Driving Mobile Banking Usage: The Role of Information Technology in Indonesia

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ABSTRACT
To date, payment methods have evolved to include mobile banking, enabling individuals to conduct transactions more conveniently from anywhere. This trend can be analyzed, as the number of mobile banking users has consistently increased year by year. This study aims to analyze the influence of perceived risk, perceived trust, perceived cost, self-efficacy, performance expectancy, effort expectancy, and social influence on behavioral intention to use mobile banking in Indonesia. Based on data collected from 234 respondents, the results indicate that most of the variables significantly influence consumer behavioral intention, as evidenced by the Structural Equation Modeling (SEM) method. The data were analyzed using SPSS Statistics 25 and Amos Graphic software. The findings reveal that perceived risk, perceived trust, effort expectancy, and social influence significantly affect behavioral intention. In contrast, perceived cost, self-efficacy, and performance expectancy do not have a significant impact on behavioral intention.

Keywords: *UTAUT, behavioral intention, mobile banking*

1. INTRODUCTION

Mobile payment has emerged as one of the most prevalent payment methods in contemporary society. The adoption of mobile payment systems has witnessed substantial growth on a global scale. By 2023, it is projected that approximately 6.92 billion individuals worldwide will utilize smartphones to conduct mobile payments. This upward trend in the global usage of mobile payments is primarily attributed to the surge in smartphone sales, the convenience offered by such systems, and the concerted efforts of both governmental and private sectors to promote digital transactions (Lyhach, 2024).

Alongside mobile payment systems, mobile banking has also gained prominence as a widely adopted payment method, enabling consumers to perform cashless and cardless transactions seamlessly. Mobile banking is a banking service that utilizes information technology through dedicated applications (Hadi & Novi, 2015). Moreover, it functions as a service facility designed to streamline access to real-time information and facilitate efficient transactions (Maulana, Iskandar, & Mailany, 2019). Another definition describes mobile banking as a cashless payment system that relies on smartphone devices and wireless technologies, including QR codes, Near Field Communication (NFC), and One-Time Passwords (OTP) (Jatmiko, 2022).

In 2024, significant growth has been identified in the number of mobile banking users, particularly among Indonesia's largest banks, including Bank BRI, Bank BCA, Bank Mandiri, and Bank BNI. PT Bank Rakyat Indonesia (Persero) Tbk. (BBRI) reported that the number of mobile banking users reached 31.6 million as of December 2023, reflecting a 32.6% increase compared to the previous year. Similarly, Bank Central Asia (BCA) recorded 30.3 million mobile banking users as of December 2023, with a growth rate of 10%. Meanwhile, PT Bank Mandiri (Persero) Tbk. (BMRI) reported 23 million mobile banking users, representing a 45% growth rate. Lastly, Bank Negara Indonesia (BNI) registered 16.2 million mobile banking users as of December 2023, marking a substantial 74.7% increase from the previous year (Laras, 2023).

This study is motivated by gaps identified in prior research by Shin & Lee (2021) and Al-Saedi et al. (2020), particularly regarding the influence of perceived risk on behavioral intention. Furthermore, while Yaseen et al. (2022) found that the variable effort expectancy did not significantly affect behavioral intention, contrasting results were reported by Al-Saedi et al. (2020), Abu-Taieh et al. (2022), and Shin & Lee (2022), where effort expectancy was shown to have a significant impact. Another notable discrepancy arises in the findings on social influence: Shin & Lee (2022) and Yaseen et al. (2022) concluded that social influence does not significantly affect behavioral intention,

whereas Al-Saedi et al. (2020) and Abu-Taieh et al. (2022) demonstrated a significant influence of social influence on behavioral intention.

According to the study by Abu-Taieh et al. (2022), perceived risk has a negative impact on the adoption of e-government services, as well as in various other fields with similar contexts. Abu-Taieh et al. (2022) further emphasized that perceived risk significantly and negatively influences behavioral intention. Based on these arguments, the first hypothesis is proposed as follows:

H1: Perceived risk has a significant negative influence on behavioral intention.

According to Abu-Taieh et al. (2022), perceived trust has a significant influence on behavioral intention. Their study highlights that perceived trust positively and significantly affects behavioral intention in the context of mobile payment adoption. Based on these findings, the second hypothesis is proposed as follows:

H2: Perceived trust has a significant positive influence on behavioral intention.

