Determining factors of digital wallet actual usage: A new model to identify changes in consumer behavior

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CHRONICLE	ABSTRACT
	Since smartphones are so common, digital wallets have developed swiftly to fulfill the demands of a contemporary culture that promotes mobility and streamlines transaction processes. This study's objective is to clarify consumer behavior in Indonesia's adoption of digital wallets. This study was carried out in Jakarta involving 360 respondents. This study analyzes using a structural equation model (SEM) with LISREL software tools. The results of this study explain that perceived ease of use, trust, security, and intention are important in increasing the actual usage of digital wallet users in Indonesia. The practical implications of this study are useful for comparing perceived scores on various antecedents of digital wallet adoption. The study identifies potential differences in perceptions of the elements influencing the adoption of digital wallets in Jakarta, particularly among the younger generation, which makes up the bulk of respondents. The success or failure of digital wallets depends on a variety of ecosystem components as well as consumer-related factors.

1. Introduction

The Ministry of Communication and Information Technology of the Republic of Indonesia (Kemenkominfo) as the leader of digital transformation in Indonesia explained Indonesia's success in accelerating the digital transformation process over the last five years. development in the last five years in Indonesia has focused on providing infrastructure to equalize connectivity and increase economic growth. Digital wallets are now a necessity for the community in carrying out their activities and fulfilling their needs (Rachbini et al., 2022; Shetu et al., 2022). Especially in the last 2 years, the Covid-19 pandemic has made the use of digital wallets for transactions increasing (Fahlevi, 2021). The development of a digital financial service product needs to pay attention to the development of solutions that are relevant to the needs of users and the surrounding ecosystem. Seeing the characteristics and needs of society 4.0 which is increasingly complex, the financial technology industry certainly needs to provide solutions and follow the changes that occur (Alharbi et al., 2022). The rapid development of adoption of financial technology in the country is directly proportional to the challenges faced, namely building public trust in data security. Electronic transactions using digital wallet applications or e-wallet are increasing. Besides being considered practical,

safe, fast, and offering many benefits, transactions like this are also considered safer, during a pandemic like today. Because it is in accordance with health protocols that do not interact directly (Afshari et al., 2021).

By offering simple payment channels, mobile applications have revolutionized the worldwide banking and payments sector. Due to the availability of a sizable untapped customer base made up of unbanked clients, the impact is bigger for developing countries (Chawla & Joshi, 2020). This possibility has drawn numerous new businesses, including start-ups, to Indonesia, where they are beginning with digital wallet services. As a result, firms in the telecom, banking, and online retail sectors have started to develop business plans for their own digital wallet services. Physical wallets and digital wallets both serve the same purposes. Bank card and credit card can be used to load money into digital wallets, which can then be used to make payments to individuals or businesses (Bagla & Sancheti, 2018). A variety of channels are possible for this transaction (Shin, 2009).

Digital wallets are one of the current trends in banking transactions brought about by technological advancements. The capacity to use mobile phone features to conduct online financial transactions is commonly considered as a component of digital wallet in the context of electronic banking. Unsurprisingly, the existence of smartphones has facilitated the quick growth of digital wallets, which has enabled them to meet the needs of the modern society that encourages mobility and facilitates transaction services today. In other words, the popularity of digital wallets is increasing as a result of the flexibility and practicality of the transactions offered by these services. Liu *et al*. (2015) noted that technology advancements in mobile payment systems have played a significant role in launching and forming new inventions for more than 20 years (Hatzakis *et al*., 2010). Since 2012, Indonesia has seen a rise in the use of digital wallets.

