

THE ROLE OF ATTITUDE AS A MEDIATION BETWEEN THE EFFECTS OF PERCEIVED USEFULNESS, PERCEIVED EASE OF USE, AND PERCEIVED TRUST ON THE INTENTION TO ADOPT MOBILE PAYMENT

Submission date: 07-Aug-2020 08:22AM (UTC+0700)

Submission ID: 1366753228

File name: File_Procceding_ircmb2019.pdf (552.84K)

Word count: 3738

Character count: 19802

TECHNOLOGY

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THE INTENTION TO ADOPT MOBILE PAYMENT TECHNOLOGY**

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Abstract

This study aims to identify factors that influence the intention of adopting a newly introduced mobile payment technology by proposing a conceptual framework which is based on the technology acceptance model (TAM). Data for the study were collected through online survey to 169 respondents. Data analysis was conducted by using Structural Equation Modeling (SEM) technique with LISREL. The results show user's attitude plays a significant role in mediating the effects of both perceived usefulness and perceived trust on the intention to adopt a mobile payment technology. In contrary to previous studies, this study shows that perceived ease of use fails to bring significant effect on attitude. These results imply that providers of new digital technology should pay more attention on promoting the usefulness of their services. It is also important for the providers to take into account the element of trust in their services.

Keywords: technology acceptance model, perceived usefulness, perceived ease of use, perceived trust, attitude, intention to adopt, financial technology.

1. Background

Financial services industry has experienced technological innovation which is in line with the rapid developments of digital technologies. The innovation is known as financial technology (hereinafter, Fintech). Financial Stability Board (FSB), an international body that monitors and makes recommendations about the global financial system, defines Fintech as ² a form of technology-based financial innovation that able to produce new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.

Financial transactions through Fintech cover payment, lending, wealth management, and insurance services (Arjunwadkar, 2018). Fintech is perceived to offer efficient, quick, and ease of use feeling to the users. In general, by carrying only a smartphone device users can pass various transactions within seconds.

In Indonesia, the development of Fintech has been increasingly rapid and covers ² various sectors, like fast payments, loans, retail investment, and remittance. The year 2015 marked the emergence of Indonesian Fintech Association (AFI). The association is home for around 30 percent of Fintech providers in the country. As of year 2017, there were 140 registered Fintech providers, which is about ten times the number in year 2007.

A shift toward cashless society has begun as Indonesian people begin to show interest in using electronic money (e-money). In the big cities, e-money is widely used as an alternative to cash payment in retail transactions. This development happens following the acceptance of online commerce (e-commerce). In 2017, it is recorded that 143 million people in Indonesia, about 54 percent of the total population, were connected to the internet network and familiar with e-commerce and ride-hailing applications.

Mobile payment ² is the newest form in electronic payment technology. Mobile payment allows users to carry out various types of transactions, be they payments, purchases of goods or services, money transfers, and other services through their smartphones in an easy, fast, and secure way. This financial technology is intended to meet the increasing demand in non-cash services.

2. Literature Review

Theory of Technology Acceptance Model (TAM, see Figure 1) was first introduced by Davis (1989). TAM theory was actually based on an earlier theory known as Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975). The TRA theory suggests a number of factors that influence people's decision on how and when to use a new technology.

In TAM, Davis proposes that users' adoption on a new technology will depend on their behavioral intention to use the technology. In turn, the behavioral intention to use will depend on the attitude. The attitude itself consists of two beliefs, specifically perceived use of use and perceived usefulness. Davis (1989) defined the variables Perceived Usefulness (PU) as "the degree to which a person believes that using a particular system would enhance users' job performance" and Perceived Ease-of-Use (PEOU) as "the degree to which a person believes that using a particular system would be free from effort".

PU is the level of confidence of users that adopting certain technologies will improve ³ their performance (Davis, 1989). In the context of mobile payment, smooth transactions are an indicator ³ of system usability. Before adopting new technology, consumers critically evaluate all the benefits they will get after using the technology.

