Exploring the Role of Trust in Mobile-Banking Use by Indonesian Customer Using Unified Theory of Acceptance and Usage Technology

Mohamad Saparudin1,2, Agus Rahayu1, Ratih Hurriyat1 & Mokh. Adib Sultan1

1 Universitas Pendidikan Indonesia, Bandung, Indonesia
2 STIE Kusuma Negara Jakarta, Indonesia

Correspondence: Mohamad Saparudin, Universitas Pendidikan Indonesia, Bandung, Indonesia.

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Abstract

M-banking is an innovative digital application that provides convenience in transactions and this technology benefits both customers and banks. The purpose of this study is to examine the factors that influence the customer’s intention to use m-banking and the role of trust in influencing the UTAUT construct. The UTAUT model that is expanded with trust variables is used in this study. Data was collected through an empirical study based survey of 243 participants in Jakarta, using convenience sampling. The study results show that there is a significant relationship between performance expectancy, effort expectancy, social influence and trust with behavioral intention. Moreover, trust significantly influence performance expectancy, effort expectancy, social influence, social influence. The findings theoretically are able to prove the factors that influence the customer's mobile banking adoption, where the effort expectancy factor is the factor that most influences the intention to use m-banking in Indonesia.

Keyword: trust in mobile-banking, behavioral intention, performance expectancy, effort expectancy, social influence, the unified theory of acceptance and usage technology (UTAUT)

1. Introduction

The development of information and communication technology currently has a significant influence on human social life (Jin, et al 2016), such as education, engineering, medicine, aviation, commerce, administration, household equipment, entertainment, business including banking industry. With the growing smartphone market and the ease of obtaining it, it has encouraged the banking industry to create innovative digital applications that provide convenience for customers to transact, namely mobile banking. Mobile banking is an application that utilizes mobile facilities to conduct mobile banking transactions (Al-Jabri, 2012).

Currently, mobile banking is one of the new technologies that are increasingly being used by most banks (Laukkonen & Laukkonen, 2007; Suoranta & Mattila, 2004; Munoz-Leiva et al., 2017). Mobile banking opens up opportunities for banks to offer added value as incentives to customers. This technology has also increasingly attracted the attention of customers because it can provide the same traditional services as money transfers, check deposits or pay bills, and even introduce new electronic services, such as consultants and virtual personal banking services that make it possible to transfer and withdraw money without a card (Abdallah, Dwivedi, & Rana, 2018). With mobile banking, customers can access many banking facilities 24 hours a day to conduct transactions and for banks this technology is beneficial because it can significantly reduce costs (Koenig-lewis et al., 2009). This M-banking technology has provided comfort, ease of use and speed (Suoranta & Mattila, 2004; Baabdullah, Abdallah, Rana, & Kizgin, 2019). Users of mobile banking services in Indonesia according to Bank Indonesia reports continue to increase rapidly. The total growth of mobile banking users from four major banks (Mandiri, BCA, BNI, and BRI) reached 23.65 million users in 2015. The number increased by 25% from the number of mobile banking users in 2014 which were around 18.8 million users and is expected to continue to rise in the following years.

The results of a MEF Mobile Ecosystem research institute, 80% of the total 70 million bank customers in Indonesia have actively used the mobile banking service to check balances and transfer funds to other customers. (https://dailysocial.id/post/mobile-banking-indonesia). Data data from the APJII survey in 2017 shows that the development is not comparable with the growth of internet users and smart cellular markets where only 7.39% of internet users are using it for transactions with banks. This means that the use of cellular banking services is much
lower than expected even though the company has invested millions of dollars to build a cellular banking system (Luarn & Lin, 2005). This might happen because the users are still not utilizing the existing facilities (Yao & Zhong, 2011), regarding security and privacy, risk factors, trust. The widespread adoption of cell phone use does not reflect the adoption of the use of mobile banking, although mobile banking is considered the first commercial cellular service (Hoehle, 2007).

