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Acceptance and Use of Mobile Banking in Central Asia: Evidence from Modified UTAUT Model

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Abstract

The main purpose of this study is to analyze the adoption and use of mobile banking by university students and its potential determining factors. This study comprises 259 completed questionnaires answered through an online survey method. The respondents are Mongolian university students who have experience in using mobile banking applications. Young adults rely heavily on technology and are more likely to adopt mobile banking applications; however, there is limited research on the acceptance and use of mobile banking applications among this cohort, particularly from the perspective of Central Asian developing economies. Through using the SmartPLS 3.3 software, confirmatory factor analysis was conducted to evaluate the construct and structural equation modeling. The main results indicate that performance expectancy, effort expectancy, social influence, and facilitating conditions are the main constructs related to mobile banking technology acceptance; perceived security positively impacts perceived trust. Moreover, perceived trust is the construct of the use of mobile banking technology by the university students who responded to the questionnaire. However, the relationship between perceived risk and use behavior was not accepted.

Keywords: Mobile Banking, UTAUT, Perceived Security, Perceived Trust, Perceived Risk

JEL Classification Code: C12, E42, G21, G41, O53

1. Introduction

Mobile banking is gaining popularity as an innovative delivery channel for financial services (Thusi & Maduku, 2020). Mobile banking (or m-banking) is defined as “the use of mobile terminals such as cell phones and personal digital assistants to access banking networks via the wireless application protocol” (Zhou et al., 2010). It allows financial transactions to be undertaken from any place, at any time (Zhou, 2012a). It permits making payments, transferring

money, managing bank accounts, selling and buying stocks, and using other financial services from a mobile device (Gu et al., 2009; Laukkanen, 2007). Mobile banking does not only provide customers with flexible and consistent financial services that increase customer efficiency and satisfaction (Laukkanen & Pasaden, 2008; Verissimo, 2016), but also provides banks with significant cost savings, increased transaction efficiency, and greater productivity (Ho et al., 2020).

Despite the numerous advantages of this technology, the penetration of mobile banking services by traditional banking establishments is still limited in both developed and developing countries (Akturan & Tezcan, 2012; Alalwan et al., 2016; Malaquias & Hwang, 2016). Moreover, m-banking remains one of the least adopted types of self-service banking compared to other types, such as automated teller machines (ATMs) (Chakiso, 2019) or e-banking. Previous studies examined several factors to explain the low penetration of mobile banking worldwide that impact behavioral intentions (Ho et al., 2020). The results indicate customers’ doubt of security of mobile banking transactions, lack of trust in m-banking, aversion or lack of confidence in innovations and specific characteristics

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related to smartphones as one of the significant barriers in mobile banking adoption and use (Muñoz-Leiva et al., 2010).

Interestingly, there is evidence that the countries with higher penetration rates of mobile banking are developing countries such as India, Indonesia, South Africa, and Brazil (Marous, 2015). Likewise, Sawe (2017) investigated that Botswana, Kenya, and Uganda have high mobile banking penetration. Kenya, for instance, was the first country to introduce a text-based m-banking service, 'M-Pesa,' in 2007 (Shaikh & Karjaluoto, 2015). However, the literature on low rates of innovation adoption remains ripe for more research (Lee & Chung, 2009). Furthermore, it is notable that since most of the theories emerged and evolved in Western countries with advanced economies, there is a need to understand how consumer behavior varies across countries with distinct cultures and economic development (Hassan & Wood, 2020).

Thus, this paper aims to focus on Mongolia as a developing country in Central Asia, which takes the lead with approximately 93% of the population owning a bank account, and it is almost double of the other CAREC (Central Asia Regional Economic Cooperation Program) countries (Giannetto et al., 2019), with over 55.5 % of the population owning smartphones (Chintushig, 2019). Therefore, an empirical study will advance the understanding of factors influencing the intention of adoption and use of banking technologies in the context of Central Asian countries. Furthermore, this article endeavors to identify the main obstacles from the perspective of young adults, the group with the highest smartphone penetration than any other age group.

The rest of the paper is organized as follows: The first section discusses the literature on the Unified Theory of Acceptance and Use of Technologies (UTAUT), which is the core theory of this study and describes the proposed research model. The following section presents the methodology used to test and verify the proposed hypotheses. The SmartPLS software then analyzes the results using the structural equation modeling techniques. Finally, the conclusion and research implications are discussed.

