EJABM European Journal of Applied Business and Management
European Journal of Applied Business Management, 11(2), 2025, pp. 98-128 ISSN 2183-5594

Research Paper

Users' Intention to Continue Mobile Financial Services (MFS): The Moderating Role of Promotional Incentives

Submitted on 17th march 2025
Accepted on 16th may 2025
Evaluated by a double-blind review system

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ABSTRACT

Purpose: This study examines the determinants of users' continued usage of mobile financial services (MFS) for online purchases in the developing country of Bangladesh.

Methodology: A mixed-method conceptual framework was developed to carry out this study. The non-probability convenience sampling method was employed to collect data using a structured questionnaire survey. Analysis of data from 413 participants was conducted using SmartPLS4.0 partial least equation modeling (SEM-PLS).

Results: Perceived lifestyle compatibility and fear of COVID-19 have been found to positively impact the continuous usage of mobile financial services, both directly and indirectly. Furthermore, the analysis results show that while perceived online security has a direct impact, a substantial mediated effect was not found. According to the study, perceived social influences have no significant impact. In addition, promotional incentives did not moderate the hypothesized relationship.

Research limitations: In the future, cross-sectional research with a larger sample size could be explored, as the current study needed more generalizability.

Practical implications: This study could help create consumer-friendly marketing strategies and a new business model. Due to consumer usage habits' unpredictability, the during and after COVID-19 pandemic has created new marketing chances for online businesses.

Originality: One of the few studies in Bangladesh to address the post-pandemic emergent research issue, these offer theoretical and methodological insights into the causes influencing the behavioral intention to use MFSs and the implications of continuance usage intention.

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Keywords: *Mobile financial services; Perceived lifestyle compatibility; Perceived online security; COVID-19 fear; Promotional Incentives; Continuance Usage Intention.*

Acknowledgments: The Biosafety, Biosecurity, and Ethical Committee of Jahangirnagar University reviewed and approved the study with Ref No: BBEC, JU/M 2024/02 (87). The researchers acknowledge the anonymous respondents' consent to be part of the data collection procedure. Moreover, the researchers also acknowledge the anonymous reviewers and the editorial team's continuing support of the publication procedure.

1. Introduction

Financial technology (FinTech) enhances the financial industry and the public by making daily transactions more economical, convenient, and secure (Chen et al., 2019; Puschmann, 2017). The COVID-19 pandemic has expedited technology adoption across nearly all global sectors (Al nawayseh, 2020; Khatun et al., 2021). The contagiousness of COVID-19 has transformed customer behavior that impacts life, business, international trade, and migration (Sumi & Ahmed, 2022). The global shift to online shopping offers e-commerce enterprises new prospects, and the digital transformation boosts e-retail (Dannenberg et al., 2020). The use of FinTech payment systems has increased during the COVID-19 pandemic (Alchuban et al., 2022). Consequently, Fu and Mishra (2022) discovered that the COVID-19 pandemic and the corresponding government lockdowns caused a significant rise in the number of finance app downloads.

During the pandemic, mobile financial services (MFS) providers assume a crucial role in economic integration within developing nations, as they have been demonstrated to be an optimal solution for fostering a germ-free environment (Zhao & Bacao, 2021). Yan et al. (2023) stated that FinTech applications, including mobile financial services (MFS), are crucial for fostering resilience during the pandemic. Moreover, during the COVID-19 pandemic, access to financial services is considered one of the main drivers of socioeconomic resilience (Al nawayseh, 2020; Karusala et al., 2019). Previous studies have also indicated that the COVID-19 pandemic has increased digital banking in developing nations (Bazarbash et al., 2020). Besides, mobile banking has evolved in Bangladesh during the pandemic (Rahman, 2020).

In Bangladesh context, mobile financial services (MFS) emerged as the predominant alternative to cash transactions during the epidemic (Khatun et al., 2021). Throughout the pandemic, mobile financial services were essential in sustaining a germ-free environment

and continue to be successful and beneficial in the post-COVID-19 period (Sharifi et al., 2021). Mobile payment services are becoming increasingly popular across all demographics because these services are convenient and offer individualized services (Singh et al., 2020). Additionally, Daragmeh et al. (2021) noted that suppliers with financial literacy, education, and a positive disposition towards financial products introduce FinTech solutions. Moreover, banks are focusing more on online payment services since customers want these services to offer customized solutions and increase income from banking (Gupta & Arora, 2020).

Amid the pandemic, traditional businesses were compelled to close, and consumers would rather stay home and shop online (Al Amin et al., 2022a). In light of this unusual circumstance, it is imperative to comprehend the role of situational and psychological factors in determining consumers' behavioral intentions when using mobile financial services. Various technology adoption models exist in the literature that focus on behavioral characteristics, such as the technology acceptance model (TAM) (Davis, 1989), innovation diffusion theory (DIT) (Rogers, 2003), theory of planned behavior (TPB) (Ajzen, 1991), and the extended unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2012a). Multiple prior studies have examined various aspects of mobile payment services and the involvement of different stakeholders in the acceptance, persistence, and execution of mobile payment services (Al Amin et al., 2022b; C.C & Prathap, 2020; Cao & Niu, 2019; Chawla & Joshi, 2019; Francioni et al., 2022; Gupta & Arora, 2020; Hassan & Wood, 2020; Katini et al., 2023; Liebana-Cabanillas et al., 2018). These studies have examined several behavioral, psychological, and technical elements that are considered necessary in assessing the utilization of mobile payment services by customers, retailers, government, and other payment providers.

To our knowledge, there is a paucity of research regarding the factors influencing the adoption of MFS during (Yan et al., 2023) and after the COVID-19 pandemic in the context of an emerging nation, specifically Bangladesh, where the MFS sector has witnessed significant growth during the pandemic. This study investigates the impact of various factors, including perceived lifestyle compatibility, perceived social influences, perceived online security, and COVID-19 fear, on users' intention to continue using mobile financial services in Bangladesh during and after the COVID-19 pandemic. This point of view, combined with COVID anxiety or dread from the perceived danger of infection when shopping, has driven consumers to choose these services even during the

early stages of COVID-19 limitation relaxation (Francioni et al., 2022). The study uses the extended unified theory of acceptance and use of technology (Venkatesh et al., 2012b). Furthermore, promotional incentives have been seen as a moderating factor in the frequent usage of mobile financial services.