Previous studies on mobile payment adoption have identified that perceived cost has a significant negative influence on behavioral intention (Alqahtani et al., 2014; Hongxia et al., 2011). Similarly, Al-Saedi et al. (2020) found that perceived cost significantly and negatively affects behavioral intention in the context of mobile payment usage. Based on these findings, the third hypothesis is proposed as follows:

H3: Perceived cost has a significant negative influence on behavioral intention.

Previous studies have demonstrated that self-efficacy has a significant positive influence on behavioral intention in the context of mobile payment adoption (Boonsiritomachai & Pitchayadejanant, 2019; Dasgupta et al., 2011; Luarn & Lin, 2005; Yu, 2012). Similarly, Al-Saedi et al. (2020) confirmed that self-efficacy significantly and positively affects behavioral intention. Based on these findings, the fourth hypothesis is proposed as follows:

H4: Self-efficacy has a significant positive influence on behavioral intention.

Previous studies have established that performance expectancy has a significant positive influence on behavioral intention in the context of mobile payment adoption (Chong et al., 2012; Hongxia et al., 2011; Yang, 2010; Yu, 2012). Similarly, Abu-Taieh et al. (2022) Shin & Lee (2021) confirmed that performance expectancy significantly and positively affects behavioral intention regarding mobile payment usage. Based on these findings, the fifth hypothesis is formulated as follows:

H5: Performance expectancy has a significant positive influence on behavioral intention.

Previous studies on mobile payment adoption have shown that effort expectancy has a significant positive influence on behavioral intention (Alalwan et al., 2017; Chong et al., 2012; Im et al., 2011). Similarly, Abu-Taieh et al. (2022) confirmed that effort expectancy significantly and positively affects behavioral intention in the context of mobile payment usage. Based on these findings, the sixth hypothesis is proposed as follows:

H6: Effort expectancy has a significant positive influence on behavioral intention.

Previous studies on mobile payment have found that social influence has a significant positive influence on behavioral intention (Aik-Chuan et al., 2010; Hongxia et al., 2011; Leong et al., 2013; Tan et al., 2014). Similarly, Abu-Taieh et al. (2022) and Yaseen (2022) confirmed that social influence significantly and positively affects behavioral intention in the context of mobile payment usage. Based on these findings, the seventh hypothesis is proposed as follows:

H7: Social influence has a significant positive influence on behavioral intention.

2. RESEARCH METHOD

The type of research conducted in this study is basic research. This research aims to test the validity of existing theories and to explore and deepen understanding of empirical phenomena. It falls under the category of causal research, which seeks to demonstrate cause-and-effect relationships by examining the influence of exogenous variables—namely, perceived risk, perceived trust, perceived cost, self-efficacy, performance expectancy, effort expectancy, and social influence—on a single endogenous variable, which is behavioral intention to use mobile banking in Indonesia. This study employs a quantitative research method, utilizing primary data collected from respondents who have used mobile banking in Indonesia. The data is then processed and analyzed to draw conclusions.

This study targets customers who have used mobile banking applications in the past year. A quantitative approach is employed, with data collected through questionnaires. Respondents are selected using purposive sampling and assured that their identities will remain confidential. All responses will be used exclusively for research purposes.

