



FACTORS AFFECTING ADOPTION OF MOBILE BANKING AMONG UNIVERSITY STUDENTS: USING UTAUT2 APPROACH

Amarpreet Singh* **Dr. Lalit K. Singh****

**Research Scholar, Department of Management Studies, Kumaun University Campus, Bhimtal, Uttarakhand.*

***Professor, Department of Management Studies, Kumaun University Campus, Bhimtal, Uttarakhand.*

Abstract

The rapid growth of financial inclusion and internet has led the banking system to upgrade the banking channels to online platform. The aim of this paper is to determine acceptance of mobile banking application among university students of India, who significantly affect the continuous usage of mobile banking service. It attempted to examine the impact of performance expectancy, effort expectancy, social influence, trust and facilitating conditions on the behavioural intention. These are the established dimensions of UTAUT2. Data were obtained from 270 university students from Kumaun region of Uttarakhand. The collected data was analysed using SPSS20 and AMOS 20. The results revealed that performance expectancy, social influence, and trust were the important factors among students while measuring the behavioural intention to adoption of mobile banking.

Keywords: *Behavioural Intention, Effort Expectancy, Facilitating Conditions, Mobile Banking, Performance Expectancy, Social influence.*

1. Introduction

The revolution of internet technology during late 1990s, worked as a booster for the banking. Mobile banking was introduced in the year 2000, with the help of wireless mobile technologies such as Short Messaging Service (SMS), Wireless Access Protocol (WAP) and General Packet Radio Service (GPRS). Several terms have been used for mobile banking as m-Banking, branchless banking, m-payments, m-transfers (Liu et. al., 2009; Ivatury and Mas, 2008; Donner and Tellez, 2008).

Mobile banking, often known as mobile app banking, refers to financial transactions carried out using the apps on smartphones, with the help of mobile internet technology (3G, 4G VoLTE) is called mobile banking or mobile app banking. The large penetration of Smartphone has initiated the innovative idea of mobile app banking. Until the COVID-19 crisis, mobile app banking comprised a small share of e-banking. With the prolonged lockdown during COVID-19, technology played a vital role in mitigating the effects of pandemic on the banking transactions. The major advantage of mobile banking is that financial transactions can be conducted anytime and anywhere (Kleijnen et al., 2004; Herzberg, 2003; Rivari, 2006; Laukkanen, 2007). Mobile banking offers several services as: mini-statements and checking of account history, alerts on account activity or passing of set thresholds, monitoring of term deposits, access to loan statements, access to card statements, ordering cheque books, balance checking in the account, recent transactions PIN provision, change of PIN and reminder over the Internet, blocking of (lost, stolen) cards, fund transfers, recharging, commercial payment processing, bill payment processing, Peer to Peer payments, withdrawal at banking agent, deposit at banking agent etc.

The objective of the study is to explore the factors affecting mobile banking adoption among University students. Since younger generation is more technology savvy and the adoption rate of new technologies is high among this generation. The current study is based on UTAUT2 Model (Venkatesh



& Davis, 2000). When user displays technology acceptance behaviour, consideration of social influence, trust and risk is seen as a generally occurring phenomenon observed in certain technologies and works as an essential factor in the purchase of products and acceptance of IT (Venkatesh, 1996; Yoo, Choi, & Kim, 2002).

2. Theoretical Framework and Literature Review

The Unified Theory of Acceptance and Use of Technology (UTAUT) model was introduced by Venkatesh et al., in the year 2003. The model has the constructs as Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC), this model is able to explain 70% variance (Venkatesh et al., 2003). This model was upgraded by adding the constructs namely Hedonic Motivation (HM), Price Value (PV) and Habit (HB) in consumer context (Venkatesh et al., 2012). Several studies has been conducted using UTAUT/UTAUT2 (Luo et al., 2010; Bankole et al., 2011; Yu, 2012; Baptista & Oliveira, 2015; Alalwan et al., 2017) to identify the core determinants of mobile banking adoption.

