudes. Consumers' attitudes are also positively correlated with consumer BI. Consumers' Attitudes reveal a significant mediating relationship between PU, PEU, and consumer BI, but no mediation role between PFR, PSR, and consumer BI. Additionally, SI positively moderated the relationship between consumers' attitudes and consumers' BI in the banking industry.

This research offers numerous potential theoretical contributions. First, the research integrated three popular theories to develop a comprehensive framework that effectively demonstrates the complexity of customer attitudes within the banking sector. Al-Smadi [71] incorporated the TAM and the theory of planned behaviour (TPB) to examine consumer behaviour intention within the Jordanian context. From the UAE perspective, Kaakeh et al. [72] used the TRA and TPB to examine the Islamic banking users' attitudes. Hoque et al. [73] also employed the TRA and TPB theories to determine consumers' mindsets and attitudes towards taking frequent services of Islamic banking in

Bangladesh. Alshari & Lokhande [74] adapted TAM theory to investigate users' attitudes and behavioural intentions towards FinTech services usage within underdeveloped countries. Since this research integrated three theories, it would contribute to the theoretical understanding through not only the TAM theory but also the concerns of risk and the SIT theory. This triadic combination facilitates a subtle analysis of users' attitudes and behaviour in the banking sector. This research framework serves as a foundation for future research within banking or other contexts. Second, by illustrating its indirect function in converting risk-associated and technology observations into behavioural intention, the study extends previous frameworks by introducing consumers' attitude as a mediating variable. This mediation approach offers empirical evidence for the necessity of attitudinal development in hybrid service contexts and reaffirms its significance in financial institution adoption studies. Finally, the addition of SI as a moderator between BI and consumers' attitude gives current acceptance frameworks a new dimension. This moderating impact illustrates how social circumstances can either increase or decrease the influence on users' attitudes in collectivist countries like Bangladesh, where friends and familial connections frequently influence economic choices. This realisation throws into question the linear attitudinal influence assumption and urges future research to use more culturally relevant modelling.

Furthermore, by exposing a comprehensive socio-techno-psychological concept behind customers' behavioural intentions, this work contributes to theoretical discourse. SIT incorporates the social forces influencing decision-making, PRT adds the interpersonal component of risk, and TAM records cognitive evaluations of utility and ease. Combining these perspectives produces a dynamic knowledge of how perceived risk, societal norms, and technology acceptance influence intention formation. This integration expands the scope of TAM beyond individualistic settings to potentially dangerous collectivist settings where social networks co-create decision logic. In order to represent technology adoption as a multifaceted, socially integrated procedure rather than a solely technological one, the framework provides a practical basis for future FinTech and hybrid-service studies.

This research also offers valuable practical implications. The outcome reveals that PU and PEU have a significant impact on consumer attitudes. Therefore, banks should take the initiative and execute user-friendly services for consumers so that consumers can complete their financial transactions effortlessly. In this case, financial institutions should add features including a voice-enabled system, advocate for multiple languages, and flexible consumer views that can help detect consumer issues. Financial risk and security risk are the most common risks that impact consumer attitudes and behavioural perceptions. Bangladeshi banking industry can adopt different systems like multi-factor authentication, encryption, and fraud detection tools to ensure consumers' risk-free transactions. Furthermore, social influence moderated the relationship between consumers' attitude and behavioural intention, which means that social media positively influences consumers to use the banking services in Bangladesh. Hence, banks can advertise their products or services through social media and news portals regarding the benefits of mobile banking and internet banking. Numerous marginalised communities in Bangladesh are out of reach of online-based financial services. Banks and policymakers can work together to penetrate mobile banking and internet connections within those societies that help them complete financial deals easily. A good number of people

in Bangladesh still lack financial literacy; moreover, policymakers should take proper initiatives to boost the financial literacy of the people.

