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Perceived Ease of Utilization, Usefulness, Security, and Trust in Mobile Banking

Sherlen Tertia¹, Anny Nurbasari²

^{1,2} Master of Management Department, Business Faculty, Maranatha Christian University, Bandung, West Java, Indonesia

Correspondence: Sherlen Tertia, A Graduate student of Master of Management Department, Business Faculty, Maranatha Christian University, Bandung, West Java, Indonesia, Email: sherlentertia@yahoo.com

Abstract

Mobile banking is an internet-based application of banks to serve their customers. With this application, the customers can check their balance on their banking account and transact online with the other parties. Therefore, growing trust in mobile banking becomes essential. Moreover, to reach it, banks need to focus on the determinants. According to previous studies, at least three factors are available: perceived ease of utilization, usefulness, and security. By answering this challenging topic, this study aims to test these determinants of trust statistically. After employing the 106 respondents in Bandung using the mobile banking application as the sample taken by the snowball sampling technique and examining three hypotheses by structural equation model based on partial least square, this research concludes a positive sign exists in these causal associations.

Keywords: Effortless, Mobile Banking, Practicality, Protection, Trust

1. Introduction

Trust is a basic for banks to operate, especially to build a relationship with the customers to guarantee the safety of the funds placed in saving deposit accounts and purchased non-financial products from banks, such as insurance policies and mortgages. Customers with high trust in banks believe that the banks serve them and meet their transactional needs well. After that, they will have a positive personal experience (Van Esterik-Plasmeijer & Van Raaij, 2017).

Furthermore, to achieve the transactional needs of their customers, the banks must adopt technological advancements, enabling them to provide many service features based on the internet (Laukkanen, 2007), for example, mobile banking (Mutahar, Daud, Ramayah, Isaac, & Aldholay, 2018). With this application, the consumers can easily access the related features anytime and anywhere through smartphones (Suryasa, Prayoga, & Werdistira, 2018).

One of the well-known frameworks associated with technological utilization in the banking industry is the technology acceptance model [see the study of Gu, Lee, and Suh (2009) in South Korea, Dash, Mohanty, Pattnaik,

Mohapatra, and Sahoo (2011) in India, and Al-Sharafi, Arsha, Abu-Shanab, and Elayah (2016) in Jordan, as well as Ismail and Purwani (2021) in Indonesia, for example]. This model was firstly introduced by Davis (1989), presenting perceived ease of utilization (PEOU) and perceived usefulness (PU) as attitudes determining the intention to use.

Furthermore, many researchers modify the technological utilization model by adding customer trust as influenced factor by PEU (Roca, García, & de la Vega, 2009; Aghdaie, Piraman, & Fath, 2011; Primananda, Setyaning, Hidayat, & Ekasari, 2020; Wilson, Keni, & Tan, 2021) and PU (Roca et al., 2009; Revels, Tojib, and Tsarenko, 2010; Gu et al., 2009; Aghdaie et al., 2011; Amin, Rezaei, & Abolghasemi, 2014; Al-Sharafi, Arsha, Abu-Shanab & Elayah, 2016; Primananda et al., 2020; Wilson et al., 2021). Also, Flavián & Guinalú (2006), Roca et al. (2009), Damghanian, Zarei, and Kojuri (2016), Al-Sharafi et al. (2016), Ismail, Roslan, Fauzi, and Husin (2017), add perceived security as the trust determinant.

Inspired by this previous evidence, this study's objective is to check and analyze the effect of perceived ease of utilization, usefulness, and security on customer trust in mobile banking in Bandung. Additionally, customers in this city are classified based on several types of banks: (1) state-owned banks: BNI46, Bank Rakyat Indonesia, Bank Mandiri, Bank Tabungan Negara, Bank Syariah Indonesia, (2) regional government banks: Bank Jawa Barat, (3) private commercial banks, and (4) private rural banks.