2. Literature Review and Hypothesis Development

2.1. Background

Mobile banking is an evolution of electronic banking that allows consumers to make financial transactions via smartphones and software applications (Ho et al., 2020). There are over 2.4 billion people who are using e-banking in 2020, which is expected to reach 3.6 billion in the next four years (Juniper Research, 2020). Such global growth in the use of

e-banking has been influenced by the advancement of mobile phone penetration as well as the remarkable advancement of mobile internets such as 3G and 4G connections (Owusu et al., 2021). The trends propose that significant growth opportunities remain, leading to predictions of potentially massive increases in the number of m-banking users. These figures also warrant further investigations of any persistent adoption issues in m-banking, especially in the case of mobile subscribers (Shaikh & Karjaluoto, 2015).

Many studies were conducted on understanding the acceptance and use of technologies. One of the most widely used theories to explain the individual's acceptance of technologies is the Unified Theory of Acceptance and Use of Technologies (UTAUT). The theory, which was developed by Venkatesh et al. (2003), is a unified theory that brings eight major theories in technology acceptance and uses together, such as the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behaviour (TPB), a combined TBP/TAM, the Model of PC Utilisation, Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT). The following theories have been widely used separately in various researches; however, the study by Venkatesh et al. (2003) scrutinized these eight theories separately, explaining the variance in relation to user intentions by 17 to 53 percent. Among these theories, scholars have indicated that the UTAUT provides a better understanding of the variance in the behavioral intention to use technology. The core UTAUT suggests that individuals would choose to adopt and use technology if it presents four characteristics such as performance expectancy, effort expectancy, social influence, and facilitating conditions. Additionally, user variables such as age, gender, and experience are also assumed to moderate various UTAUT relationships (Venkatesh et al., 2012). These determinants explain the intention to use, which feeds into use behavior with a significant variance (Hanif & Lallie, 2021).

Thus, the UTAUT was selected as the core theoretical model for this research for its comprehensiveness and significant explanatory power in predicting the acceptance of a technology (Lawson-Body et al., 2018). A review of the literature also shows a limited application of the UTAUT to examining mobile banking apps acceptance and use among age cohorts in Central Asia. This study, therefore, presents an opportunity to apply an extended UTAUT model in the context of mobile banking. The research model is depicted in Figure 1.

2.2. Performance Expectancy

Jeng and Tzeng (2012) state that performance expectancy is the strongest predictor of attitude toward intention to use and use behavior. Venkatesh et al. (2003)

define performance expectancy as ‘the degree to which one believes that using the system will help her attain gains in job performance. In the mobile banking context, performance expectancy represents the positive perception of users toward convenient payment, fast response, and the effectiveness of the service where consumers can benefit from technologies (Zhou et al., 2010). Previous studies support the positive impact of performance expectancy on the intention to use mobile financial services (Nguyen & Nguyen, 2020; Oliveira et al., 2014; Patil et al., 2020; Thusi & Maduku, 2020). Based on the strong evidence from previous studies, the following hypothesis is proposed:

H1: *Performance expectancy positively affects the behavioral intention to use mobile banking apps.*

2.3. Effort Expectancy

Effort expectancy, similarly to performance expectancy, is identified as having a strong impact on the use intention of the technology. Venkatesh et al. (2003) define effort expectancy as “the degree of ease associated with the use of the system.” In the context of mobile banking, Thusi and Maduku (2020) define effort expectancy as the “degree to which users believe that mobile banking apps are easy to learn and require less effort to use.” Previous researches on intention to use of mobile financial services discuss the importance of effort expectancy toward intention to accept and use mobile banking apps (Alalwan et al., 2017; Bhatiasevi, 2016). Even though mobile banking applications offer a significant number of benefits, many consumers may be discouraged by the effort and time needed to learn new technologies and would prefer to choose a traditional way of banking. As such, the hypothesis is proposed as:

H2: *Effort expectancy positively affects the behavioral intention to use mobile banking apps.*