The majority of studies concur that digital wallets are crucial for boosting mobile commerce and financial inclusion (Kumar et al., 2018; Madan & Yadav, 2016; Singh et al., 2017). On the one hand, digital wallets enable mobile commerce transactions and provide convenience. On the other hand, they reduce the cost of financial services provided via mobile devices (Dinh *et al*., 2020). The original proponent of the Technology Acceptance Model, Davis (1989), includes both input (users' attitudes toward the technology, its perceived utility, and how easy it is to use) and output (users' actual activity) elements (ie, behavioral intentions, technology use). Perceived usefulness (PU) and perceived ease of use (PEU) are two of these factors that are thought to account for the outcomes in significant ways (Marangunić & Granić, 2015). Variations in the perceived usefulness and ease of use are typically explained by these factors, as well as a number of others: It was shown that TAM (Technology Acceptance Model) was significantly associated to a number of other variables, including subjective norms (SN), self-efficacy (CSE), and facilitation conditions (FC).

The term "digital wallet" refers to a digital payment system that can be used in place of traditional currency using a smartphone and various technical media, such as QR codes, near-field communication (NFC), and one-time passwords (OTPs). For users to use a digital wallet, they must first possess digital currency (e-wallet). There are a plethora of international mobile payment options such as PayPal, Google Wallet, Master Paypass Card, ZipPay, and many others (We Are Social & Hootsuite, 2020). Meanwhile in Indonesia, the results of a study by an independent research institute under the auspices of the Financial Times, FT Confidential Research Digital wallet show the Top 5 digital wallets (Laudon & Traver, 2016). The results of this research have conducted an online survey during September-December 2020, covering all of Indonesia, with 1,000 respondents selected. ShopeePay is listed as the most used digital wallet brand (50%), with a large difference compared to 4 other players, such as Ovo (23%), Gopay (12%), Dana (12%), and LinkAja (3%).). The five brands are now the most widely used by consumers to make digital payments. They are very popular because they are diligent in promoting and cooperating with various merchants, so they are very well known to consumers and the scope of application features is quite complete (Mediatama, 2020).

Customers use digital wallets because payments are simpler compared to cash transactions which have several risks such as theft, damaged money, inefficiency, and practicality in transactions. The steps of governments in the world are starting to shift according to issuing digital currencies that can be stored in digital wallets at this time (Kazmi et al., 2021). However, the use of digital wallets as a means of cashless payment is inseparable from various obstacles, both in terms of use and risk because fraud cases in Indonesia are very high, so the security factor is the main key to building consumer confidence to use digital wallets in Indonesia (Purnama et al., 2021). This new model of payment using the Quick Response Code (QR Code) saves potential problems (fraud) (Teng & Khong, 2021). Carrying a traditional wallet would be cumbersome and inefficient (Kaur et al., 2020). The phenomenon of the development of e-wallets around the world has different backgrounds. In China, the existence of a digital wallet as a means of payment first appeared for online shopping on the Alibaba shopping site, resulting in the appearance of Alipay (Nookhao & Chaveesuk, 2019). If customers already use a digital wallet, they no longer need to carry the wallet (Daragmeh et al., 2021). One only needs to top up the digital wallet balance on a particular application on their smartphone (Shin, 2009). In addition, the payment transaction process using a digital wallet is also fairly easy and fast (Rachbini et al., 2022; Yong Lee et al., 2021). Digital wallets also help customers reduce the worry of having to carry large amounts of money (Shetu et al., 2022). Now digital wallets also have a good security system and are safe from burglary, so customers don't have to worry (Handayani et al., 2020). Another advantage of using a digital wallet is having a variety of promotions on offer, cashback offered by digital wallet business industry players has proven to be able to attract consumers to switch to cashless payments using digital wallets. The most rapid development of digital wallets occurred in 2018 (Shetu et al., 2022). Usually, digital wallets will work with many merchants. The promotions offered also vary, ranging from

rebates/discounts to cashback. So, it is not surprising that using a digital wallet like this is in great demand by the public. Moreover, if the promo given is very tempting (Fahlevi, 2020). These various promos are often held on special days such as national celebrations, beautiful dates, or celebration days.