2.1 Performance Expectancy (PE)

Venkatesh et al. (2003) define Performance Expectancy “as the degree to which an individual believes that using the system will help him or her to attain gains in job performance” (p. 447). The new construct combines five core constructs from previous literature, including: Extrinsic Motivation (MM), Perceived Usefulness (TAM/TAM2), Relative Advantage (IDT), Job-fit (MPCU), and Outcome Expectations (SCT) (Davis 1989; Thompson, Higgins and Howell 1991; Moore and Benbasat 1991; Davis, Bagozzi and Warshaw 1992; Compeau and Higgins 1995). In fact, information system adoption research suggests that a system that does not help people perform their jobs is not likely to be received favourably (Nysveen et al. 2005).

H1. Performance Expectancy will have a positive influence on students’ behavioural intention towards MB.

2.2 Effort Expectancy (EE)

Effort Expectancy can be defined “as the degree of ease associated with the use of the system” (p. 450). Venkatesh et al. (2003) combine three concepts from the adoption literature in order to capture the construct of Effort Expectancy: Ease of Use (IDT), Complexity (MPCU), and Perceived Ease of Use (TAM/TAM2) (Davis 1989; Moore and Benbasat 1991; Thompson, Higgins and Howell 1991). Effort expectancy may contribute towards performance, near-term perceived usefulness and the lack of it can cause frustration, and therefore, impair adoption of innovations (Davis, 1989). The intention based research studies have proposed that effort expectancy and usefulness of technology affect the attitude of the users towards adoption of a technology. (Cheung & Vogel, 2013; Cheon, Lee, Crooks & Song 2012).

H2. Effort Expectancy will have a positive influence on students’ behavioural intention towards mobile banking.

2.3 Social Influence (SI)

According to M. Kocaleva (2015) Social influence (SI) can be defined as the change in thoughts, feelings, attitudes or behavior of an individual that results from the interaction with another individual or group. Venkatesh et al. (2003) defined social influence as the degree to which an individual considers importance of his / her image in a group. Due to social influence, individuals seek for similar



traits between people and a particular group to create the sense of belongingness i.e. the social categorization process (Tajfel & Turner, 1986). Prior studies of mobile banking adoption have shown a relationship between social influence and intention to use mobile banking (Riquelme & Rios, 2010; Puschel et al., 2010; Tan & Lau, 2016).

H3: Social influence has a positive effect on the students' behavioural intentions to use mobile banking.

2.4 Trust

Trust can be defined as the willingness to make one vulnerable to actions taken by a trusted party based on the feeling of confidence or assurance (Gefen, 2000). Masrek et al. (2012) defined trust in mobile banking as “the belief that allows individuals to willingly become vulnerable to the bank, the telecommunication provider, and the mobile technology after having the banks, and the telecommunication provider’s characteristic embedded in the technology artefact”. Trust thus plays a significant role in the adoption of mobile banking (Afshan & Sharif, 2016; Susanto et al., 2016).

H4: Trust has a significant effect on the students' behavioural intentions to use mobile banking.

2.5 Facilitating Conditions

Facilitating Conditions are defined as “the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system”(Venkatesh et al. 2013). This definition conceptualizes an idea that is embodied by three other constructs: Facilitating Conditions in MPCU (Thompson, Higgins and Howell 1991), Perceived Behavioural Control in TPB (Ajzen 1991; Taylor and Todd 1995), and Compatibility in IDT (Moore and Benbasat 1991).

H5: Facilitating Conditions has a significant effect on the students' behavioural intentions to use mobile banking.

2.6 Behavioural Intention(BI)

Behavioral Intention (BI) is the willingness of the individual to a certain behavior (Venkatesh et al.,2003). Behavioral intention refers to individual willingness to complete a particular behavior (Ajzen, 1991; Fishbein & Ajzen, 1975). Similar results were concluded by the studies of Yi and Hwang (2003), Ndubisi(2004), Park (2009), Liu et al.(2009), and Tosuntas, et al. (2015). Behavioral intention is an important and effective factor for predicting individual behaviour (Tosuntas, Karadag & Orhan, 2015).

