Integrating UTAUT and TPB Frameworks to Examine Digital Wallet Adoption: Evidence from University Students in a Developing Economy

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ABSTRACT

Digital wallets facilitate financial inclusion by offering secure, accessible, and convenient cashless transactions, enabling the unbanked population to be included in the formal economy. This study intends to examine the determinants influencing higher education learners of a developing country, Bangladesh, towards the uptake of digital wallets. To pursue the research objective, this study integrates the UTAUT and TPB frameworks. To drive deeper insights from different perspectives, this research extended the basic UTAUT model by incorporating two relevant attributes: Perceived Security (PS) and Digital Literacy (DL). A structured questionnaire was administered to elicit responses, yielding 527 responses with a 74% response rate. Structural Equation Modelling (SEM) was conducted to examine the conceptual framework using SmartPLS 4 and SPSS 28.0. The study found that performance expectancy, perceived security, digital literacy, attitude, and perceived behavioral control substantially influence users' intention to adopt digital wallets. Surprisingly, the effects of facilitating conditions and subjective norms on users' intention to use digital wallets are insignificant. This study generates meaningful insights for future research, guiding policymakers, developers, and scholars in crafting policies and strategies to enhance the adoption and expansion of digital wallets for accelerating financial inclusion in Bangladesh.

Keywords: Digital wallet; UTAUT; TPB; Perceived Security (PS); Digital Literacy (DL); Developing Country.

1. INTRODUCTION

In today's world, the rapid expansion of technology across diverse fields is transforming societal norms and frameworks. Widespread internet access and the omnipresence of smartphones have made these cutting-edge technologies and innovations more accessible, fostering a more inclusive ecosystem [1]. The emergence of Industry 4.0 amplified these innovative transformations to enhance digital engagements and reform existing business models and economic pursuits [1]-[3]. Within the context of this economic reformation, digital wallets emerged as a significant technological breakthrough, accelerating how transactions are executed in the digital landscape [4],[5].

A digital wallet is an electronic or online tool that facilitates transactions through a smartphone or computer, removing the need for physical currency [6]. Digital wallets can substitute cash and credit cards, enabling the shift towards a smart, digital, and cashless society [7]. Besides democratizing financial services, digital wallets facilitate payments, savings, and investments and create opportunities for many unbanked and underbanked populations to embrace financial inclusion by ensuring access to digital assets. Digital wallets have been considered an important stimulus in ensuring economic reformation by boosting people's purchasing capacity after the 2020 pandemic [8]. Digital wallet adoption after the COVID period encourages people to reignite commercial activities. Due to all these features, digital wallets are being used as a trusted alternative to conventional transaction methods.

The role of digital wallets in integrating developing countries into an inclusive, sustainable digital economy is undeniable. For Bangladesh's low and middle-income people, mobile fintech services, especially digital wallets, have become the most affordable and accessible options for fintech solutions [9]. Mobile phone subscriptions surpassed 178.61 million as of August 2021, which has a tremendous impact on creating demand for the emergence and use of digital wallets [10]. Digital wallets can significantly enhance financial inclusion, streamline transactions, and support the country's move toward a

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cashless economy. For university students, who represent a tech-savvy and future-oriented demographic, digital wallets also promote financial independence and digital engagement, making them a crucial target group for fostering long-term adoption and digital transformation in Bangladesh.

Despite their disruptive potential, the uptake of digital wallets in many developing countries remains uneven due to a myriad of behavioral, technological, and socio-cultural factors. To sustain the growth of digital wallet adoption in Bangladesh, all stakeholders, including fintech service providers, need to comprehend the elements that motivate users to embrace digital wallet adoption [11]. Considering the gap, this study examines the factors driving users to adopt digital wallets in their transactions in the context of an emerging country, Bangladesh. Most of the prior studies used different theories and models in isolation to measure users' perception towards technology adoption. However, very few studies attempted to integrate different theories, which can lead to a more comprehensive outcome, suggesting a research gap. To bridge this research gap, this study attempts to explore the synergies between UTAUT and TPB, demonstrating how their integration can illuminate critical adoption pathways.

Numerous researchers have extended the UTAUT model to analyze the uptake of novel technologies, considering different individual and contextual variables [12], [13]. To generate deeper knowledge from different perspectives, this study extends the basic UTAUT model by adding two significant attributes: Perceived Security (PS) and Digital Literacy (DL). Perceived security and digital literacy were specifically chosen for this study because they address two critical concerns in digital wallet adoption within developing economies like Bangladesh. Perceived security reflects users' concerns about the safety of their financial data, which is a major barrier to adoption in areas with limited cybersecurity infrastructure. Digital literacy, on the other hand, captures users' ability to effectively navigate and utilize digital financial tools, an essential factor among university students who may vary in their technological competencies. These constructs provide a more context-sensitive understanding of adoption behavior than traditional UTAUT or TPB variables alone. The primary objective of this paper is to investigate the attributes that affect the adoption of digital wallets among tertiary-level students in the scope of Bangladesh, by integrating the extended UTAUT and TPB frameworks. Additionally, this research acknowledges the unique challenge that exists in developing countries, including low digital literacy.