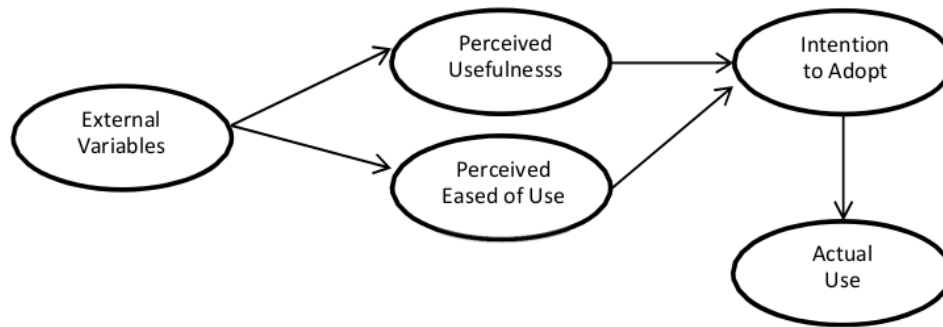


Figure 1. Technology Acceptance Model

³ The PU is the degree of consumer's beliefs that adopting particular technology will enhance their performance (Davis, 1989). In the context of m-payment, smooth transactions such as online utility bill payment, mobile and dish TV recharge, sending and receiving money, mobile shopping, balance transfer and ticket booking are the indicators of system usefulness, before adopting any new technology, consumers critically evaluate all the benefits they will get after using it.

³ PU also has been empirically validated as an important antecedent of the intention of adopting new technologies (Arvidsson, 2014; Duane et al., 2014). ³ Kim et al. (2010) analyzed the impact of user-centric and system characteristics on the use of mobile payments in various types of users and found that PU had a significant positive impact on the use of mobile payments. In considering the usefulness of mobile payment technology, ¹ customers find it cheaper, convenient, flexible and efficient. Hence, the following hypothesis is proposed.

H1: Perceived usefulness positively influences attitude

² It is also found in Davis (1989) that even if potential users believe that the application provided can be useful, users may at the same time believe that the system is too difficult to use

and that the performance benefits of its use are greater than the effort to use the application. If an information system has high user friendliness, it will have a positive impact on users and create a positive attitude towards the use of new technology. PEOU is a significant influence of a positive attitude towards the use of mobile payments and customer satisfaction. People who believe in relevant technology will need minimal effort or better still be free of effort (Davis, 1989).

Furthermore, PEOU refers to the relative complexity of a new system or technology, which can have a significant impact on consumer intentions for the adoption of the new system or technology (Rogers, 2003). PEOU is a belief in ease of use, namely the degree to which users believe that the technology can be used easily and free from problems. The intensity of use and interaction between users and the system can also show ease of use. PEOU responds that existing routine practices can be applied to the situation faced so that it can reduce the uncertainty that is lacking (Eriksson and Sharma, 2003). Accordingly, study of Sikdar and Makkad (2015) indicates that PEOU ¹ is a significant antecedent of positive attitude toward m-payment and customer satisfaction. Hence, ⁴ the following hypothesis is proposed.

H2: PEOU positively influences attitude

⁴ In a social context, trust has several implications. Trust can be referred as one party belief other party to perform the particular transactions, expecting that those other party will have the ability to perform, monitor, and control (Mayer et al., 1995). Since mobile payment services involve a higher level of risk than a traditional payment transaction, trust becomes a key factor to influence adoption to use mobile payment.

Trust can be defined as the willingness to be loyal to a service provider expecting a positive outcome regarding the service provider's future behavior (Zhou, 2016). While using mobile phones, the customers provide more personal and financial information, which might

create a concern in their minds regarding the level of security. In an electronic service, ³ trust is the most important determinant that can influence consumer perceptions of use (Mallat, 2007).

Hence, the following hypothesis is proposed.

H3: Trust positively influences attitude

Attitude represents how consumer feels about their attitude ² towards the acceptance of new ideas and practices. Attitude reflects favorable or unfavorable feeling that people express through their behavior (Premkummar, Rammurthy, and Liu, 2008), which implies that attitudes develop over time as people gain experience. The formation of attitude involves a combination of cognitive beliefs and affective feelings about an object. Attitude towards a certain object is formed, stored in memory and readily accessible which will not only ease decision-making process, but also enhance the quality of decision making (Fazio, Ledbetter, and Towles-Schwen, 2000).

