ASSESING MOBILE BANKING APPLICATION: THE EXTENDED UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

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Abstract

The advancement of technology enables mobile banking to become a possibility for the banking sectors, where adaptation of such information innovation can improve their service performance and customer satisfaction. This study aims to investigate and explore factors, which influence customers to use mobile banking in Semarang, Indonesia. The extending of a unified theory of acceptance and use of technology (UTAUT) is used as the primary model, where perceived risk and perceived access barriers are further appended into the model. After testing and validation, the questionnaire was distributed to university students (undergraduate and graduate students) and workers in Semarang, Indonesia. There are 300 questionnaires was usable for this research came from users and non-users of mobile banking services. The Goodness-of-fit (GOF) test was used to evaluate the model measurement. The outcomes of the survey are tested through structural equation modeling (SEM) to test the relationship between various factors involving in the adaptation of mobile banking in Semarang Indonesia. Findings certify that unified theory of acceptance and use of technology research model is appropriate to analyze mobile banking usage. It posits two significant determinants of intention to use mobile banking service, social influence (SI) and perceived access barriers (PAB) while facilitating condition (FC) as the powerful factor in use behavior (UB).

Keywords- *Mobile Banking, UTAUT, SEM*

1. INTRODUCTION

Background Study

Fast advances of technology drive the ubiquitous of mobile technology usage. As a result, mobile devices become a part of human life for communication and support their performance. Mobile banking is the recent technology that promoted by bank sectors to improve their services. The concepts of this technology are providing financial information and enable customers to conduct banking transactions freely at anytime from anywhere through mobile devices, such as checking balance account, transferring money, paying payment. Self-service

technology reduces the direct interaction between bank and customer. The users of this kind of services will get advantages in terms of time and convenient. Therefor mobile banking service meets the demand of modern society that promotes mobility for their routine.

Based on the statistic reported by Bank Indonesia in 2025, the number of mobile banking transactions shows a consistent upward trend. Mobile banking transactions reached 1,93 billion in 2024 and increased around 2,29 billion transactions in the next year. The growth of mobile banking usage in Indonesia cannot be separated from the increasing use of mobile phones. The sophisticated features on a mobile phone provide convenience for users doing banking services.

However, access barriers such as cost, system complexity, digital literacy, and security concerns critically shape both users' intentions and actual capability to use technology. Traditional models like TAM and UTAUT mainly focus on cognitive perceptions like usefulness and ease of use. These models tend to treat access barriers as secondary or external factors rather than core elements. Recent studies that add variables like training, risk, and digital literacy reflect an effort to fill this gap, showing that access constraints need deeper integration into adoption frameworks for a more comprehensive understanding of user behavior. However, in order to maintain their current customer, attracting new customers may not be easy with mobile banking. Furthermore, they need to define what factors affect people's use of this technology. Doing so will increase their customer satisfaction and uncover the reasons potential users do not want to use mobile banking.

This study utilized the extending of the unified theory of acceptance and use of technology (UTAUT), because it is considered as a sturdy model, then include perceived risk and perceived access barriers as the supplemental factors to UTAUT. Moreover, this model consists of eight theories and models: theory of reason action (TRA), technology acceptance model (TAM), theory of planned behavior (TPB), motivational model (MM), combined TAM and TPB, model of PC utilization (MPCU), innovation diffusion theory (IDT), and social cognitive Theory (SCT) (Chao, 2019). Then, it concluded into four key factors that affect intention and usage of technology, which are effort expectancy, performance expectancy, social influence, and facilitating condition(Venkatesh et al., 2003).

Mobile banking acceptance and adoption have been studied in various research models, such as technology acceptance model (TAM) (Wachyudi & Martutiningrum, 2026), combination of TPB, TAM, and perceived risk (Sasidharan & Venkatakrishnan, 2024a), unified theory of acceptance and use of technology (UTAUT). Al et al (2026) employed TAM in order to investigate factors that influence customer to use mobile banking service in Jakarta. The authors found that perceived usefulness and perceived ease of use have influenced the users' usage of mobile banking. In addition, perceived usefulness has stronger impact to user intention than perceived ease of use. Sasidharan & Venkatakrishnan, 2024)by combining TPB, TAM, and perceived risk as the constructs, the results indicated that the perceived behavioral

control have been positively affect behavioral intention to apply mobile banking in Jakarta. Based on Fares et al. (2012), by proposing modified UTAUT model defined that the most significant factor on customers intention was security while facilitating condition affected to the actual use of mobile banking in Jordan.