As with other innovation concepts, M-banking is very dependent on user behavior intention, and influences the use of mobile banking (Baptista & Oliveira, 2015). Therefore, it is necessary to identify the factors that influence behavior intention/intention to adopt M-Banking because the success or failure of a technological innovation depends on the level of customer acceptance of the technology. This study uses two models, the UTAUT Model (Venkatesh, Moris & Davis, 2003, 2003) and theory of trust (Mayer, 1995) in the context of mobile banking. The Trust factor is considered important in understanding acceptance of M-banking. Trust is considered an important aspect in adopting online banking because it can increase adoption rates (Nguyen, 2013). The researcher considers that these two constructs are still very relevant to the conditions in Indonesia where the trust factor is still an obstacle in receiving mobile banking.

2. Literature Review

The Unified Theory of Acceptance and Usage Technology (UTAUT) model is an integration of eight previous models such as TRA, TPB, TAM, MM (Motivation Model), MPCU (model of PC utilization), DOI (diffusion of innovation n TAM-TPB and SCT (sociocognitive theory) This model has become one of the most popular frameworks in the field of technology acceptance models, like the previous acceptance model, the UTAUT Model aims to explain user intentions to use information technology and user behavior UTAUT models present a more comprehensive picture of the acceptance process compared to previous models (Venkatesh et al., 2003).

Since it was first proposed and published in 2003, the focus of studies on UTAUT has been validated, and developed through the addition of new external variables, and combined with other theoretical models and the causal relationships of other models with UTAUT key variables including the trust variable. Some researchers have paid particular attention to studies that incorporate these variables (Munoz-Leiva et al., 2017; Im, Kim, & Han, 2008; Lafaexo, Hadri, Amhal, & Rossafi, 2018). Literature shows that trust is an important factor in explaining user acceptance of technology (Featherman & Pavlou, 2003). Trust has an impact on the intention to use online services, because of its role in reducing uncertainty (Mcknight & Choudury., 2002). Trust also impacts social influence (Beyari & Abarshi, 2018), performance expectancy, risk perception and effort expectancy (Luo et al., 2010), behavioral intention (Luo et al., 2010; Oliveira et al., 2014).

Trust is not a new variable in the research but the literature review results of the researchers show that trust is formed from the constructs of UTAUT, therefore researchers are interested in conducting an extended UTAUT model in the context of mobile banking by adding trust variables. The trust variable is considered important in understanding acceptance of M-banking (Ramos, 2018) and is an important aspect in adopting online banking because it can increase adoption rates (Nguyen, 2013). The online environment is an impersonal environment that offers a lot of risks (Ramos, 2018). This means that online services that involve financial transactions, such as m-banking, can contribute to increasing insecurity and the risk felt by users in conducting banking transactions via cell phone or internet. The researcher considers that this construct is also very relevant to the conditions in Indonesia where the trust factor is still an obstacle in the acceptance of mobile banking.

3. Conceptual Model and Hypothesis Development

3.1 Trust

Increasingly widespread internet crime such as account hacking, the factor of trust becomes very important in using M-banking. Trust is considered as an important aspect in online banking adoption because trust can increase customer adoption rates. Trust is the foundation of business. A business transaction between two or more parties will occur if each of them trusts each other.

Some literature has defined trust with various approaches (Mukherjee & Nath, 2003). Initially, trust is widely studied from the discipline of psychology, because this is related to one's attitude. In its development, trust became the study of various disciplines. According to Mayer (1995) there are three factors that shape a person's trust in others, namely ability, benevolence, and integrity, whereas according to Mukherjee and Nath (2003) the dimensions of trust consist of the perceived risk. This risk perception arises because economic transactions involve trust in online banking, where banks and customers are separate, physical relationships are very difficult to monitor and cyber laws are still unclear. As a result, the higher the risk of customer perception will affect the level of trust in online banking and the
system. The second is technology orientation. Consumer orientation toward technology from electronic communication and the internet often represents their trust in internet banking. Reputation is overall quality or character that can be seen or valued by the community. Reputation is a very important factor of trust. The measure used to assess trust in this research refers to ability, benevolence and integrity as proposed by (Mayer, 1995). Literature shows that trust is an important factor in explaining user acceptance of technology (Featherman & Pavlou, 2003). Trust has an impact on the intention to use online services, because of its role in reducing uncertainty (Mcknight & Choudury., 2002). Trust has an impact on social influence (Beyari & Abarshi, 2018), performance expectancy, risk perception and effort expansion (Luo et al., 2010), behavioral intention (Luo et al., 2010; Oliveira et al., 2014).