2.4. Social Influence

The way consumers are affected by society is through the idea of social influence. Venkatesh et al. (2003) define social influence as “the degree to which an individual perceives that important one believe he or she should use the new system.” In the context of mobile banking, social influence is defined as “the influence of the surrounding and social environment on a customers’ intention to adopt mobile banking” (Alalwan et al., 2017). Likewise, previous studies indicate that social influence, in the form of reference groups and recommendations from others, can affect the willingness to adopt new technologies (AbuShanab & Pearson, 2007; Al-Saedi et al., 2020; Kosim & Legowo, 2021; Le et al., 2020;

Tan & Teo, 2000). Thus, the following hypothesis is then formulated in the following way:

H3: *Social influence positively affects the behavioral intention to use mobile banking apps.*

2.5. Facilitating Condition

Venkatesh et al. (2003) describe that facilitation condition refers to “the degree to which an individual believes that organization and infrastructure exist to support the use of the system.” In the context of mobile banking, it supports that mobile banking consumers are expected to have appropriate knowledge and adequate infrastructure for banking operations. Moreover, for an individual to use mobile banking applications, one needs to have a set of skills, such as installing banking applications, knowledge of mobile operation services, and its security features (Baptista & Oliveira, 2015). Previous studies indicate a strong association between facilitating conditions and the intention to adopt mobile banking (Afshan & Sharif, 2016; Kwateng et al., 2019; Musyaffi et al., 2021). Based on this evidence, the following hypothesis is proposed:

H4: *Facilitating condition has a positive effect on the behavioral intention to use mobile banking apps.*

2.6. Perceived Security

In the context of mobile banking, perceived security refers to privacy-related concerns. Hanif and Lallie (2021) define it as “the belief that a user’s privacy will not be safeguarded if they use a mobile banking application.” Furthermore, in the study by Flavián and Guinaliú (2006), there is evidence that trust is influenced by security perceived by the consumers. Thus, grounded in this literature, the following hypothesis is proposed:

H5: *Perceived security positively affects perceived trust when using a mobile banking app.*

2.7. Perceived Trust

Scholars identify that trust is more important in online operations than in traditional operations (Gefen et al., 2003). It is a significant success factor for online enterprises, electronic services, and communications (Beldad et al., 2010). There are multiple definitions of trust related to the existing technologies. However, in the context of mobile banking, Hanif and Lallie (2021) define it as “a psychological expectation that banks will take steps to ensure the safety and confidentiality of user data and transactions against cyber security risks arising from the use of mobile

banking applications.” Previous studies observed a positive association between trust and use behavior (Malaquias & Hwang, 2019; Malaquias & Silva, 2020). Therefore, the following hypothesis is:

H6: *Perceived trust positively affects the use of mobile banking apps.*

2.8. Perceived Risk

Wang et al. (2015) discuss how trust decreases the perception of risk and uncertainty related to mobile commerce use. In the context of mobile banking, Hanif and Lallie (2021) define perceived risk as “the feelings of uncertainty or anxiety over the possibility of fraud, unauthorized access, breaches in confidentiality, hacking and other cyber threats as a result of using a mobile banking application.” In other words, “risk” is discussed as a user’s expectations of suffering a loss when using mobile banking to perform financial transactions (Cocosila & Trabelsi, 2016). Thus, if consumers face increased perceived risks from mobile banking applications, they are less likely to use them. Therefore, in line with the existing literature, the following hypothesis is:

H7: *Perceived risk has a negative effect on the use of mobile banking applications.*

2.9. Intention to Use

In the Unified Theory of Acceptance and Use of Technologies, intention to use is a strong and positive technology predictor of use behavior (Venkatesh et al., 2012). Furthermore, in previous studies on mobile banking

technologies, intention to use was identified as a direct and strong impacting factor of use behavior (Baptista & Oliveira, 2015; Thusi & Maduku, 2020). Thus, the following hypothesis is proposed as follows (Figure 1):

H8: *Intention to use has a positive impact on the use behavior of mobile banking apps.*

3. Methodology

The main objective of the survey was to collect data on the behavioral intention and user behavior of mobile banking applications. Based on the UTAUT conceptual model, a 29-item online-based questionnaire was distributed via Google Forms to evaluate the technology acceptance and use factors. The multi-item scales measuring eight constructs were adapted from previous research; some of the wordings were changed to fit the mobile banking context. Measurement item statements for performance expectancy, effort expectancy, facilitating conditions, and social influence was adopted from (Davis, 1989; Kim et al., 2010; Venkatesh et al., 2012). Perceived trust items were adopted from Malaquias and Hwang (2016), perceived trust and security items were adopted from (Oliveira et al., 2014; Zhou, 2012b). Intention to use and use behavior items were adopted by (Venkatesh et al., 2012; Zhou et al., 2010). Detailed item statements are available in Table 1. All items were measured on a five-point Likert scale, where 1 was identified as “strongly disagree” and 5 was identified as “strongly agree.” An online pilot survey was conducted on a sample of 44 students from different school years; the results indicated that the students clearly understood the instructions and measurement items.

