Intention to Use Mobile Payment in Indonesia. The Role of Innovativeness, Usefulness, Risk, and User Stress

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Abstract. This study aims to examine the effect of perceived satisfaction, perceived usefulness, perceived risk, and perceived trust variables on the intention to use mobile payment in Indonesia. This study uses Gopay mobile payment as an object. This study is causal research that was tested empirically by using questionnaire data of 300 respondents who have used Gopay mobile payment at least 3 times in the last 3 months. The analysis of this study used Structural Equation Modeling (SEM) with SPSS 25 and AMOS 22.0 software. The results show that innovativeness and perceived ease of use has a positive and significant effect on perceived usefulness, stress has a negative and significant effect on perceived usefulness, while perceived satisfaction, perceived usefulness, and perceived trust have a positive and significant effect on the intention to use mobile payment Gopay in Indonesia.

Keywords: Innovativeness · Perceived usefulness · Perceived Risk · Intention to Use Mobile Payment

1 Introduction

Current technological developments bring changes not only in business but also in consumer behavior. One of the rapid developments in Indonesia today is the use of non-cash payment methods, better known as e-money. This growth is supported by Bank Indonesia's (BI) policy, which since 2013 has proposed the "National Cashless Movement," aiming to provide convenience for its users and reduce handling costs from financial institutions.

The 2021 data shows that the most frequently used digital payments in Indonesia are e-wallet and virtual accounts. These two payment methods dominate 80% of the payment methods [1]. One of the biggest e-wallets today is Gopay, which is a product of Decacorn Gojek. A survey shows that Gopay is the most popular e-wallet service in Indonesia today [2] and it is also the highest monthly e-wallet in Indonesia [3].

This study is based on the gaps found in Cabanillas et al. [4] and Leiva et al. [5]. In Cabanillas et al. [4], all variables, namely innovativeness, stress, perceived ease of use, perceived satisfaction, perceived usefulness, perceived risk, and perceived trust, have a significant effect on the intention to use mobile payment, while in Leiva et al. [5],

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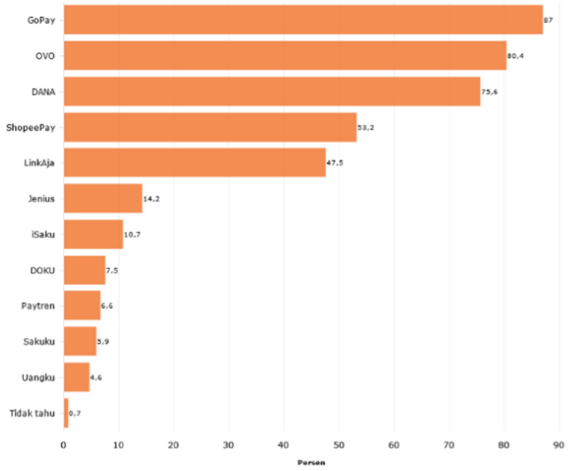

Fig. 1. Percentage of e-wallet users in Indonesia

perceived usefulness and perceived risk do not have a significant effect on the intention to use mobile payment. This study replicates Cabanillas et al. [4] with Gopay as the research object (Fig. 1).

In Cabanillas et al. [4], innovativeness is defined as the willingness of users to try a new information technology which is a payment service through cellular media, where innovation is considered to play an important role in determining user perceptions of technology adoption. Yi et al. [6] state that innovativeness can affect perceived usefulness and the intention of user behavior to use new technology. Personal innovation and perceived usefulness can be closely related and are strong determinants of users' intentions to use mobile payment services, so the following hypothesis is proposed.

H1: Innovativeness has a positive effect on Perceived Usefulness.

Stress refers to a situation where individuals experience an inability to adapt to something new, experience increased sensitivity, and can have negative impacts, such as fatigue, headaches, restlessness, and irritability [7]. Consumers who are stressed and nervous are very resistant to change and will affect the acceptance of payment services such as trading activities through mobile media [8]. Individuals who feel anxious, stressed, and nervous when trying and using new technology may refuse to use technology and prefer to make payments by traditional methods [9]. Based on these arguments, the second hypothesis is proposed as follows.

H2: Stress has a negative effect on Perceived Usefulness.