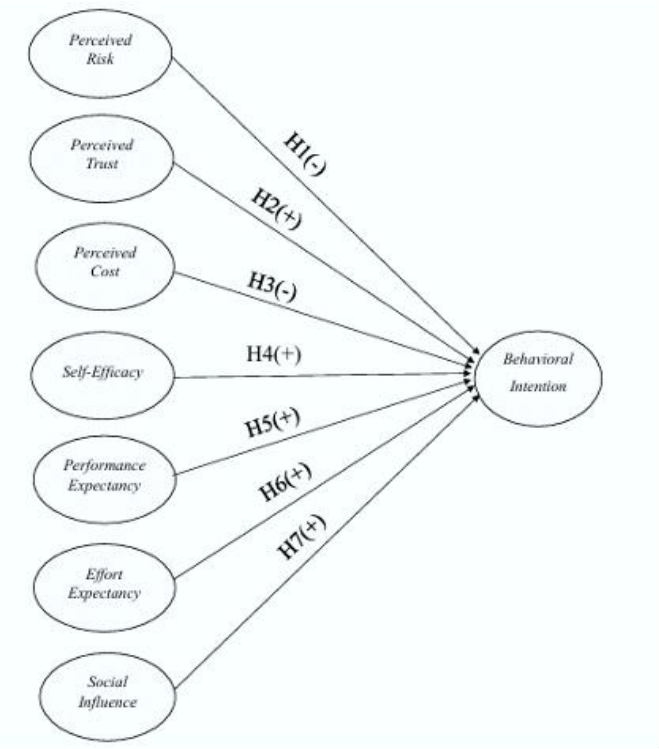


Figure 1. Research Model

This study employs Structural Equation Modeling (SEM) for data analysis, utilizing Amos Graphic 22 software to evaluate the conceptual model. The analytical approach consists of two stages: first, the assessment of the measurement model (validity and reliability), followed by the structural model (hypothesis testing). The measurement model examines the relationship between each variable and its indicators, while the structural model determines the relationships between the variables themselves.

3. RESULTS AND DISCUSSIONS

In the initial stage of the research, a validity test was conducted on the measurement instruments used. This validity test was performed using the Pearson Correlation method. An indicator is considered valid if it meets the criteria of a Pearson Correlation value ≥ 0.5 and a significance value ≤ 0.05 (Barker et al., 2002). Based on the test results from 30 respondent data, all indicators were declared valid as they met these criteria. Below are the detailed results of the validity test for each construct: Perceived Risk: This construct met the validity requirement with a Pearson Correlation value > 0.7. Perceived Trust: This construct also met the validity requirement with a Pearson Correlation value > 0.7. Perceived Cost: This construct was declared valid with a Pearson Correlation value > 0.5. Self-Efficacy: This construct met the validity requirement with a Pearson Correlation value > 0.6. Performance Expectancy: This construct demonstrated excellent validity with a Pearson Correlation value > 0.8. Effort Expectancy: This construct met the validity requirement with a Pearson Correlation value > 0.9. Social Influence: This construct also met the validity requirement with a Pearson Correlation value > 0.8. Behavioral Intention: This construct showed very high validity with a Pearson Correlation value > 0.9. Thus, it can be concluded that all measurement instruments used in this research have met the validity requirements based on the established criteria.

After conducting validity and reliability tests on 30 respondents, which were declared valid and reliable, the next step involved distributing the questionnaire to collect the required amount of data. A total of 234 respondent data were obtained through the questionnaire, all of which met the research criteria. The measurement model was then tested using Confirmatory Factor Analysis (CFA) with the Amos Graphics software. The adequacy of the measurement model was evaluated based on the Goodness of Fit (GoF) indices. The following criteria were used to assess the model fit, in accordance with established standards: (1) CMIN/DF ≤ 3.00, (2) RMSEA ≤ 0.08, (3) GFI, CFI, and TLI: Values between 0.8 and 0.9 indicate marginal fit, while values above 0.9 indicate good fit. These criteria were applied to ensure the robustness and suitability of the measurement model for further analysis.

Table 1. Measurement Model Goodness of Fit Test Using CFA

No.	Goodness of Fit Index	Criteria	Test Result	Description
1	CMIN/DF	≤ 3.00	1.501	Good Fit
2	RMSEA	≤ 0.08	0.046	Good Fit
3	GFI	Marginal Fit (0.8–0.9) Good Fit (≥ 0.9)	0.890	Marginal Fit
4	CFI	≥ 0.90	0.957	Good Fit
5	TLI	≥ 0.90	0.948	Good Fit

Based on Table 1, the results of the measurement model's Goodness of Fit test using Confirmatory Factor Analysis (CFA) indicate that all criteria have been met. The findings are as follows: (1) CMIN/DF (Chi-Square/Degrees of Freedom): The value of 1.516 falls within the good fit category, as it is below the threshold of ≤ 3.00. (2) RMSEA (Root Mean Square Error of Approximation): The value of 0.047 is classified as good fit, as it is below the threshold of ≤ 0.08. (3) GFI (Goodness of Fit Index): The value of 0.888 is categorized as marginal fit, as it falls within the range of 0.8–0.9. (4) CFI (Comparative Fit Index): The value of 0.958 is classified as good fit, as it exceeds the threshold of ≥ 0.9. (5) TLI (Tucker-Lewis Index): The value of 0.949 is categorized as good fit, as it exceeds the threshold of ≥ 0.9.