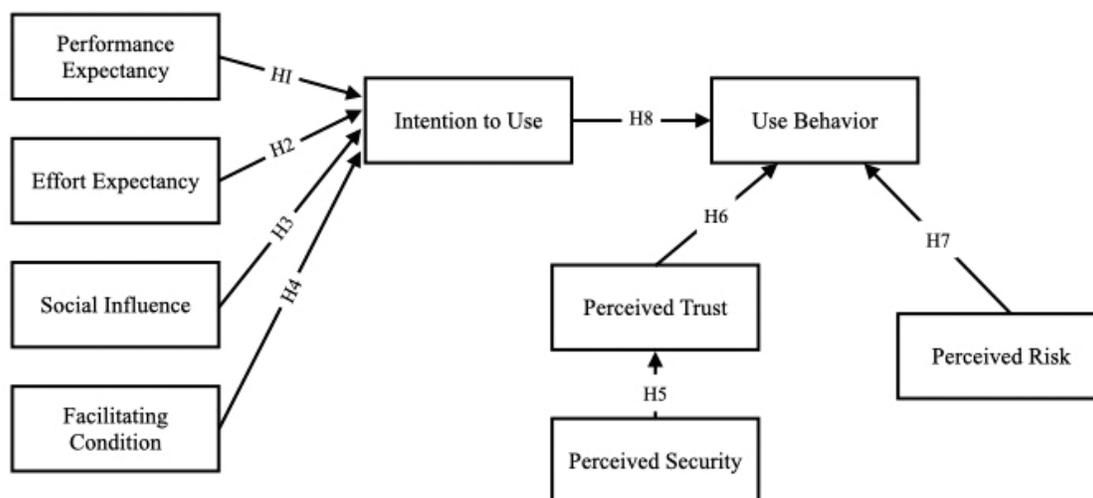


Figure 1: Proposed Research Model

Table 1: Factors Affecting Acceptance and the Use of Mobile Banking Applications

Construct	ID	Measurement	Source
Performance Expectancy (PE)	PE1	I would find a mobile banking application useful in my daily life.	Kim et al. (2010); Venkatesh et al. (2003).
	PE2	Using a mobile banking application would help me accomplish banking tasks more quickly.	
	PE3	Using a mobile banking application would increase my productivity.	
Effort Expectancy (EE)	EE1	My interaction with mobile banking applications would be clear and understandable.	Davis (1989); Kim et al. (2010); Venkatesh et al. (2003).
	EE2	It would be easy for me to become skillful at using mobile banking applications.	
	EE3	I would find mobile banking applications easy to use.	
	EE4	I think that learning to use mobile banking would be easy for me.	
Social Influence (SI)	SI1	People who are important to me think that I should use mobile banking applications.	Venkatesh et al. (2003).
	SI2	People who influence my behavior think that I should use mobile banking applications.	
Facilitating Conditions (FC)	FC1	I have the necessary resources to utilize mobile banking applications	Venkatesh et al. (2003).
	FC2	I have the necessary knowledge to utilize mobile banking applications.	
Perceived Trust (PT)	PT1	I believe banks will do everything they can to secure transactions through mobile banking applications for users.	Malaquias and Hwang (2016); Khalilzadeh et al. (2017).
	PT2	I believe that mobile banking applications are trustworthy.	
	PT3	I believe that mobile banking applications are reliable.	
Perceived Security (PS)	PS1	I would feel secure using my credit/debit card information through a mobile banking application.	Cheng et al. (2006); Khalilzadeh et al. (2017).
	PS2	Mobile banking applications are a secure means through which to send sensitive information.	
	PS3	I would feel safe viewing my account balance on a mobile banking application.	
	PS4	I would feel safe paying bills on a mobile banking application.	
Perceived Risk (PR)	PR1	Using mobile banking applications is risky.	Featherman and Pavlou (2003).
	PR2	I feel that using mobile banking applications would cause me a lot of trouble if something went wrong.	
Intention to Use (IU)	IU1	I intend to use a mobile banking application in the next 6 months.	Davis (1989); Venkatesh et al. (2003).
	IU2	I plan to use a mobile banking application in the next 6 months.	
	IU3	I believe that I should use a mobile banking application in the future.	
Use Behavior (UB)	UB1	I often use internet banking to manage my account.	Venkatesh et al. (2003).
	UB2	I often use internet banking to transfer and remit money.	
	UB3	I often use internet banking to make payments.	

