THE ANALYSIS OF USER'S INTENTION IN USING MOBILE PAYMENT: A CASE OF YAP!

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ABSTRACT

This study discusses the acceptance of mobile payment in Indonesia using the case study of mobile payment YAP. The model used in the research is TAM (Technology Acceptance Model) and the analysis process uses SEM-PLS (Structural Equation Modeling-Partial Least Square). This research is a quantitative research by using analysis of primary data in the form of questionnaires distributed to all of YAP users. The results of the study show that a person's main factor in using the YAP mobile payment services is influenced by one's experience in using mobile payment services (at least toward using) and social influence from other person (perceived social influence). The expected experience is supported by the perception of benefits from the mobile payment services. This perception of benefits is influenced by the level of ease and degree of conformity of a person's habits in making payment transactions. This can be used by mobile payment service providers to create services with applications that are easy to use, convenient, and have the power of interest for users such as giving a gimmick to certain payment transactions.

KEYWORDS

User Acceptance, Mobile Payment, Yap!, TAM

1. INTRODUCTION

The use of mobile payments in the millennial era grows rapidly. Millennial consider mobile payment services as an innovative payment alternative. YAP (Your All Payment) mobile payment is a non-cash payment tool issued by one of the largest listed state-owned banks in Indonesia (BNI). The YAP application runs on a mobile device with the Android or IOS operating system. The YAP payment process uses a scan QR code model. This QR code is a standard code in the form of a two-dimensional matrix containing black and white squares in an irregular position (Li, et al., 2015). Merchants are required to have a unique QR code to ensure that there is cooperation between merchants and BNI. One of the advantages of YAP and BNI customers is that there is no need to do a top up process for the application wallet. This is because the source of this wallet connected to BNI savings, credit card and wallet products. This YAP can be used as an online payment, offline payments at YAP merchants, debit transactions, credit cards, and money withdrawals. Based on BNI Corporate Plan 2014-2018, BNI will strengthen the consumer business in collaboration with business partners and provide financial transaction solutions with a focus on e-commerce and millennial generation. The process to achieve this goal is to provide digital payment services to support customer transaction needs such as mobile payment.

The organization of electronic money and electronic wallets in Indonesia is regulated by Bank Indonesia. Based on data from Bank Indonesia as of September 26-2018, there are 32 companies that have obtained electronic licenses (Bank Indonesia, 2018). Several companies compete to provide the best electronic-based payment services with their respective products. Based on interviews with operational manager of BNI Bank who handle YAP, it was disclosed that management targeted users of YAP application to be 2 million users and the number of merchants participating in YAP network reached 1 million merchants by the end of 2018. Based on the BNI's internal data as of September 2018, the number of users as many as 355,229 and the number of merchants is 314,265. These show that the target of management is still far to be achieved, because the users only reached 17% and 31% merchants respectively.

Research on the acceptance of mobile payment is increasingly popular along with the growing development of the e-commerce industry and the use of mobile cellular technology. This is also the case in

Indonesia. A study on the investigation of receipt of mobile payments, shows that there are users in Indonesia motivated to use mobile payment (Hunafa, et al., 2017). A significant factor in motivating to use mobile payment is perceived usefulness and perceived ease to use. Perceived ease to use is influenced by social influence, while perceived usefulness is influenced by personal innovativeness and perceived ease to use. The desire to use the system can be determined by the analysis of behavior and profiles of the users or potential users (Jia, 2014). There are many methods for making predictions to analyze the level of system adoption, including mobile payment technology. The most widely used method is TAM (Technology Acceptance Model).

Based on the facts presented, a strategy is needed to increase (Bank Indonesia, 2018) the acceptance of mobile payment applications to pursue the company targets. This research will raise the issue of "What factors can influence the acceptance of mobile payments with YAP case study?" This study is expected to provide information about factors influencing the acceptance of mobile payments and play a role in the process of implementing mobile payment in Indonesia. Organizations can get recommendations for the process in developing a mobile payment therefore it can be used more widely, and it is expected to achieve the goals of the organization in developing business processes. This paper has 7 sections namely theoretical background, conceptual model, methodology, results and analysis, discussion, implications as well as conclusion.