Perceived ease of use is defined as the ease with which the process of using any technology services such as cellular trading or mobile payments can be made [5]. Another definition describes perceived ease of use as the degree to which a person believes that using a particular system would be free of effort [10]. Consumers believe easy-to-use technology will be very useful and lead to technology adoption such as payments using mobile payment services [11]. Thus, the technology that is easy to use will be felt useful. The third hypothesis is as follows.

H3: Perceived Ease of Use has a positive effect on Perceived Usefulness.

Satisfaction refers to a psychological or emotional state resulting from a cognitive assessment of the gap between expectations and the actual performance of an information system [12, 13]. Perceived satisfaction is a general evaluation of a product by customers, which is related to both whether or not the product meets the needs and desires of customers [14]. Users with a high level of satisfaction will have a higher intention to use technology, so the fourth hypothesis is as follows [15].

H4: Perceived satisfaction has a positive effect on the Intention to use mobile payment on Gopay in Indonesia.

Perceived usefulness is the level where consumers believe that using a certain system will help improve their work performance [10]. Several studies confirm that when users perceive a higher level of perceived usefulness, users will have a greater intention to use the payment system [4]. [16–18], The fifth hypothesis is as follows.

H5: Perceived usefulness has a positive effect on the Intention to use mobile payment on Gopay in Indonesia.

According to Bauer [19] and Leiva et al. [5], perceived risk is a consumer's perception of the uncertainty and unfavorable consequences perceived by consumers related to consumer expectations while using certain products or services. Perceived risk reflects the consumer's perception of the uncertainty of the results related primarily to finding and selecting product or service information before deciding to use it [20]. Furthermore, Luna et al. [21] stipulates that risk negatively affects the use of cellular payment systems as well as consumer perceptions of the uncertainty and adverse consequences of making transactions using mobile payment methods. The sixth hypothesis is as follows.

H6: Perceived risk has a negative effect on the Intention to use mobile payment on Gopay in Indonesia.

According to Morgan & Hunt [22], trust is the willingness of users to rely on partners who are considered to have integrity related to qualities such as competence, honesty, responsible, etc. The existence of trust can ease someone to understand, control, and monitor a situation. On the other hand, Singh et al. [23] define trust in B2C e-commerce as a psychological state that induces acceptance of the vulnerability of people who trust and is based on favorable expectations about the intentions and behavior of others. According to Leiva et al. [5], trust is used to understand the intention to use easily, based on the idea that trust will reduce the effort expended to understand, control, and monitor a situation. The higher the trust, the greater the intention to use technology; thus the seventh hypothesis is as follows.

H7: Perceived trust has a positive effect on the Intention to use mobile payment on Gopay in Indonesia.

All seven hypotheses in this study can be seen in Fig. 2. There are five hypotheses with a positive direction and two hypotheses with a negative direction.

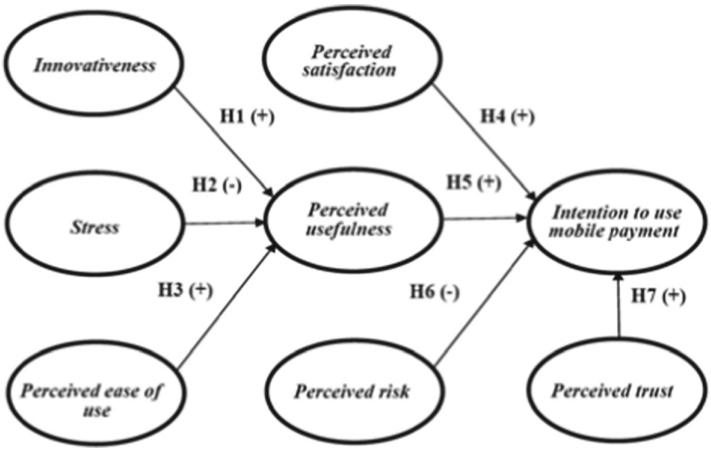

Fig. 2. Research model

2 Research Methods

This study is basic causal research. A quantitative approach was used in this study by collecting data in the form of a survey. The collected data were processed using the Structural Equation Modeling (SEM) technique using SPSS 25 and AMOS 22.0 software.

The level of measurement in this study is the interval. The type of measurement scale used was a 5-point numerical scale. The greater the score or, the more to the right indicates that the respondent increasingly agrees with the statement. All variables in this study consist of 3–5 indicators. The target population of this study was all mobile payment users who have used Gopay mobile payment for a minimum period of 6 months. The characteristics of the population were: (1) have mobile payment Gopay at least three times in the last 3 months, (2) aged at least 18 years old, and (3) domiciled in Indonesia. The distribution of the questionnaires was carried out online using a google form to 300 respondents.