Customers are skeptical of digital wallet technology and mobile service providers in general (Dinh et al., 2020). They worry about identity theft, fraud involving their bank accounts and credit card numbers, and clerical errors during financial transactions. That's why they're wary about making purchases via smartphone app (Ramadan & Aita, 2018). Consumers have also noted that due to the small number of establishments that accept digital wallet services, the likelihood of their regular use is low. Also, customers are wary since they don't know what they're doing and service providers haven't been explicit (Chris, 2017). The use of cash for purchases also seems to be a deeply ingrained habit for many customers., so this phenomenon will slow down the acceptance rate of innovative payment methods such as digital wallets. In the realm of theory, differences in the use of variables and differences in models in the modification of the TAM model are one of the research gaps that require further research on the most appropriate TAM modification model to examine digital wallet adoption. Based on this gap, it is necessary to conduct research based on the latest findings which found the phenomenon that there is a shift in consumer behavior in terms of digital wallet transactions today, it is necessary to do further research to find out how big the shift in behavior is in an academic study.
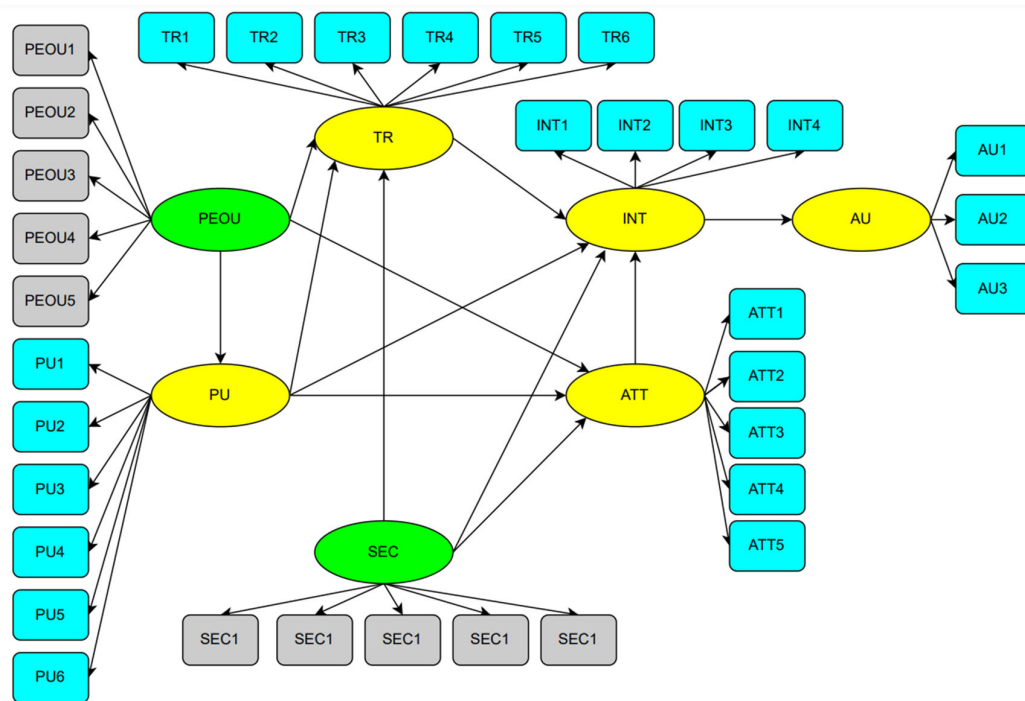

Fig. 1. Research Model

Based on the identification of the problems above, given the existing capabilities and limitations, the study will only discuss digital wallet users in Jakarta and analyze several important factors based on theory and previous research (see figure 1), Additional analysis which is also one of the novelties in this study, especially in the context in Jakarta and the theme of the discussion of digital wallets is the impact of "intention" on "actual usage". This research is contextual in nature, namely conducting research on the context of users in Jakarta. In the explanation above, there is a research gap in this research, Therefore, this study aims to identify the crucial elements in the still-sluggish adoption of digital wallets. The goal of this study is to analyze the variables that affect attitudes and behavioral intentions towards the use of digital wallets, as well as the causes of such use and the opinions of those who already use them. as a new form of consumer behavior that begins with the desire to use digital wallets for consumer groups with a high level of potential use and actualization of digital wallet usage (Choudrie et al., 2018). The research model using the usage actualization dependent variable is still little used, especially in digital wallet adoption research (Sarmah et al., 2021).