Behavioral ² intention is determined by the attitude of a user who can be advantageous or unfavorable towards the use of the technology and the perception of its usefulness (Davis, 1989). Higher ² the level of intention, higher the likelihood that the behavior will be carried out (Ajzen, I. 2011). Moreover, expressed intention is the tendency of someone to choose doing or not doing a work. For instance, one's intention to do e-money transaction is due to the ease and use of e-money, which is more efficient compared to physical cash, protecting consumer privacy, yet it cannot be counterfeited.

¹ Attitudes may be positive, negative, or neutral. This is because attitudes are evaluative statements or judgments, either favorable or unfavorable concerning objects, people or events (Davis, 1989). ¹ Attitude toward an innovation is a critical intervening variable in the innovation adoption decision. Intention to use is affected by the user's attitude towards using the

information system. Thus, attitude toward a specific information technology is conceptualized as a potential user's assessment of the desirability of intending to use that technology.

If the attitudes of potential users are favorable (positive) there will be higher intentions to adopt and if the attitudes are unfavorable (negative), intentions to adopt will be lower (Davis, 1989). Accordingly, studies of Lee, Lee, and Kim (2007), Wu, Jayawardhena and Hamilton (2014), and Cabanilas et al. (2015) indicate that attitude has a positive influence on the intention to adopt mobile payment. Hence, the following hypothesis is proposed.

H4: Attitude has a positive influence on the intention to adopt

Based on the explanations above, the framework of this study is as follows.

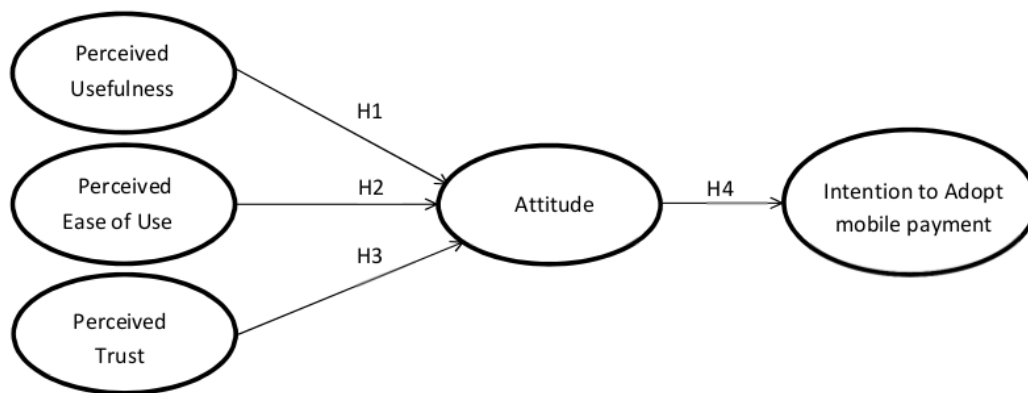


Figure 2. Research framework

3. Methodology

This study used quantitative approach. Data were collected through online questionnaire. There were totally 169 respondents participated in this study. Data were analyzed by using LISREL SEM technique. Usual tests on normality, validity, reliability, and model compatibility were also applied.

The survey was conducted on May-June 2019 and shared among individuals who live in Surabaya and recognize the services of LinkAja mobile payment. LinkAja² is an electronic-based financial service that provides hassle free transactions in credit top-up, merchants payment, bills payment, buying game vouchers, donate, money transfer from a smartphone. The mobile payment service was just launched in 1 March 2019. It was developed upon an earlier mobile payment service, T-Cash. T-Cash was provided by Telkomsel company, the market leader in the Indonesia's telecommunication industry.

4. Results and Discussion

The characteristics of respondents which based on age, gender, and occupation will be discussed in the following. Out of the 169 respondents the highest percentage of age group was 21-40 years (51%), then followed with the age group of 17-20 years old (45%), and the age group of above 40 years (4%). Male respondents consisted of 64% population. Respondents divided into several occupations, namely high school student (30%), university student (35%), employee (20%), and entrepreneur (15%).

A summary of descriptive statistics is shown in Table 1. The results show that majority of respondents gives approval towards the usefulness of LinkAja mobile payment services. Overall perceived usefulness variable obtain an average value of 3.857. Based on the table, perceived ease of use variable was measured using three indicators. The total average value obtained for this variable was 3.700. This shows that in average respondents agreed that LinkAja has good ease of use. On the variable of perceived trust, the average value was 2.430. It means in average respondents gave disapproval to the trust indicators.