Examining the factors of consumers' attitudes on their behavioural intentions within the banking industry provides significant insights. It is essential to recognise the limitations and explore possible directions for further investigation. This research has several limitations. Firstly, the research collected data from 398 consumers, and most of the participants are from the Chittagong, Dhaka, Sylhet, and Comilla divisions of Bangladesh. Future research can be done by increasing the sample sizes by covering all of the divisions within the country. Future researchers can fully focus on just one region to examine consumers' attitudes and their behavioural intentions. Secondly, the study used a convenience sampling method since this approach generates bias during participant selection. Furthermore, research can be conducted by following any sampling methods, including cluster, purposive, systematic, and so on, based on the research objectives and the researcher's convenience. Thirdly, the research integrated three theories, such as TAM, PRT, and SIT. In this case, though our study used all the constructs of the theory, we just used a few constructs of the other theories. So, future research can be done by considering and including more factors, including social risk, psychological risk, and time risk. It is worth mentioning that most of the prior research is focused on the benefits and acceptance sides of technology; future scholars can research the barriers or challenges towards accepting FinTech service acceptance, since all of the residents in Bangladesh have yet to accept the service. Finally, all mediators' influence has not been justified in this research; prospective scholars can include any vital factors as mediators.

Appendix 1: measurement scales

Construct	Items	Source
Perceived Usefulness (PU)	PU1: Using FinTech service improves my job performance. PU2: Using FinTech solutions saves me time. PU3: FinTech solutions enable me to accomplish tasks more quickly. PU4: Using FinTech solutions increases my productivity in managing financial transactions. PU5: Overall, I find the FinTech solutions are more useful than traditional banking systems for managing my finances.	[22]
Perceived Ease of Use (PEU)	PEU1: I think FinTech solutions are easy to use PEU2: Learning FinTech solutions is easy for me PEU3: Using the fintech system does not require much mental effort PEU4: I can easily perform banking tasks using fintech services without needing assistance PEU5: Fintech services are designed in a way that makes banking tasks feel effortless.	[22]
Social Influence (SI)	SI1: My friends and family believe I should use fintech services for banking SI2: Social recommendations influence my decision to use fintech services SI3: The opinions of others impact my use of fintech services SI4: I feel encouraged by my peers to adopt fintech solutions for banking.	[55, 61, 88]
Perceived Financial Risk (PFR)	PFR1: I am concerned about the potential financial risks associated with using fintech services for banking PFR2: I worry that fintech services might expose me to financial losses due to security breaches PFR3: I am concerned that I might be overcharged for certain services when using fintech platforms PFR4: My confidence in fintech services is affected by the potential risk of fraudulent activities.	[56–58]

Construct	Items	Source
Perceived Security Risk (PSR)	PSR1: I am concerned about the security of my personal information when using fintech services PSR2: I worry that my financial data may be accessed by unauthorised individuals when using fintech services PSR3: The privacy of my financial information is at risk when using fintech services PSR4: I worry that fintech platforms could be vulnerable to cyber-attacks that may compromise my financial security.	[59,60]
Behavioural Intention (BI)	BI1: I have the intention to use fintech services in the next six months BI2: I will recommend fintech services to others BI3: I am likely to continue using fintech services in the future BI4: I am committed to using fintech services for my banking needs soon.	[61, 88]
Consumers' attitude (ATT)	ATT1: I think that using fintech services is a good idea for managing my financial transactions ATT2: I believe that utilising fintech innovations for financial transactions is a wise decision ATT3: I find the experience of using fintech services to be pleasant ATT4: In my opinion, it is desirable to adopt fintech innovations for improved financial management	[22]

Abbreviations

ATT	Attitude
AVE	Average variance extracted
BI	Behavioural intention
CMB	Common method bias
CR	Composite reliability
CRM	Customer relationship management
FinTech	Financial technology
FC	Full collinearity
HTMT	Heterotrait-Monotrait
PEU	Perceived ease of use
PFR	Perceived financial risk
PU	Perceived usefulness
PRT	Perceived risk theory
PSR	Perceived security risk
SI	Social influence
SIT	Social influence theory
TAM	Technological acceptance model

Author contributions

Tipon Tanchangya: Writing – review & editing, Writing – original draft, Investigation, Conceptualization. Mohammad Abdullah Al Mamun: Investigation, Software, Formal analysis, Conceptualization, Funding acquisition. Tania Akter: Writing- review & editing, Funding acquisition, Validation, supervisionBalayet Hossain: Project administration, Methodology, Conceptualisation. Abul Khair Mohammed Abdul Baten: Software, Resources, Supervision. Naimul Islam: Data curation, Supervision, Project administration. Md. Karimul Alam: Investigation, Validation, Visualization.

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Data availability

Data will be available upon reasonable request.

Declarations

Consent to participate

Informed consent was obtained from all participants involved in this study.

Consent for publication

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