3 Results and Discussion

Validity and reliability testing were carried out with 30 initial respondents. Question items on the questionnaire can be categorized as valid because the Pearson correlation item value with a total value greater than 0.361 and has a significance below 0.05 ($\alpha = 5\%$). The results of Cronbach's alpha show a value above 0.6, so all indicators can meet the valid and reliable criteria.

In the measurement model test, the parameter results have met the criteria (CMIN/DF = 1.386; RMSEA = 0.036; GFI = 0.889; CFI = 0.968; TLI = 0.963). The next stage was to test the validity and reliability of the constructs. The validity of the constructs can be reviewed through standardized loading and Average Variance Extracted (AVE) with a minimum value of 0.5. Reliability can be seen from Construct Reliability (CR) value

above 0.6. All the results meet the criteria so that they can be continued to the structural model test.

Structural model testing show that all parameters met the specified criteria (CMIN/DF = 1.585; RMSEA = 0.044; GFI = 0.874; TLI = 0.950; CFI = 0.944). There is one parameter that falls in the "marginal fit" category but is still acceptable and hypothesis testing can be done (Tables 1 and 2).

The results of hypothesis testing indicate that all hypotheses in this study are supported. The variable that most strongly influences perceived usefulness is innovativeness, while the negative effect of "stress" is smaller than the other variables. H1 has a standardized estimate value of 0.457, a critical ratio value of 5.451, and a p-value of 0.001***. These results show a positive and significant influence between Innovativeness and Perceived usefulness. These results are consistent with previous research conducted by Cabanillas et al. [4], which states that Innovativeness (I) has a positive effect on the Perceived Usefulness (PU) variable and is a strong determinant of user desire to continue using mobile payment services (Fig. 3).

The second hypothesis examines the relationship between the Stress (S) and Perceived Usefulness (PU) variables. H2 has a standardized estimate value of −0.154, a critical ratio value of −2.406, and a p-value of 0.016. These results indicate a negative and significant effect between the two variables. The results of this study are in accordance with previous research conducted by Cabanillas et al. [4], which states that Stress

Table 1. Goodness of Fit Measurement Model

Parameters	Criteria	Result	Conclusion
CMIN/DF	CMIN/DF $\leq$ 3	1.386	Good Fit
RMSEA	RMSEA $\leq$ 0.08	0.036	Good Fit
GFI	GFI 0.8–0.9	0.889	Marginal Fit
CFI	CFI $\geq$ 0.95	0.968	Good Fit
TLI	TLI $\geq$ 0.95	0.963	Good Fit

Table 2. Hypothesis Testing Results

Hypothesis	Standardized Estimate	C.R.	P-value
H1 (+)	0.457	5.451	***
H2 (−)	−0.154	−2.406	0.016
H3 (+)	0.445	6.06	***
H4 (+)	0.191	2.822	0.005
H5 (+)	0.432	4.87	***
H6 (−)	−0.105	−1.979	0.048
H7 (+)	0.307	3.639	***

