Chapter

Mobile Payments Is the Future of Banking for Pakistani Generation Z: Navigating through UTAUT

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Abstract

This empirical investigation explores the factors that influence Generation Z's use of mobile payment systems (MPS) through the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. Specifically, it examines how various determinants impact MPS usage behavior among Gen Z. Furthermore, this study incorporates a Customer Financial Resources (CFR) construct to gain a deeper understanding of the phenomenon, providing valuable insights into the complex dynamics of MPS adoption. This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to investigate the UTAUT model's applicability in explaining Mobile Payment System (MPS) adoption. The analysis was based on a sample of 310 Gen Z respondents, who were selected using convenience sampling, allowing for an in-depth examination of the relationships between the variables. Within the context of the Pakistani banking landscape, the findings demonstrate an explanatory power of 45.5%. Moreover, the results indicate that Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and CFR are all significant predictors of MPS adoption intention (BI), exerting a positive influence on Users' Behavior (UB). The results show that affordability is a critical consideration for Gen Z users in Pakistan when it comes to mobile payment solutions. Prioritizing affordability enables banks to effectively target and serve Gen Z users. By combining social media marketing with gamification, banks can make mobile payments more appealing to Gen Z users by highlighting affordability and user-friendly design.

Keywords: Generation Z, UTAUT framework, customer financial resources, behavioral intention, use behavior, mobile payment system, Pakistani banking sector

1. Introduction

The widespread adoption of smartphones has revolutionized financial activities, enabling individuals to make payments, shop, and manage budgets with ease [1]. The advent of smart payment technology has further expanded the scope of smartphones,

providing access to various payment services, including payment transactions, money transfers, and account balance inquiries, thereby facilitating MPS [2]. According to Hassaan and Yaseen, [3], MPS exhibits key features, including intelligence, connectivity, mobility, and temporal-spatial flexibility, which collectively contributes to enhanced convenience for customers. This convenience enables customers to perform various financial activities *via* mobile phones, reducing processing times and enhancing hedonic pleasure [2]. Moreover, MPS provides consumers with a user-friendly interface through specialized apps, allowing service providers to innovate and differentiate themselves through novel product offerings and services [3]. By leveraging MPS, service providers can enhance their competitive advantage in an increasingly saturated market [4].

Pakistan has the eighth largest mobile phone user base globally, with 178 million cellular subscribers covering 83.09% of the population [5]. Despite the availability of MPS options from various financial organizations, a substantial portion of the population still prefers traditional payment methods [3, 6]. This preference for traditional methods is reflected in Pakistan's high cash circulation rate of 40% (as of 2020), which is substantially higher than those of its regional counterparts, such as India and Bangladesh, where the rate falls below 15% [5]. Although MPS are gaining traction in Pakistan, they remain in their early stages, offering vast growth potential [3, 7]. Therefore, further research is necessary to identify and understand the key factors influencing individuals' intentions to adopt MPS [3, 7], providing valuable insights for developing effective strategies to promote adoption and maximize the benefits of MPS [3].

The current Information Systems (IS) literature indicates that financial resources play a pivotal role in digital payment adoption, underscoring the need for further research to investigate this relationship in greater depth, particularly within the mobile payment context [8, 9]. Scholarly work has increasingly focused on understanding the determinants of technology adoption, resulting in the development of comprehensive frameworks that illuminate user behavior and acceptance [3, 8, 10]. Scholars advocate for the application of an extended UTAUT framework to investigate the multifaceted factors influencing MPS adoption, providing valuable insights that can inform and direct future research endeavors [10, 11].

Notably, despite Generation Z's (Gen Z) significant presence in the population, limited research has explored the factors influencing their intention to adopt MPS [12, 13]. In Pakistan, Gen Z (born between 1995 and 2010) has grown up with the internet and are highly skilled in using technology [13]. Gen Z is well-equipped to navigate digital platforms and leverage social media for global connections and knowledge sharing [13]. Furthermore, their early exposure to technology has profoundly shaped their communication styles and behaviors [12, 13]. Indeed, Pakistan's Gen Z plays a vital role in the adoption of MPS, driven by their technological proficiency, substantial population size, and digital-centric behaviors [12]. This demographic's early exposure to technology has cultivated a strong inclination toward fintech solutions [12]. As a significant and expanding segment, Gen Z represents a crucial market for mobile payment providers, warranting targeted attention. Their familiarity with digital platforms and social media suggests a natural preference for cashless transactions, aligning seamlessly with their lifestyle and consumption patterns [12]. Moreover, technology has profoundly shaped their financial habits, predisposing them to adopt seamless payment methods [3, 12]. Indeed, a substantial knowledge gap persists concerning the factors that drive mobile payment adoption among Gen Z, underscoring

the necessity for further research to inform and guide policymakers and stakeholders in the fintech industry [3, 11].