On the other hand, before making an online purchase, customers examine various aspects; nonetheless, promotions and discounts can significantly impact individuals' purchasing intentions (Hongdiyanto et al., 2020). Besides, Arce-Urriza et al. (2017) indicated that promotions are a short-term marketing tactic designed to generate consumer demand from sales. In a recent study, Nishio and Hoshino (2024) highlighted that promotional incentives are frequently utilized to augment customer purchasing motivation solely in the near term and bolster consumer loyalty. Furthermore, Joo (2015) found that discounts incentivize online purchases by enhancing both the monetary and non-monetary benefits of online buying. The study examines users' usage of mobile financial service motivations during and after the COVID-19 pandemic (Al Amin et al., 2022b; Chen & Yang, 2021). This study answers the following research questions:

RQ1: How do perceived lifestyle compatibility, perceived social influences, perceived online security, and COVID-19 fear affect consumers' behavioral intention to use mobile financial services during and after the COVID-19 pandemic?

RQ2: How do perceived lifestyle compatibility, perceived social influences, perceived online security, and COVID-19 fear affect consumers' intention to use mobile financial services during and after the COVID-19 pandemic?

RQ3: Do promotional incentives moderate consumers' mobile financial services use during and after the pandemic?

Our findings contribute to understanding users' continuous usage behavior of mobile financial services. The mixed conceptual model we used to analyze the data incorporates perceived online security, perceived lifestyle compatibility, perceived social influences, and fear of COVID-19. Second, as a mediating environment, the study looked at mobile financial services usage beyond COVID-19 to see how they affected behavioral intention. Third, the findings of the moderator role of promotional incentives also highlighted the users' continuance intention to use the services. Finally, yet importantly, this study is among the few that looked into the continuous use of mobile banking services in a developing nation like Bangladesh. The research findings provided the author with

various ideas, including how to leverage successful marketing techniques to outperform traditional business methods for users in Bangladesh, who define the potential for developing nations. The literature review, theoretical framework, and hypotheses development are in parts 2 and 3. Section 4 covers research methodology, whereas Section 5 covers data analysis and results. Section 6 finishes with theoretical and managerial implications, study limits, and future research directions.

2. Literature Review

Mobile financial services (MFS), or mobile banking, enable online financial transactions (Sharma et al., 2020). During the last three decades, several theoretical strategies have been employed in the study of technological adoption (Yan et al., 2023). Mobile banking applications are studied using the Technology Acceptance Model (TAM) Davis (1989), Hassan and Wood (2020), Ho et al. (2020); United Theory of Acceptance and Use of Technology 2 (UTAUT2) Shavneet et al. (2020); extended United Theory of Acceptance and Use of Technology Sobti (2019); Theory of Planned Behavior (TPB) (Kim & Hwang, 2020; McBride et al., 2020). The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2012a) has been extensively employed as a foundational model to understand individuals' behavioral intentions to adopt new technologies, including FinTech (Al nawayseh, 2020; Yan et al., 2023), mobile banking (Akhter & Khalily, 2020; Geebren et al., 2021; Khatun et al., 2021), blockchain (Di Francesco Maesa & Mori, 2020; Guo & Yu, 2022; Li et al., 2020), and online banking (Li et al., 2021; Raza et al., 2020; Singh & Srivastava, 2020). TAM is unique among mobile banking adoption. Trust, social influence, and perceived risk comprised TAM (Hassan & Wood, 2020; Ho et al., 2020). Research shows many preconditions and incentives for mobile payment intention. If social distance constraints are maintained, digital payment methods will be essential since cash can propagate viruses (C.C & Prathap, 2020; Sharma et al., 2020). Mobile payment adoption and recommendation are affected by compatibility, perceived technological security, performance expectations, innovativeness, and social influence (Gao et al., 2018; Kalinic et al., 2019; Oliveira et al., 2016). Perceived trust predicts mobile payment system uses better than an intention to use, enjoyment, behavioral control, usefulness, and subjective norms, according to Cao et al. (2016).

Khatun et al. (2021) also mentioned that the pandemic substantially transformed consumer lifestyles, encompassing work attitudes, shopping behaviors, payment methods, and banking activities, among other aspects. Therefore, COVID-19 should enhance mobile payments for two reasons. First, lockup and quarantine of mobile payments encourage social distancing. Second, most services require online payment (C.C & Prathap, 2020). Consumers' wish to use mobile money for online shopping amid a pandemic in Bangladesh was ignored. Therefore, understanding how technological, psychological, and situational factors affect MFS users' online shopping habits is vital. The current study uses a conceptual model that focuses on perceived online security and COVID-19 anxiety to analyze customers' continued use of mobile financial services for online buying during a pandemic and beyond. However, online payment can decrease the risk of exposure to viruses and bacteria (Daragmeh et al., 2021). It is regarded as a significant source of information for banks, payment platforms, and FinTech companies, aiding them in comprehending customer purchasing behaviors.

2.1. Theoretical framework

In the earlier and more current pandemic literature, the acceptance and perception of new technology have been thoroughly investigated and discussed (Al Amin et al., 2021; Al Amin et al., 2022a; Bazarbash et al., 2020; Belarmino et al., 2021; Hasan et al., 2021; Hong et al., 2021; Koch et al., 2020; Santosa et al., 2021). The Technology Acceptance Model (TAM) (Bhatt, 2022; Hassan & Wood, 2020; Muñoz-Leiva et al., 2017; Shaikh et al., 2020; Singh et al., 2020) and the extended Unified Theory of Acceptance and Use of Technology (UTAUT) (Gupta & Arora, 2020; Patil et al., 2020; Rahi et al., 2019; Rahi et al., 2019; Santosa et al., 2021; Sharma et al., 2020; Van Droogenbroeck & Van Hove, 2021) are often employed frameworks for evaluating the effects of users' behavior.

