The influence of trust, perceived usefulness, attitude, and promotion on e-wallet adoption among generation Z in Bangkalan, Indonesia

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Abstract. Digital transformation significantly changes the behavior of financial transactions, especially among Generation Z, who are highly familiar with technology. The increasing usage of e-wallets offers efficient and practical forms of payment that assist in a cashless movement in Indonesia. Meanwhile, not much is known about behavioral and technological factors that influence the adoption of e-wallets by young users. Thus, this research will contribute to the availability of empirical evidence as regards the effect of trust, perceived usefulness, attitude, and promotion on the intention to adopt e-wallets among Gen Z in Bangkalan. In this study, the quantitative approach was employed by using primary data through an online questionnaire distributed to undergraduate students who are below 26 years old. A total of 120 valid responses were analyzed by means of SEM using AMOS software. The test results showed that perceived usefulness and attitude significantly influenced e-wallet adoption, but, contrastingly, trust and promotion have no significant direct effect. Moreover, perceived usefulness also has a positive impact on attitude and promotion; thus, this explains the importance of perceived usefulness in shaping user intentions. These findings add to the sparse knowledge regarding behavioral determinants of digital payment adoption and could help policymakers and fintech developers enhance user trust, usability, and engagement.

1 Introduction

In fact, technological progress driven by advances in science and engineering has changed how mankind interacts with financial systems. From a physics point of view, stability in one system is dependent on balanced flows of energy and information. The same will be true for the digital economy: it is therefore very relevant that financial technology represents an applied information system designed for optimally managing the flow of digital data and transactions through secure and efficient networks [1], [2]. One of the most popular fintech innovations, e-wallets operate on algorithmic verification and data transmission systems that guarantee accuracy and dependability—both principles central to control and information theory in physics [3], [4].

This is reflected in Indonesia in the form of rapid development in digital payments; the total value of the e-wallet transactions increased from USD 1.5 billion in 2018 to an estimated USD 25 billion by 2023, demonstrating exactly how quickly digital information systems have been adopted by users in Indonesia alone. E-wallets not only make cashless transactions viable but also serve to illustrate how technologies applied in this scenario increase the systemic efficiency of economic interactions among people. Generation Z—people born between the years of 1997 and 2012—is one of the fastest adopters of such technology, as most of them grew up with digital devices and online ecosystems [6], [7].

However, even though e-wallets have become an integral part of daily transactions, the behavioral and technological factors that determine their adoption remain inconsistently understood. Previous studies have highlighted variables such as perceived usefulness [13], [14], trust [11], [12], promotion [14]–[17], and attitude [18]. Yet, findings differ across countries and regions, suggesting that adoption dynamics depend on local conditions—just as variations in physical systems arise from differences in environmental parameters. This research gap is particularly relevant for areas like Bangkalan, where digital infrastructure and economic accessibility differ from major urban centers.

The solution to this will inherently show how behavioral science interacts with technological design in maintaining digital payment ecosystems. Identifying the most influential factors has the potential to help improve both user trust and system efficiency, driven by the same logic of optimization as physical models seeking minimization of entropy and maximization of stability [2], [4]. This study contributes by providing empirical evidence with which to link trust, perceived usefulness, attitude, and promotion to the intention to use an e-wallet among Generation Z in Bangkalan, Indonesia. Applying a scientific modeling approach using SEM, this study will bridge behavioral and applied system

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sciences in explaining how perceived benefits and user attitudes shape adoption behavior. The outcomes are expected to contribute to the interdisciplinary development of reliable, user-centered, and efficient digital financial systems in Indonesia.

2 Research methodology

This research is a quantitative study that seeks to investigate the cause-and-effect relationships among trust, perceived usefulness, attitude, promotion, and intention to use e-wallets. The research applies the Structural Equation Modeling (SEM) method using AMOS software, which enables statistical modeling of complex relationships between observed and latent variables.

Primary data collection was done through an online questionnaire distributed using the social media WhatsApp, Instagram, and Facebook. A total of 120 valid responses were obtained from D3 and S1 students of Universitas Trunojoyo Madura, aged below 26 years, representing Generation Z. The sampling technique used in this study was simple random sampling, whereby every member in the target population has an equal opportunity to be selected into the sample.

2.1 Research model

The thinking framework in Figure 1 shows the influence between the variables examined in this research, namely perceived usefulness, trust, interest in use, attitudes and promotion. Based on that figure, it can be seen that the research used 5 variables and 6 hypotheses to be tested. The framework base on previous research from [8]; [16]. Research [8] used 4 variables including perceived use fullness, promotion, attitude as exogenous variables and intention to use as endogenous variables.