The studies conducted by researchers (Cheung & Vogel, 2013; Lin et al., 2013; Schepers & Wetzels, 2007) take into consideration social influence by using the concept of subjective norms, wherein the studies conclude the influence of components of a group than a holistic group influence. Social pressure / influence acts as a catalyst in acceptance of product, services and technology. Group leaders have an ability to influence the perception and behaviour of the group members. The reference group is strongly bonded and relationally close, therefore there exists a sense of comparison and competition among group members (Rice and Aydin 1991, Festinger, 1957).

3. Proposed Model

The proposed a model is based on the basic UTAUT2, which relates the constructs of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Trust(TR), Facilitating Conditions and Behavioral Intention (BI). The proposed model is shown in Figure 1.

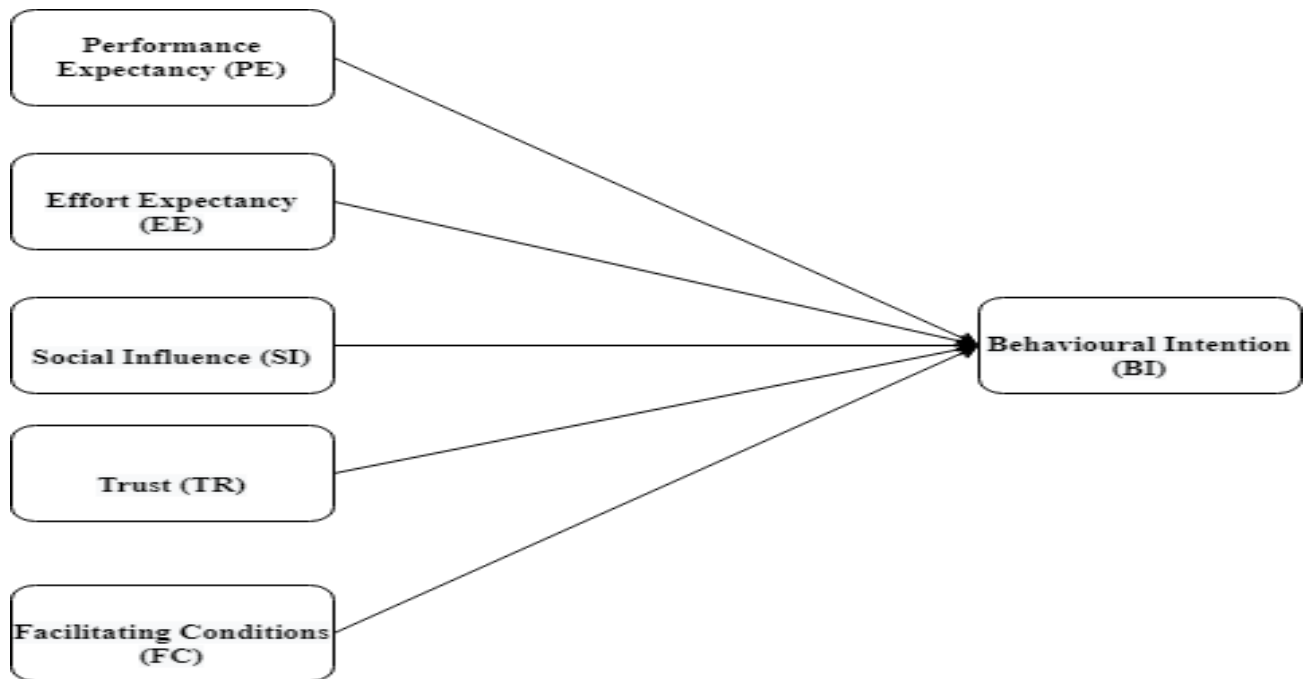


Figure 1: Proposed Model

4. Method

4.1 Participants

To test the hypotheses, 350 questionnaires were sent to the students of Universities in the Kumaun region. Of these questionnaires sent, 270 were returned (response rate = 77.1%). The participants answered all measures on a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

4.2 Procedure for Analysis

The data analysis was conducted in AMOS version 20 and SPSS version 20. Firstly the measurement model was analysed which was followed by the examination of the analysis of the structural model. The measurement model was tested by a number of fit measures. The comparative fit index (CFI), Tucker–Lewis index (TLI), and root mean square of approximation (RMSEA) were used to assess the model fits with the data. The measures of CFI and TLI indicate fit with a threshold above .90 and excellent fit above .95. An RMSEA value indicates good fit below .08 and excellent fit below .05 (Byrne, 2012; Kline, 2010). The construct reliability (CR) and average variance extracted (AVE) were calculated to test, the reliability and validity of the variables. The mediating effects, is tested by the bootstrapping method in AMOS.