The respondents of this research are university students in Mongolia who own a smartphone and a bank account. Data was collected between October 4 and October 29, 2021. A total of 313 responses were collected. However, those 54 responses were invalid given the missing data; thus, the final

sample includes 259 responses. The survey respondents' demographic information is presented in Table 2.

Table 2 presents that the respondents were female ($n = 66\%$) and male (34%). The respondents were from those aged between 20–22 ($n = 49\%$), 17–19 ($n = 36.3\%$), 23–25

Table 2: Demographic Information

Variables	Level	N (N = 259)	%
Gender	Female	171	66.0
	Male	88	34.0
Age	17–19	94	36.3
	20–22	127	49.0
	23–25	24	9.3
	Above 25	14	5.4
University Status	Undergraduate Student	243	93.8
	Graduate Student	16	6.2
Experience of Using Mobile Banking Application	1–3 months	59	22.8
	4–6 months	52	20.1
	Above 6 months	148	57.1

(9.3%) and above 25 ($n = 5.4\%$). Most of the respondents were undergraduate students ($n = 93.8\%$). Almost half of the respondents ($n = 57.1\%$) had more than 6 months of experience using a mobile banking application. The second-largest cohort as those who had experience ($n = 22.8\%$) of 1–3 months. Those with 4–6 months of mobile banking experience fewer responses ($n = 20.1\%$).

4. Results and Discussion

4.1. Reliability Test

Identifying the reliability of research is an important step for studies investigating factors that impact behavior. Developed in 2014, SmartPLS software is used to calculate confirmatory factor analysis (Ringle et al., 2014). According to previous studies (Byrne, 2012; Fraering & Minor, 2006), in order to first confirm convergent and discriminant validity, it is crucial to conduct CFA to determine whether the research model and measurement items provide a good fit to the data (Diana, 2014).

As presented in Table 3, demonstrates that standardized factor loading values for every measurement item are greater than 0.7, with 0.836 being the lowest (Hair et al., 2010). The Cronbach's alpha and composite reliability also exceed the recommended threshold of 0.7 (Hair et al., 2010; Nunnally, 1978). Likewise, the average variance extracted (AVEs) is greater than the recommended 0.5, with the AVE for intention to use (IU) having 0.775 as the lowest score (Gefen et al., 2000; Hair et al., 2010). Additionally, the requirement for discriminant validity is accepted as all AVE values are greater than the correlation between the constructs in the measurement model (Fornell & Larcker, 1981). The results of Cronbach's alpha,

composite reliability, and AVE indicate reasonably good internal consistency. Finally, based on the reliability test, all measurement items remained for analyzing the conceptual model of the study.

4.2. Hypotheses Testing

This research suggests that the proposed model is predictive of intention to use mobile banking applications ($R^2=0.680$) and use behavior ($R^2=0.492$) among Mongolian students. Moreover, Table 4 displays the results of hypothesis testing for each construct. Performance expectancy ($\beta = 0.389, p < 0.01$), effort expectancy ($\beta = 0.206, p < 0.5$), social influence ($\beta = 0.152, p < 0.01$), and facilitating conditions ($\beta = 0.124, p < 0.5$) have a positive significant effect on intention to use of mobile banking applications. Thus, hypotheses H1, H2, H3, H4 are supported. Next, perceived security ($\beta = 0.825; p < 0.001$) has a positive and significant effect on perceived trust, thus supporting hypothesis H5. Moreover, perceived trust has a significant and positive effect on use behavior ($\beta = 0.122, p < 0.01$), supporting hypothesis H6. However, perceived risk ($\beta = 0.091, p > 0.05$) is not statistically correlated with use behavior resulting in the rejection of hypothesis H7. Finally, intention to use ($\beta = 0.607, p < 0.001$) has a significant and positive impact on use behavior, thus supporting hypothesis H8. Based on these results, hypotheses H1, H2, H3, H4, H5, H6, and H8 were supported, while H7 was not accepted (Figure 2).