2. Methods

The time used by researchers for this research was carried out from April 2021 to December 2021. According to Hair et al. (2014) and Malhotra et al. (2006) these criteria are intended so that this research is measurable and clear when entering the analysis stage to be used as data analysis. The sample criteria in this study are as follows:

    1. Residents of DKI Jakarta

  2. Age 18-35 Years

  3. Have a digital wallet app

Due to the aforementioned fact that the study's target population is unclear, the study's sample size was calculated using the view of Malhotra et al. (2006), who state that the number of samples as responders needs to be modified depending on the total number of questions in the questionnaire. Assuming values between 5 and 10, the observed variable is n. (indicator). For this study, we have 35 indicators, which, when multiplied by 10, yields the total of 350.

$$n = Item\ Indicators \times 10 = 35 \times 10 = 350$$

This study employed 360 samples to raise research precision and decrease research error standards from errors, however the minimum required for such a determination is just 350. The collected surveys' responses will be randomly picked in order to keep the study's objectivity intact, as random sampling is being used. This study uses the Structural Equation Model (SEM). According to Hair et al., 2014), SEM analysis basically aims to obtain a structural model. The model obtained can be used for prediction or model proof. In addition, SEM can also be used to see the size of the influence, either directly, indirectly, or the total effect between the independent variable (exogenous variable) and the dependent variable (endogenous). According to (Hair et al., 2017), SEM is also a statistical technique that is generally used in customer behavior analysis, because this analysis is a combination of factor analysis, regression analysis, and path analysis. SEM is the development of linear model generation (GLM) with multiple regression as its main part. SEM tends to be more accurate, illustrative and robust than the regression technique when modeling interactions, non-linearity, error measurement, error terms correlation and correlation between latent variables as measured by multiple indicators. SEM can also be used as an alternative to path analysis and time series data analysis based on covariance. The random sampling mechanism in this study uses the SPSS 25 software tool on the Random Number Generators menu. Questionnaires will be distributed as much as possible to the population of DKI Jakarta after exceeding the minimum limit according to the minimum proportional sample, the researcher will select the data using the menu in this SPSS. The reason for using this tool is to make it easier for researchers to choose homogeneous samples with the principles of fairness and transparency. The software will select a random sample automatically so that the study can meet the random principle in this study. The use of manual sampling based on numbers such as odd-even or multiples often results in manipulation of the data so that researchers use SPSS as a sample determination tool.

3. Result and Discussion

The characteristics of the respondents profiled in detail in this chapter, in particular characteristics such as gender, age, employment status, and digital wallet used, provide the basis for the socio-demographic analysis of the results and subsequent discussion. Respondents have the ability to determine whether they wish to participate in the study. In the end, the responses they provided produced the data needed for this research study (see Table 1).

Table 1
Profile Respondents

Category	Total	Percentage
Gender		
Men	172	47.7%
Woman	188	52.3%
Age		
15-25	207	57.5%
26-35	75	20.8%
36-45	41	11.4%
45>	37	10.3%
Status		
High School	46	12.7%
Bachelor	145	40.2%
Employee	151	41.9%
Housewife	18	5.2%
Digital Wallet		
OVO	59	16.3%
GoPay	68	18.8%
ShopeePay	106	29.4%
LinkAja	51	14.4%
Dana	76	21.1%
Total	**360**	**100%**