Thus, this study aims to elucidate the key factors influencing individuals' BI to adopt MPS, specifically extending the UTAUT framework by incorporating CFR. Building on this framework, our research reveals that CFR plays a vital role in promoting mobile payments among Gen Z in Pakistan by providing digital financial tools, enhancing financial literacy, and increasing access to financial services [8]. Consequently, Gen Z is empowered to make convenient mobile payments that seamlessly align with their digital lifestyle. Furthermore, leveraging CFR enables mobile payment providers to effectively target young users, promote a cashless economy, and support financial stability.

This study offers significant implications for MPS providers, enabling them to develop customer-centric strategies that enhance the experiential outcomes. Building on these implications, the findings provide actionable guidance for MPS executives seeking to leverage smart mobile technology to drive service excellence. Furthermore, this research contributes to the advancement of IS literature by offering pioneering insights into the evolving landscape of MPS. Indeed, the findings can help researchers better understand customer behavior and the adoption of innovative mobile payment systems.

2. Literature review

2.1 An overview MPS adoption among Pakistan's Generation Z

The advent of online payment platforms in Pakistan in 2009, facilitated by the proliferation of cellular networks, has played a crucial role in advancing mobile payment systems [6]. The rapid growth of Pakistan's e-commerce sector has underscored the importance of MPS, which has become a vital catalyst for economic development. Branchless banking has gained momentum primarily due to this advancement, which has received substantial support from a range of financial institutions [6]. Leading MPS platforms, such as Upaisa, EasyPaisa, and JazzCash, provide user-friendly apps that enable seamless transactions and account management [3, 6, 14]. These platforms benefit both users and service providers by offering convenient financial access, improved services, cost reductions, and increased sales [7, 10]. Moreover, the shift to MPS has positively transformed traditional banking, expanded economic opportunities, and contributed to socioeconomic progress [8]. Pakistan's young population (51.7%), which is highly familiar with digital technologies, increase their likelihood of adopting mobile payment solutions [13]. Previous studies indicate a growing preference among younger generations for mobile payment technologies, particularly in developing countries [3, 11]. Therefor this study examines the key drivers of MPS adoption among Gen Z in Pakistan. By identifying these factors, the research aims to uncover opportunities for enhancing financial inclusion and fostering sustainable economic growth.

2.2 UTAUT model

Venkatesh et al. [15] proposed the UTAUT model, which consists of four key constructs including PE, EE, FC, and SI. These constructs predict users' BI to adopt

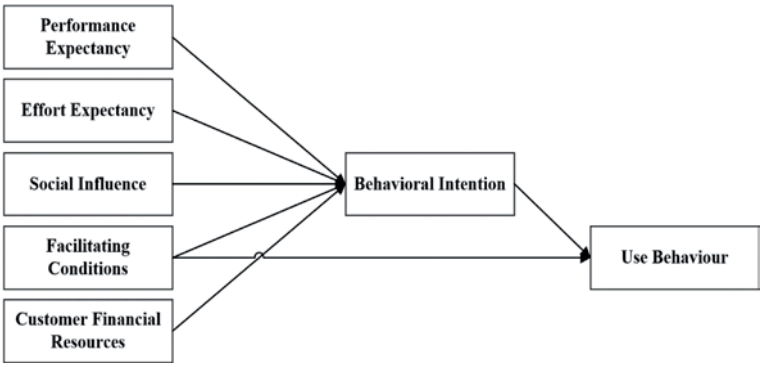

Figure 1.
Research Model adapted by Venkatesh et al. [15]. The proposed framework provides a theoretically grounded structure for examining the effects of exogenous variables on behavioral intention and use behavior.

technology. This study extends the UTAUT model by incorporating CFR to investigate the factors influencing individuals' intention to use MPS (see **Figure 1**). The financial costs associated with MPS, including equipment costs, transaction fees, and bank charges, affect an individual's ability to afford these services [8, 9]. Financial constraints and affordability issues can hinder the widespread adoption of new innovations [9]. Therefore, understanding the impact of CFR on MPS adoption is crucial, particularly in developing nations where household incomes are low [8, 9]. The UTAUT model provides a valuable framework for analyzing technology adoption, serving as a solid foundation for this investigation. By understanding these factors, MPS providers can improve their services and increase adoption rates.