The remainder of the article is structured as follows: Segment 2 presents the related literature, research framework, and hypothesis development. Segment 3 details the methodology, Segment 4 covers the results of the analysis, Segment 5 contains a discussion of the findings. Segment 6 contains the implications, and finally, Segment 7 outlines the conclusion of the study.

2. RELATED LITERATURE

2.1 Digital Wallet Insight

In today's advanced fintech industry, digital wallets have emerged as a breakthrough technology that redefines transaction methods. They offer a contemporary solution for storing, managing, and handling digital currency transactions. They also excel in seamless accessibility, intuitive design, and resilient security protocols [1]. Digital wallets significantly contribute to promoting financial inclusion, especially in underdeveloped countries. Ref. [14] opined that digital wallet promotes financial inclusivity by facilitating transactions through the use of smartphones among unbanked people. In many emerging nations, digital wallets are rapidly gaining popularity, fueled by nationwide digitalization initiatives and the expanding e-commerce sector [1]. Using digital wallets and other digital payment methods has added a unique dimension to Bangladesh's marketing sector. The overall transaction value in Bangladesh's digital payments sector is projected to reach $14.67 billion in 2024 and $26.72 billion by 2027, reflecting a compound annual growth rate (CAGR) of 19.07% [15]. Furthermore, digital wallets have reshaped consumer purchasing behaviors by providing convenient access to information, alternative options, and improved feedback mechanisms. For both consumers and businesses, embracing digital wallets represents more than just a passing trend, it marks a transformative move toward more efficient, transparent, and secure financial transactions. This shift contributes to extended economic growth [16].

Although the application of digital wallets is expanding rapidly, their adoption remains relatively low in developing countries, especially among the rural population. The uptake of digital wallets is hindered by a combination of factors such as inadequate access to stable internet connections, low levels of financial literacy, limited infrastructure for secure transactions, and a general mistrust of digital platforms due to concerns over data privacy, fraud, and the lack of robust customer support systems [17], [18]. One effective way to address these

challenges is to understand the users' perceptions [19]. Focusing on this gap, this study intends to investigate the factors motivating users to uptake and use digital wallets in the context of a developing country, Bangladesh.

2.2 Theories, Model Conceptualization, and Hypotheses Formulation

2.2.1 Extended Unified Theory of Acceptance and Use of Technology (UTAUT) Model

As society undergoes digital transformation, users frequently find themselves compelled to embrace and leverage innovative technologies [15]. Information system research revealed various parameters that impact technology acceptance across different adoption models [20]. Among these, the UTAUT model, proposed by [21], is widely acknowledged as the most influential framework for examining technology uptake and usage. In several technology adoption studies, researchers argue that UTAUT can explain as much as 70% of the variation in user intentions [22], [23]. UTAUT is an extensively used model for analyzing technology uptake and utilization in both individual and organizational contexts, serving as a framework for integrating various technologies across corporate and personal settings [24]. Multiple studies [25], [26] have utilized the UTAUT model to examine the FinTech uptake, examining the aspects driving bank customers' acceptance of key financial technologies. To assess the users' perception and future prospects of digital wallets, this study adopts two variables from basic UTAUT: Performance expectancy (PE) and Facilitating Conditions (FC), and extends the model by incorporating two contextual variables, Perceived Security (PS) and Digital Literacy (DL).

2.2.2 Theory of Planned Behavior (TPB)

TPB was derived from the Theory of Reasoned Action (TRA) [27], which intends to clarify a broad spectrum of human behaviors, widely validated as an effective framework for predicting and understanding human actions across diverse fields [28]. TPB was developed to enhance TRA by overcoming its shortcomings, especially in contexts when individuals lack complete spontaneous control over their actions [29]. TPB comprises three constructs: Subjective Norm (SN), Attitude (AT), and Perceived Behavioral Control (PBC). Numerous studies employed this framework to examine the use behavior and satisfaction in different areas, for example, digital payment systems [30], online learning behavior [31], and smart home technology adoption [32]. In this study,

TPB is incorporated with the UTAUT model to predict users' intention to uptake and utilize digital wallets in the context of Bangladesh.