2. THEORETICAL BACKGROUND

2.1 Mobile Payment

According to Bank Indonesia regulations, the term of mobile payment is generalized into digital financial services (DFS), which defined as payment system and financial services activities carried out in collaboration with third parties and using mobile or web-based technology tools and equipment to support inclusive finance. This definition from Bank Indonesia is also in line with the opinion of (Dahlberg, et al., 2015) who define mobile payment as a means of payment for goods, services, and bills with a wireless mobile device and other communication technologies. Based on the two definitions of mobile payment, we can conclude that mobile payment is a mean of payment for goods, services, and bills by using applications on mobile devices issued by third parties. YAP is a payment tool stored in a mobile application. The source of funds used in YAP are comprises of savings, credit cards, and electronic money. Since it was introduced in January 2018, YAP can be used to process payments to offline and online merchants/merchants. The payment process at offline merchants can be done by scanning the merchant's QR code, while online merchants can be done by choosing an online payment method through YAP. The ease of the payment process is in a more flexible funding source facility for various customers, especially for BNI customers who do not need to top up because the source of fund can be taken from savings or credit card facilities.

2.2 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is a study of the acceptance of a technology for the users of these technologies. This theory was introduced by Davis in 1989 regarding the acceptance of someone to accept or reject information technology. The TAM theory uses 2 important variables in determining the acceptance of a technology namely perceived usefulness (perceived use) and perceived ease of use. There are several information technology acceptance theories such as technology acceptance model (TAM), a unified theory of acceptance and use of technology (UTAUT), and diffusion of innovation (DOI). In this study TAM will be used as a research model for the acceptance of mobile payment technology. The use of TAM is considered very suitable to provide more informative conceptual predictions with various variables that can be adjusted to the main research to analyze the behavior of users of mobile payments (Jia, 2014).

3. CONCEPTUAL MODEL

This study is the result of a combined research model from (Ma, et al., 2018) (Cabanillas, et al., 2015) (Karjaluo, et al., 2017) (Mun, et al., 2017) (Hossain & Mahmud, 2016). Previous researches discussed the factors that influence the use of mobile payment services. These factors are also called research variables, then these variables are formed into indicators of research that will be tested against several respondents. The research model can be seen in Figure 1.

Figure 1. Proposed Model

Research by (Davis, 1989) mentions two factors that influence a person's desire to use a system, namely, perceived usefulness and perceived ease of use. Perceived usefulness is defined as the level of how much someone believes that the use of a system will improve performance (Davis, 1989). Research by (Cabanillas, et al., 2015) (Davis, 1989) state that perceived usefulness has a positive impact on attitude toward to use. Mobile payment is one of the uses of technology to assist in the payment process. If an individual considers mobile payment technology to be useful, it will be a pleasure to use. Mobile payment can provide convenience and comfort in making payments, and people are no longer bothered with carrying lots of cash. Relationships that can be formed from perceived usefulness are:

H1: Perceived usefulness influence positively on attitude toward to use mobile payment.

Perceived ease of use is one of the significant factors in the acceptance of a technology (Davis, 1989). Perceived ease of use is defined as a person's level of trust in using a system with minimal effort. Perceived ease to use has a positive impact on intention to use and perceived usefulness (Ma, et al., 2018). The studies by (Cabanillas, et al., 2015) and (Davis, 1989) resulted that strengthen perceived ease to use has an impact on perceived usefulness. The study by (Mun, et al., 2017) also results in perceived ease to use having an impact on the intention to use. If the user feels easy in transacting using a mobile payment, then it can increase the frequency and nominal of the transaction using mobile payment. Relationships perceived ease to use with perceived usefulness and intention to use hypotheses can be formed as follows:

H2a: Perceived ease to use influences positively on the perceived usefulness in using mobile payment.

H2b: Perceived ease to use influence positively the intention to use an individual in using mobile payment.