Literature Review

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) as an integrative model to explain how people use and accept information technology. This model incorporates eight previous theories of technology acceptance, including the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model, Theory of Planned Behavior (TPB), Combined TAM and TPB, Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory. UTAUT is considered a comprehensive grand theory because it can explain variations in behavioral intention and technology usage behavior better than its predecessors. A modified of unified theory of acceptance and use of technology (UTAUT) by adding perceived risk and perceived access barriers was used as the primary model in this research.

Performance expectancy (PE) is the degree of users believes that by using mobile banking provide advantages when doing banking transactions. This constructs similar to perceived usefulness in TAM (Venkatesh et al., 2003)**.** If mobile banking promote beneficial to its users, it will make consumers put much intention to apply this system.

H1: Performance expectancy has a positive effect on intention to use

Effort expectancy (EE) defined as the ability of mobile banking to easily associate with its users (Venkatesh et al., 2003). If the user finds mobile banking does not require too much effort, it will grow their intention to use mobile banking as well as their expectation to its performance. However, the easier operation to use mobile banking, the risk of other people access user's account would be higher as well.

H2: Effort expectance has a positive effect on intention to use

H3: Effort expectance has a positive effect on performance expectance

H4: Effort expectancy has positive effect on perceived risk

Perceived risk is refers to users' sense of uncertainty and potential negative consequences when using the service. It includes concerns about fraud, unauthorized access, data breaches, hacking, and other cyber threats, which create anxiety around financial transactions (Ivanova & Yeon KIM, 2022). With the arising of the uncertainty level of mobile banking risk will decrease user's intention to adopt mobile banking service. According to Featherman & Pavlou (2003), the probability of loss of money or privacy prevents the user to evaluate mobile banking service.

H5: Perceived risk has a negative effect on intention to use

Moreover, when user believes that mobile banking service does not have a higher level of risk, they would have a mindset that such service is useful. Since perceived usefulness in the model that Featherman & Pavlou (2003) proposed is equivalent with performance expectancy in UTAUT, so it postulated that:

H6: Perceived risk has a negative effect on performance expectancy

Social influence described as the extent of individual convinced by their family, friends, and colleague to use mobile banking (Venkatesh et al., 2003). If they believe with the opinions and reviews from their surrounding regarding mobile banking service, they will follow to use it.

H7: Social influence has a positive effect on intention to use

Perceived barriers are the degree of user admit that mobile banking service is cost more money and complicated for user (Porter & Donthu, 2006). The higher user impression of access barriers related to mobile banking usage, the less favorable their intention toward mobile banking usage.

H8: Perceived access barriers has a negative effect on intention to use

Facilitating condition is the extent of customer believes that there are infrastructure and company support them to use mobile banking service (Venkatesh et al., 2003). They would be pleased using mobile banking if there is guideline that helps them if there is a trouble. In contrast, if there is no facilities to support user apply for mobile banking service, it make user unwilling to use this service.

H9: Facilitating condition has a positive effect on use behavior

To be consistent with the underlying theory, intention to use is predicted will have a significant positive influence toward use behavior (Venkatesh et al., 2003). Thus, it can be hypothesized that:

H10 : Intention to use has a positive effect on use behavior

2. METHODS

Every user was selected in order to gather information about the factors that affect people's choice to use mobile banking. This suggests that both users and non-users of mobile banking services were targeted, but only Semarang, Indonesia, employees and graduate and undergraduate university students. The author has specified relevant study constructs that were introduced and validated in earlier studies, as per the literature review in the previous chapter. This study's primary constructs, which were taken from Venkatesh et al. (2003), include performance expectancy, effort expectancy, social influence, facilitating condition, and intention. Furthermore, Sasidharan & Venkatakrishnan (2024) provided the additional constructions for perceived risk, while Porter & Donthu (2006) provided the constructs for perceived access restrictions.