2.2.3 Conceptual Model and Hypothesis Formulation

The proposed conceptual framework is constructed following an in-depth analysis of a wide range of literature on digital wallet adoption. This model introduces a novel perspective by expanding the UTAUT framework through the inclusion of two additional variables, perceived security (PS) and digital literacy (DL), and integrating this extended UTAUT with the TPB framework. The objective is to elucidate the determinants influencing the uptake of digital wallets among the young generations of Bangladesh.

Performance Expectancy (PE)

PE denotes an individual's conviction that digital wallet systems will improve their efficiency and effectiveness in performing tasks [33]. Customers are more interested in embracing digital wallets when they perceive them as offering attractive incentives [34]. Several previous studies have validated PE as a critical factor influencing the Uptake intention of information systems. [33]-[35] revealed that PE plays a pivotal role in the adoption of financial technologies, including mobile payments and digital wallets. Therefore, the author proposes the following hypothesis:

H1. PE has a positive influence on users' intention to use digital wallets.

Facilitating Conditions (FC)

According to [36], FC refers to the extent to which individuals perceive themselves as having the required logistics and knowledge to operate wireless internet-enabled devices for conducting payments through e-wallets or digital wallets. [35] suggest that a well-established organizational and technical infrastructure for digital wallet systems can enhance customers' willingness to uptake digital wallet services. Study [13] found that FC has a positive impact on motivating consumers to adopt change through technological advancements in the context of m-bankuing, while [37], [38] revealed that the relation between FC and intention to use is not significant in the domain of m-payment services. Therefore, this study suggests the following hypothesis:

H2. FC positively influences users' intention to use digital wallets.

Perceived Security (PS)

PS denotes the degree to which individuals perceive that using mobile payment (m-payment) systems, for example, digital wallets, is safe and protected [33]. Consumers are more likely to conduct financial transactions via digital wallets if they feel confident that their confidential data is secure. Numerous studies have identified PS as a motivating feature in impacting the uptake of financial technologies. Studies [33], [35], [39] have shown a positive association between PS and m-payment service adoption intention. Interestingly, study [40] discovered that PS did not have an encouraging effect on the mode choice intention of autonomous vehicles in Malaysia. Hence, the following hypothesis is proposed:

H3. PS positively influences users' intention to use digital wallets.

Digital Literacy (DL)

DL refers to the capability to proficiently and critically navigate, assess, and generate information through various digital technologies [41]. In the context of digital wallets, DL implies the ability to effectively and safely use digital payment systems, including understanding how to set up, navigate, and manage digital wallets, as well as recognizing and mitigating potential security risks associated with online transactions. Earlier research has verified that DL has a strong favorable association with users' intention to adopt financial technologies. Study [41] revealed that DL facilitates digital transaction adoption intention. Study [42] discovered DL as a significant determinant of women's online shopping behaviour. Therefore, the following hypothesis is formulated:

H4. DL positively influences users' intention to use digital wallets.

Attitude (AT)

Attitude refers to a tendency to react positively or negatively to a behavior, along with a predisposition toward an individual's interest in adopting a specific technological innovation [43]. Empirical findings highlight the importance of attitude in influencing behavioral intentions [44]. Numerous studies support that a positive attitude toward digital wallets significantly influences

users' decision-making towards fintech, for example, e-wallets and boosts their acceptance and usage [45], [46]. Therefore, the following hypothesis is developed:

H5. Attitude is strongly associated with users' intention to use digital wallets.

Subjective Norms (SN)

SN denotes the perceived social influence to either engage in or refrain from a particular behavior [43]. Both theoretically and empirically, SN plays a critical role in stimulating the intention to uptake novel inventions, including digital wallets. [29] found that digital wallet influences customer satisfaction and continuance intention of e-services. Study [44] revealed a positive association between SN and use intention in the context of e-wallet. Study [47] demonstrated how SN positively affects Muslim Millennials' and Gen Z's intention to use digital wallets in Banjarmasin. Underscoring the impact of SN on the adoption of digital wallets, this study proposes the following hypothesis.

H6. SN has a significant impact on the intention to use digital wallets.