Previous research on adopting innovative technologies and online information systems emphasized information technology, psychological, and sociological factors (Venkatesh et al., 2003). Previous studies employed various technology adoption theories or models about MFS. The proposed model in this study was created in conjunction with an extended UTAUT theory. After assessing the prior research, we have incorporated the extended UTAUT (perceived social influences, perceived lifestyle compatibility, perceived online security, behavioral intention, and continuance usage intention) and users' contextual dimension (COVID-19 fear) into the theoretical framework for mobile

financial services. In Bangladesh, barely any study has been done on pandemic-related constructs from the standpoint of continuing to use mobile financial services following the post-pandemic situation. In addition, the authors incorporated promotional incentives as a moderating factor to assess the impact on users' behavioral intention and continued usage behavior of mobile financial services. Nevertheless, few of these researches have combined two theoretical frameworks into a mixed-method theoretical setting. The subsequent research framework, depicted in Figure 1, was proposed based on the literature study and the socio-psychological context of MFS users.

2.2. Hypotheses development

The process of developing hypotheses will be discussed in the following section.

2.2.1. Perceived lifestyle compatibility (PLC)

The perceived compatibility is how well people think, act, and live with innovation (Mauro C. Hernandez & Afonso Mazzon, 2007). Mobile banking acceptance depends on compatibility (Chen, 2013; Shaikh & Karjaluoto, 2015). Muñoz-Leiva et al. (2017) introduced social image. Due to innovative uncertainty, people seek guidance from others out of respect, honor, prestige, reputation, credibility, social connection, etc. Users' perceived compatibility substantially influences digital wallet usage in developing countries (Chawla & Joshi, 2019; Shetu et al., 2022). The researchers postulated the following hypotheses,

H1a: Users' perceived lifestyle compatibility (PLC) positively correlates with the behavioral intention to use mobile financial services for online shopping during and after COVID-19.

H1b: There is a significant positive association between users' perceived lifestyle compatibility and their intention to continue using mobile financial services for online shopping during and after COVID-19.

H1c: Users' behavioral intention to use mobile financial services for online shopping during and after COVID-19 mediates the relationship between perceived lifestyle compatibility and continuance usage intention.

2.2.2. Perceived social influences (PSI)

Venkatesh et al. (2012b) defined "the degree to which consumers believe that significant individuals such as family and friends believe they should use a specific technology." This concept has often been used to measure mobile wallet adoption (Amoroso & Magnier-Watanabe, 2012; Yang et al., 2012). Dwivedi et al. (2019) state that social impact does not moderate behavioral intentions. In Bangladesh (Shetu al., 2022), Qatar (Musa et al., 2015), and Portugal (Oliveira et al., 2016), mobile payment research has revealed that social impact significantly affects behavioral intentions. The following hypotheses have been proposed in light of these factors:

H2a: Perceived social influences (SI) significantly influence users' behavioral intention to use mobile financial services for online shopping during and after COVID-19.

H2b: There is a significant positive association between users' perceived social influences and their intention to continue using mobile financial services for online shopping during and after COVID-19.

H2c: Users' behavioral intention to use mobile financial services for online shopping during and after COVID-19 mediates the relationship between perceived social influences and continuance usage intention.

2.2.3. Perceived online security (POS)

Despite privacy concerns, Malaquias and Hwang (2016) discovered that consumers frequently consent to disclose their personal information. Security and privacy concerns were identified by Thakur and Srivastava (2013) in their study conducted in the Indian setting as significant barriers to the adoption of mobile commerce. The study findings showed that perceived online security significantly impacts consumer intentions toward using mobile wallets and mobile banking in developing countries (Chawla & Joshi, 2019; Patel & Patel, 2018; Shetu et al., 2022; Zhang et al., 2018). These factors have led to the following speculations:

H3a: Perceived online security (POS) significantly influences users' behavioral intention to use mobile financial services for online shopping during and after COVID-19.

H3b: There is a significant positive association between users' perceived online security and their intention to continue using mobile financial services for online shopping during and after COVID-19.

H3c: Users' behavioral intention to use mobile financial services for online shopping during and after COVID-19 mediates the relationship between perceived online security and continuance usage intention.

2.2.4. COVID-19 fear (COF)

The transmission of the COVID-19 pandemic can be categorized as being under fear control (Chen et al., 2022). In response to risk, notably the COVID-19 pandemic, fear is an adaptive response (Addo et al., 2020; Naeem, 2021). Considering these assumptions, consumers' appreciation and experience may improve product or service uptake (Chen & Yang, 2021). Ishfaq and Mengxing (2022) proposed that COVID-19 as perceived risk is the independent variable and applied the TAM model to analyze online buying intention during the pandemic. Customers' concern about COVID-19 and dining out during the pandemic may increase online food delivery. In the context of Bangladesh, Al Amin et al. (2022b) emphasized that mobile grocery shopping applications have increased online shopping, reduced physical interaction and influenced consumers' inclination to adopt these applications. C.C and Prathap (2020) suggested using mobile money to break social links if COVID-19 is hazardous. Mobile payments simplify cashless payments and reduce COVID-19 risk. Health I.T. and chronic illness smartphone apps depend on health threat perception (Dou et al., 2017). The following hypotheses have been postulated in light of these factors:

H4a: COVID-19 fear significantly influences users' behavioral intention to use mobile financial services for online shopping during and after the COVID-19 pandemic.

H4b: A significant positive association exists between users' COVID-19 fear and continuance usage intention to use mobile financial services for online shopping during and after COVID-19.

H4c: Users' behavioral intention to use mobile financial services for online shopping during and after COVID-19 mediates the relationship between COVID-19 fear and continuance usage intention.

2.2.5. Behavioral intention to use (BIU) and Continuance usage intention (CUI)

Mobile payment system studies demonstrate that numerous factors influence consumers' use (Kalinic et al., 2019). In India and Bangladesh, mobile payment systems increased consumers' behavioral intention to use them (Patil et al., 2020; Shetu et al., 2022).

Continuous intention is a positive post-use behavior that entails using or buying a brand, product, or service after adoption (Kumar & Shah, 2021). This variable's antecedents have been studied in sharing services (Eugene Cheng-Xi et al., 2018), mobile and social apps or services (Qing & Haiying, 2021), internet banking (Rahi & Abd, Ghani, 2019), e-government services (Puthur et al., 2020), financial services (Zhou et al., 2018). During COVID-19, some studies examined continuous intention antecedents. Several sectors have explored how technology ease, especially mobile apps and services, affects customers' actions and intentions (Alt et al., 2021; Bhatt, 2022; Shim et al., 2021; Zhu et al., 2022). The hypothesis is proposed as follows,

H5: Users' behavioral intention to use mobile financial services for online shopping during and after COVID-19 has a significant positive influence on their continued intention to use them.