4.3. Discussion

The findings of this research present a significant and positive relationship between performance expectancy (H1) and behavioral intention to use mobile banking

Table 3: Measurement Model Convergent Validity and Internal Consistency Test

Variables	Indicator	Mean	SD	Loading (>0.7)	Cronbach Alpha (>0.7)	CR (>0.7)	AVE (>0.5)
Performance Expectancy	PE1	4.232	1.058	0.900	0.885	0.929	0.813
	PE2	4.270	1.019	0.916			
	PE3	4.031	1.024	0.889			
Effort Expectancy	EE1	4.089	0.996	0.899	0.911	0.937	0.789
	EE2	4.124	0.994	0.880			
	EE3	4.135	1.018	0.895			
	EE4	4.259	0.938	0.879			
Social Influence	SI1	3.884	1.098	0.943	0.865	0.934	0.876
	SI2	3.687	1.125	0.929			
Facilitating Conditions	SI2	3.687	1.125	0.929	0.852	0.931	0.871
	FC2	4.004	1.060	0.931			
Perceived Trust	PT1	3.637	1.139	0.882	0.897	0.936	0.829
	PT2	3.510	1.123	0.923			
	PT3	3.521	1.123	0.927			
Perceived Security	PS1	3.398	1.132	0.913	0.919	0.943	0.805
	PS2	3.320	1.133	0.906			
	PS3	3.656	1.119	0.884			
	PS4	3.579	1.161	0.886			
Perceived Risk	PR1	3.351	1.257	0.883	0.854	0.925	0.861
	PR2	3.606	1.224	0.971			
Intention to Use	IU1	4.073	1.214	0.884	0.854	0.912	0.775
	IU2	4.228	1.114	0.919			
	IU3	4.398	0.998	0.836			
Use Behavior	UB1	3.919	1.346	0.929	0.910	0.944	0.848
	UB2	4.058	1.280	0.923			
	UB3	3.869	1.355	0.910			

Note: The good fit of the model is indicated by SRMR = 0.047 (Henseler et al., 2014); NFI = 0.900 (Lohmöller, 1989).

applications. This result is consistent with the UTAUT, where respondents believe that mobile banking applications will benefit their overall banking experience. The technology benefits include 24/7 accessibility, convenient payments, fast response, and service effectiveness (Venkatesh et al., 2012; Zhou et al., 2010). Likewise, effort expectancy (H2) is a strong determinant in predicting mobile banking application use intention among young adults. This implicates that the respondents find it easy to operate and employ mobile banking. Young adults are the largest cohort who use smartphones in Mongolia; thus, mobile banking technology should be easy for this particular group. This finding is also coherent with the UTAUT. Therefore,

the banks can adopt special user experience and user interface strategies to attract consumers from different age cohorts.

The further findings indicate that social influence (H3) is a significant and positive factor in relation to the intention to use mobile banking applications, which is consistent with the existing literature (Baptista & Oliveira, 2015). Furthermore, in previous studies, young adults were more likely to adopt mobile banking when they perceived influence from important people and those who influence their behavior (Tan & Lau, 2016). Facilitation condition (H4) was also significantly impacted mobile banking application adoption. This finding is consistent with the

Table 4: Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	Std Error	t-value	P	Result
H1	Performance Expectancy → Intention to Use	0.389	0.093	4.182***	0.000	Accepted
H2	Effort Expectancy → Intention to Use	0.206	0.093	2.193*	0.028	Accepted
H3	Social Influence → Intention to Use	0.152	0.059	2.596**	0.009	Accepted
H4	Facilitating Conditions → Intention to Use	0.124	0.065	1.946*	0.050	Accepted
H5	Perceived Security → Perceived Trust	0.825	0.028	29.137***	0.000	Accepted
H6	Perceived Trust → Use Behavior	0.122	0.047	2.586**	0.010	Accepted
H7	Perceived Risk → Use Behavior	0.091	0.050	1.770	0.077	Not Accepted
H8	Intention to Use → Use Behavior	0.607	0.064	9.445***	0.000	Accepted

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Significant at the 0.05 level.

propositions of the UTAUT. This suggests that if consumers have adequate knowledge and infrastructure, they are more likely to adopt mobile banking technologies. Furthermore, special educational promotions can be adopted by banks for mobile banking tutorials, which will contribute to the consumers' use intention.