Perceived Behavioral Control (PBC)

PBC reflects an individual's belief in the ease or difficulty of acting and measures the extent to which they feel in control of carrying out a behavior [43]. PBC is essential in influencing an individual's intention to embrace emerging technologies [29]. [48] demonstrated that PBC significantly influences users' e-wallet adoption behavior in Malaysia. Consequently, this study proposes:

H7. PBC has a significant effect on users' intention to use digital wallets.
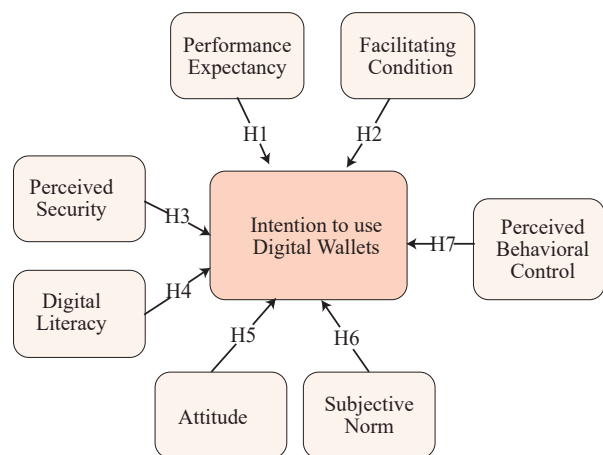
Fig. 1: Conceptual Research Framework (Authors' Creation)

3. METHODOLOGY

3.1 Constructs for Measurement

The list of measurement components and their corresponding sources is presented in Table I to confirm the validity of all perceived variables for the latent components in the research model that was formulated from prior data.

Table I: Measurement Constructs of the Study

Constructs	Corresponding items	Sources
Performance Expectancy (PE)	PE1: I would find digital wallets useful in my job. PE2: Digital wallets enable me to accomplish tasks more quickly. PE3: Digital wallets can improve my productivity. PE4: Overall, I find digital wallets beneficial in my daily life.	[13], [23], [49]
Facilitating Condition (FC)	FC1: I have knowledge of using digital wallets. FC2: I have resources (e.g. Smartphone) to use digital wallets. FC3: Digital wallets are compatible with other systems I use. FC4: If I face any problem using digital wallets, I can solve it quickly.	[23], [49], [50]
Perceived Security (PS)	PS1: Digital wallets are trustworthy. PS2: Digital wallets can protect my financial information. PS3: The security system adopted by the digital wallets are reliable.	[51]
Digital Literacy (DL)	DL1: My technical skills enable me to access and use advanced features of digital wallets. DL2: My knowledge of digital tools encourages me to try out new digital wallets. DL3: I feel confident resolving technical issues while using digital wallets. DL4: Digital wallets seem intuitive and user-friendly because of my digital literacy.	[52]
Attitude (AT)	AT1: Using digital wallets would be beneficial for me. AT2: I believe the use of digital wallets would improve the quality of my life. AT3: Using digital wallets is a good choice for my financial management. AT4: I enjoy the use of digital wallets.	[45], [46]
Subjective Norms (SN)	SN1: People who are important to me encouraged my use of digital wallets. SN2: People who influenced my behavior wanted me to use digital wallets instead of any alternative means. SN3: People whose opinions I valued preferred that I use digital wallets for managing transactions SN4: I am more likely to use digital wallets if my friends and family use them.	[29], [47], [53]
Perceived Behavioural Control (PBC)	PBC1: I could use digital wallets well to manage financial transactions. PBC2: Using digital wallets entirely within my control. PBC: I had the resources, knowledge, and ability to use digital wallets.	[29], [48]
Intention to Use (IU)	IU1: I plan to use digital wallets in the future. IU2: I intend to continue to use digital wallets frequently. IU3: I am used to digital wallet services.	[12], [23]

3.2 Population and Sampling

The target population of this research comprises digital wallet users across different age groups of university students in a developing country. The author chose the convenience sampling method to select respondents for the study. This study employed Structural Equation Modeling (SEM) to investigate the relationships between latent variables, as outlined by [54]. The literature on determining sample sizes for different types of data

analytics illustrates a notable divergence in perspectives [55]. A sample size of 200 is usually considered adequate, while a sample size of 300 is deemed good for conducting data analysis by applying structural equation modeling (SEM) [56]. According to [57], the sample size needs to be at least ten times the number of items in the research study's constructs to do multivariate research. Our study encompasses a total number of 29 constructs, and ten times the constructs become 290. Consequently, the sample size must be at least 290 or above.

3.3   Data Collection

710 questionnaires were circulated to the contributors via an online link forwarded to their email, accompanied by a deadline. A reminder email was sent to those who did not reply within the time frame given. The data was collected from March 26 to August 25, 2024. After removing outliers and treating missing data, 527 full questionnaires were obtained from the 593 returned questionnaires. The response rate for this study is 74%. As demonstrated in the preceding part (3.1), the sample size should be greater than or equal to 290, however, the sample size of 527 is more suitable to employ the SEM approach. A total of 527 questionnaires were examined for further statistical analysis. Respondents participated in this research voluntarily, and no compensation was provided.