2.2.6. Promotional incentives (POI) as a moderator

Companies employ price-oriented promotions, special offers, discounts, and various marketing methods to cultivate consumer loyalty and attract new customers (Grewal et al., 2011). Corporate mobile wallet services offer promotional benefits like cash rewards for app downloads, coupon codes, cash incentives, loyalty points, and other freebies (com, 2015). Balakrishnan et al. (2020) demonstrated in their study that promotional incentives function as external triggers that provoke impulse customer behavior. Moreover, Liang and Lin (2023) have shown that immediate and time-limited promotions significantly influence impulse purchases. Promotional codes and discounts make purchases more convenient and repeatable. The study findings revealed that incentives and promotions change over 50% of U.K. internet customers' purchases (Brooks, 2015; Report, 2015). Mobile wallet adoption requires advertising benefits due to increased competition and new entrants. Madan and Yadav (2016) discovered promotional incentives boost mobile wallet use. Customers who want to buy things online consider it a significant purchase benefit (Arora et al., 2017; Brooks, 2015).

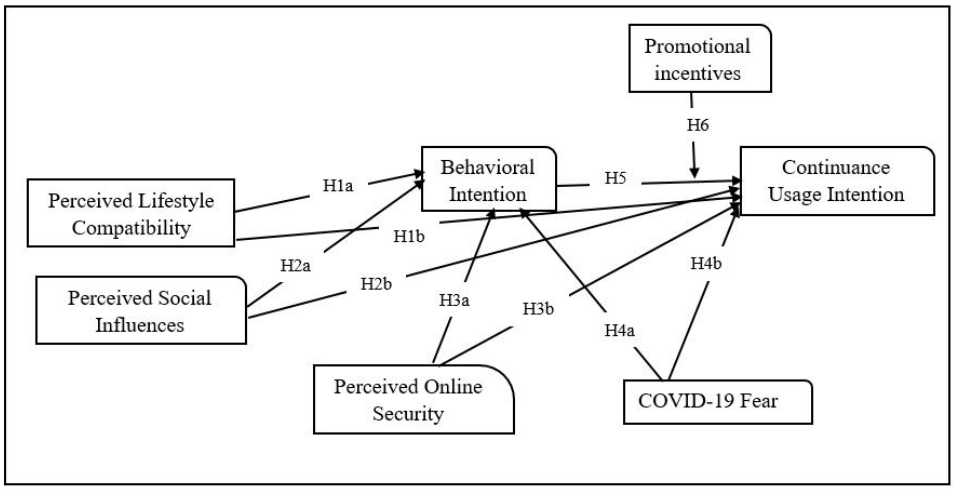
Additionally, Madan and Yadav (2018) found that promotional benefits greatly influenced mobile purchase behavior. On the other hand, Park et al. (2018) further asserted that discount coupons delivered through mobile messaging exert a temporal influence that enhances client purchasing propensity. Venkatesh et al. (2021) discovered that discounts, a promotional incentive, amplify the impact of enablers on the link

between inhibitors and purchase intention under specific conditions. The hypothesis is proposed as follows,

H6: Promotional incentives (POI) significantly moderate the relationship between behavioral intention to use and continuance usage intention of mobile financial services on online shopping during and after COVID-19.

Figure 1 shows the authors' proposed theoretical model for the investigation.

Figure 1: A Proposed Research Framework



Source: Proposed by researchers

3. Methodology

3.1. Measures

The survey was the primary method of data collection employed in this investigation. The researchers developed the first questionnaire based on the proposed study paradigm, taking into account the relevant literature. Besides, they examined and modified every element of the research model to align with the specifics of this study. Appendix Table I lists 26 items of theoretical model measurements and scales. This study quantifies constructs from strongly disagree (1) to agree (5) using a 5-point Likert scale—the 4-item perceived lifestyle compatibility scale adapted from Moore and Benbasat (1991). Venkatesh et al. (2012b) examined perceived social influences with three items. Perceived online security, 4-item scale adapted from Jin et al. (2018). The COVID-19 fear measurement used a 4-item scale adapted from Jain et al. (2020). The 4-item scale of behavioral intention was adapted from Venkatesh et al. (2012b). On the contrary, we

adapted the 3-item scale of continuance usage intention from Bhattacherjee et al. (2008) and Santosa et al. (2021). Furthermore, the 3-item scale of moderating constructs promotional incentives adapted from Wang et al. (2019) and Zhao et al. (2019) (see details in Appendix Table-1).

3.2. Sample design and data collection

The study's participants are individuals residing in Dhaka city, Bangladesh, who utilize mobile financial services. This study is cross-sectional empirical because each respondent provided information once (Malhotra, 2014). The researchers gave respondents the consent form and survey questionnaire to assess their interest in the study. The researcher used a structured questionnaire to collect the primary data for this study's data analysis. The research questionnaire was written in English for study participants. This study used non-probability convenience sampling to select respondents based on their subjective assessment since the population and sampling frame were unknown (Saunders et al., 2019). To collect data, the authors employed both online and offline methods. In offline mode, a one-on-one personal interview was conducted, and the respondents were requested to fill out a questionnaire and be handed a consent form. Two research assistants aided in the process of collecting data. In addition, internet surveys were utilized due to their data collection technique, guaranteeing cost-effectiveness, efficiency, and enhanced accuracy (Fricker, 2008). To reach the target audience, survey questions were sent via email, Google Classroom, Facebook, and Instagram in October–November 2023 (Balakrishnan & Shuib, 2021). A total of 56 survey replies were excluded from the 469 completed surveys owing to errors made by the respondents while filling out the form. 413 responses were declared suitable and included in the data analysis. Cohen (1988) outlines effect sizes of 0.2 as small, 0.5 as medium, and 0.8 as large for determining the requisite sample size. In this study, the authors employed a medium effect size of 0.5 to determine the sample size utilizing G-Power 3.1.9.7 software. With a power of 0.95, the requisite sample size for data analysis was found to be 210. The sample size 413 of this study adequate to produce valid SmartPLS (PLS-SEM) results and adheres to the "10 times rule of thumb," which dictates that the minimum sample size should be tenfold the most intricate interactions of the research model (Chin, 1998). To test the data for non-response bias, the characteristics of early and late replies were compared (Popa et al., 2017). Table I provides respondent demographics. Of the replies, 51.8 percent were men, and 48.2 percent were women. 43.58 percent of respondents were between the ages of 24

and 30. A survey among consumers revealed that 85.4 percent made fewer than five purchases online every month. In addition, 32.3 percent of consumers have an income below 40,000 Tk. With mobile financial services, users have various payment choices; 97 percent utilize bkash, and 35.2 percent use nagad MFS apps for online payments.