2. Literature Review and Hypothesis Development

2.1. Perceived ease of utilization and customer trust

Davis (1989) describes perceived ease of utilization as how simple technology is for somebody: If it is easily applied, it does not require the significant effort. Using 180 students as the clients of the online trading system, Roca et al. (2009) confirm a positive association between ease of application and trust. Based on Aghdaie et al. (2011), investigating 275 Iranian purchasers, perceived ease of application positively influences trust in the commercial websites. According to the study by Primananda et al. (2020), this perceived ease positively affects the confidence of online shopping platform users in Yogyakarta. This fact is also supported by Wilson et al. (2021) after employing 346 Chinese laptop users from five cities: Beijing, Shanghai, Shenzhen, Guangzhou, and Hangzhou. Denoting this evidence, we declare the first hypothesis:

H₁: Perceived ease of utilization positively affects customer trust.

2.2. Perceived usefulness and customer trust

Davis (1989) defines perceived usefulness as how helpful technology is for someone. Meanwhile, Revels et al. (2010) explain that this usefulness is one of the primary determinants of innovational utilization related to the consumer value when applying technology on mobile phones. Employing 910 mobile banking users, Gu et al. (2009) prove a positive effect of perceived usefulness on trust. This positive association is obtained by Roca et al. (2009) after investigating 180 students as the clients of the online trading system. Studying 275 Iranian shoppers on the commercial websites, Aghdaie et al. (2011) demonstrate the same evidence.

Furthermore, in their study on 302 Malaysians as mobile website users, Amin et al. (2014) declare that perceived usefulness positively influences trust. Additionally, Al-Sharafi et al. (2016) demonstrate that the conviction of 198 Jordanian consumers in a mobile banking application is determined by perceived usefulness. Surveying the students as the virtual shopping platform users in Yogyakarta, Primananda et al. (2020) provide the same evidence. This fact is also supported by Wilson et al. (2021) after employing 346 Chinese laptop users from five cities: Beijing, Shanghai, Shenzhen, Guangzhou, and Hangzhou. Denoting this evidence, we state the second hypothesis:

H₂: Perceived usefulness positively affects customer trust.

2.3. Perceived security and customer trust

Perceived security ensures that customers' personal and financial data are not observed, kept, and falsified by irresponsible parties (Kolsaker & Payne, 2002). If the organization can guarantee it, trust in the internet from their

customers will exist, as demonstrated by Flavián & Guinalú (2006), with Spanish website users as the samples and Roca et al. (2009) investigating 180 students as the clients of the online trading system. Based on investigating 395 customers using internet banking of Bank Saderat Iran in Semnan, Damghanian et al. (2016) state that perceived security positively affects trust.

Moreover, through their study, Al-Sharafi et al. (2016) demonstrate that the trust of 198 Jordanian consumers in a mobile banking application is positively determined by perceived security. Also, this positive effect is confirmed by Ismail et al. (2017) when investigating three of five aspects of perceived security: confidentiality, authentication, and privacy, by employing the 200 higher education students in Muadzam Shah, Pahang, Malaysia. Additionally, non-repudiation has no impact, but authorization has a negative influence. Denoting this evidence, we declare the third hypothesis:

H₃: Perceived security positively affects customer trust.

3. Research Method

3.1. Variable Operationalization

This study uses three determinants: perceived ease of utilization (PEU), usefulness (PU), security (PS), and one dependent variable: trust. Moreover, we adopt and modify the items used by Gu et al. (2009) and Roca et al. (2009) to measure perceived ease of utilization, usefulness, and security. Meanwhile, we mention Gu et al. (2009) and Malaquias and Hwang (2016) to quantify customer trust. Furthermore, these related items are presented in Table 1.

Table 1: The items of perceived ease of utilization, usefulness, and security

Variable	Items	Source
Perceived ease of utilization	I can learn the way to transact through mobile banking (PEU1). I am quickly skilled when transacting through mobile banking (PEU2). My interactions with the mobile banking systems are rational (PEU3).	Gu et al. (2009) and Roca et al. (2009)
Perceived usefulness	This internet banking application is beneficial for me during transactions (PU1). This internet banking makes my transactions easy (PU2). This internet banking makes my transaction rapid (PU3).	Gu et al. (2009) and Roca et al. (2009)
Perceived security	My transaction through this internet banking cannot be changed by a third party (PS1). This internet banking system protects my personal and financial information (PS2). My transaction through this internet banking cannot be detected by a third party (PS3).	Gu et al. (2009) and Roca et al. (2009)
Trust	This mobile banking is reliable for me (T1). The bank holds and fulfills its promises when I use its mobile banking (T2). The bank prioritizes me as the customer (T3).	Gu et al. (2009), Malaquias and Hwang (2016)

3.2. Population, sample, sampling technique, and data collecting method

The population in this research is the customers of banks utilizing a mobile banking application in Bandung. The banks intended are classified into (1) state-owned banks, (2) regional government banks, (3) private commercial banks, and (4) private rural banks. Because the sample number is unknown, we utilize the snowball sampling technique, as Pandjaitan, MS, and Hadiano (2021) employ, by counting on the admirable relationship with respondents.