Research by (Ma, et al., 2018) says perceived of trust affects the intention to use. Trust is a person's belief to use a mobile payment transaction in accordance with expectations. Trust is still important in ecommerce transactions. If a person's level of trust increases, the desire to use mobile payment will also increase. The relationship of perceived of trust and mobile payment can be written with the following hypothesis:

H3: Perceived of trust influences positively on intention to use

Research by (Ma, et al., 2018) says that perceived compatibility affects perceived ease to use. Someone who is accustomed to shopping online will be more easily interested in mobile payment. The results of the study by (Cabanillas, et al., 2015) states that perceived compatibility affects perceived usefulness. The

payment process can be accommodated by YAP by making offline payments through scanning a QR code on a mobile device and for payment online with payment notifications that must be made on the online transaction activities that have occurred. If someone has a transaction behavior related to online payments, they will be more interested in using mobile payment. The perceived compatibility relationship can be written as a hypothesis as follows:

H4a: Perceived compatibility influences positively on perceived usefulness

H4b: Perceived compatibility influences positively on perceived ease to use

Researches by (Cabanillas, et al., 2015) and (Mun, et al., 2017) give results that social influence influences intention to use. In addition, research by (Cabanillas, et al., 2015) says that personal innovativeness to IT influences perceived ease to use and intention to use. Evaluation of technology acceptance cannot be separated from decisions that consider social environmental conditions. The social environment is an individual's perception of how important a system is used. The relationship between perceived social influences can be written as a hypothesis as follows:

H5: Perceived social influence influences positively on intention to use

Personal innovativeness is a form of desire from individuals to use new technology (Cabanillas, et al., 2015). This is in line with the research conducted by (Karjaluoto, et al., 2017) which uses the personal nature of individuals to have an impact on the level of adoption of a system. (Cabanillas, et al., 2015) says that innovative personal can influence the level of individual acceptance to use technological innovations. Personal innovativeness is also influenced by perceived usefulness and intention to use. (Karjaluoto, et al., 2017) has the aim of research that describes the acceptance of the value of technology. The value is also influenced by personal innovativeness. This form of value describes the benefits and experience in using a technology. The relationship between perceived innovativeness on mobile payment can be written with the following hypothesis:

H6a: Perceived innovativeness influences positively on perceived usefulness

H6b: Perceived innovativeness influences positively on intention to use

Attitude toward to use is a positive or negative feeling to use a new system. Research by (Cabanillas, et al., 2015) states that attitude toward using affects intention to use. The same thing is also supported by research by (Hossain & Mahmud, 2016) which says that attitude toward using affects intention to use. If someone has a sense of wanting to use a mobile payment, it will give a positive boost to using the mobile payment. The attitude relationship toward to use can be written with the following hypothesis:

H7: Attitude toward to use influences positively on intention to use

4. METHODOLOGY

4.1 Research Method

The approach in this study uses a quantitative approach. This research uses a case study research method and the data collection method uses an online survey. Stages of research carried out include the process of problem identification, study of literature, primary data collection (preparation of quantitative data collection instruments, readability test of questionnaires, distribution of questionnaires), data analysis, and conclusion. Before conducting questionnaires, readability testing needs to be performed for the purpose to provide information on how much the readability of the questionnaire by respondents. Questionnaires that have been prepared are disseminated through Twitter social media, Instagram and communication channels. The analysis process will be carried out using SEM-PLS (Structural Equation Model) by utilizing SmartPLS 3.0. The selection of SEM-PLS is based on the advantages of the data sample that does not have to be normally distributed, the number of samples is small, and does not have to meet the criteria of goodness of fit.

4.2 Instruments

The questionnaires filled out by the respondents are divided into 3 parts. The first is the use of mobile payment products that have been used. Second is fill in with respondents' identity such as age, gender, education level, occupation, frequency of mobile payment usage, and e-mail address. Third is the set of questions of user acceptance of mobile payment. The questionnaire uses a 5 Likert scale where scale 1 is strongly disagree and scale 5 strongly agrees.

5. RESULT AND ANALYSIS

5.1 Respondents Demographics

The research questionnaire data was collected with a period of 1 month (151 respondents). The summary of the respondents' demographics in the study can be shown in Table 1. The data meets the minimum requirements where more than 30 respondents are required to conduct research (Roscoe, 1975). The summary of the respondents' demographics in the study can be shown in Table 1.