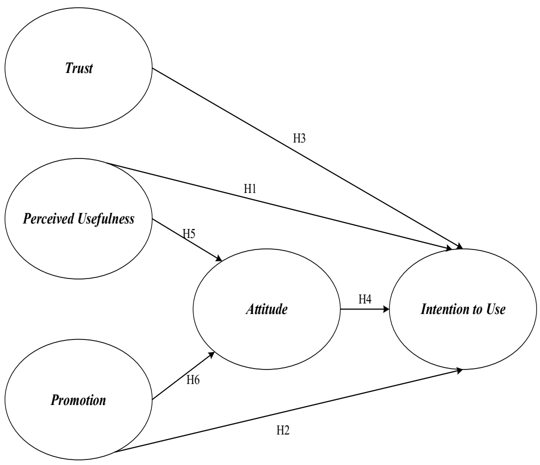

Fig. 1. Framework.

2.2 Trust

Trust is a situation where users believe in a product or service due to the first user experience with the product or service, so that this allows users to expand the use of the information system/technology obtained [17]. According to [18] [19], trust in an electronic payment system can be interpreted as consumer confidence that believes that in the process of electronic payment transactions a process that is in accordance with what consumers expect will be obtained. In this study, indicators that can be used to measure trust include: safe and protected privacy, there is no fraud in making a transaction, has a low risk, and is able to keep the information provided safe.

2.3 Perceived usefulness

Perceived usefulness is a benefit that users can feel related to the extent to which someone can believe that utilizing technology or using new applications is able to increase ability or productivity (Davis, 1989 in [18]). The definition of Perceived Usefulness is how great the degree of a person's dependence on a particular system that can increase that person's work ability [20]. This perception is an important role holder that influences consumers' desire to have reasons for using a product or service. Perception is the initial picture of consumer expectations for the fulfilment of the desired needs. Consumer perceptions of a product that has the latest technological breakthroughs also make the starting point for consumer interest in using the product, so that perceived usefulness can be said to be one of the most influential perceptions if consumers use related products. This perception of benefit is also the level of consumer confidence in certain subjects that are able to simplify and speed up the work they do so that it can improve the performance and work performance of the consumers concerned (Duta, 2015 in [18]). In this study, indicators that can be used to measure perceived usefulness trust include: useful, faster, more effective transactions, increased productivity, and reliability [21].

2.4 Interest in use

Interest in the use is the level of a person's desire to continue using and carrying out certain behaviours. Intention to use, or called interest in use, is the power to encourage someone to use something. According to [21] [9], interest in use is encouragement and the desire always to want to try to use in the future to come.

2.5 Promotion

Sales promotion is a way to stimulate the desire to buy a product/service. Promotion can also be interpreted as a medium of corporate communication to consumers, which aims to create a positive image of the products offered by the company in the market, so as to attract consumers to buy. The main factor in the success of a company is also influenced by promotion. Without promotion, consumers cannot find out about the services or services sold by the company. There are various types of promotions offered by companies, namely in the form of cashback and sale discounts [10].

2.6 2Attitude

According to [22], attitude could be understood as a person's general evaluation of that concept where the more positive someone evaluates the product/brand, the higher the likelihood that a person is going to buy/use the product/service. The attitude of one party towards the other cannot be generalized because their experiences are different.

3 Result and discussion

Based on the variables and indicators used for analysis, validity and reliability tests will be discussed and calculated in the Structural Equation Modeling method with AMOS software in this research. Validity test on each indicator is seen from the large loading factor. The instrument is said to be valid if the amount of loading factor ≥ 0.05 [23]. The factor loading value for each variable meets the validity criteria based on the results of the validity and reliability testing with a value exceeding 0.60. Then, the AVE value for each variable exceeds 0.5. It means that all the variables have met the validity criteria in the AVE test. All variables have a composite reliability value ≥ 0.7. Therefore, it can be concluded that the variables used in this research are all reliable.
The steps in managing AMOS SEM data include developing a theory-based model, development of a flowchart, converting a flowchart into an equation, identifying the model, evaluation of the model, modification of the model, and interpretation of the model.

3.1 Theory-based model development

In Figure 1, the model in general consists of 4 exogenous variables and 1 endogenous variable. The exogenous variables include trust, perceived usefulness, promotion, and attitude. Meanwhile, the endogenous variable is interest in use.