Table I: Demographic Profile of The Respondents

Demographic attribute	Category	Frequency	Percentage (%)
Gender	Male	213	51.8%
	Female	200	48.2%
Age	18-23 years	150	36.32%
	24-30 years	180	43.58%
	31-36 years	50	12.11%
	Above 36 years	33	7.99%
Frequency of online shopping in a month	0-5 times	352	85.4%
	5-10 times	43	10.4%
	More than 10 times	18	4.2%
Income	0-20,000 tk	202	48.8%
	20,000-40,000 tk	133	32.3%
	40,000- 60,000 tk	48	11.6%
	More than 60,000 tk	30	7.3%
Frequently used mobile financial services [Users' can choose multiple payment options]	bkash	320	97%
	Nagad	116	35.2%
	Upay	12	3.6%
	Tap	22	6.7%
	Rocket	82	24.8%
	CellFin	11	3.3%
	NexusPay	36	10.9%
	Gpay	9	2.7%
	Others	14	4.2%

Source: Researchers' computation

3.3. Data analysis

Utilizing SmartPLS4, partial least square structural equation modeling (PLS-SEM) was employed to examine relationships. The PLS-SEM method was selected because of its many advantages. Firstly, theoretical models for explanation or prediction can be tested with PLS-SEM (Hair et al., 2019). Second, PLS-SEM addresses model identification issues in complex structural models with many constructs. PLS-SEM provides value for complex and multifaceted entities since it can also optimize variation explained in models (Hair et al., 2022).

Using a two-stage technique, the researcher assessed the research model's predictive power and hypotheses using a structural model and the construct reliability and validity using a measurement model. Furthermore, researchers, to confirm the validity and

dependability of the model, investigated the standard method bias (CMB). Appendix Table II demonstrates that similar to the earlier research, variance inflation factors (VIF) values of less than 3.3 are regarded as the cutoff point (Kock, 2015). The VIF of the present investigation confirmed earlier findings by indicating no standard method bias (CMB) or collinearity existed.

4. Results

4.1. Analysis of measurement model

The researchers examined the outer measurement model using Hair et al. (2017). Composite reliability examined measurement construct reliability. Fornell and Larcker criterion model and HTMT ratio tested its discriminant validity, whereas Average Variance Extracted (AVE) and cross-loading rated its convergent validity. Hair et al. (2017) recommended composite reliability be more than 0.7 to achieve construct reliability, which accounts for 70% of model variation. Hair et al. (2017) state that Cronbach's Alpha (α) and rho_A values vary from 0 to 1. Values near 1.0 indicate that the model variables are more internally consistent. The recommended Cronbach's Alpha (α) and rho_A values are 0.7 or higher (Hair et al., 2017). Convergent validity was tested for AVE and cross-loading. AVE must be more than 0.5 to explain more than 50% of the study model's variance (Hair et al., 2017). As indicated in Table II, all of our study model constructs met dependability and AVE standards. Table II displays item factor loading, construct reliability, and convergent validity.

The Fornell and Larcker criterion (see Table III) and Heterotrait-Monotrait ratio (HTMT) of correlations in Table IV examined the measuring model's discriminant validity. Hair et al. (2017) use the Fornell and Larcker criterion, where the diagonal value is the squared root of the AVE, and the other cell represents the correlation. They advocated higher diagonal than off-diagonal levels. According to Table IV, the Heterotrait-Monotrait (HTMT) correlation ratio must be less than 0.9 to be valid (Gold et al., 2001). No multicollinearity was found (Hair et al., 2017; Henseler et al., 2015).

Table II: Construct Reliability and the Results of The Outer Model

Constructs	Measurement items	Loadings	α	rho_A	CR	AVE	R^2
Perceived Lifestyle Compatibility	PLC1 PLC2 PLC3	0.837 0.871 0.835	0.805	0.805	0.885	0.720	
Perceived Social Influences	PSI1 PSI2 PSI3	0.749 0.840 0.897	0.775	0.789	0.870	0.691	
Perceived Online Security	POS1 POS2 POS3 POS4	0.740 0.885 0.813 0.874	0.847	0.854	0.898	0.689	
COVID-19 Fear	COF1 COF3 COF4	0.827 0.840 0.860	0.796	0.797	0.880	0.710	
Behavioral Intention to Use	BIU1 BIU2 BIU3 BIU4	0.863 0.808 0.830 0.857	0.860	0.863	0.905	0.705	0.524
Continuance Usage Intention	CUI1 CUI2 CUI3	0.908 0.850 0.871	0.849	0.851	0.909	0.769	0.692
Promotional Incentives	POI1 POI2 POI3	0.800 0.850 0.805	0.756	0.765	0.859	0.671	

Source: SmartPLS 4.0 analysis

Table III: Discriminant Validity-Fornell and Larcker Criterion Model

Construct	BIU	COF	CUI	PLC	POI	POS	PSI
BIU	0.840						
COF	0.663	0.843					
CUI	0.779	0.704	0.877				
PLC	0.583	0.557	0.570	0.848			
POI	0.548	0.434	0.543	0.324	0.819		
POS	0.624	0.759	0.626	0.550	0.395	0.830	
PSI	0.580	0.653	0.598	0.606	0.379	0.766	0.831

Table IV: Heterotrait-Monotrait Ratio (HTMT)

Construct	BIU	COF	CUI	PLC	POI	POS	PSI
BIU							
COF	0.801						
CUI	0.811	0.858					
PLC	0.697	0.696	0.690				
POI	0.678	0.557	0.669	0.421			
POS	0.730	0.723	0.741	0.668	0.488		
PSI	0.706	0.830	0.731	0.763	0.496	0.853	