3.4   Analytical Method

In this study, descriptive statistical analysis was performed using SPSS 28.0. Besides this, the author utilizes the Partial Least Squares (PLS) method, a statistical approach adapted from SEM, to analyze and validate the suggested framework and the relationships among the anticipated constructs. According to [58], SEM is a widely recognized approach for evaluating the rationality of a hypothesis through empirical data [58]. SmartPLS is a prominent software package for PLS-SEM data assessment [54]. To perform the required statistical analysis, including developing a research model and calculating a measurement model, the data is initially loaded into Microsoft Excel (.csv) and subsequently imported into the SmartPLS software.

4.   RESULTS

4.1   Demographic Traits of Participants

Table II demonstrates a breakdown of the demographic details of this study involving 527 participants. The table presents distributions based on gender, age, education

level, and digital wallet usage frequency. The majority of contributors in this study are male, 411 individuals (78%), while females represent a smaller proportion, comprising 116 individuals (22%). In terms of age distribution, the largest portion of participants, 481 individuals (91.3%), fall within the 20-25 age group, making this the dominant category, while a smaller proportion, comprising 37 individuals (7.0%), belong to the 26-30 age group. Only a negligible percentage of respondents are below 20 years old (0.2%) and above 30 years old (1.5%), demonstrating that the sample predominantly consists of young adults. Regarding educational level, 515 individuals (97.7%) of respondents were undergraduate students, while only 12 (2.3%) were graduate students. The study examined how often users use digital wallets and revealed that 32.8% of respondents use digital wallets often, 25.6% frequently, and 19.5% always. Nonetheless, 22% of participants still use digital wallets rarely. This implies a high level of digital wallet adoption, though some participants' usage remains limited.

Table II: Demographic Details of Participants

Variable	Description	Frequency (n=527)	Percentage (%)
Gender	Male	411	78.0%
	Female	116	22.0%
Age	Below 20	1	0.2%
	20-25	481	91.3%
	26-30	37	7.0%
	Above 30	8	1.5%
Education	Undergraduate	515	97.7%
	Postgraduate	12	2.3%
Digital Wallet use	Rarely	116	22.0%
	Often	173	32.8%
	Frequently	135	25.6%
	Always	103	19.5%

4.2   Measurement Model

In this study, Composite Reliability (CR), Average Variance Extracted (AVE), and Cronbach's alpha were evaluated following established criteria to ascertain the validity and reliability of each construct [59], [60]. This reliability test investigates the precision and uniformity of the research instruments. The findings indicate a strong internal integrity across all components. A Cronbach's Alpha coefficient exceeding 0.70 confirms internal consistency and reliability in the study's methodology [60]. Table III exhibits that Cronbach's alpha values range from 0.751 to 0.929, indicating the study's internal consistency.

Convergent validity assesses the extent to which the variables of a hypothesis align, as indicated by the AVE. In this study, the AVE value ranged from 0.573 to 0.875, exceeding the required threshold value of 0.5 [59], [60]. This confirms that a significant proportion of the variance in the constructs is elucidated by the items correlated with them. Consequently, it supports the convergent validity of the measurement model.

The substantial Composite Reliability (CR) values, which are above the threshold of 0.7 and fall between 0.754 to 0.929, demonstrate the internal consistency and reliability of the measurement model [59], [60]. The results provide strong evidence of the validity and reliability of the study's measurement methods. Consequently, they reinforce the credibility and validity of the constructs, confirming their appropriateness for assessing the factors influencing students' intention to use digital wallets.

Table III: Convergent Validity and Internal Reliability

Constructs	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Performance Expectancy (PE)	PE1	0.837	0.843	0.844	0.680
	PE2	0.849			
	PE3	0.807			
	PE4	0.805			
Attitude (AT)	AT1	0.748	0.751	0.754	0.573
	AT2	0.805			
	AT3	0.746			
	AT4	0.727			
Digital Literacy (DL)	DL1	0.826	0.848	0.849	0.687
	DL2	0.852			
	DL3	0.793			
	DL4	0.842			
Facilitating Condition (FC)	FC1	0.815	0.789	0.793	0.614
	FC2	0.828			
	FC3	0.771			
	FC4	0.715			
Subjective Norms (SN)	SN1	0.857	0.837	0.843	0.674
	SN2	0.852			
	SN3	0.729			
	SN4	0.840			
Perceived Security (PS)	PS1	0.937	0.929	0.929	0.875
	PS2	0.951			
	PS3	0.919			
Perceived Behavioural Control (PBC)	PBC1	0.914	0.884	0.885	0.812
	PBC2	0.914			
	PBC3	0.875			
Intention to Use (IU)	IU1	0.854	0.795	0.796	0.710
	IU2	0.843			
	IU3	0.830			

4.2 Structural Model Evaluation

The structural model explores the causal relationships among the latent constructs of a given model [61]. This study examines the SEM to assess the associations among variables. The following model (Fig. 2) was created using SmartPLS, and the results demonstrate the p-values and cross-loadings for analyzing the direct associations between dependent and independent constructs.