3. Research hypothesis formulation

3.1 Performance expectancy (PE)

PE refers to the degree to which an individual believes that using a technology will enhance their efficiency, productivity, or overall task performance [15]. In the context of mobile payments, it reflects users' perception that adopting such systems will save time, simplify transactions, and provide greater convenience compared to traditional payment methods [10, 11, 16]. Indeed, previous research shows that PE is a salient predictor of MPS adoption [3, 7]. Hence, it is hypothesized that:

H1. *PE is positively associated with BI.*

3.2 Effort expectancy (EE)

EE is defined as the degree to which an individual perceives ease of effort connected with using new technology [17]. Davis et al. [18] found that simplicity and user-friendliness are vital factors that promote the adoption of new technologies. The requirement for specialized skills and knowledge in using MPS [19] highlights the significance of EE in influencing users' intentions to use technology [20]. By applying the UTAUT model in recent studies, various authors have validated a significant relationship between EE and an individual's intention to adopt MPS [3, 7]. Hence, it is hypothesized that:

H2. *EE is positively associated with BI.*

3.3 Social influence (SI)

SI refers to the degree to which an individual feels pressured by their social network to use technology [15, 21]. The opinions of family and friends can influence an individual's intention to use MPS [3]. Research has consistently shown that SI is a significant predictor of technology adoption intentions [3, 7]. Hence, it is hypothesized that:

H3. *SI is positively associated with BI.*

3.4 Facilitating Conditions (FC)

FC is the perception of the availability of organizational and technical resources and support to facilitate the effective use of a technology [15, 21]. MPS require a set of technical structures and skills, such as installing apps and knowledge about mobile services and their security-related features [16]. Therefore, FC play a crucial role in providing a strong foundation for MPS use. Extant research has consistently shown that FC plays a crucial role in MPS adoption, influencing both adoption intentions and usage behavior [3, 10]. Hence, it is hypothesized that:

H4. *FC is positively associated with BI.*

H5. *FC is positively associated with UB.*

3.5 Customer financial resources (CFR)

CFR associated with using MPS determine the extent to which individuals can afford to access and utilize MPS [8] This includes expenses such as equipment costs and transaction fees [16]. Limited financial resources hinder the widespread adoption of MPS [9]. As MPS evolve, improvements in device affordability, user-friendly interfaces, and network infrastructure are likely to overcome financial barriers, driving wider adoption. [3]. However, high technology costs may limit MPS adoption among consumers with restricted financial resources, reducing practical benefits and increasing usage difficulties [3, 9]. Hence, it is hypothesized that:

H6. *CFR is positively associated with BI.*

3.6 Behavioral intention (BI)

BI is a widely studied concept in technology acceptance, representing an individual's cognitive readiness to use specific technology [22]. Research consistently confirms that BI precedes actual behavior [21]. Theoretical models, such as the Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), and UTAUT, support the intention-usage relationship [15, 23, 24]. Empirical studies on MPS adoption have also found a positive relationship between BI and UB [3, 7]. Hence, it is hypothesized that:

H7. *BI is positively associated with UB.*

4. Research methodology

4.1 Data collection and sampling strategy

This research examines the salient factors shaping the intentions and behaviors of Pakistani Gen Z individuals in adopting MPS, providing insights into their adoption decisions. A quantitative survey methodology was employed, wherein 310

participants were recruited *via* convenience sampling, comprising current MPS users from Generation Z residing in Pakistan's prominent metropolitan cities (Islamabad, Karachi, and Peshawar). Prior to participation, informed consent was obtained from each respondent, and survey instruments were administered through face-to-face interactions. There were a majority of male participants (57.4%). Most of the participants (41.0%) had master's degrees and were from higher education levels. The demographic characteristics of the participants are comprehensively outlined in **Table 1**. The survey instrument was developed based on existing research, with minor modifications to suit the current context (see **Table 2**). The survey assessed intentions and behaviors using a seven-point Likert scale, supplemented by five multiple-choice questions that captured demographic information, including age range, gender groups, education status, city of residence, and frequency of MPS use in the past year.

5. Results

5.1 Data analysis tools and techniques

For 20 years, first-generation statistical techniques were widely used in social sciences research. However, their weaknesses have been overcome by second-generation

Demography		**Frequency**	**Percentage (%)**
Gender	Female	132	42.6
	Male	178	57.4
City	Islamabad	110	35.5
	Karachi	102	32.9
	Peshawar	98	31.6
Education level	Matric	53	17.1
	Intermediate	46	14.8
	Bachelor's degree	62	20.0
	Master's degree	127	41.0
	Others	22	7.1
Age group	14–16	33	10.6
	17–19	58	18.7
	20–22	66	21.3
	23–25	80	25.8
	26–28	73	23.5
Frequency of MPS use in the past 1 year	1–10	69	22.3
	11–20	75	24.2
	21–30	59	19.0
	31–40	50	16.1
	Above 40	57	18.4

Table 1.
Demography of participants.