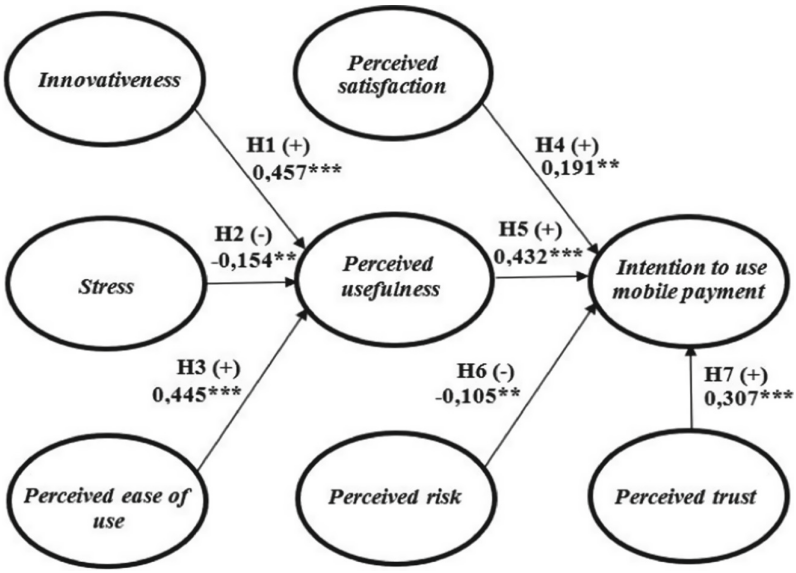

Fig. 3. Results of Hypothesis testing

(S) has a negative effect on the Perceived Usefulness (PU) variable. The complexity or difficulty in using the Gopay mobile payment application will have a significant impact on the perception of the usefulness of the application. This stress exists when users perceive Gopay as a complex, complicated, time-consuming, and mind-consuming means of payment.

The third hypothesis has a standardized estimate value of 0.445 and a critical ratio value of 6.06, and a p-value of 0.001***. These results show a positive and significant effect between Perceived Ease of Use (PE) on the Perceived Usefulness (PU) variable. These results are in accordance with the results of previous studies conducted by Leiva et al. [5] and Cabanillas et al. [4], which reveal that Perceived Ease of Use (PE) has a positive effect on the Perceived Usefulness (PU) variable.

The fourth hypothesis examines the relationship between the Perceived Satisfaction (PS) variable and the Intention to Use Mobile Payment (IU) variable. These results show the standardized estimate value of 0.191, the critical ratio value of 2.822, and the p-value of 0.005. This shows a positive and significant influence between the two variables. These results are in accordance with the results of previous research conducted by Cabanillas et al. [4], which says that Perceived Satisfaction (PS) has a positive effect on the Intention to Use Mobile Payment (IU) variable.

The fifth hypothesis examines the relationship between the Perceived Usefulness (PU) variable and the Intention to Use Mobile Payment (IU) variable. The test results show a standardized estimate of 0.432, a critical ratio value of 4.87, and a p-value of 0.001***, indicating a positive and significant effect between the two variables. These results are in accordance with the results of previous research conducted by Cabanillas et al. [4], which reveal that Perceived Usefulness (PU) has a positive effect on the Intention to Use Mobile Payment (IU) variable.

The sixth hypothesis examines the relationship between the Perceived Risk (PR) variable and the Intention to Use Mobile Payment (IU) variable. The test results show the standardized estimate value of −0.105, a critical ratio value of −1.979, and a p-value of 0.048, indicating a negative and significant effect between the two variables. These results are in accordance with the results of a previous study conducted by Cabanillas et al. [4], which shows that Perceived Risk (PR) has a negative effect on the Intention to Use Mobile Payment (IU) variable.

The seventh hypothesis examines the relationship between the Perceived Trust (PR) variable and the Intention to Use Mobile Payment (IU) variable. The resulting standardized estimate is 0.307, the critical ratio is 3.639, and the p-value is 0.001***, indicating a positive and significant effect between the two variables. These results are in accordance with the results of previous studies conducted by Leiva et al. [5] and Cabanillas et al. [4], which confirm that Perceived Trust (PT) has a positive effect on the Intention to Use Mobile Payment (IU) variable.

Overall, this model shows that although stress and perceived risk have a significant negative effect on the formation of Intention to use mobile payments, the magnitude of the effect is much smaller than other variables. Thus, it can be said that the effect of the positive variable is much stronger than the inhibiting variable. The most powerful variable that shapes perceived usefulness is innovativeness, thus Gopay, as the largest mobile payment in Indonesia must encourage the development of the latest innovations in its payment system that facilitates customers. Another important variable is customer trust in Gopay. This trust is obtained from experience gained while using the service and will strengthen the Intention to continue using Gopay.

4 Conclusion

The limitation of this research is that the object was only Gopay as the largest mobile payment in Indonesia. Further research can be carried out with more diverse mobile payment objects. This study also still has limitations from the distribution of respondents who do not represent the population of Indonesian users. Further research can use a sampling technique that can represent the user population in Indonesia.

In the future, Gopay can develop its application by using the user' fingerprint, as currently, the application asks users to enter a pin code consisting of six numbers manually when making payments. This is done to make consumers increasingly think that Gopay's mobile payment service is easy to use, and the perceived convenience will encourage users to use Gopay more frequently.