Empirical results of this study have supported the significant and positive impact of perceived security (H5) on perceived trust. Previous studies have scrutinized whether mobile banking users are concerned about hacking, data breaches, and possible access to information from a stolen phone (Hanif & Lallie, 2021; Damghanian et al., 2016). Therefore, if banks have strategies to increase perceived security among current mobile banking users, it is more likely that consumers will have great trust in them.

Further findings indicate that perceived trust (H6) in mobile banking applications positively impacts the actual use of mobile banking applications. However, perceived risk (H7) does not have a significant impact on consumers' use behavior. This result is consistent with previous literature (Sharma, Singh, & Sharma, 2020). This means that low perceived risks related to technology use may be due to the fact that the respondents are mobile banking users.

Previous studies indicate that once consumers begin to use mobile banking applications, the level of perceived risks decreases. Thus, special promotions by marketing managers can be presented to consumers, assuring the security of technology, transactions, and confidentiality of personal information. In other words, the more banks are committed to creating safe operations for consumers, the more the consumers' trust will be. Finally, this research supports a significant and positive relationship between intention to use (H8) and use behavior of mobile banking applications, which is consistent with existing literature (Thusi & Maduku, 2020; Venkatesh et al., 2012).

5. Conclusion and Implications

This study has both theoretical and practical applications. Theoretically, this research contributes and enhances the literature on modified UTAUT in the context of mobile banking acceptance and use in Central Asia. To the best of the researcher's knowledge, this research is one of the first studies to investigate the factors impacting intention to use and actual use of mobile banking applications using an extended UTAUT model with perceived trust, security, and risks in Mongolia. The findings contribute to the model's validity among young adults in Central Asia. Specifically, this research indicates a significant and positive impact of performance expectancy, effort expectancy, social influence, and facilitating conditions on intention to use, perceived security on perceived trust, and perceived trust on the use behavior. All accepted hypotheses are consistent with the existing literature. Finally, although extensive studies have addressed the intention to use and use behavior in Asia, less attention has been paid to the Central Asia region. Thus, this study represents new findings based on the banking application users in the Central Asia region, namely Mongolia, and adds empirical implications to this research area.

This research also has practical implications from which the banks in Central Asia can benefit. The results of this study can provide banks with insights into the influencing factors of mobile banking acceptance and use. For instance, mobile banking marketing managers may consider strategies to help banks retain their mobile banking consumers and promote mobile banking services among non-users. Determining the key factors impacting acceptance and use is crucial to strategizing, developing, implementing, and improving mobile banking services. Through scrutinizing the constructs (specifically the role of performance expectancy, effort expectancy, social influence, facilitating conditions,

perceived security, perceived trust, and perceived risk) that impact mobile banking application acceptance and use among young Mongolian users, international and domestic banks in Mongolia will be able to develop and adapt their promotional strategies, create user-friendly application designs, and assure service quality based on the needs of consumers among university students.

For example, the findings suggest that young adults will continuously use mobile banking applications if they believe they will benefit from them. Thus, it is essential that advertising specialists execute continuous promotions, emphasizing the benefits of mobile banking applications and their effective functions. Also, the findings state that young adults will use mobile banking applications if they find them easy to use and have the necessary knowledge and infrastructure. Therefore, mobile banking application developers should consider user-friendly design and layout; marketing managers may provide special tutorial programs on mobile banking application usage. Also, banks may consider offering special 24/7 customer support services via an application call center or chatbots.

Moreover, our results showed that social influence positively impacted the intention to use; thus, banks can take advantage of early mobile banking application adopters, such as social media influencers, who can promote the service and generate positive word-of-mouth. Finally, banks need to reinforce information security and overall transaction security to gain consumers' trust. This can include banks' adaptation of the latest security tools, such as wireless encryption technologies.

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