Fortunately, we successfully collected 106 mobile banking users in Bandung as the number of samples based on this technique during the survey between June 1 and July 31, 2021. This survey is executed by distributing the questionnaire, as Hartono (2012) explains. Following Sugiyono (2010), we use the Likert scale for assessing respondents' answers, ranging from 1 to 5 for absolutely disagree to agree with responses.

3.3. Method for analyzing data

This study employs the structural equation model based on partial least squares. It is due to the sample size near 100, i.e., 106 internet banking users, and the utilization of unobservable variables, as Ghozali (2008) explains. Also, this model can be seen in the first equation.

$$\text{TRUST} = \beta_1.\text{PEU}_i + \beta_2.\text{PU}_i + \beta_3.\text{TRUST} + \zeta_i \quad (1)$$

Because of the items, the loading factor as the confirmatory factor analysis, Cronbach Alpha, and composite reliability coefficients must be detected to assess the validity and reliability of responses. After that, their judgment is formulated by referring to Ghozali (2008) as follows:

- If the loading factor exceeds 0.5, the respondent's answer to the item is accurate. The related indicators should be removed if this value cannot pass this cut-off point.
- If the Cronbach Alpha or composite reliability coefficients exceed 0.7, the respondent's answer to the items is reliable.

4. Result and Discussion

4.1. Result

Based on the online survey between June 1 and July 31, 2021, we present the data of 106 mobile banking users on the demographic and bank-related features (see Table 2), the result of validity and reliability examinations (see Table 3), and model estimation (see Table 4).

4.1.1. The result of demographical and bank-related features

Table 2 presents the demographic characteristics: gender and age, and the bank-related characteristic: the origin of the bank type. In this survey, females participate more than males by 61.32%. The respondents aged between 23 and 27 have the most prominent position based on age at 47.17%. Besides, the respondents as the commercial bank mobile users are the dominant, reflected by 66.04%.

Table 2: The result of demographical and bank-related features of the respondents

Feature		Description	Total	%
Demographic characteristic	Gender	Males	41	38.68%
		Females	65	61.32%
	Age	17-22	35	33.02%
		23-27	50	47.17%
		28-32	16	15.09%
Above 32		5	4.72%	
Bank related characteristic	The origin of the bank type	State-owned banks	33	31.13%
		Regional government banks	2	1.89%
		Commercial banks	70	66.04%
		Rural banks	1	0.94%

Source: Processed survey data

4.1.2. The result of validity and reliability tests

Panel A in Table 3 demonstrates the loading factor of indicators, as validity testing result of perceived ease of utilization (PEU): 0.869, 0.840, 0.896, usefulness (PU): 0.614, 0.894, 0.863, security (PS): 0.899, 0.930, 0.923, and trust: 0.815, 0.875, 0.878. Because these values are above 0.5, the answer of respondents is accurate. Moreover, in Panel B, the Cronbach Alpha coefficient for PEU, PU, PS, and trust is 0.837, 0.707, 0.909, and 0.818, and each composite reliability coefficient is 0.902, 0.839, 0.943, and 0.892. These values are higher than 0.7; therefore, respondents' answer to each item of PEU, PU, PS, and trust is consistent.

Table 3: The result of validity and reliability tests

Panel A. Confirmatory factor analysis result as the validity detection				
Indicators	Loading factors			
	PEU	PU	PS	TRUST
PEU1	0.869			
PEU2	0.840			
PEU3	0.896			
PU1		0.614		
PU2		0.894		
PU3		0.863		
PS1			0.899	
PS2			0.939	
PS3			0.923	
T1				0.815
T2				0.875
T3				0.878
Panel B. Cronbach Alpha dan Composite reliability coefficient as the reliability detection result				
Research Variable	PEU	PU	PS	TRUST
Cronbach Alpha coefficient	0.837	0.707	0.909	0.818
Composite reliability coefficient	0.902	0.839	0.943	0.892

Source: Adjusted output of Warp PLS 7.