References

1. Rossa, V. (n.d). *Tren Pembayaran Digital di Indonesia Tahun 2021: Pertumbuhan E-Wallet Mencapai 300%.* Accessed 2021 from https://www.suara.com/lifestyle/2021/12/14/182802/tren-pembayaran-digital-di-indonesia-tahun-2021-pertumbuhan-e-wallet-mencapai-400
2. Lidwina, A. (n.d). *GoPay Jadi Dompet Digital Paling Populer di Indonesia.* Accessed 2020 from https://databoks.katadata.co.id/datapublish/2020/12/28/gopay-jadi-dompet-digital-paling-populer-di-indonesia
3. Ryza, P. (n.d). *Laporan iPrice: GoPay Jadi E-wallet dengan Pengguna Bulanan Tertinggi di Indonesia.* Accessed 2021 from https://dailysocial.id/post/laporan-e-wallet-indonesia-iprice
4. Cabanillas, F. L., Japutra, A., Molinillo, S., Singh, N., & Sinha, N. (2020). Assessment of mobile technology use in the emerging market: Analyzing intention to use M-payment services in India. *Telecommunications Policy 44*(9).
5. Leiva, F. M., Climent, C. S., & Cabanillas, F. L. (2017). Determinants of intention to use the Mobile Banking Apps: An extension of the classic TAM model. *Spanish Journal of Marketing-ESIC, 21*(1), 25–38.
6. Yi, M. Y., Fiedler, K. D., & Park, J. S. (2006). Understanding the role of individual innovativeness in the acceptance of IT-based innovations: Comparative analyses of models and measures. *Decision Sciences, 37*(3), 393–426.
7. Tarafdar, M., Pullins, E. B., & Nathan, T. S. (2014). Technostress: Negative effect on performance and possible mitigations. *Information Systems Journal, 25*(2), 103–132.
8. Venkatesh, M., & Davis (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.
9. Swilley, E. (2010). Technology rejection: The case of the wallet phone. *Journal of Consumer Marketing, 27*(4), 304–312.
10. Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*, 982–1003.
11. Venkatesh, V., James Thong, Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157–178.
12. Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing, 5*, 25–48.
13. Natarajan, T., Balasubramanian, S. A., & Kasilingam, D. L. (2017). Understanding the intention to use mobile shopping applications and its influence on price sensitivity. *Journal of Retailing and Consumer Services, 37*, 8–22.
14. Hossain, M. S., Zhou, X., & Rahman, M. F. (2018). Examining the impact of QR codes on purchase intention and customer satisfaction on the basis of perceived flow. *International Journal of Engineering Business Management, 10*, 1–10.
15. Hung, M. C., Hwang, H. G., & Hsieh, T. C. (2007). An exploratory study on the continuance of mobile commerce: An extended expectation-confirmation model of information system use. *International Journal of Mobile Communications, 5*(4), 409–422.
16. Kim, Y., Park, Y. J., Choi, J., & Yeon, J. (2015). An empirical study on the adoption of "Fintech" service: Focused on mobile payment services. *Advanced Science and Technology Letters 114*(Business 2015).
17. Pooi, M. Y., Khalid, H., & Nadarajah, D. (2017). Millennials' perception on mobile payment services in Malaysia. *Procedia Computer Science, 124*, 397–404.
18. Singh, N., Sinha, N., & Cabanillas, F. L. (2020). Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence. *International Journal of Information Management, 50*, 191–205.

19. Bauer, R. A. (1960). Consumer behavior as risk taking. In R. S. Hancock (Ed.), Dynamic *marketing for a changing world*, *Proceedings of the 43rd conference of the American marketing association* (pp. 389–398).
20. Cunningham, L. F., Gerlach, J. H., Harper, M. D., & Young, C. E. (2005). Perceived risk and the consumer buying process: Internet airline reservations. *International Journal of Service Industry Management, 16*(4), 357–372.
21. Ramos-de-Luna, I., Montoro-Ríos, F., & Liébana-Cabanillas, F. (2015). Determinants of the intention to use NFC technology as a payment system: An acceptance model approach. *Information Systems and e-Business Management, 14*, 1–22. https://doi.org/10.1007/s10257-015-0284-5
22. Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing, 58*(3), 20–38.
23. Singh, J., & Sirdeshmukh, D. (2000). Agency and trust mechanisms in consumer satisfaction and loyalty judgments. *Journal of the Academy of Marketing Science, 28*(1), 150–167.