3.2 Flowchart development

The theoretical model that has been created previously is then depicted in a flow diagram to make it easier for researchers to see the causal relationships that they want to test. A flowchart is the diagrammatic representation of a model showing all the relationships among the variables in it. Model Identification Identification of a model in SEM (Table 1) is used to find out whether there is enough information to identify a solution to the structural equation. Model identification is done by looking at the degrees of freedom value. The model in this study has a degrees of freedom value of 128. So, the model in this study falls into the over-identified category because it has a positive value or degrees of freedom > 0. It means the model has enough information to identify a solution.

Table 1. Model identification.

Number of distinct sample moments :	190
Number of distinct parameter to be estimated :	62
Degrees of freedom (190-62)	128

3.3 Model modification

A model that has been tested and passed the testing criteria does not mean that the model is the best one. Model modifications were done in order to decrease the value of Chi-square and the model became fit. Model modification analysis uses the result of output modification indicators. The purpose of modification is to see whether the modification can reduce the chi-square value and make the model fit. Based on the evaluation of goodness of fit done, it can be seen that almost all of the GOF criteria are not yet fit. Thus, modification is needed in order to make the model fit, namely as follows:

Figure 2 showed the model modification was done by adding the flow of relationships between the variables based on recommendations of the Amos program.

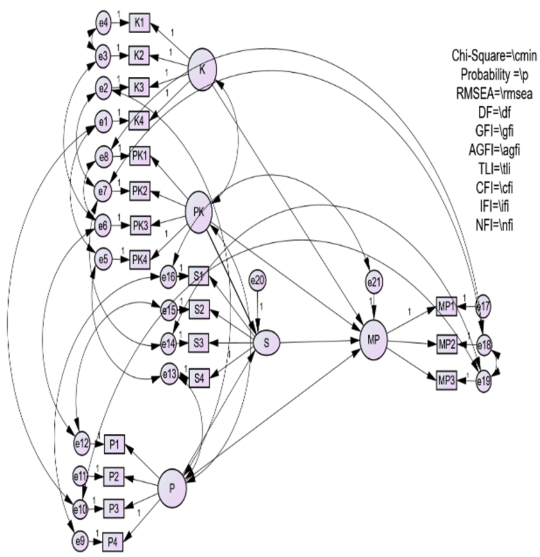

Fig. 2. Modified form 20.

Table 2 presents the model feasibility test; modification 20 has met the requirements of the model feasibility test, which is 4-5 criteria. In modification 20, there are 6 criteria that meet the requirements (Figure 3). This can be seen in Table 3, where the chi-square value in modification 20 is expected to be small, that is 173.676, CMIN/DF is less than ≤2.00, namely 1.357, RMSEA ≤ 0.08, namely 0.06, TLI is more than ≥ 0.95, it is 0.951, CFI is more than ≥ 0.95, namely 0.963, IFI is more than ≥ 0.95, namely 0.964.

Table 2. Goodness of fit.

Chi square	Small is better	468,26	Not Fit	173,676	Good Fit
CMIN/DF	≤ 2.00	3,143	Not Fit	1,357	Good Fit
Probability	≥0.05	0	Not Fit	0,004	Not Fit
RSMEA	≤ 0.08	0,147	Not Fit	0,06	Good Fit
GFI	≥ 0.90	0,706	Not Fit	0,862	Not Fit
AGFI	≥ 0.90	0,626	Not Fit	0,796	Not Fit
TLI	≥ 0.95	0,705	Not Fit	0,951	Good Fit
CFI	≥ 0.95	0,743	Not Fit	0,963	Good Fit
NFI	≥ 0.90	0,668	Not Fit	0,877	Not Fit
IFI	≥ 0.95	0,668	Not Fit	0,964	Good Fit

3.4 Model Interpretation

In model interpretation, hypothesis testing is carried out based on SEM analysis. This test is conducted by comparing the P (Probability) value obtained from the Regression Weights output results with the required limit, namely the P value < 0.05. If the results obtained show that the P value is less than 0.05, then H0 is rejected and H1 is accepted. The hypothesis results can be viewed on the summary table of the results of the AMOS SEM method in the form of Regression Weights output in Table 3.

Table 3. Hypothesis testing.