4.1.2. The result of the model estimation

Table 4 demonstrates the model estimation result covering the path coefficients, their standard error of estimation, t-statistic, and probability with additional features, such as the size effect, R-square, and Q-square, to assess the model fit. The size effect for PEU, PU, and PS is reflected by f-square of 0.087, 0.107, and 0.292. Referring to Ghozali (2008), we interpret that PEU and PU have a low impact, but PS has a medium effect. The R-square for this model is 0.486. Denoting Ghozali (2008), we infer that the contribution of three determinants of trust is at a moderate level. The Q-square for this model is 0.493. Mentioning Ghozali (2008), we deduce that this research model has predictive relevancy.

Table 4: The structural equation model result: The determinant of customer trust in mobile banking

Determinant	Path coefficient	Standard error of estimation	t-statistic	Probability	f-square
PEU	0.201	0.092	2.18478261	0.016	0.087
PU	0.234	0.091	2.57142857	0.006	0.107
PS	0.481	0.086	5.59302326	<0.001	0.292
R-square		0.486	Q-square		0.493

Source: Adjusted output Warp PLS 7

After displaying the model estimation result, the next step is testing three research hypotheses in section two. Furthermore, each statement is statistically examined by comparing the probability value of the t-statistic with the

5% significance level. Each research hypothesis is acceptable if this value is below the 5% significance level. In Table 4, these intended values for a positive path coefficient for PEU, PU, and PS are 0.016, 0.006, and <0.001, respectively. Because of this circumstance, we accept the first, second, and third hypotheses declaring a positive effect of perceived ease of utilization, usefulness, and security on consumer trust in mobile banking.

4.2. Discussion

This research reveals that, firstly, perceived ease of utilization positively influences trust in mobile banking. This situation exists because banks equip their mobile banking application with user interface and experience. With these features, the users can easily understand to operate mobile banking. Also, this positive influence happens because the dominant respondents are the young users aged 23 to 27 (47.17%) (see Table 2), who are still enthusiastic about technology. By considering this fact, this study confirms Roca et al. (2009), Aghdaie et al. (2011), Pramananda et al. (2020), and Wilson et al. (2021).

Secondly, this research demonstrates that perceived usefulness positively influences trust in mobile banking. This situation happens because many benefits exist in mobile banking, such as checking balances, transferring money, buying mutual funds, paying insurance policies, monthly electricity, credit card bills, etc. With this fact, this study confirms Gu et al. (2009), Roca et al. (2009), Aghdaie et al. (2011), Amin et al. (2014), Al-Sharafi et al. (2016), Pramananda et al. (2020), and Wilson et al. (2021).

Finally, this study shows that perceived security positively affects trust in mobile banking. Additionally, this effect is the largest (see f-square of PS: 0.292 in Table 4). This situation is essential because many crackers attempt to break into mobile banking and take money from the customer's bank account. Therefore, banks need to provide a system protecting the identity of mobile banking users. With this fact, this study confirms Flavián & Guinalú (2006), Roca et al. (2009), Damghanian et al. (2016), Al-Sharafi et al. (2016), and Ismail et al. (2017).

5. Conclusion

This study intends to prove and analyze the effect of perceived ease of utilization (PEU), usefulness (PE), and security (PS) on trust in mobile banking of the users in Bandung. Furthermore, to attain this purpose, we surveyed the related customers between June 1 and July 31, 2021, and got 106 responses. After statistically testing these three effects, we summarize the positive impact of PEU, PE, and PS on trust in mobile banking. It means the customers' conviction in mobile banking can be increased when the banks amplify ease, usefulness, and protection in its utilization.

This study has some limitations. Firstly, it only uses three determinants of trust in mobile banking, i.e., perceived ease of utilization, usefulness, and security. Furthermore, the subsequent scholars can add perceived privacy, risk, gender, and ages, for example, into their model to handle this situation. As the second limitation, this study utilizes snowball sampling because of the unknown population size. Moreover, the following scholars should use the population with the identified number to improve it. Hence, the size of samples representing the population can be calculated by a specific formula, for example, Slovin or Isaac and Michael.

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