Constructs	Key measurement items	Sources
PE	Utilizing MPS increases my likelihood of successfully completing tasks that are important to me	Venkatesh et al. [21]
	Utilizing MPS improves my task performance	
	Utilizing MPS enables me to complete tasks more efficiently	
EE	I find it easy to learn how to use MPS	Venkatesh et al. [21]
	MPS provides a clear and intuitive user experience for me	
	MPS is easy for me to use	
	Acquiring skill in using the MPS comes easily to me	
SI	Individuals who are important to me recommend the use of MPS	Venkatesh et al. [21]
	Individuals who are familiar to me recommend the use of MPS	
	Most people around me use MPS	
FC	I have access to the necessary resources for using MPS	Venkatesh et al. [21]
	I have the necessary knowledge to use MPS effectively	
	MPS is compatible with other technologies I use	
	Support from others is accessible when I face difficulties with MPS	
CFR	I perceive the annual MPS fees to be excessively costly	Nguyen et al. [9]
	I perceive the MPS transaction fees to be excessively high	
	I find the cost of MPS to be excessively high	
BI	I intend to utilize MPS as a future payment method	Venkatesh et al. [21]
	I intend to consistently utilize the MPS in my daily transactions	
	I intend to consistently utilize the MPS for future transactions	
UB	I utilize the MPS	Oliveira et al. [25]
	I frequently utilize MPS to manage my accounts	
	I utilize MPS as main source to make transfer	

Notes: *EE = effort expectancy; MPS = mobile payment system; UB = use behavior; BI = behavioral intention; SI = social influence; CFR = customer financial resources; PE = performance expectancy; FC = facilitating conditions.*

Table 2.
A brief look at measurement items and their origins.

techniques like SEM [26]. This study uses PLS-SEM, a powerful data analysis technique suitable for empirical research. PLS-SEM assesses reliability, validity and causal relationships among constructs, making it an attractive alternative to traditional SEM methods. Its ability to handle small sample sizes and examine cause-and-effect relationships among multiple constructs makes it an ideal choice for this study [27].

5.2 Measurement model evaluation

The assessment of measurement models is a multifaceted process, comprising three distinct levels [28]. Initially, internal reliability consistency is established through the evaluation of Composite Reliability (CR), with acceptable values ranging from 0.70 to 0.95 and Cronbach's alpha (α), which should exceed 0.7 (see **Table 3**) [28]. Subsequently, convergent validity is estimated *via* Average Variance

Constructs	Cronbach's alpha	CR	AVE
BI	0.723	0.724	0.643
CFR	0.757	0.759	0.673
EE	0.779	0.794	0.600
FC	0.755	0.769	0.670
PE	0.715	0.718	0.638
SI	0.767	0.780	0.681
UB	0.733	0.736	0.652

Table 3.
The constructs' validity and reliability.

Extracted (AVE), with a threshold of 0.50 and outer-loadings of indicators, which should surpass 0.50 (See **Table 3** and **Figure 2**) [28]. Finally, discriminant validity is assessed based on the Heterotrait-Monotrait ratio (HTMT), with values below 0.85 deemed acceptable (see **Table 4**) [29, 30].

5.3 Structural model evaluation

This study examined the hypotshesized relationships between constructs and their impact on customers' BI and UB. As shown in **Table 5** and **Figure 3**, the results indicate that all constructs had a significant impact on both BI and UB, p-values ≤0.10 [26].