Table 1. Respondent Profile Demographic Summary

Characteristics		Number of Respondents	Percentage	Characteristics		Number of Respondents	Percentage
Gender	Men	75	50%	Education	Junior High School	4	3%
	Women	76	50%		High School	4	4%
Age	<18 years	2	1%		Bachelor	113	75%
	18-24 years	31	20%		Master/Doctoral	29	19%
	25-34 years	95	63%		Others	1	1%
	35-44 years	16	11%	Duration of Use	<= 3 months	25	17%
	45-54 years	7	5%		> 3 - 6 months	31	20%
	55-64 years	0	0%		>6 - 12 months	33	22%
	>=65 years	0	0%		>1 - 2 months	35	23%
					>2 - 4 months	17	11%
					> 4 months	10	7%

5.2 Analysis using SEM-PLS

The phase analysis of the outer model is a process of testing reliability and testing validity. Reliability testing is seen in the Composite Reliability (CR) value and the value of Cronbach's Alpha (CA). Based on Table 2 shows that the composite reliability value of all latent variables is above 0.7, so that it can be said that all latent variables qualify for the next process. The testing process after fulfilling the reliability requirement test is testing the outer loading. Outer loading is used to check indicators that meet the requirements of a latent variable. The outer loading value is said to qualify if the value is more than 0.7 (Hair, et al., 2014). Testing the value of the outer loading shown has met the conditions where the outer loading value for each indicator used above 0.70 so that the process is continued with a validity testing process. Convergent validity testing is used to ensure that all domains used in the construct are relevant and are covered by existing indicators. Convergent validity test is acceptable if the average variance extracted (AVE) value is greater than 0.50 (Hair, et al., 2014). The results of convergent validity testing with AVE values can be shown in Table 2 where all latent variables have met the requirements. The AVE value of each latent variable is above 0.5.

Table 2. CA, CR and AVE Values

Variables	CA	CR	AVE	Variables	CA	CR	AVE
attitude toward using	0.823	0.883	0.655	perceived innovativeness	0.718	0.798	0.676
intention to use	0.905	0.933	0.778	perceived social influence	0.890	0.932	0.820
perceived compatibility	0.828	0.897	0.743	perceived trust	0.844	0.883	0.640
perceived ease to use	0.850	0.899	0.692	perceived usefulness	0.841	0.896	0.822

Based on the results in Table 3 it can be shown that the results of hypothesis testing are based on the value of the path coefficient and the value of t-statistics with an error rate of 5%. The hypothesis is accepted if the path coefficient value is greater than 0.05 and the t-statistics value is more than 1.96. The results of the analysis show that there are 6 accepted hypotheses and 4 hypotheses rejected (Figure 2).

Table 3. Results of Hypothesis Test

Hypothesis	Path Coefficient	t-statistics	p-value	Results
H1	0.730	12.736	0.000	Accepted
H2a	0.396	3.797	0.000	Accepted
H2b	-0.088	0.830	0.406	Rejected
H3	0.033	0.358	0.720	Rejected

Hypothesis	Path Coefficient	t-statistics	p-value	Results
H4a	0.415	3.777	0.000	Accepted
H4b	0.617	10.119	0.000	Accepted
H5	0.343	2.214	0.027	Accepted
H6a	-0.005	0.057	0.954	Rejected
H6b	-0.032	0.446	0.655	Rejected
H7	0.575	4.605	0.000	Accepted

Figure 2. Research Model After the Hypothesis Testing

6. DISCUSSIONS

In the study shows that the H1 perceived usefulness test has a significant impact on the personality toward using the users to use the mobile payment services. It can be interpreted that if the user gets the benefit of the mobile payment services, it is possible for the user to have the drive to continue using the mobile payment services. In other words, to get encouragement for users to use mobile payment services, mobile payment services providers can provide benefits to the ease of transacting on payments that are usually done every day. This is in line with research by (Cabanillas, et al., 2015) which states that the perception of benefits is positive in determining one's experience in using a QR-based mobile payment system.