Table 1. Summary of Descriptive Statistics

Variable	Mean	St. Dev.	T-Value	Skewness	Kurtosis	Min.	Freq.	Max.	Freq.
PU1	3.834	0.850	58.647	-0.499	0.352	1	2	5	37
PU2	3.893	0.873	57.968	-0.714	0.805	1	3	5	42
PU3	3.846	0.845	59.161	-0.299	-0.244	1	1	5	40
PEOU1	3.669	0.829	57.533	-0.265	-0.093	1	1	5	25
PEOU2	3.728	0.785	61.748	-0.076	-0.478	2	8	5	27
PEOU3	3.704	0.828	58.149	-0.290	-0.066	1	1	5	27
T1	2.408	0.984	31.801	0.278	-0.457	1	33	5	3
T2	2.385	0.964	32.170	0.332	-0.487	1	31	5	2
T3	2.479	0.939	34.319	0.082	-0.484	1	28	5	2
ATT1	3.686	0.874	54.822	-0.316	-0.015	1	2	5	30
ATT2	3.876	0.832	60.533	-0.578	0.605	1	2	5	38
ATT3	3.757	0.883	55.305	-0.448	0.072	1	2	5	34
IT1	3.876	0.803	62.727	-0.538	0.412	1	1	5	35
IT2	3.953	0.858	59.902	-0.596	0.119	1	1	5	47
IT3	3.923	0.809	63.027	-0.677	0.640	1	1	5	38

Note:

PU1: Using LinkAja would enable to pay more quickly.

PU2: Using LinkAja makes it easier to conduct transactions.

PU3: User would find LinkAja a useful possibility for paying.

PEOU1: I believe that when I use LinkAja, the process will be clear and understandable.

PEOU2: I believe that it is easy for me to become skillful at using LinkAja as mobile payment.

PEOU3: I believe that LinkAja is easy to use.

T1: I believe that LinkAja service provider will act ethically when capturing, retaining, processing and managing my personal data.

T2: I believe that LinkAja service provider act honestly in dealing with consumers.

T3: I believe that LinkAja service provider implements adequate security measures to secure my personal data.

ATT1: Using LinkAja service ¹ is a good idea

ATT2: I like the idea of using LinkAja services

ATT3: I would feel that using the LinkAja application is pleasant

IT1: ¹ I intend to use LinkAja technology system as often as needed.

IT2: I will use LinkAja on a regular basis in the future.

IT3: Using the LinkAja for handling my transactions is something I would do.

The results show that attitude variable received an average value of 3.78. This means the attitude indicators received approval from the respondents. The table also shows that the intention to adopt variable received the highest value of 3.953 and the lowest value of 3.876. Overall the intention to adopt variable received an average value of 3.917. It can be concluded that respondents gave approval to the intention to adopt indicators.