5. Data Analysis

The data were analysed using both AMOS version 20 and SPSS version 20. Structural equation modelling (SEM) was used to validate the measurement model and subsequently test the assumptions. Cronbach's alpha was used as a reliability test prior to confirmatory factor analysis (refer to table 2). Performance expectancy (PE= 0.910), effort expectancy (EE= 0.849), social influence (SI= 0.828), trust (TR= 0.878), facilitating conditions (FC= 0.869), and behavioural intention (BI= 0.857) all went above and beyond the norm of (= 0.70) (Nunnally, & Bernstein, 1994).



5.1 The Measurement Model

Prior to testing the hypotheses, the validity and reliability of the data were assessed using a measurement model. Confirmatory factor analysis (CFA) is used in the measuring model.

The CFA was conducted with $\chi^2=4140.303$, 171 degrees of freedom, $(\chi^2/df)=24.212$, and a 0.05 significance level. The specified 0.08 threshold level is met by the RMSEA of 0.051, which is acceptable. The desired 0.90 value was exceeded by the CFI (0.969) and TLI (0.938) readings (Newcomb, Huba, & Bentler, 1986). This established that the measurement model accurately captured the data (refer to table 1).

Table 1: Summary statistics of measurement model fit

Model goodness-fit indexes	Recommended value	Results in this study
Goodness-of-fit index (GFI)	≥ 0.90	0.919
Adjusted goodness-of-fit index (AGFI)	≥ 0.80	0.902
Normalized fit index (NFI)	≥ 0.90	0.944
Comparative fit index (CFI)	≥ 0.90	0.969
Root mean square residual (RMSR)	≤ 0.10	0.051

Source: Authors

A composite reliability measure was used to look at construct reliability and determine how well construct items represent the latent construct. Although values lower than 0.7 have been accepted, there is a generally accepted threshold value of 0.7 or more for CR (Hair et al., 2017). The AVE for each item was also more than the recommended limit of 0.50 (Fornell, & Larcker, 1981). Given the quantity of indicators, all statistics confirmed the overall excellent measurement quality. Refer to table 2 for validity and reliability.

Table 2: Validity and Reliability

	CR	AVE	MSV	MaxR (H)	SI	FC	TR	PE	BI	EE
SI	0.832	0.665	0.249	0.867	0.799					
FC	0.874	0.657	0.462	0.954	0.052	0.827				
TR	0.891	0.739	0.461	0.925	0.047	0.628	0.856			
PE	0.912	0.762	0.168	0.934	0.408	0.097	0.019	0.878		
BI	0.849	0.667	0.107	0.866	0.260	0.057	0.073	0.229	0.819	
EE	0.836	0.624	0.247	0.844	0.490	0.065	0.048	0.364	0.318	0.794

Source: Authors

As a measure of discriminant validity, the Fornell-Larcker criteria compares the square root of each construct's AVE with its correlations with all other constructs in the model. It indicates that a construct and the components that make up its associated indicators must exhibit greater variance than any other construct (Hair et al., 2010). All of the standardised factor loadings are larger than 0.60, and CR are greater than 0.80, establishing the CR (Fornell, & Larcker, 1981). Additionally, the average extracted variance (AVE) exceeds the 0.50 criterion (Fornell, & Larcker, 1981). In relation to convergent validity, table 3 illustrates the results of CFA.