The questionnaire is divided into two sections. The first section collected the respondent's demographic information. The following section discussed the measurement for the study model's constructs, which examined participants' opinions of mobile banking services. Each of the following categories—performance expectancy, effort expectancy, social influence, enabling condition, perceived risk, perceived access barriers, and intention to use—was measured using five Likert scale measures: from 1 (strongly disagree) to 5 (strongly agree). In addition, use behavior was assessed using two questions. In the first question, the respondent was asked if they use mobile banking. Next, the person was asked how often they used mobile banking during that specific time.

The data collection was conducted in Semarang, Indonesia and university students and workers were chosen as the respondent of this survey. Before the author spread it out, a pretesting with 10 respondents was executed in order to check the wording of questions that used in the questionnaire. As the respond from the respondent, the questionnaire has been edited slightly. The questionnaire was divided into two sections with 37 questions. The first section is 10 questions about respondent demographic including gender, age, education, occupation, and the remaining question is related to the use of mobile banking frequency. Therefore, the next section is to examine the eight constructs, which are performance expectancy, effort expectancy, social influence, facilitating condition, perceived risk, perceived access barriers, intention to use, and use behavior as listed in the Appendix A. Each item on the second section was measured with a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). SPSS and AMOS were used in this study as the tools to analyze the data.

There are 300 useful questionnaires was collected, which 150 students and 150 workers. The percentage of men and women are 48% and 52% consecutively. The majority of respondents are under 35 years old, which is 76.4% and 76.7% with bachelor's degree.

3. RESULT AND DISCUSSION

In order to examine the factor loading and reliability, an Exploratory Factor Analysis (EFA) by SPSS was used. The varimax rotation of factor analysis was conducted to verify whether the items were correctly loaded in the correlative factors or not. Ramlugun & Issuree (2014), (Cheng et al., 2006) defines item loading that greater than .30 is classified to be significant, if greater than .40 is considered to be more important, and if greater than .50 is classified to be very significant. As the Table 2 shown, the majority of loading factor are greater than .50 except for IU1 and IU3 (0.465 and 0.400 respectively). In addition, the reliability of the items were tested using Cronbach’s Alpha, and all of the items have reliability score greater than .600 (Table 2), which according to Safeena et al (2012) is classified as reliable.

A structural equation modeling (SEM) was utilized to test the hypotheses and in order to measure the relationship between each construct, confirmatory factor analysis was used. As

suggested by (Hooper et al., 2008), (Malaquias & Hwang, 2016), the goodness of fit was measured by using Chi-square over degree of freedom (x2/df ≤ 3.0), root mean square residual (RMR ≤ 0.08), goodness-of-fit index (GFI ≥ 0.8), adjusted goodness-of-fit index (AGFI ≥ 0.8), normalized fit index (NFI > 0.9), tucker-lewis index (TLI > 0.8), comparative fit index (CFI > 0.9), and root mean square error of approximation (RMSEA ≤ 0.08). Following these guides, the model fit indices for the research model of this study are x2/df = 2.406, RMR = 0.076, GFI = 0.861, AGFI = 0.832, NFI = 0.755, TLI = 0.817, CFI = 0.838, RMSEA = 0.69.