This research measures the statistical weighting of the path coefficient using the bootstrapping method (resampling = 5000) [59]. The association between independent and dependent variables is analyzed by measuring t-values and assessing significance at the 0.05 level (P < 0.05). Additionally, Bias-Corrected Confidence

Intervals (BCI LL-UL) are evaluated to determine the significance of the hypothesized links [60]. The PLS results for the structural model are presented in Table IV. The outcomes indicate a significant correlation between the variables: PE and IU ($\beta = 0.150$, P = 0.003), PS and IU ($\beta = 0.298$, P = 0.000), DL and IU ($\beta = 0.237$, P = 0.000), AT and IU ($\beta = 0.125$, P = 0.019), and PBC and IU ($\beta = 0.095$, P = 0.013).

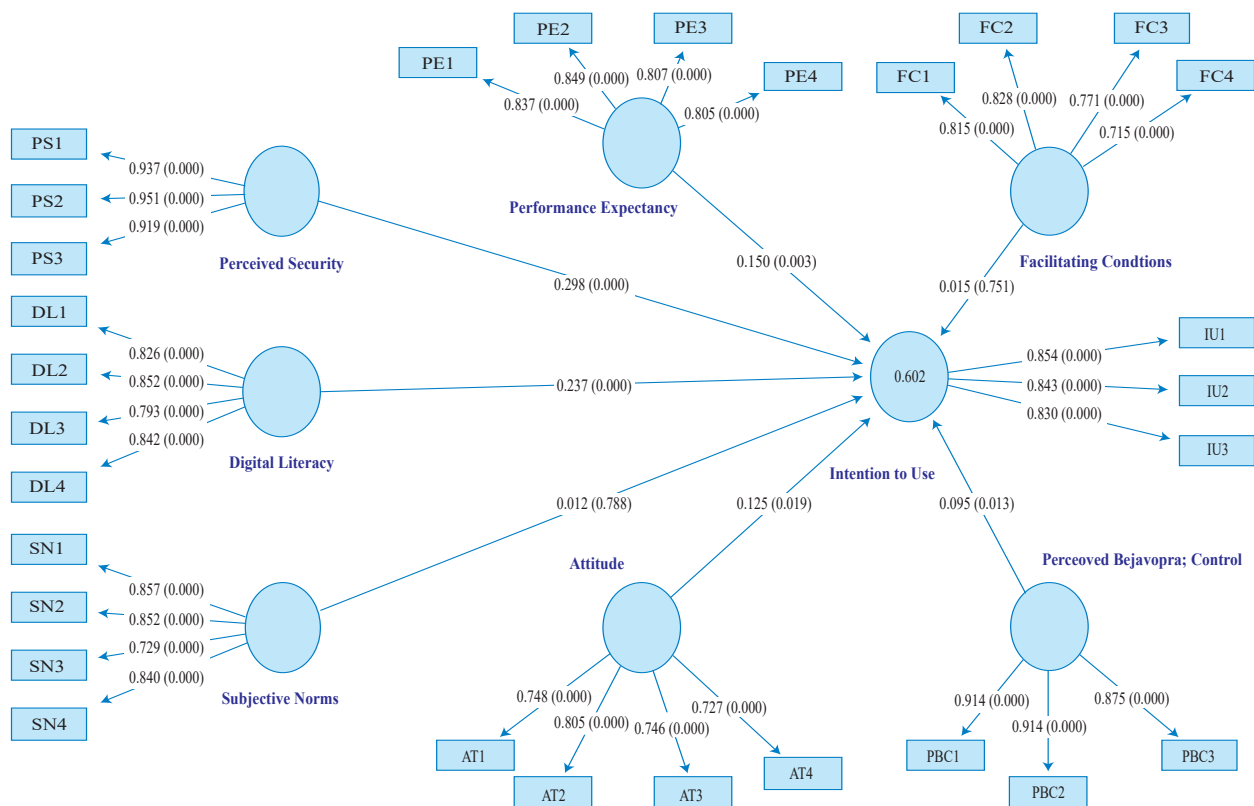Hence, H1, H3, H4, H6, and H7 were confirmed at a significance level of 0.05 (P < 0.05).

Fig. 2: Path Diagram with P-Values and Path Coefficient

Studies conducted the Variance Inflation Factor (VIF) calculation for every association to assess collinearity and to avoid biases in regression findings [61]. A VIF greater than 3.3 is considered an indicator of pathological collinearity and a potential sign of common method bias (CMB) affecting the model. Therefore, if all VIF values in the inner model are 3.3 or lower, the model can be deemed free from common method bias [62]. Since all of the values of VIF demonstrated in Table IV are less than 3.3, it is confirmed that the model is devoid of common method bias.