4.2. Structural model assessment

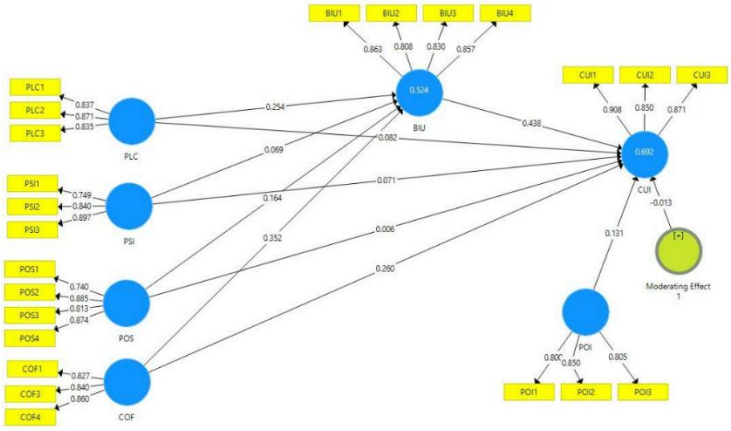
Henseler et al. (2015) say path coefficient significance and squared multiple correlations (R^2) determine a structural model's explanatory power. The study model's path coefficient was calculated by bootstrapping t-values and p-values with 5000 resamples (Hair et al., 2020). SmartPLS4.0 assessed the theoretical model's statistical significance following PLS-SEM. Hypothesized results are in Table V. Hypotheses H1a and H1b outputs indicated that the results supported the proposed hypotheses. PLC significantly affects BIU (β = 0.254, t-statistics = 3.918, p = 0.000); and CUI (β = 0.193, t-statistics = 3.530, p = 0.000), supported the hypotheses. According to the study findings, H2a and H2b hypotheses were not significant. Besides, PSI results for BIU (β = 0.069, t-statistics = 0.970, p = 0.332) and CUI (β = 0.102, t-statistics = 1.561, p = 0.119) were non-significant, rejecting hypotheses. Hypothesis H3a shows that POS has a strong effect on the results for BIU (β = 0.164, t-statistics = 2.276, p = 0.023). Besides, H3b is not statistically significant, whereas the output for CUI is (β = 0.078, t-statistics = 1.104, p = 0.270). Additionally, H4a and H4b showed that the proposed hypotheses COF were statistically significant. The results indicated that BIU (β = 0.352, t-statistics = 5.643, p = 0.000) and CUI (β = 0.414, t-statistics = 5.795, p = 0.000) had substantial positive output values, supporting the proposed hypotheses. Moreover, the hypothesis H5 shows the significant positive impact with BIU and CUI (β = 0.438, t-statistics = 7.343, p = 0.000). Moreover, effect sizes (f^2) were assessed. Figure 2 shows the path analysis of the proposed results.

The significant independent variables had effect size f-square (f^2) values of 0.02, 0.15, and 0.35, indicating minor, moderate, and significant impacts (Cohen, 1988). The magnitude of the effect f-square controls the representative impact of numerous variables in the study model (Henseler et al., 2015). The effect size strength of this model ranged from 0.000 to 0.247, as indicated in Table V. In Table V, R^2 is 0.524, indicating that the independent constructions (PLC, PSI, POS, and COF) affect BIU by 57.6%. Besides, BIU, PLC, PSI, POS, and COF explained the model's 69.2% variance in CUI. Table V also demonstrated blindfolding-based cross-validity redundancy Q^2, which justifies the PLS-SEM's predictive power. The result-directed value Q^2 of our endogenous constructs exceeded Hair et al. (2017) threshold value ($Q^2>0$).

Table V: Hypotheses Testing and Path-Coefficients Results

Hypothesis	Structural paths	Path coefficients (β)	Mean	SD	T-values	P-Values	f-square	Effect size	Decision
H1a	PLC -> BIU	0.254	0.257	0.065	3.918	0.000	0.079	Small	Accepted
H1b	PLC -> CUI	0.193	0.192	0.055	3.530	0.000	0.012	Small	Accepted
H2a	PSI -> BIU	0.069	0.071	0.072	0.970	0.332	0.004	Small	Rejected
H2b	PSI -> CUI	0.102	0.106	0.065	1.561	0.119	0.006	Small	Rejected
H3a	POS -> BIU	0.164	0.165	0.072	2.276	0.023	0.017	Small	Accepted
H3b	POS -> CUI	0.078	0.077	0.071	1.104	0.270	0.000	Small	Rejected
H4a	COF -> BIU	0.352	0.348	0.062	5.643	0.000	0.103	Small	Accepted
H4b	COF -> CUI	0.414	0.410	0.071	5.795	0.000	0.078	Small	Accepted
H5	BIU -> CUI	0.438	0.429	0.060	7.343	0.000	0.247	Moderate	Accepted
NB: Coefficient of determination (R^2) for BIU=0.524 and CUI=0.692. Blindfolding-based Cross-Validity Redundancy (Q^2) for BIU= 0.359, and CUI= 0.520									

Figure 1: A Path Analysis of the Proposed Model



Source: Authors' analysis

4.3. Testing the mediating effects

The indirect effects of the significance level in the mediation test are displayed in Table VI. The associations between perceived lifestyle compatibility, perceived online security, and fear of COVID-19 are mediated by the behavioral intention to use. These interactions supported hypotheses H1c (β=0.111, t=3.428, p=0.001); H3c (β=0.072, t=2.124, p=0.034); and H4c (β=0.154, t=4.584, p=0.000). Furthermore, perceived social

influences, the hypothesis H2c (β=0.030, t=0.993, p=0.321) was rejected based on the particular indirect impact of the significant mediation relationship testing.