Figure 1 presents the result of the structural model. The empirical evidence of the study presents that social influence becomes the most powerful factor (0.44) that affects user intention toward mobile banking service, this result is persistent with the finding of (Yu, 2012). On the other hand, perceived access barriers are the strongest obstacle (-0.47) for user to use mobile banking

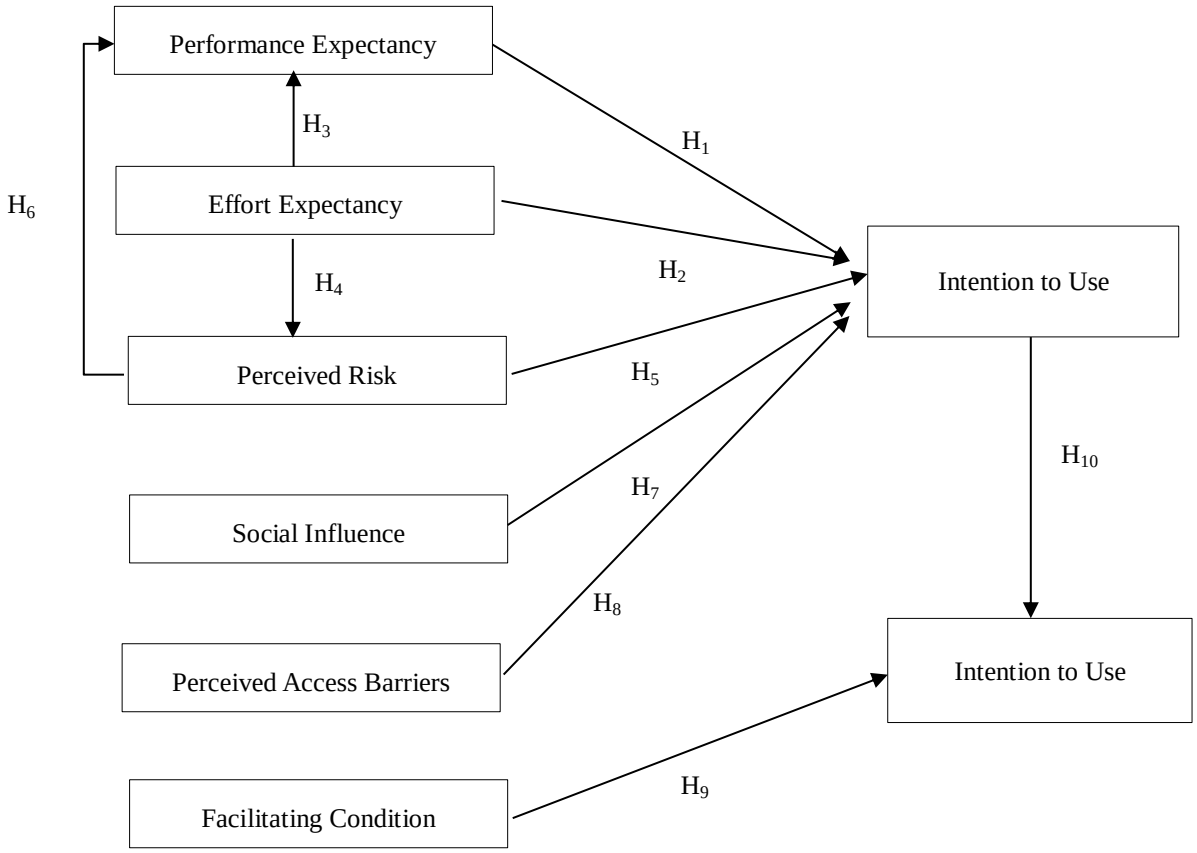

Figure 1. Research Model

Critical value (C.R) tests the significance of the parameter estimates in SEM, by dividing the parameter estimate by its standard error (S.E). According to Cheng et al. (2006), the C.R ± 1.96 is considered important to the model.