H1: Trust influences social influence
H2: Trust influences Performance expectancy
H3: Trust influences Effort expectancy
H4: Trust Influences Behavioral intention

3.2 Performance Expectancy

Performance expectation (EP) is the level where the use of technology will benefit consumers in carrying out certain activities (Venkatesh, 2012). According to Venkatesh et al. (2003), it is the extent to which someone believes that using a system will help him to benefit in job performance. Furthermore according to Tai (2013), EP is the consumer's belief that the use of certain technologies can improve overall performance (Riswanto, et al., 2019). PE is measured by perceived usefulness, extrinsic motivation, job-fit and relative advantage (Venkatesh et al, 2003), usefulness, speed, increase efficiency, improve the performance (Martín & Herrero, 2012), and productivity, convenient, and speed (Junadi, 2015). In this study, PE is measured by the benefits of m-banking, the level of transaction speed, system innovation and time efficiency. The results of previous studies show that performance expectancy is related to the intention to use mobile banking (Abdallah et al., 2018; Acheampong et al., 2018; Baabdullah et al., 2019; Lafraxo et al., 2018).

H5: Performance expectancy influences behavioral intention to continue using M-banking

3.3 Effort Expectancy

EP is the level of convenience associated with the use of technology by consumers; (Venkatesh, 2012; Venkatesh et al., 2003; Yu, 2012). EE comes from three existing construction models: perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT).

This EE construct is measured by perceived ease of use, methodical complexity and usage simplicity (Maduku, 2017), usefulness, flexibility, user friendliness and overall navigation facilities (Chinyamurindi, 2017), usefulness, cost effectiveness, easy to learn, easy to use, clear interaction with the use of the system (Xiang, Magnini, & Fesenmaier, 2015), perceived ease of use, complexity, and ease of use (Venkatesh et al., 2003), ease of use, system flexibility, easy to learn (Junadi, 2015; Nugroho et al., 2017), simple, ease of use, little effort, (Martín & Herrero, 2012), perceived ease of use (Huang & Kao, 2015). EE in this study uses the ease to learn, understand operations, interact with the system and system flexibility. Previous studies conclude that effort expectancy influences behavioral intention (Abdallah et al., 2018; Lafraxo et al., 2018).

H6: Effort expectancy influences behavioral intention to continue using M-banking

3.4 Social Influence

SI is the level of influence that others can have on the adoption of a given system. According to Venkatesh et al. (2003), SI is an individual's perception that someone else who is important in his life thinks that he must adopt a given technology (Yu, 2012). Social influence as a direct determinant of intention to use is represented as subjective norm TRA, TAM2, TPB/DTPB and C-TAM-TPB; social factors at MPCU and IDT images (Venkatesh et al, 2003).

Other literature shows also indicators of social influence namely: people think useful, appropriate to use, agree to use (Martín & Herrero, 2012), subjective norm, social factors, and image (Huang & Kao, 2015), the important people (family/relatives/friends) recommend the system, use the system support the use of the system (Junadi, 2015). SI measures in this research are the influence of superiors, the influence of friends or spouses, and self-image. The results of previous studies show that social influence is significantly related to behavioral intention (Abdallah et al., 2018; Acheampong et al., 2018; Lafraxo et al., 2018).

H6: Social Influence influences behavioral intention to continue using M-banking.
As with other innovation concepts, M-banking is very dependent on user behavior intention, and influences the use of mobile banking (Baptista & Oliveira, 2015). Therefore, it is necessary to identify the factors that influence behavior intention/intention to adopt M-Banking because the success or failure of a technological innovation depends on the level of customer acceptance of the technology.

In this study using two models to predict behavioral intention, namely the first UTAUT Model. UTAUT Model, in this model there are 4 variables that influence technology acceptance by individuals and the intention to adopt it, namely performance expectation (PE), effort expectation (EE), social influence (SI) and facilitation conditions (FC) (Venkatesh et al., 2003). PE, EE and Social Influence directly influence intention or behavioral intention, whereas FC variable directly influences usage behavior. Both trust models, some researchers have recently added the trust variable to the UTAUT model to increase the predictive power and enable a deeper understanding of technology adoption as a concept in the system used (Luo et al., 2010). There are three factors that shape a person's trust in others, namely: ability, benevolence, and integrity (Mayer, 1995).