			Estimation	S.E.	C.R	P
MP	←----	PK	0,524	0,261	2.006	0,045
S	←----	PK	1,027	0,116	8,889	***
MP	←----	P	0,056	0,078	0,716	0,474
S	←----	P	-0,173	0,062	-2,821	0,05
MP	←----	S	0,356	0,181	1,967	0,049
MP	←----	K	0,288	0,209	1,378	0,168
K	←-→	PK	0,192	0,04	4,775	***
PK	←-→	P	0,169	0,046	3,69	***

Table 4 is the main reference to test the hypothesis of whether it has a significant effect or no effect, and this can be shown in the P-value. The required alpha significance value is 0.05. If the results obtained show that the p value is less than 0.05 then the hypothesis is accepted.

Based on Table 4, the following results are obtained:

1) Hypothesis 1

H1 is not rejected, meaning perceived usefulness has a positive significant effect on intention to use.

This indicates that the greater the perception of the usefulness of an e-wallet, the stronger the interest in using it. The positive significant relationship is because users are of the opinion that e-wallets have many uses, and this affects their interest in the use of e-wallets. They consider the use of E-wallets to be more useful, with transactions faster, more effective, and boosting productivity. These results are in line with research conducted by [10] and [24], which state that the perceived benefit variable has a positive and significant effect on people's interest in the use of e-wallets.

2) Hypothesis 2

H2 is rejected because the promotions have no significant effect on interest in using e-wallets.

It means the results of this study are the same as researches by [25] [26] [8] [27] which state that promotional attractiveness does not significantly influence e-wallet repeat user interest. According to the research results, they consider that promos do not guarantee someone buying an item on an online application because there are many risks when transacting online and also the promos offered do not meet their needs.

3) Hypothesis 3

H3 was not rejected: Attitude positively and significantly influences interest in the use of e-wallets.

The results of the study of the effect of attitudes on interest in using an e-wallet by students at Trunojoyo Madura University show that there is a positive and significant effect. They use e-wallets because through the ease of the features displayed in the e-wallet application, they become interested in using e-wallets. Besides that, e-wallets can be used anywhere and at any time. They did not feel that using an e-wallet was cumbersome, and they also thought that the use of an e-wallet was more effective and efficient than cash payments. In accordance with the test results, research conducted by [8] has also shown that attitude variable is significant with a positive effect on interest in use.

4) Hypothesis 4

H4: Trust does not have a significant positive effect on interest in using e-wallet.

From the results of this research, it can be seen that the students at Trunojoyo University, Madura, who are used to making transactions by using e-wallets, still pay little attention to the security system provided by the application. The customers have not given full attention to whether the amount is suitable to the nominal amount paid or if the application can monitor transaction history and can provide security in maintaining customer privacy. This research gives the same result with the research conducted by [28] [29], which states that the trust variable does not influence the variable using m-payment.

5) Hypothesis 5

H5 Failed to be rejected: perceived usefulness has significant positive impact on attitudes

It can be interpreted that the higher the perceived usefulness, the higher the attitude of users towards e-wallets, and vice versa: the lower the perceived usefulness derived from using e-wallets, the lower the attitude of users towards e-wallets. This is in line with research conducted by [30] which states that perceived usefulness has a positive effect on attitudes.

6) Hypothesis 6

H6 is rejected: There is no significant effect from promotions on attitudes. The results of this research differ from research [8], which states that the promo variable has a significant positive effect on attitudes.

7) Hypothesis 7

H7: Trust has a positive significant impact on perceived usefulness; therefore, H7 is not rejected. This is according to the definition of trust by [18], wherein trust in an electronic payment system means that trust in the electronic payment transaction process will provide a process that is as expected. This research is in line with research from [31] [20] that said perceived usefulness on trust has a significant positive effect.

8) Hypothesis 8

H8: Promotion is not rejected, since perceived usefulness does indeed significantly positively affect promotion. This is according to the meaning of the perceived usefulness variable, namely a benefit that a user can feel is related to the use of technology or using a new application which is able to increase capability or productivity. If the respondents use the e-wallet application well, the respondent will be able to reap very large benefits from the e-wallet itself. By making the most of the e-wallet, the respondents will get benefits such as by taking advantage of existing promos. This result is also in line with research from [20] which states that the perceived usefulness of promos has a relationship between variables.

4 Conclusions

1) The research results show that not all factors influence preferences for using e-wallets. There are two factors that influence interest in using e-wallets, namely perceived usefulness and attitude.
2) There are two new relationships were found that were recommended, namely:
   a. The first relationship, the trust variable and perceived usefulness have a significant positive influence on e-wallet use.
   b. Second relationship, the perceived usability variable with promos has a significant positive influence on e-wallet use.

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