These results demonstrate that the measurement model exhibits an acceptable level of fit, with most indices meeting the criteria for good fit. This supports the validity and robustness of the model for further analysis.

Table 2. Measurement Model Evaluation

Variable	Indicator	Standardized Loading (λ)	AVE	CR	Description
PR	PR1	0.779	0.587	0.810	Valid & Reliable
	PR2	0.759			Valid & Reliable
	PR3	0.761			Valid & Reliable
PT	PT1	0.762	0.504	0.802	Valid & Reliable
	PT2	0.680			Valid & Reliable
	PT3	0.704			Valid & Reliable
	PT4	0.690			Valid & Reliable
PC	PC1	0.808	0.587	0.801	Valid & Reliable
	PC2	0.925			Valid & Reliable
	PC3	0.502			Valid & Reliable
SE	SE1	0.800	0.536	0.855	Valid & Reliable
	SE2	0.748			Valid & Reliable
	SE3	0.640			Valid & Reliable
PE	PE1	0.749	0.620	0.830	Valid & Reliable
	PE2	0.847			Valid & Reliable
	PE3	0.762			Valid & Reliable
EE	EE1	0.823	0.703	0.876	Valid & Reliable
	EE2	0.874			Valid & Reliable
	EE3	0.817			Valid & Reliable
SI	SI1	0.731	0.625	0.833	Valid & Reliable
	SI2	0.826			Valid & Reliable
	SI3	0.811			Valid & Reliable
BI	BI1	0.801	0.694	0.872	Valid & Reliable
	BI2	0.881			Valid & Reliable
	BI3	0.815			Valid & Reliable

Based on Table 2, the results of the validity and reliability tests indicate the values of Average Variance Extracted (AVE) and Construct Reliability (CR). An indicator is considered valid if it has an AVE value ≥ 0.5, while an indicator is considered reliable if it has a CR value ≥ 0.7. A variable with an AVE value ≤ 0.5 may occur due to one or more indicators having standardized loadings (λ) that do not meet the criteria, thereby resulting in an AVE value ≤ 0.5. However, one indicator, PC4, was removed because it did not meet the required standardized loading threshold.

As shown in the table above, the AVE and CR values for all constructs meet the established criteria. This confirms that the measurement model is both valid and reliable, allowing the research to proceed to the next stage, which is structural model testing.

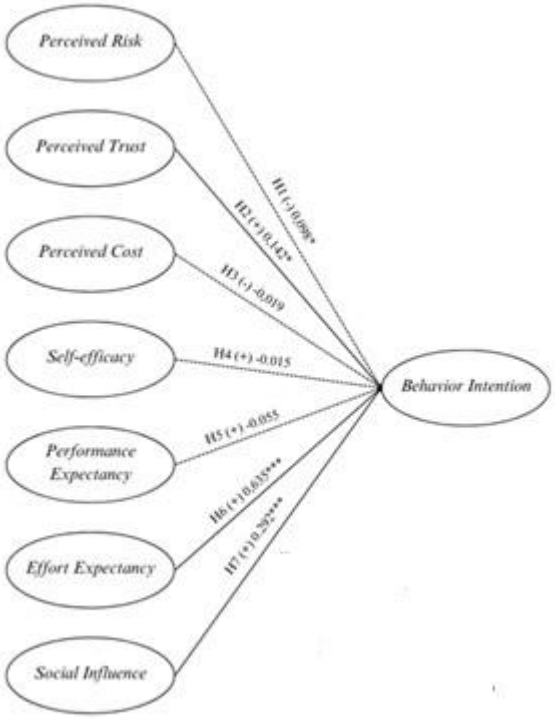
Table 3. Structural Model Goodness of Fit Test Using SEM