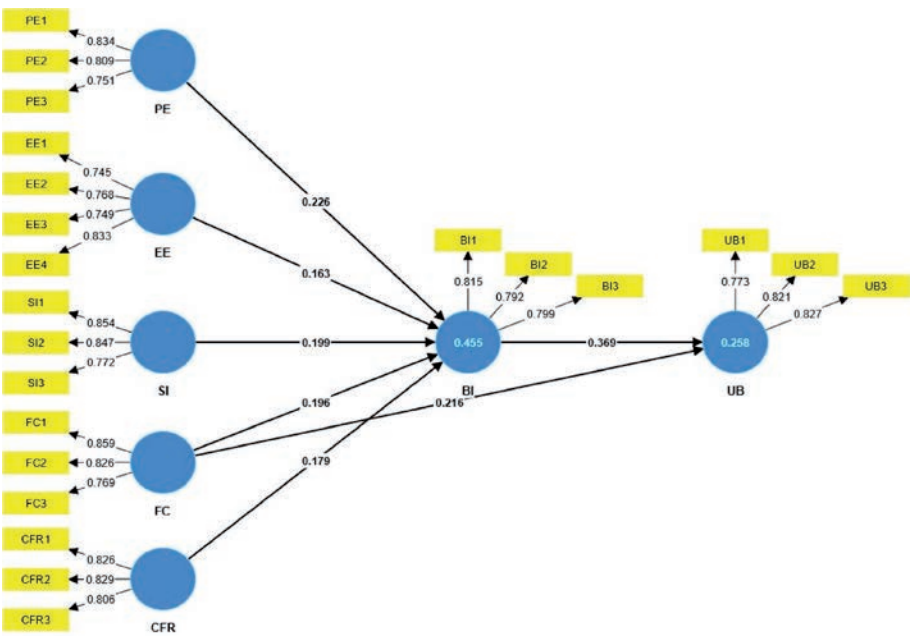

Figure 2.
R square, path coefficient, and outer-loadings indicators. The proposed figure offers a theoretically robust structure for investigating the impact of external factors on behavioral intention and usage behavior, leveraging metrics such as R-squared, path coefficients, and outer loadings to analyze and interpret the results.

	BI	CFR	EE	FC	PE	SI	UB
BI							
CFR	0.594						
EE	0.604	0.402					
FC	0.630	0.447	0.425				
PE	0.718	0.510	0.607	0.562			
SI	0.610	0.372	0.492	0.426	0.467		
UB	0.644	0.403	0.388	0.518	0.565	0.357	

Notes: UB = use behavior; EE = effort expectancy; SI = social influence; FC = facilitating conditions; BI = behavioral intention; CFR = customer financial resources; PE = performance expectancy

Table 4.
HTMT correlations ratio.

Association between predictors	VIF	t-value	Standard deviation	f^2	p-value	Significant
BI→UB	1.283	7.067	0.052	0.143	0.000	Yes
CFR → BI	1.263	3.539	0.051	0.047	0.000	Yes
EE → BI	1.398	3.249	0.050	0.035	0.001	Yes
FC → BI	1.324	3.537	0.056	0.053	0.000	Yes
FC → UB	1.283	3.786	0.057	0.049	0.000	Yes
PE → BI	1.491	4.060	0.056	0.063	0.000	Yes
SI → BI	1.285	4.287	0.046	0.057	0.000	Yes

Notes: UB = use behavior; BI = behavioral intention; EE = effort expectancy; PE = performance expectancy; CFR = customer financial resources; SI = social influence; FC = facilitating conditions; VIF = variance inflation factor; f^2 = f square.

Table 5.
Structural model estimates, comprising VIF and f^2 values for collinearity assessment.

The Effect Size (f^2) was computed [31] and the Variance Inflation Factor (VIF) values (< 3) indicate the absence of collinearity issues (see **Table 5**) [32, 33]. The R square (R^2) values demonstrated the substantial predictive accuracy for BI (0.455) and the moderate predictive accuracy for UB (0.258) (see **Table 6**). Furthermore, the blindfolded approach revealed significant predictive relevance, as indicated by Cross-Validated Redundancies (CVR) and Cross-Validated Communalities (CVM) exceeding zero for all endogenous variables (See **Table 6**) [34].

5.4 Hypothesis testing

The study employed PLS-SEM, a sophisticated statistical method, to test the research hypotheses. The results confirmed the effectiveness of the extended UTAUT model in predicting the adoption of MPS, consistent with the outcomes of previous research [3, 7–9]. The analysis reveals that PE ($\beta = 0.514$, $p < 0.000$), EE ($\beta = 0.452$, $p < 0.001$), SI ($\beta = 0.453$, $p < 0.000$), FC ($\beta = 0.465$, $p < 0.000$), and CFR ($\beta = 0.440$, $p < 0.000$) have positive effect on BI. The results further showed a positive effect of FC ($\beta = 0.385$, $p < 0.000$) and BI ($\beta = 0.467$, $p < 0.000$) on UB.