![Conceptual model adopted from Vankantesh et al, 2003.](image)

**Figure 1. Conceptual model adopted from Vankantesh et al, 2003.**

Note: PE: Performance expectancy, EE: effort expectancy, SI; Social Influence, BI: Behavior intention

### 4. Methodology

For the purpose of research, data was collected from five regions in Jakarta. This study uses convenience sampling technique instead of probability sampling technique. Probability sampling is actually the right technique to avoid sampling bias and result generalizability (Bhattacherjee, 2012) but it is very difficult to get customer M-banking user data in connection with bank secrecy rules. The online-survey was used to facilitate the distribution of questioners to mobile banking users and was conducted for three months from July to September 2019, and the sample in this study were 400 respondents.

The UTAUT construct was measured using items adopted from previous studies (Huang & Kao, 2015; Martin & Herrero, 2012; Venkatesh et al, 2003; Yu, 2012), while trust is measured using items adopted from previous studies (Featherman & Pavlou, 2003; Mayer, 1995; Zhou, 2011) Before the questionnaire was distributed to respondents, a pilot study of 44 people was conducted to test the level of validity and reliability of the measuring instrument. The results showed that all question items were valid and reliable, where the Cronbach alpha value indicated a number above 0.7.

### 5. Result

#### 5.1 Characteristics of Respondents

Of the 400 questionnaires distributed, a total of 243 questionnaires were returned and filled out completely. The sample of this study was 243 respondents consisting of 127 or 52.3% men and 116 or 47.7% women. Most respondents in this study aged 20-30 years as many as 103 or 42.4% followed by the age group 31-40 as many as 95 respondents or 39.1%. 80.6% or 196 respondents are private employees and constitute the largest group in terms of work. In connection with the income of the largest income groups of 5-10 million by 103 respondents or 44.4%, followed by groups with income between 11-15 million as much as 76 or 31.3%.
Table 1. Characteristics of respondents

|                   | Frequency | Percent (%) |
|-------------------|-----------|-------------|
| **Gender:**       |           |             |
| Male              | 127       | 52.3        |
| Female            | 116       | 47.7        |
| **Total**         | 243       | 100.0       |
| **Occupation:**   |           |             |
| Students          | 14        | 5.8         |
| Government employee | 16       | 6.6         |
| Private employee  | 196       | 80.6        |
| Self-employed     | 12        | 4.93        |
| Other             | 5         | 2.07        |
| **Total**         | 243       | 100.0       |
| **Age:**          |           |             |
| 20-30             | 103       | 42.4        |
| 31-40             | 95        | 39.1        |
| 41-50             | 36        | 14.8        |
| > 50              | 9         | 3.7         |
| **Total**         | 243       | 100.0       |
| **Income (million IDR):** |       |             |
| 5 – 10            | 108       | 44.4        |
| 11- 15            | 76        | 31.3        |
| 16-20             | 30        | 12.4        |
| 20-30             | 12        | 4.9         |
| 30-40             | 10        | 4.1         |
| > 40              | 7         | 2.9         |
| **Total**         | 243       | 100.0       |

5.2 Structural Equation Modelling

This study uses a two stage structural equation model (SEM) using AMOS 24. The first stage, tested the size of the model using CFA to ensure that the fitness model and has the construct validity and reliability are eligible. The second stage is testing the hypothesis of the proposed model.

CFA Test results show a pretty good model where CMIN/DF was 2.65, GFI = 0.787, AGFI = 0.739, CFI = 0.920, TLI = 0.910 and RMSEA = 0.089. All question items have a factor loading above 0.60 and all constructs have composite reliability above 0.7 as suggested by (Hair et al., 2014). AVE values also indicate values between 0.763 - 0.899, meaning that all constructs have values greater than 0.5 as proposed by Hair et al. (2014).