As presented in Table 1, effort expectancy, social influence, perceived access barriers were found to be significant in affecting user's intention to use mobile banking, and facilitating conditions had a strong positive effect on use behavior, thus supporting hypotheses H2, H7, H8, and H9. This result is in line with Dendrinos & Spais (2024) and Fachrudin et al. (2025). Effort expectancy is a significant determinant of intention to use mobile banking services, especially when users perceive the application as easy to use and efficient for digital transactions. A mobile banking application that is easy to learn allows users to complete transactions quickly and efficiently, which ultimately increases behavioural intention to use the service. Moreover, people's willingness to use mobile banking is also influenced by social influence. According to (Yu, 2012), this situation is caused by the power of word-of-mouth. The results of this study also confirm that users' intentions to use mobile banking were influenced by their surroundings; if more members of their family or friends use the service, they will be more eager to learn about it. This result also can be found on the research conducted by Dendrinos & Spais (2024). However, people's intentions toward mobile banking services will grow less favorable as they become aware of the increasing impediments to adopting mobile banking. Users' lack of financial and technical skills may be the cause of the greatest number of barriers to their intention to use mobile banking. People in Semarang who are more at ease and accustomed with traditional banks may be reluctant or unmotivated to use their mobile devices for banking, even though doing so will be advantageous to them. In addition, facilitating conditions and user's intention affect use behavior, because most users already own mobile devices that enable digital transactions, the study finds that facilitating conditions have a significant impact on the usage of mobile banking services. Additionally, users can access mobile banking applications more quickly and conveniently when they have internet connectivity. Although public WiFi is not available everywhere in Semarang, customers can still use cellular internet providers to access mobile banking services. This suggests that a key factor in promoting the actual use of mobile banking services is the availability of technology infrastructure and related resources. Research on the uptake of mobile banking also demonstrates that favorable circumstances, like having access to the internet, owning a device, and receiving technical assistance, have a big impact on how people behave when using digital banking services (Mensah & Khan, 2024).

This study also found that effort expectancy significantly influenced performance expectancy and perceived risk, so hypotheses H3 and H4 were accepted. Effort expectancy increases the effectiveness of user interactions with the system, allowing users to more fully explore the features that are accessible and take use of the technological performance enhancements. Additionally, because users are not burdened by technical complexity, a user-friendly system improves the perception of usefulness by making the advantages of the technology more concrete and applicable to their activities. This result is linear with research conducted by (Paramita & Hidayat, 2023). In terms of perceived risk, a straightforward and

user-friendly mobile banking interface can increase customers' confidence and lower their perception of the possibility of transaction errors or system malfunctions. High effort expectation can lower perceived danger because users feel more in control of the technology they are using (Arief & Usman, 2025).

Table 1. Result of hypothesis testing

Hypotheses	P	Result
PE => IU (H_1)	0.467	Not supported
EE => IU (H_2)	0.020	Supported
EE => PE (H_3)	***	Supported
EE => PR (H_4)	0.021	Supported
PR => IU (H_5)	0.396	Not supported
PR => PE (H_6)	0.799	Not supported
SI => IU (H_7)	***	Supported
PAB => IU (H_8)	***	Supported
FC => UB (H_9)	***	Supported
IU => UB (H_{10})	0.008	Supported

On the other hand, performance expectancy and perceived risk, which are not statistically significant, explain intention to use, not supporting hypotheses H1 and H5. Hypothesis H6 was also rejected due to an insignificant result. (Safitri et al., 2024) and also found that performance expectancy does not affect behavioral intention. Today's mobile banking users tend to view the benefits of digital banking apps as a basic necessity integral to their daily transactions, so that perceived benefits (performance expectancy) are no longer the primary factor in shaping their intention to use the service. Once mobile banking technology has become widely adopted and part of their routine transactions, users no longer consider the benefits of the technology as the primary factor in their decision to use it. Based on research by Angelica & Satria (2024)on behavioral intentions regarding mobile banking use among Generation Z, it was found that perceived risk does not significantly influence the intention to use mobile banking. This is due to Generation Z's high digital literacy and experience as digital natives, which has made them accustomed to interacting with app-based financial services; consequently, the risks inherent in using technology are no longer perceived as a major barrier. Furthermore, the risks associated with using mobile banking are viewed as a normal part of daily digital system usage, so they do not significantly influence individuals' decisions to use the service.

4. CONCLUSION

The advancement in information technology and communication have influenced in the increasing number of mobile phone in Indonesia. However, with the huge number of mobile devices usage does not reflect on mobile banking usage, it is still remain small. In the present study, reveals two categories, which influence user inention toward mobile banking usage, social influence as the positive factor while perceived access barriers as the negative significant factor. Bank may take into account to do socialization to people in Semarang regarding mobile banking service.

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