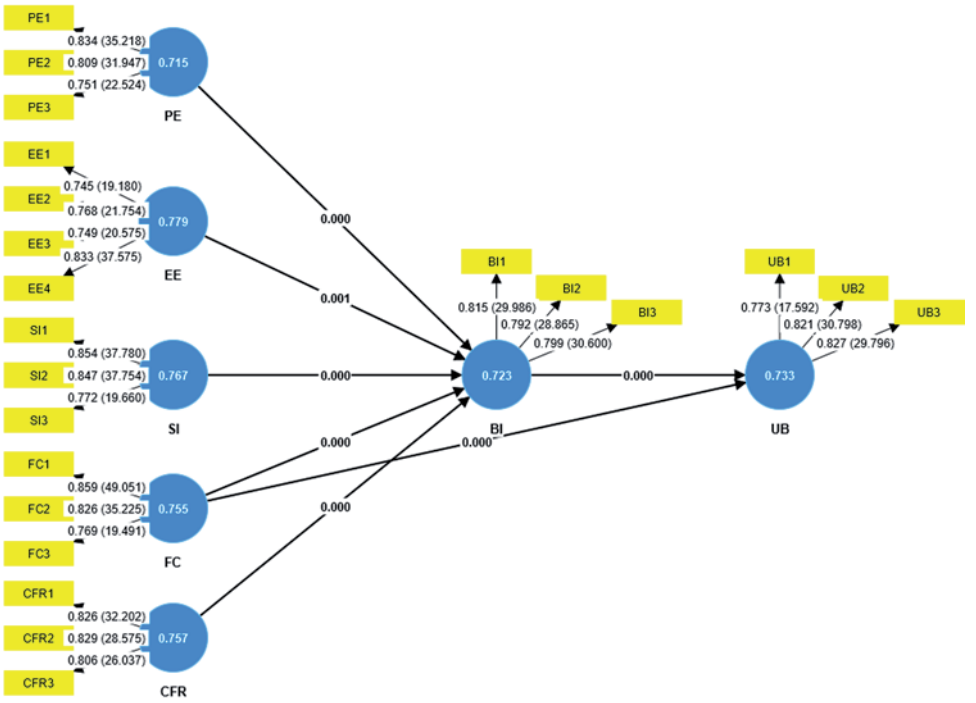

Figure 3.
P-values, T-values and Cronbach's alpha. The proposed figure presents a theoretically sound approach to studying the impact of external factors on behavioral intention and usage behavior, leveraging statistical analysis through P-values, T-values, and Cronbach's alpha.

Constructs	R^2	R^2 Adj	CVC	CVR
BI	0.455	0.446	0.289	0.281
UB	0.258	0.253	0.308	0.162

Notes: BI = behavioral intention; UB = use behavior; CVM = cross-validated communalities; CVR = cross-validated redundancies; R^2 = R square; R^2 Adj = R^2 adjusted.

Table 6.
Predictive relevance, R square Adj, and R square.

6. Discussion

The study aimed to investigate the key factors influencing the acceptance and use of MPS among Generation Z by extending the UTAUT with CFR. The findings of the study demonstrate that UTAUT is a robust framework [35] that significantly enhances our understanding of MPS adoption. Theoretically, the results indicate that Generation Z exhibited significantly positive responses to the measured factors, providing empirical support for the study's conceptual model. The findings of this study indicate that MPS performance positively influences Generation Z's intention to adopt and use MPS in real-life scenarios.

Indeed, the positive relationship between PE and BI towards adopting MPS among Generation Z is driven by their desire for speed, convenience, and seamless digital experiences. As digital natives, Gen Z prioritizes efficiency and ease of use, making

MPS an attractive option [12]. The perceived utility of MPS, including features like one-click payments and real-time transaction tracking, aligns with their tech-savvy behaviors and preferences [13]. This finding supports the UTAUT and highlights the importance of emphasizing time-saving features and user-friendly interfaces in MPS marketing strategies to appeal to Gen Z's needs and preferences. Indeed, consistent with prior research, the majority of studies applying the UTAUT model have found that PE has a significant positive impact on BI [19, 36–38].

Furthermore, the study reveals a positive relationship between EE and BI toward adopting MPS among Generation Z. This finding suggests that Gen Z's intention to adopt MPS is significantly influenced by their perception of how easy it is to use these systems [20]. The findings are supported by existing research [3, 7, 19, 38], confirming a strong positive relationship between EE and BI. Given their digital nativeness and familiarity with technology, Gen Z values user-friendly interfaces and seamless interactions, which, in turn, enhances their willingness to adopt MPS [19]. This relationship underscores the importance of designing MPS that are intuitive, easy to navigate, and require minimal effort, thereby catering to Gen Z's expectations for effortless digital experiences.

Also, the study highlights a positive relationship between FC and BI as well as UB toward adopting MPS among Generation Z [15, 21]. This suggests that Gen Z's adoption intentions are influenced by the availability of resources and support that facilitate MPS use, such as internet access, mobile devices, and technical assistance [16]. As a digitally connected cohort, Gen Z expects seamless integration of MPS with existing digital ecosystems, and favorable facilitating conditions enhance their confidence in using these systems [6]. Consistent with prior research [3, 10], the findings demonstrate that users are more likely to adopt MPS when they possess the necessary resources, facilities, and skills to utilize it effectively. Therefore, MPS providers can enhance acceptance by offering customer support services, such as 24/7 call centers and skilled staff to assist customers.

Notably, the study reveals a positive relationship between SI and BI toward adopting MPS among Generation Z. The finding is supported by previous research [3], which also indicated that SI plays a crucial role in shaping users' behaviors and decisions. This finding indicates that Gen Z's adoption intentions are shaped by the opinions and behaviors of their social circle, including friends, family, and peers [39]. As a cohort heavily influenced by social media and online communities, Gen Z is likely to adopt MPS if they perceive it as a socially accepted and popular trend [3, 7]. This highlights the importance of leveraging social proof, influencer marketing, and peer-to-peer recommendations to promote MPS adoption among Gen Z, as well as creating a sense of community around MPS use.