According to Preacher and Hayes (2004), the author used a bootstrapping methodology (bootstrap sample size = 5000) to evaluate the mediating influence of users' behavioral intention to utilize mobile shopping apps. This study used asymmetric confidence intervals (CIs) to assess the mediating influence among the indirect correlations. Asymmetric CIs have the potential to be a highly accurate method of estimating the mediating impact (MacKinnon et al., 2004). On the contrary, Preacher and Hayes (2004), state that if zero were outside the 95% confidence interval, there would be a substantial finding for the mediating impact. The results of the mediating effect test are shown in Table VI. The investigation findings indicated that there was not a single zero included in the 95% confidence interval, for the hypotheses H1c, H3c, and H4c. The suggested hypotheses were accepted, and it was shown that the relationships were considerably mediated by the relationships H1c, H3c, and H4c.

Table VII: Significance of Specific Indirect Effects and Mediation Analysis

Hypothesis	Indirect path	Path coefficients (β)	T-Values	P-Values	LLCI	ULCI	Decision
H1c	PLC -> BIU -> CUI	0.111	3.428	0.001	0.056	0.177	Accepted
H2c	PSI -> BIU -> CUI	0.030	0.993	0.321	-0.030	0.093	Rejected
H3c	POS -> BIU -> CUI	0.072	2.124	0.034	0.017	0.149	Accepted
H4c	COF -> BIU -> CUI	0.154	4.584	0.000	0.099	0.237	Accepted
Note: p<0.05, p<0.001							

4.4. Testing of moderating effects

The results of the bootstrapping technique demonstrate the strength of connections between users' behavioral intention to use and continuance usage behavior of mobile financial services, as well as the moderating effects of promotional incentives' hypothesis H6; (β=-0.013, t=0.432, p=0.666). Numerous reports have indicated that individual qualities impact how people use digital technologies (Venkatesh et al., 2012b). The association between behavioral intention to use and continuance usage behavior of mobile financial services was not moderated by the marketers' promotional incentives in the suggested model. The study's results were also consistent with a survey by Venkatesh et al. (2021), in which the authors likewise found no evidence of a substantial influence from

the moderator of discounts, one of the promotional incentives. In Table VII, the moderating effects are displayed.

Table VII: The Moderation Effects

Hypothesis	Structural path	Path coefficients (β)	T-Value	P-Value	LLCI	ULCI	Decision
H6	Moderating effect 1>CUI	-0.013	0.432	0.666	-0.070	0.043	Not moderated

5. Discussion

This study emphasizes the importance of analyzing how the behavioral intention to use mediates the relationships among perceived lifestyle compatibility, perceived online security, and fear of COVID-19 to validate the users' intention to continue using the MFS services for online shopping. In addition, the authors added promotional incentives as a moderating construct between users' behavioral intention to use and continued usage of mobile financial services during online shopping. BIU significantly influences the perceived lifestyle compatibility (PLC), approved hypotheses H1a-H1c. The study findings aligned with the prior research (Chawla & Joshi, 2019; Muñoz-Leiva et al., 2017; Shetu et al., 2022). Besides, perceived social effects (PSI) did not affect mobile financial service users' BIU and CUI in hypotheses H2a–H2c. The study found consistent Bangladeshi literature (Shetu et al., 2022) and tested contradictory findings (Dwivedi et al., 2019; Oliveira et al., 2016). Furthermore, the hypothesis H3a, perceived internet security (POS), positively affects users' BIU. However, the study findings do not align with the proposed hypotheses H3b and H3c, nor do they support the claims. In addition, the findings aligned with the prior research (Chawla & Joshi, 2019; Patel & Patel, 2018; Zhang et al., 2018). Thus, hypotheses H4a-H4c found that COVID-19 fear (COF) significantly affected online shoppers' BIU and CUI of mobile financial services. Al Amin et al., (2021) conducted a study during the COVID-19 epidemic focusing on mobile grocery shopping applications in Bangladesh. Hypothesis H5 found that mobile financial services' BIU and CUI increased COVID-19 pandemic internet shopping. This confirmed mobile financial services usage research (Alt et al., 2021; Bhatt, 2022; Mew & Millan, 2021; Shetu et al., 2022; Shim et al., 2021; Thomas-Francois & Somogyi, 2022). Finally, the moderating construct promotional incentives (POI) hypothesis H6 found no moderation between users' behavioral intention to use online shopping mobile financing

services and users' continuance using intention. Research shows online shoppers use mobile financial services more (Arora et al., 2017; Madan & Yadav, 2016, 2018).

5.1. Theoretical Contributions

While mobile financial services have been examined in numerous countries, studies on MFS remain evolving, particularly in developing nations following the pandemic. This study addresses a gap in literature by being one of the empirical investigations to examine a comprehensive model based on the UTAUT, which includes perceived lifestyle compatibility, perceived social influences, perceived online security, and fear of COVID-19. Furthermore, the promotional incentives serve as a moderating construct. The study offers various theoretical implications. The study considerably enhances existing literature by empirically validating and integrating a research model encompassing multiple dominant features from the extended UTAUT framework. This study posits that comprehension of perceived lifestyle compatibility, perceived social influences, and perceived online security offers an avenue into the existing literature on MFSs. Secondly, the present research is among the pioneering empirical studies that established COVID-19 fear as a psychological construct influencing users' intention to continue using MFSs. Furthermore, the existing work on MFSs predominantly overlooks the impact of psychological constructs, such as fear of COVID-19, on users' behavioral intentions about MFS in the post-pandemic period. The researchers contended that the apprehension around COVID-19 could affect users' behavioral intentions amid an unprecedented circumstance. Furthermore, incorporating the psychological construct, fear of COVID-19, augmented the UTAUT model. This study established that consumers favored MFS when apprehensive about COVID-19 infection. Following the conclusion of the pandemic, they remained enthusiastic about continuing to utilize the MFS. This study demonstrated the synergistic impact of the technology attributes and consumer psychological traits on their intention to continue using MFSs. The moderating construct, promotional incentives, did not have a substantial moderating effect. This insignificant finding also contributes to the current literature by demonstrating the integration of the new moderating component into the enlarged UTAUT model. This study ultimately confirmed the applicability of MFSs within Bangladesh following the pandemic crisis. This study is among the first to examine the continuing use of MFSs following the pandemic.