Then, the factor perceived ease to use has a significant impact on the perceived usefulness of the use of mobile payment services. This can be interpreted that the user feels the ease of use of the mobile payment application can provide more encouragement to explore the mobile payment service. In other words, mobile payment service providers can improve the user experience in interacting with easy applications, so that the benefits of mobile payment services can be felt more by mobile payment users. Ease of use can be produced by providing face-to-face forms that are easy to operate and provide a nuance of beauty that matches the mobile device.

In H3, the relationship perceived easy to use does not have a positive influence on the intention to use for the case of using the mobile payment services. The ease of use of the application is not a priority for payment transaction users to switch to the mobile payment services. This is contrary to research by (Cabanillas, et al., 2015) and (Mun, et al., 2017) which says that perceived ease has a positive impact on someone's interest in using mobile payment services. This happens because mobile payment services in China and Malaysia are

already mature enough and the readiness of its users has been formed to accept the mobile payment model. This condition cannot be formed in the environment of mobile boom users who have just boomed.

In addition, a person's belief in mobile payment services do not have a positive impact on someone's interest in using mobile payment services. A person's interest to switch or try mobile payment services to accommodate payment transactions compared to the aspects of benefits and suitability expected by users or prospective users. This finding contrasts with research by (Ma, et al., 2018) which says that the perception of trust has a positive influence on interest in using mobile payment. This happens because the mobile payment services providers in China have gained trust from its users because its service providers are trusted international companies, namely WeChat, Alipay, and Baidu Wallet. In addition to international service providers, the Chinese community also believes in services released from the country because of the national soul that has been instilled by the Chinese government.

In addition, the results of the H5 test indicate that perceived compatibility has a significant impact on the perceived usefulness of using the mobile payment services. It can be interpreted that the trend or lifestyle of a person in making a payment transaction is very influential to bring about the desired benefits on the mobile payment services. For mobile payment services providers, to maintain and increase mobile payment users, it can provide the benefits expected by users. These benefits can be encouraged by providing payment services that were previously used by users to switch to mobile payment services. Giving a gimmick can also be a stimulus for people to use. This finding is in line with research by (Cabanillas, et al., 2015) which states that the perception of conformity positively determines the perception of the benefits of a QR-based mobile payment system.

The perceived compatibility relationship has a significant impact on perceived ease to use the use of mobile payment services. It can be interpreted that the trend or lifestyle of users of payment transaction services can encourage increased ease of use of mobile payment applications. In other words, if the mobile payment service provider can provide a stimulus for the use of mobile payment services for various payment transactions that have been widely used, it will encourage people to try using the mobile payment application. Types of transactions that can be provided in the form of purchases of goods and services through online media or direct cash transaction media. The ease of use of the mobile payment application turned out to be not only influenced by the design of face-to-face applications that are good and interactive, but also driven by the desire of users to try the application due to the commonly used payment transaction model. This finding is also in line with research by (Ma, et al., 2018) which says that perceptions of conformity have a positive impact on perceived ease.

The H7 test results perceived social influence have a significant impact on the intention to use on the mobile payment service. This can be interpreted that the social influence of one's experience in using a mobile payment service provides moral support for others to try to do things that are considered beneficial for others, especially in using mobile payment services. For mobile payment services providers to be able to increase someone's desire to use mobile payment services, they can provide a marketing model, one of which focuses on the experience, benefits, and convenience of users of mobile payment services. This marketing model can be used to build positive thinking for everyone involved with payment transactions, so that they start trying out mobile payment services and move from the old payment method (cash, debit cards and credit cards). This finding is in line with research by (Mun, et al., 2017) which says that social influence has a relationship with consumer interest in using mobile payment services. This is also supported by research by (Cabanillas, et al., 2015) which says that the perception of how important a system is from users positively determines the interest in using a QR-based mobile payment system.