Consistent with previous research [8, 9], the findings highlights a positive relationship between CFR and BI toward MPS among Generation Z. The research emphasizes the significance of CFR in enabling MPS adoption [9], covering a broad spectrum of costs including equipment expenses and transactional fees. The substantial financial costs associated with MPS pose a significant barrier to their widespread adoption and utilization [8, 9]. The findings emphasize that MPS providers should offer intuitive financial management tools, flexible payment options, and transparent fee structures to align with Generation Z's financial preferences and behaviors.

The study confirms a positive relationship between BI and UB toward adopting MPS among Generation Z, aligning with previous research [3, 7–11, 16]. BI reflects an individual's willingness to engage in a specific behavior, such as adopting a particular technology. According to Venkatesh et al. [15], consumer behavior research examines

two key dimensions: the factors influencing technology adoption and the reasons behind continued usage. While some studies focus on pre-adoption intentions, others explore post-adoption behaviors, including sustained usage patterns [40]. IS literature consistently identifies BI as a key predictor of UB [15, 21], indicating that individuals with stronger intentions are more likely to follow through with the intended action [40]. In the context of MPS, customers with high adoption intentions are more inclined to use these services long-term [22]. Empirical studies further support this relationship, demonstrating a significant link between BI and actual SBS usage [22, 38]. The finding of this study highlights the importance of understanding and addressing Gen Z's needs, preferences, and concerns to foster positive intentions and drive actual adoption and continued use of MPS, ultimately contributing to the growth of digital payment ecosystems.

7. Theoretical contributions

This study seeks to understand the factors influencing Generation Z's intention to use MPS. By synthesizing MPS research within the FinTech literature, it enhances our understanding of how Pakistan's Generation Z adopts financial technology innovations. A more nuanced comprehension of Generation Z's engagement with FinTech will address the current paucity of research validating the UTAUT model.

The findings highlight the significant roles of EE, SI, and FC in shaping Generation Z's intention to adopt MPS, thereby validating the UTAUT framework. Additionally, the study examines the impact of the extended construct of CFR on MPS adoption. Indeed, empirical research on MPS adoption among Pakistan's Generation Z remains scarce [12].

This study bridges this gap by investigating the limited acceptance of MPS in Pakistan. Extending the UTAUT model [15], this study provides a comprehensive analysis of the factors driving MPS adoption among Generation Z in a developing economy context. By addressing the research objectives and questions, the study makes significant theoretical contributions, filling critical knowledge gaps while offering practical insights for researchers and practitioners [3, 8].

8. Managerial implications

The study provides valuable insights for MPS providers, highlighting key factors influencing Generation Z's adoption and usage of MPS. By understanding these factors, MPS providers can make informed decisions to enhance service quality, maximize technological investments, and ensure a worthwhile return on investment.

First, the findings indicate that PE has a positive relationship with BI to adopt MPS among Generation Z. This offers valuable insights for businesses, financial institutions, and marketers to develop targeted following strategies:

- *Highlight benefits:* Emphasize the benefits of MPS such as speed, convenience, and efficiency in marketing campaigns to appeal to Gen Z's desire for seamless digital experiences.

- *Demonstrate value:* Clearly demonstrate the value proposition of MPS, such as time-saving features, rewards, and real-time transaction tracking, to Gen Z users.

- *Targeted marketing:* Develop targeted marketing strategies that speak to Gen Z's preferences and needs, showcasing how MPS can fit into their digital lifestyles.

- *Training and support:* Provide adequate training and support to ensure Gen Z users can effectively use MPS and realize their benefits.

Second, the positive relationship between EE and BI to adopt MPS among Generation Z provides actionable insights for businesses and marketers. Based on the findings, the following strategies can be employed:

- *Simplify user experience:* Design MPS with intuitive interfaces and easy-to-use features to reduce user effort and enhance adoption.

- *Clear instructions:* Provide clear, concise instructions and tutorials to help Gen Z users understand and navigate MPS.

- *User-friendly design:* Prioritize user-friendly design to minimize complexity and frustration, ensuring a seamless payment experience.

- *Feedback mechanisms:* Implement feedback mechanisms to help users understand transaction processes and outcomes, reducing anxiety and uncertainty.

Third, the findings show that SI drives BI to adopt MPS among Generation Z. This offers valuable guidance for businesses and marketers, informing the following strategic approaches:

- *Influencer marketing:* Partner with social media influencers and thought leaders to promote MPS and increase adoption among Gen Z.