5.2. Managerial Implications

Our research results can assist mobile financial services (MFS) providers and online retailers in several capacities. Perceived lifestyle compatibility, perceived online security, fear of COVID-19, and behavioral intention strongly influenced the continued use of mobile financial services (MFS) for online buying. The study's findings indicate that the moderating construction of promotional incentives did not significantly impact the relationship between users' behavioral intention and intention to continue using. The findings align with the prior studies. During the COVID-19 epidemic, retailers may provide competitive monetary and non-monetary incentives. Prior literature demonstrated that various promotional incentives, such as discounts, coupons, redemption points, and loyalty programs, exhibit differing levels of acceptability among users. This study did not delineate any promotional incentives; we conducted a genetic analysis of customer behavior. Marketers might utilize distinct promotional incentives to highlight consumers' behavioral dimensions. Practitioners should exercise greater caution regarding users' internet presence, particularly in identifying the consumer segments targeted for promotional incentives, which is of paramount importance.

Furthermore, offering promotional incentives on high-end products might mitigate the negative perceptions associated with the brand, as evidenced by prior studies. Consumers of lower-end products exhibit a heightened reactivity to promotional incentives, particularly in the context of impulse purchasing (Liang & Lin, 2023; Nishio & Hoshino, 2024). Promotional incentives can enhance users' awareness of the highly competitive online landscape, encouraging increased online buying using mobile financial services (MFS). Furthermore, repetitive online buyers are apprehensive about promotional incentives to maintain their use of mobile financial services for online payments.

6.1. Limitations and future research directions

The study uses data from Dhaka, Bangladesh, a developing country, following the COVID-19 outbreak. The study's findings may be limited to industrialized nations and other developing nations' metropolitan centers because it was based on Dhaka city's responders after the COVID-19 pandemic. Due to the study's reliance on self-reported survey data from a single location, conducting the study in many sites aids in overcoming the limitation. Future studies might compare responses from diverse regions to generate a nationwide comparison. To conduct worldwide comparisons in this sector, it is possible

to analyze responses from different nations with diverse cultural backgrounds. Subsequent longitudinal investigations may offer further understanding. This study primarily examines consumers, but future research may include mobile financial services service provider comments. Besides, future research could incorporate cultural, psychological, and environmental elements that influence consumers' usage. Further investigation could explore how these attributes influenced customers' intentions to use the service beyond the pandemic.

6. Conclusion

The study examined factors that predict whether Bangladeshi users will use mobile financial services apps for online shopping during emergencies like the COVID-19 epidemic. This study found that perceived lifestyle compatibility, perceived online security, and COVID-19 fear were strongly significant in the analyzed results. The current study model was validated using the proposed theoretical model and additional constructs, such as COVID-19 fear and promotional incentives. The moderating construct of promotional incentives did not moderate mobile financial service users' behavioral intention to use and continuance usage intention. This study incorporates promotional incentives as a moderating variable, making a novel contribution to the current literature by assessing the PLS-SEM approach within the context of mobile financial services app usage in Bangladesh. The analytical results indicated that promotional incentives do not significantly affect consumers' intention to continue using MFS, leading to notably low acceptance rates. Our work was innovative in highlighting the absence of promotional incentives within the extended UTAUT theory from the perspective of Bangladesh, particularly in developing countries, thereby providing fresh insights for both scholars and market practitioners.

ABBREVIATIONS

MFS: Mobile Financial Services; TAM: Technology Acceptance Model; UTAUT2: Unified Theory of Acceptance and Use of Technology; TRI2.0: Technology Readiness Index; PEOU: Perceived ease of use; PU: Perceived usefulness; PLC: Perceived Lifestyle Compatibility; SI: Social Influences; POS: Perceived Online Security; COF: COVID-19 fear; BIU: Behavioral intention to use; CUI: Continuance usage intention; POI: Promotional incentives.

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Appendix Table I: Items measurement

Construct	Statements	References
Perceived Lifestyle Compatibility	PLC1: I believe that using MFS will fit my lifestyle. PLC2: I believe that using MFS is suitable for me PLC3: I believe that MFS is compatible with the way I shop online PLC4: I think MFS is more suitable for me since I spend more time on mobile apps than on the desktop. PLC5: Keeping a record of transitions and receipts is my habit, and I believe mobile wallet fulfills them	Moore and Benbasat (1991)
Perceived Social Influences	PSI1: People who are important to me think that I should use MFS for online shopping PSI2: People who influence my behavior think that I should use MFS PSI3: People whose opinions I value prefer that I should use MFS	Venkatesh et al. (2012b)
Perceived Online Security	POS1: I believe the technology used in MFS is very secure POS2: I think the service has the potential to be safer than traditional payment options such as credit cards and cash POS3: I think that transactions conducted through MFS are secure POS4: I think the chances of losing money stored in the MFS are low	Jin et al. (2018)
COVID-19 Fear	COF1: COVID-19 fear makes me uncomfortable transacting physically COF2: I feel afraid of going out for any shopping purposes COF3: I feel more comfortable paying online shopping through MFS COF4: I prefer MFS on online shopping to avoid the risk	Jian et al. (2020)
Behavioral Intention to Use	BIU1: I would like to do transactions using MFS soon BIU2: I will likely use my smartphone to pay at the point of sale BIU3: I will frequently use MFS in future BIU4: I intend to use MFS when the opportunity arises	Venkatesh et al. (2012b)
Continuance Usage Intention	CUI1: I will frequently use the MFS on online shopping CUI2: I will continue to use MFS on online shopping CUI3: I strongly recommend that others should use MFS for online shopping	Bhattacherjee et al. (2008); Santosa et al. (2021)
Promotional Incentives	POI1: Cashback rebates provided by MFS operators encourage me to purchase more online POI2: The cashback reward points (discounts for the current consumption) provided by MFS providers are attractive to me POI3: The freebies (cash on delivery) provided by service providers are attractive to me	Wang et al. (2019); Zhao et al. (2019)

Appendix Table II: Collinearity statistics (VIF) values

Variable	VIF	Variable	VIF	Variable	VIF
BIU1	2.223	PLC2	2.007	CUI2	1.905
BIU2	1.856	PLC3	1.590	CUI3	2.069
BIU3	2.018	POI1	1.390	POS4	2.639
BIU4	2.182	POI2	1.633	PSI1	1.414
COF1	1.641	POI3	1.636	PSI2	1.747
COF3	1.674	POS1	1.494	PSI3	1.996
COF4	1.771	POS2	2.703	PLC1	1.794
CUI1	2.557	POS3	1.878		