Table 2. Measurement model

| Fit indice      | Cut-off point | Measurement model |
|-----------------|---------------|-------------------|
| CMIN/DF         | < 3           | 2.65              |
| GFI             | >0.9          | 0.787             |
| AGFI            | >0.8          | 0.739             |
| CFI             | >0.9          | 0.920             |
| TLI             | >0.9          | 0.910             |
| RMSEA           | < 0.08        | 0.089             |
Table 3. Standardized regression weight

| Construct | Measurement item | Estimates | Construct | Measurement item | Estimates |
|-----------|------------------|-----------|-----------|------------------|-----------|
| Trust     | TR1              | 0.8473    | EE        | EE1              | 0.8950    |
|           | TR2              | 0.9015    | EE2       |                  | 0.9568    |
|           | TR3              | 0.9010    | EE3       |                  | 0.9409    |
|           | TR4              | 0.8775    | EE4       |                  | 0.8899    |
|           | TR5              | 0.8687    | EE5       |                  | 0.8958    |
|           | TR6              | 0.9159    | BI1       |                  | 0.8230    |
|           | TR7              | 0.8570    | BI2       |                  | 0.7760    |
|           | TR8              | 0.8912    | BI3       |                  | 0.8935    |
|           | TR9              | 0.8694    | BI4       |                  | 0.8865    |
| PE        | PE1              | 0.6099    | SI1       |                  | 0.6225    |
|           | PE2              | 0.8265    | SI2       |                  | 0.8754    |
|           | PE3              | 0.7455    | SI3       |                  | 0.8997    |
|           | PE4              | 0.8730    |           |                  |           |

Table 4. Construct validity and reliability

| Construct | CR      | AVE     |
|-----------|---------|---------|
| Trust     | 0.96903 | 0.77672 |
| PE        | 0.85154 | 0.76372 |
| EE        | 0.95519 | 0.89912 |
| SI        | 0.84721 | 0.79920 |
| BI        | 0.92177 | 0.86295 |

In the second stage the structural model testing showed that CMIN/DF was 2.68, GFI = 0.773, AGFI = 0.739, CFI = 0.903, TLI = 0.910 and RMSEA = 0.089. The test results also show that the conceptual model can predict variants in the construct of behavioral intention with r value square of 0.73, meaning that the construct of UTAUT is PE, EE and SI and the trust variable can explain the Behavioral intention variable by 73%. This is consistent with previous research models. The R square value for PE is 0.74, EE = 0.40 and SI = 0.33.

The path coefficient test results show that trust variables have a significant effect on the three UTAUT variables, namely PE ($\gamma' = 0.62$, p <0.01), EE (\$\gamma' = 0.63$, p <0.01), SI ($\gamma' = 0.58$, p <0.01), while behavioral intention influenced strongly by TR ($\gamma' = 0.34$, p <0.001), PE ($\gamma' = 0.20$, p <0.05), EE (\$\gamma' = 0.37$, p <0.00), SI ($\gamma' = 0.15$, p <0.05). Based on the results of hypothesis testing it can be concluded that all proposed hypotheses can be accepted.

Table 5. Hypothesis test results

| Hypothesis | Standardised estimate | p-value | Significance |
|------------|-----------------------|---------|--------------|
| TR $\rightarrow$ PE | 0.62 | *** | Sig          |
| TR $\rightarrow$ EE | 0.63 | *** | Sig          |
| TR $\rightarrow$ SI | 0.58 | *** | Sig          |
| TR $\rightarrow$ BI | 0.34 | *** | Sig          |
| PE $\rightarrow$ BI | 0.20 | 0.0034 | Sig          |
| EE $\rightarrow$ BI | 0.37 | *** | Sig          |
| SI $\rightarrow$ BI | 0.15 | 0.0089 | Sig          |

PE: Performance expectancy, EE: Effort Expectancy, SI: Social Influence, BI: Behavior intention
Note: *** p-value= 0.001
6. Discussion

The main objective of this study is to examine key factors that influence customers' intentions to continue using m-banking. This study uses the UTAUT model which is expanded by trust variable. As has been discussed in the results of the research that the proposed model supports previous research. The model was able to predict a large portion of variance in the behavioral intention with $R^2$ value of 0.73. This means that the model can jointly explain the intention to continue using m-banking by 73%. The path coefficient analysis results show all the factors of UTAUT and Trust are proven to have a significant relationship with behavioral intention. This study supports previous research (Abdallah et al., 2018; Acheampong et al., 2018; Baabdullah et al., 2019; Lafraxo et al., 2018). In the context of m-banking in Indonesia, EE was to be the strongest factor predicting behavioral intention. This means that ease of learning, operating, interacting, and flexibility of a system in this case m-banking is a factor that must be prioritized and considered by the banking industry. M-banking system must be made as easy as possible so that customers want to continue to use m-banking. These results are very different from the m-banking study revealed by Abdallah et al. (2017), Baabdullah et al. (2019) conducted in Jordan and Saudi Arabia, where the PE factor is the most influential factor of the model UTAUT.