No.	Goodness of Fit Index	Criteria	Test Result	Description
1	CMIN/DF	≤ 3.00	1.501	Good Fit
2	RMSEA	≤ 0.08	0.046	Good Fit
3	GFI	Marginal Fit (0.8–0.9) Good Fit (≥ 0.9)	0.890	Marginal Fit
4	CFI	≥ 0.90	0.957	Good Fit
5	TLI	≥ 0.90	0.948	Good Fit

Table 4. Hypothesis Testing Results

Hypothesis	Path	Standardized Estimate	C.R.	p-value	Description
H1 (-)	PR → BI	0.098	1.777	0.076	Hypothesis Not Supported
H2 (+)	PT → BI	0.142	1.879	0.060	Hypothesis Supported
H3 (-)	PC → BI	-0.019	0.366	0.714	Hypothesis Not Supported
H4 (+)	SE → BI	-0.015	-0.209	0.834	Hypothesis Not Supported
H5 (+)	PE → BI	-0.055	-0.443	0.658	Hypothesis Not Supported
H6 (+)	EE → BI	0.635	5.293	***	Hypothesis Supported
H7 (+)	SI → BI	0.292	3.996	***	Hypothesis Supported

Based on table 4, it can be found that out of 7 hypotheses, there are 4 hypotheses that are declared unsupported and 3 hypotheses that are declared supported. The first hypothesis is declared unsupported because although the C.R and p-value results have met the criteria, the direction of the empirical results is different from the hypothesis. The third hypothesis is declared unsupported because although it has the direction of the empirical results of the perceived cost variable on negative behavior intention in accordance with the hypothesis, the third hypothesis does not meet one of the criteria by having a C.R value of 0.366 ≤ 1.645 or a p-value of 0.714> 0.1. The fourth hypothesis is declared unsupported because although it has the direction of the empirical results of the self-efficacy variable on positive behavior intention in accordance with the hypothesis, the fourth hypothesis does not meet one of the criteria by having a C.R value of -0.209 ≤ 1.645 or a p-value of 0.834> 0.1. Also, the fifth hypothesis is declared unsupported because even though it has the direction of the empirical results of the performance expectancy variable on positive behavior intention in accordance with the hypothesis, the fifth hypothesis does not meet one of the criteria by having a C.R value of -0.443 ≤ 1.645 or a p-value of 0.658 > 0.1.



Note:
1. Fig 2. Shows standardize coeff.
2. Dash line means unsupported hypothesis
3. ** equal to <0.01 sig.
4. *** equal to <0.0001 sig.

Figure 2. Model Result

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the results, it can be concluded that hypotheses 2, 6, and 7 are supported, while hypotheses 1, 3, 4, and 5 are not supported. The detailed conclusions of this study are as follows:

a. Perceived risk does not affect behavior intention in the use of mobile banking in Indonesia.

b. Perceived trust has a positive influence on behavior intention in the use of mobile banking in Indonesia.

c. Perceived cost does not affect behavior intention in the use of mobile banking in Indonesia.

d. Self-efficacy does not affect behavior intention in the use of mobile banking in Indonesia.

e. Performance expectancy does not affect behavior intention in the use of mobile banking in Indonesia.

f. Effort expectancy has a positive influence on behavior intention in the use of mobile banking in Indonesia.

g. Social influence has a positive influence on behavior intention in the use of mobile banking in Indonesia.

Based on the research findings, the effort expectancy variable has a significant impact on behavior intention in the use of mobile banking, as indicated by a standardized estimate value of 0.639. For mobile banking service providers, enhancing the performance and efficiency of mobile banking applications is crucial, given that the majority of consumers prefer conducting transactions online rather than visiting a physical bank.

Social influence also has a significant impact on behavior intention in the use of mobile banking, as evidenced by a standardized estimate value of 0.290. For mobile banking service providers, it is essential to offer high-quality services to consumers, such as promotional events or other engagement activities, to attract potential customers.

Future studies could consider expanding the scope of research beyond Indonesia by examining mobile banking users in other countries with similar cultural characteristics. This would provide a broader perspective on user behavior across different regions.

Moreover, further exploration is needed to understand why trust, cost, self-efficacy, and performance expectancy do not influence the intention to use mobile banking. Investigating customers' digital literacy could offer valuable insights, along with a more detailed analysis of mobile banking usage beyond financial transactions.

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