Table 3: Confirmatory Factor analysis results and Cronbach’s Alpha

Items		Std. Coefficient	AVE	CR	Cronbach Alpha
		(t value)			
Social Influence			0.665	0.832	0.884
	SI1	0.846			
	SI3	0.628			
	SI2	0.893			
Trust			0.739	0.891	0.921
	TR2	0.900			
	TR3	0.929			
	TR1	0.717			
Facilitating Conditions			0.657	0.874	0.862
	FC2	0.855			
	FC1	0.500			
	FC4	0.881			
	FC3	0.955			
Performance Expectancy			0.762	0.912	0.849
	PE1	0.917			
	PE2	0.916			
	PE3	0.783			
Behavioural Intention			0.667	0.849	0.827
	BI3	0.737			
	BI1	0.867			
	BI2	0.822			
Effort Expectancy			0.624	0.836	0.839
	EE2	0.839			
	EE1	0.747			
	EE3	0.762			

AVE= Average Variance Extracted; CR = Composite Reliability;

Source: Authors



5.2 The Structural Equation Model

The five hypotheses were put to the test by constructing the structural model. The research model is deemed suitable (CMIN/df = 1.989 p 0.001; CFI = 0.969; TLI = 0.958; RMSEA = 0.051) after the research model's overall fit was verified to satisfy the appropriate standard.

The students' facilitating conditions (FC) has direct association with the behavioural intention (BI) to adopt mobile banking has a positive effect as suggested by the results ($\beta=0.235$, $p<0.01$). Hence Hypothesis 1 is accepted. The TR has positive influence on BI to adopt mobile banking, as evident by results ($\beta=0.335$, $p<0.01$). Therefore, hypothesis 2 is accepted.

The construct performance expectancy has significant positive association with BI to adopt mobile banking, as results show ($\beta=0.269$, $p<0.01$). Thus, hypothesis 3 is accepted. The students' referent groups' (SI) direct association with BI to adopt mobile banking has a significant positive effect, as suggested by the results ($\beta=0.324$, $p<0.05$). Hence Hypothesis 4 is rejected.

The results show that students' effort expectancy has a positive and significant effect on BI to adopt mobile banking ($\beta=0.230$, $p<0.01$). Therefore, Hypothesis 5 is accepted.

Table 4: Assessment of Research Hypothesis

Constructs	Hypothesis	Path Coefficient (Standardized)	t-value	Assessment
PE → BI	H1	0.269	5.016 ^{***}	Accepted
EE → BI	H2	0.230	3.685 ^{***}	Accepted
SI → BI	H3	0.324	4.575 ^{**}	Accepted
TR → BI	H4	0.335	4.837 ^{***}	Accepted
FC → BI	H5	0.235	3.737 ^{***}	Accepted

*** $p<0.01$, ** $p<0.05$

6. Discussion

The goal of this study was to empirically extend the understanding of students' mobile banking usage. To understand the behaviour of students, where they have to adapt and adopt the mobile banking, this study analysed the effect of performance expectancy, effort expectancy, social influence, trust and facilitating conditions on behavioural intention. The study used UTAUT2 theory for student's intention to use mobile banking. The results confirm that performance expectancy followed by social influence and trust are important factors in the behavioural intention to use mobile banking. The mobile banking, thus provide a validity of the research model and shows the consistency of the theoretical base in case of India. Earlier studies (Hartwick & Barki, 1994; Taylor & Todd, 1995) also confirm that the environment influences the online behaviour and perceptions. This study confirms that performance expectancy is more important than effort expectancy, particularly when placed within the context of the mobile banking adoption among university students. Therefore, performance expectancy, social influence and trust play a significant role in acceptance of mobile banking among university students. This is consistent with the earlier studies showing a positive relationship between



behavioural intention and social influence, which show the prominence of social influence in acceptance and usage of technology for learning (McInerney, 2005).

Conclusion

The purpose of the study was to have an understanding of mobile banking acceptance intention by the students of higher education in Indian universities. The model used was based on UTAUT2 using structural equation modelling. The study confirms that trust plays an important role in behavioural intention to adopt mobile banking. The contribution of the study is that the social influence, trust and performance expectancy are an important factors to enhance the perception of usefulness to improve the acceptance of mobile banking by the students.

Limitations

The limitations related to the study are acknowledged in that the data was collected using convenience sampling of college / University students of Kumaun region of Uttarakhand. It is important to understand the behavioural intention which may not reflect precisely the actual usage behaviour.

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