Notably, f^2 indicates the effect size, with values exceeding 0.35, 0.15, and 0.02 representing large, medium, and small effect sizes, respectively [63]. According to [63], the study found that the associations between PS and IU (H3: $f^2 > 0.35$) and DL and IU (H4: $f^2 > 0.35$) exhibit a highly significant effect size and the relationship between PE and IU (H1: $f^2 > 0.15$) and PBC and IU (H8: $f^2 > 0.15$) indicates a moderate effect size.

Table IV: Structural Model Evaluation for Direct Associations

H	Relations	Std Error	T values	P values*	BCI LL	BCI UL	f²	VIF	Decision
1	PE-> IU	0.051	2.965	0.003	0.054	0.250	0.322	2.630	Supported
2	FC-> IU	0.049	0.317	0.751	-0.078	0.114	0.004	2.368	Not Supported
3	PS-> IU	0.049	6.130	0.000	0.202	0.395	0.436	2.092	Supported
4	DL-> IU	0.062	3.827	0.000	0.116	0.358	0.547	2.973	Supported
5	SN-> IU	0.045	0.269	0.788	-0.071	0.103	0.010	1.778	Not Supported
6	AT -> IU	0.053	2.346	0.019	0.024	0.231	0.027	2.287	Supported
7	PBC-> IU	0.038	2.496	0.013	0.016	0.165	0.324	1.615	Supported

*at the significance level of < 0.05.
Note: PE = Performance Expectancy, FC = Facilitating Conditions, PS = Perceived Security, DL = Digital Literacy, SN = Subjective Norm, AT = Attitude, PBC = Perceived Behavioural Control

5. DISCUSSION

The study intends to explore the attributes impacting users' intention to adopt digital wallets in conducting financial transactions. The UTAUT model has been expanded to include perceived security and digital literacy, as these factors are particularly relevant to the area of financial technology. This research integrates the extended UTAUT and TPB models to develop a comprehensive framework for predicting users' intention to uptake and utilize digital wallets, combining the strengths of both models in explaining technology acceptance and behavioral intentions towards digital payments. Hence, this study has put forward seven hypotheses, which were evaluated using PLS-SEM. The study disclosed that all the determinants, except FC and SN, have a direct impact on users' intention to adopt digital wallets, as demonstrated in Table IV.

The results exposed a robust positive correlation between PE and IU, which aligns with the research of [49] and [64]. The findings imply that users exhibit strong enthusiasm for adopting digital wallets, provided that this fintech system offers tangible benefits. [65] suggested that due to the young generations' internet usage and comfort with technology, performance has become a key concern for them in adopting digital payment systems such as digital wallets. In particular, the ability to conduct financial transactions more easily and quickly is a key motivator in attracting young users to adopt digital wallets.

The present study exposes that FC is an insignificant predictor of digital wallet adoption by Bangladeshi users, which contradicts the study [35]. This is a novel finding of this study. One possible reason may be that the infrastructure limitations or lack of awareness about available support systems may diminish the perceived importance of facilitating conditions in adoption.

The study manifests that PS significantly influences IU in the context of digital wallets. The majority of authors agreed with the findings and stated that security is the main reason why consumers choose digital wallets over traditional ones [33], [35], and [39]. [65] asserted that the young generation considers security to be their top priority. The finding suggests that the ability of digital wallet systems to safeguard financial and informational privacy is a critical attribute contributing to the uptake of financial technology.

Digital Literacy (DL), integrated to extend the UTAUT model in this study, has a noteworthy influence on users' intention to use digital wallets, which aligns with the findings of [52]. Digital literacy enhances users' ability to navigate digital payment systems, including digital wallets, fostering confidence in adopting digital wallets [41], [42]. Digital literacy can increase security awareness, reducing concerns about fraud and data breaches while ensuring smoother interactions with payment apps. Digitally literate users perceive digital wallets as convenient, efficient, and aligned with technological advancements, encouraging adoption. Additionally, exposure to online financial trends and peer influence motivates them to embrace digital transactions. By improving technological competence and financial inclusion, digital literacy empowers individuals to integrate digital wallets into their daily financial activities.

The study also unveiled a positive relationship between attitude and intention to use digital wallets. This finding aligned with the research conducted by [45], [46]. This outcome implies that attitude significantly influences digital wallet adoption as users with an optimistic perception of convenience, security, and intuitiveness have a higher tendency to embrace the technology.