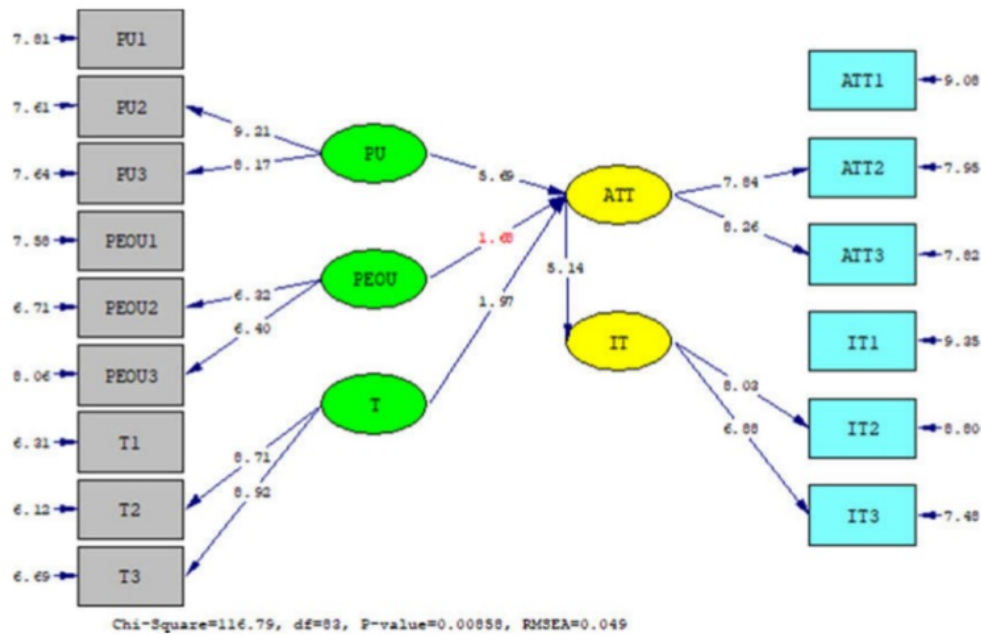


Figure 3. Path Diagram T-Values

Based on Figure 3 which shows the results of hypothesis testing, it can be concluded that:

1. H1 has a t-value of 5.69 ($t\text{-value} > t\text{-statistic } 1.96$). The hypothesis which states that perceived usefulness has a positive and significant effect on attitude is accepted. This finding is consistent with the research conducted by Mwiya, et al. (2017) which found that perceived usefulness has a positive effect on the attitude toward technology using. The process of

paying through LinkAja m-payment is perceived to be efficient and can improve the productivity of the users.

2. H2 has a t-value of 1.68 ($t\text{-value} < t\text{-statistic } 1.96$). The hypothesis which states that perceived ease to use has a positive effect on attitude is rejected. This is not in accordance with the results of ¹Lee, K., Lee, H. and Kim, S. (2007) and ¹Sikdar, P., Kumar, A. and Makkad, M. (2015) which show that positive perception on the ease of use is a significant antecedent to attitude. Ease of use in using LinkAja m-payment is not seen as contributing factor to the attitude of users.
3. H3 has a t-value of 1.97 ($t\text{-value} > t\text{-statistic } 1.96$). The hypothesis which states that trust has a positive and significant effect on attitude is accepted. This finding is in line with previous research of Mwiya, et al. (2017) which states that trust has a positive effect to attitude. Respondents agree that LinkAja m-payment is a trusted financial service that cause positive attitude.
4. H4 has a t-value of 5.14 ($t\text{-value} > t\text{-statistic } 1.96$). The hypothesis which states that attitude has a positive and significant effect on intention to use is accepted. This finding is in accordance with the finding of Cabanilas et al. (2015) which found that attitude has a positive effect on intention to adopt new technology. In general, adopting the LinkAja m-payment is perceived as a good idea as respondents have positive attitude on the application.

5. Conclusion

This study examines the role of attitude in moderating the influences of perceived usefulness, perceived ease of use, and perceived trust variables towards the intention to adopt of LinkAja mobile payment service. Based on the results of hypothesis testing, it can be concluded:

1. Perceived usefulness has a positive influence on attitude. Higher perceived usefulness leads to a more positive attitude towards LinkAja mobile payment. Therefore, it is suggested for the provider to emphasis the promotion efforts on the benefits of using the mobile payment services. For instance, the use of LinkAja provides easier and faster financial transactions, which are a solution for users with limited time.
2. Perceived ease of use does not bring significance influence towards attitude on LinkAja mobile payment. This is not in support to previous findings, and a subject for further discussions.
3. Perceived trust has a positive influence on attitude. Higher level of trust leads to a better attitude among LinkAja users. It is advised for the provider company to pay more emphasis in ensuring the reliability of LinkAja services. It is of highly important for the services to be acknowledged as a trusted and secure application, especially amid the coming of new entrants in the industry.
4. Attitude proves to bring positive influence on the intention to adopt of LinkAja mobile payment. A more positive attitude will raise the intention to adopt LinkAja mobile payment services.

In order to get more evidences, it is advised for future researchers to conduct further research on other new mobile payment services in Indonesia, such as Dana, Dompotku, Sakuku, Dimo Pay, and iPaymu. It is also recommended for future researchers to study the influences of other variables such as personal innovativeness, subjective norm, and self-efficacy, as suggested in the study of Shankar and Datta (2018).

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