- *Social proof:* Highlight user testimonials, reviews, and ratings to demonstrate social acceptance and build trust in MPS.

- *Word-of-mouth:* Encourage satisfied users to share their experiences with friends and family, leveraging word-of-mouth marketing.

- *Social media campaigns:* Develop engaging social media campaigns that showcase the benefits and popularity of MPS among Gen Z.

- *Peer-to-peer recommendations:* Design MPS that facilitate peer-to-peer recommendations and referrals, harnessing social influence to drive adoption.

Fourth, the significant role of FC in shaping Gen Z's BI to adopt MPS provides key insights for businesses and marketers, highlighting the following strategies:

- *Mobile optimization:* Ensure MPS are optimized for various mobile devices and platforms to facilitate seamless transactions.

- *Technical support:* Provide reliable technical support and customer service to address Gen Z's concerns and issues with MPS.

- *User resources:* Offer accessible resources, such as FAQs, tutorials, and guides, to help Gen Z users understand and use MPS effectively.

- *Compatibility:* Ensure MPS are compatible with various devices, operating systems, and other technologies used by Gen Z.

- *Infrastructure development:* Develop an advanced MPS infrastructure that prioritizes speed, security, and reliability to support Gen Z's digital-native behavior and facilitate seamless transactions.

Fifth, the influence of FC on Gen Z's MPS adoption and use highlights key takeaways for businesses and marketers, including:

- *Infrastructure investment:* Design and upgrade digital payment systems, including mobile networks, cybersecurity, and app performance, in a way that directly aligns with Generation Z's preferences and habits.

- *Security measures:* Implement robust security measures to protect Gen Z users' transactions and data, building trust and confidence in MPS.

Sixth, the influence of CFR on Gen Z's adoption of MPS highlights important considerations for businesses and marketers, including the following:

- *Financial integration:* Integrate MPS with various financial services, such as digital wallets and budgeting tools, to cater to Gen Z's financial management needs.

- *Flexible payment options:* Offer flexible payment options, such as installment plans or rewards programs, to accommodate Gen Z's financial preferences and behaviors.

- *Financial literacy:* Provide educational resources and tools to help Gen Z users manage their finances effectively and make informed decisions about MPS usage.

Seventh, the role of BI in driving Gen Z's MPS usage behavior offers valuable guidance for businesses and marketers, highlighting the following:

- *User engagement:* Encourage user engagement through incentives, rewards, or loyalty programs to motivate Gen Z to translate their intention into consistent MPS usage.

- *Ongoing support:* Provide ongoing support and resources to address any concerns or issues Gen Z users may encounter, ensuring continued MPS usage.

9. Conclusion

This study provides valuable insights into the factors influencing Generation Z's adoption and use of MPS in Pakistan. By extending the UTAUT with CFR, the research offers a comprehensive understanding of the key drivers of MPS adoption among digital natives. The study reveals that PE, EE, FC, SI, and CFR significantly

impact Gen Z's BI to adopt MPS. Moreover, BI is a strong predictor of actual UB. The research contributes to the existing literature on technology adoption and provides practical insights for MPS providers, policymakers, and marketers. The findings highlight the importance of designing user-friendly interfaces, offering flexible payment options, and leveraging social proof to promote MPS adoption among Gen Z. This study offers a nuanced understanding of Gen Z's MPS adoption in Pakistan, providing valuable insights for stakeholders seeking to promote digital financial inclusion and drive the growth of mobile payment ecosystems.

10. Study limitations and future research directions

This study has several limitations that should be considered. Firstly, the Generation Z survey was confined to three major Pakistani cities: Islamabad, Karachi, and Peshawar. Although this sample provided valuable insights into Generation Z's characteristics, future research should expand to include other metropolitan areas, such as Lahore, Multan, and Faisalabad. Additionally, this study employed a cross-sectional survey design. While the proposed antecedents are theoretically justified, future research would benefit from a longitudinal approach to better understand the evolution of mobile payment adoption among Pakistan's Generation Z, considering cultural, familial, and religious influences. Given Pakistan's collectivist society, future studies could explore how social influence (e.g., family opinions, peer networks) and trust perceptions (e.g., Sharia-compliance concerns, data privacy considerations) impact sustained adoption versus abandonment patterns. Further investigation of behavioral outcomes, such as fluctuations in e-wallet top-up amounts, transaction frequency during religious festivals (e.g., Eid), or regional usage disparities, could reveal how local traditions and socioeconomic factors influence practical adoption. Comparative studies between urban and rural areas might further illuminate infrastructural and cultural barriers. These insights would enable fintech firms to tailor their services to Pakistani Generation Z's unique socioreligious context, ensuring alignment with both familial expectations and Islamic financial principles (e.g., interest-free transactions).

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