Favorable attitudes enhance trust and reduce resistance to digital transactions, encouraging widespread adoption.

The observed association between SN and IU is found to be negative, a novel finding of this study, which contradicts the studies [44], [47]. This insignificance may stem from cultural factors such as individualistic decision-making among students or infrastructural elements like widespread access to digital services, which reduce reliance on social influence, as users increasingly prioritize personal convenience and perceived benefits over social pressure when making technology adoption decisions. Unlike other technologies where peer or family recommendations play a crucial role, digital financial transactions involve trust and risk considerations, making individual judgments more important. As a result, users may adopt digital wallets based on their own needs and confidence in the system rather than societal expectations.

The result reveals that PBC and users' IU regarding digital wallets are positively associated. This outcome supports the findings of the study [29] and [48]. If users feel they possess enough knowledge, facilities, and control over potential risks, they are more prone to adopt digital wallets.

6. THEORETICAL AND PRACTICAL IMPLICATIONS OF THE STUDY

6.1 Theoretical Implications

This study contributes to the literature by integrating the UTAUT with the TPB framework to provide a thorough understanding of digital wallet adoption among university students in a developing country. Although theoretical bases such as UTAUT and TPB have been extensively employed in technology adoption settings, they are frequently examined in isolation. To bridge this research gap, this study blended UTAUT and TPB models to extensively examine the dual cognitive pathways of users' use intention in the context of digital wallets. By examining seven key factors such as PE, FC, PS, DL, AT, SN, and PBC, the study extends prior research by highlighting the significance of individual perceptions and technological capabilities in influencing adoption intentions. The findings challenge existing assumptions by revealing that FC and SN do not significantly influence digital wallet uptake, indicating that external support and social pressure may be less crucial than personal competence and security considerations. This insight enhances existing theoretical frameworks and offers a nuanced perspective on digital wallet uptake in the scope of a resource-constrained developing country, Bangladesh.

6.2 Practical Implications

From a practical standpoint, the study provides valuable insights for digital wallet providers, policymakers, marketers, and financial institutions seeking to increase the acceptance rates among users in developing countries. The study demonstrates that PS and DL have a notable influence on the users' intention, which suggests that improving digital literacy and addressing security concerns should be prioritized over external facilitation or social influence to drive digital wallet adoption. Developers should focus on designing intuitive interfaces and implementing robust security measures to increase user confidence. Additionally, awareness campaigns regarding the advantages of digital wallets may be more effective than relying on peer influence or infrastructural support. By understanding the primary drivers of adoption, stakeholders can develop targeted strategies that align with user needs, ultimately fostering greater financial inclusion and transformation.

7. CONCLUSION

In a resource-constrained developing country, like Bangladesh, financial innovations play a crucial role in increasing financial inclusion [12]. To assess the uptake intention within the setting of an important financial technology, digital wallet, this study concentrates on identifying the determinants that impact users' intention to uptake and use this technology. By synthesizing the structural and behavioral aspects of UTAUT and TPB models, the study strives to uncover nuanced insights into the stimulators that drive users' intention toward digital wallets. Data were collected using a quantitative research approach from 593 respondents. Thorough data screening ensured the reliability of the final 527 responses, which were analyzed to assess users' intention to adopt digital wallets. This study employs the PLS method, a statistical technique adapted from SEM, to analyze and validate the conceptual model and the associations among the anticipated constructs. By examining seven attributes, the findings reveal that while PE, PS, DL, AT, and PBC significantly influence users' digital wallet adoption, FC and SN do not. These findings imply that for university students within the scope of financial technology uptake, personal perceptions of convenience, security, and technological skills are more influential than external support or social pressure. The study underscores the need for digital wallet providers to focus on enhancing user confidence through improved security measures and digital literacy initiatives. Ultimately, these insights

contribute to refining adoption models and offer practical recommendations for fostering digital wallet usage in developing countries.

Nonetheless, this study has certain limitations. First, it focuses solely on Bangladeshi University students, limiting generalizability; future research could explore other professionals in Bangladesh and other countries for broader insights. Second, while the sample size of this study meets the minimum requirement suggested by [60], future research could collect additional data to enhance the validity of the digital wallet adoption model in financial technology settings. Third, this research ignores the moderating and mediating effects of constructs. Studies in the future may unearth different significant insights by examining the moderating and mediating effects of several contextual and environmental variables, for example, personal innovativeness, technology experience, task-technology fit, and government initiatives. In conclusion, this study makes a significant scholarly contribution to fintech adoption research in Bangladesh by synthesizing the UTAUT and TPB frameworks to elucidate the combined influence of technological, social, and behavioral determinants on digital wallet adoption among university students within a developing economy context.

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