7. IMPLICATIONS

The results showed that there were 6 variables involved in the desire of users to use the mobile payment service. There are 5 significant variables related to user desires, namely perceived compatibility, relative to using, perceived usefulness, perceived ease to use, and intention to use. One influential variable was also perceived social influence. The results of the study show that a person's main factor in using the mobile payment service is YAP influenced by one's experience in using mobile payment services and social influence from someone. If someone has a pleasant experience with a mobile payment service, it is highly likely that the person will continue to use the mobile payment services. The social environment factors of a

person also have a big role for someone to continue to use mobile payment services or influence new people to start trying mobile payment services. This social environment can be in the form of the opinions of people around, people who influence others, or through social media. Social media can be used to show the benefits and convenience felt by using a mobile payment service. This usage experience is influenced by the perception of benefits, where these benefits are supported by perceptions of ease and conformity in one's habits in making payment transactions.

8. CONCLUSION

The results of the study show that a person's main factor in using the mobile payment services is influenced by one's experience in using mobile payment services (attitude using toward) and social influence from someone (perception social influence). A pleasant experience with mobile payment services, provides a higher possibility for someone to continue to use the mobile payment services. Supporting factors for generating such experiences are perceived usefulness and perceived ease to use. The social environmental factor of a person (perceived social influence) also has a big role for someone to continue to use mobile payment services or influence new people to start trying mobile payment services. This social environment can be in the form of the opinions of people around, people who influence others, or through social media. Social media can be used to show the benefits and convenience felt by using mobile payment services. This usage experience is influenced by the perception of benefits, where these benefits are supported by perceptions of ease and conformity in one's habits in making payment transactions.

REFERENCES

- Bank Indonesia , 2018. *Informasi Perizinan Penyelenggara dan Pendukung Jasa Sistem Pembayaran*. [Online] Available at: <https://www.bi.go.id/id/sistem-pembayaran/informasi-perizinan/uang-elektronik/penyelenggara-perizinan/Pages/default.aspx> [Accessed 8 October 2018].
- Cabanillas, F. L., Luna, I. R. & Ríos, F. J., 2015. User behaviour in QR mobile payment system: the QR Payment Acceptance Model. *Technology Analysis and Strategic Management*, 27(9), pp. 1031-1049.
- Dahlberg, T., Guo, J. & Ondrus, J., 2015. A critical review of mobile payment research. *Electronic Commerce Research and Applications*, 14(5), pp. 265-284.
- Davis, F. D., 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), pp. 319-340.
- Hair, J. J. F., Sarstedt, M., Hopkins, L. & Kuppelwieser, V. G., 2014. Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European Business Review*, 26(2), pp. 106-121.
- Hair, J. J., Hult, G. M., Ringle, C. M. & Sarstedt, M., 2014. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. California: SAGE Publications, Inc.
- Hossain, R. & Mahmud, I., 2016. *Influence of cognitive style on mobile payment system adoption: An Extended Technology Acceptance Model*. s.l., s.n.
- Hunafa, K., Hidayanto, A. N. & Sandhyaduhita, P., 2017. *Investigating Mobile Payment Acceptance Using Technological- Personal-Environmental (TPE) Framework: A Case of Indonesia..* s.l., IEEE.
- Jia, L. H., 2014. *The effect of technology usage habits on consumers' intention to continue use mobile payments*. s.l., s.n.
- Karjaluoto, H., Shaikh, A. A., Saarijärvi, H. & Saraniemi, S., 2017. How perceived value drives the use of mobile financial services apps. *International Journal of Information Management*.
- Li, L., Qiu, J., Lu, J. & Chang, C.-C., 2015. An Aesthetic QR Code Solution Based on Error Correction Mechanism. *The Journal of Systems & Software*, Volume 116, pp. 85-94.
- Ma, L. et al., 2018. *What Drives the Use of M-payment ? An Empirical Study about Alipay and WeChat Payment*. s.l., s.n.
- Mun, Y. P., Khalid, H. & Nadarajah, D., 2017. Millennials' Perception on Mobile Payment Services in Malaysia. *Procedia Computer Science*, Volume 124, pp. 397-404.
- Roscoe, J.T. 1975. *Fundamental research statistics for the behavioral sciences, 2nd edition*. New York: Holt Rinehart & Winston.