Furthermore, trust was found to be the second majorly significant. This result supported the previous study (Luo et al., 2010; Oliveira et al., 2014), where trust to be to the key point in behavioral intention to technology adoption. Therefore, banks must maintain customer confidence by continuing to pay attention to service levels, satisfaction, reputation concerns, and most importantly, banks are able to secure every banking transaction conducted by customers.

Trust was found to be a crucial factor not only to Behavioral intention but also to PE, EE and SI. The results of this study are in line with previous studies (Beyari & Abaresti, 2018), performance expectancy, and effort expansion (Luo et al., 2010). It means that trust is very influential on all constructs of UTAUT in the context of m-banking in Indonesia. Trust is subjective, therefore banks must ensure that the m-banking system used has enough ability, benevolence and integrity as suggested by Gefen (2002).

Performance expectancy is the third factor that influences behavioral intention. The results of this study are the same as previous studies (Abdallah et al., 2018; Acheampong et al., 2018; Baabdullah et al., 2019; Lafraxo et al., 2018). From the results of this study, bank management wherever possible provides and ensures additional m-banking features that can complete banking transactions without physical and time constraints. The results of the study also showed that social influence also influences behavioral intention. This is in accordance with previous studies (Abdallah et al., 2018; Lafraxo et al., 2018) presenting the results that encouragement of friends, superiors and Image/status also contribute to the intention to use m-banking.

7. Conclusion

The purpose of this research is to examine the factors that influence the intention to use mobile banking in DKI Jakarta Province. For this purpose the UTAUT Model that is integrated with trust is used. The study was conducted for 3 months from July to September 2019 in five regions of DKI Jakarta province. SEM is used to test the data collected. The results show that the proposed model can predict 73% of the variance of behavioral intention, and all proposed variables have a significant effect on behavioral intentions. Of the four variables, the EE variable has the most influence followed by the trust variable.

This study theoretically enriched the m-banking usage literature that already existed in Indonesia. First, the results of the study add new knowledge about the factors that influence the customer's mobile banking adoption, where the EE factor is the factor that most influences the intention to use m-banking in Indonesia. Second, this study examines the UTAUT model that is integrated with trust in new contexts (Indonesia) and new technology (m-banking). Although trust is not a new factor in the integration of the UTAUT model, the results of trust studies are an important factor in the Indonesian context. This is proven by the results of studies that trust not only influences behavioral intention but also the constructs of the UTAUT model (PE, EE, SI). The findings from this study can be used by the banking industry to increase the level of use of m-banking. The proposed model can explain behavioral intention by 73% and all variables significantly influence behavioral intention. Therefore the results of this study can be used as input for decision makers and banking institutions to consider the role of PE, EE, and SI of the UTAUT model and the trust variable in increasing the use of m-banking.

There are several limitations in this study. First, the use of convenience sampling in this study is likely to have an impact on issues related to the generalization of study results. This can be seen from the characteristics of respondents, where the majority of respondents are private employees, aged between 20-30 years and 5-10 million (lower sized income), meaning that the sample does not cover groups in the population aged 50 years and over, and
high income respondents. Therefore it is possible that the sample cannot accurately reflect the target population. Therefore future studies must be done by using a more proportional and broad sample. Second, this study does not measure moderator variables in UTAUT, because future studies need to consider demographic moderator variables such as age, gender and experience to be able to better explain the main constructs that influence intentions to use m-banking. Another limitation is that this study was only conducted in one province in Indonesia (DKI Jakarta), so the results of this study cannot be generalized to a larger population (Indonesia). Therefore, further research is needed that covers m-banking users in all provinces in Indonesia.

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