To determine the extent to which a set of variables faithfully represents a set of constructs, researchers often turn to a multi-variate statistical technique called confirmatory factor analysis (Adam, 2018). Although comparable, exploratory factor analysis (EFA) focuses solely on exploring the data and providing information about the required number of factors to reflect the data, whereas confirmatory factor analysis (CFA) also provides this information. To determine the relationships between latent variables, exploratory factor analysis uses all of the available data. In contrast, with confirmatory factor analysis (CFA), the researcher can establish the necessary number of factors in the data and identify the measurable variables that are linked

to the desired latent variables. You can use confirmatory factor analysis (CFA) to back up or disprove a measurement theory (Hair et al., 2014). The following is a CFA model for each construct:
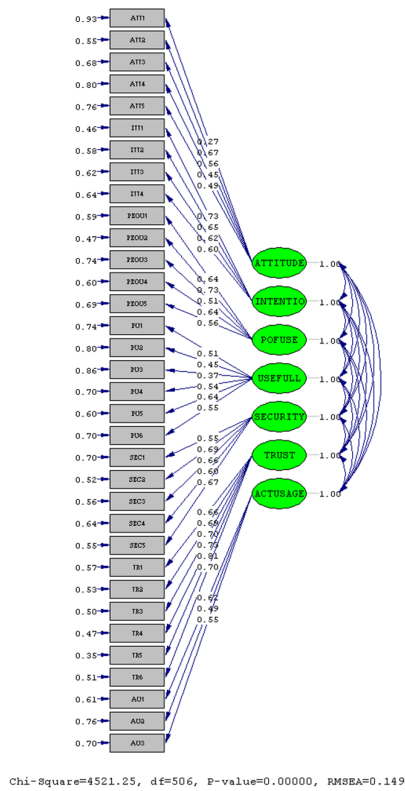

Chi-Square=4521.25, df=506, P-value=0.00000, RMSEA=0.149

Fig. 2. CFA

According to Molenaar (2019), CFA (see Fig. 2) is a form of factor analysis to test whether the measure of a variable is consistent with the researcher's understanding of the nature of the variable. Basically, the measurement of validity and reliability in the CFA is determined from a value called the Loading Factor (FL) and can be symbolized by (λ). An indicator can be said to pass the validity test, if the FL value > 0.60. Meanwhile, an indicator can be said to not pass the validity test, if the value of FL < 0.60. If the value of FL < 0.50, it is recommended to remove the indicator because it is considered weak in measuring the related variables (De Groot et al., 2008). To measure validity, it can also be explained by the value (t), where the value must be equal to or more than 1.96 (t 1.96).
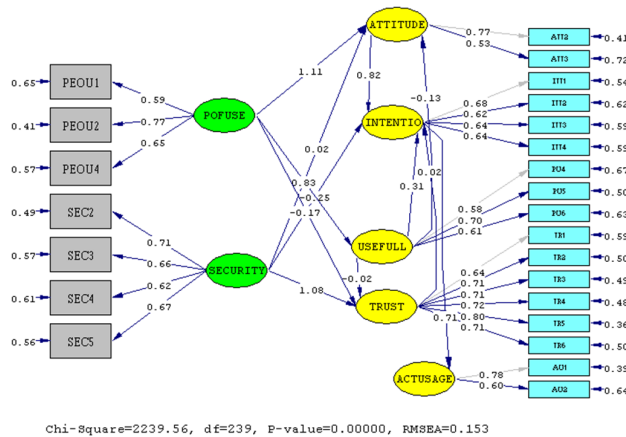

Chi-Square=2239.56, df=239, P-value=0.00000, RMSEA=0.153

Fig. 3. GOF

Based on Fig. 3 the existing GOF criteria, where the p-value limit is > 0.05 and RMSEA < 0.08, the GOF has not been met, it is concluded that the model does not fit the data, because p-value = 0.00000 < 0.05 and RMSEA = 0.153 > 0.08. LISREL provides recommendations for connecting some residuals from several indicators so that the model fits the data, as stated in the menu the modification indices suggest adding an error covariance (see Fig. 4).
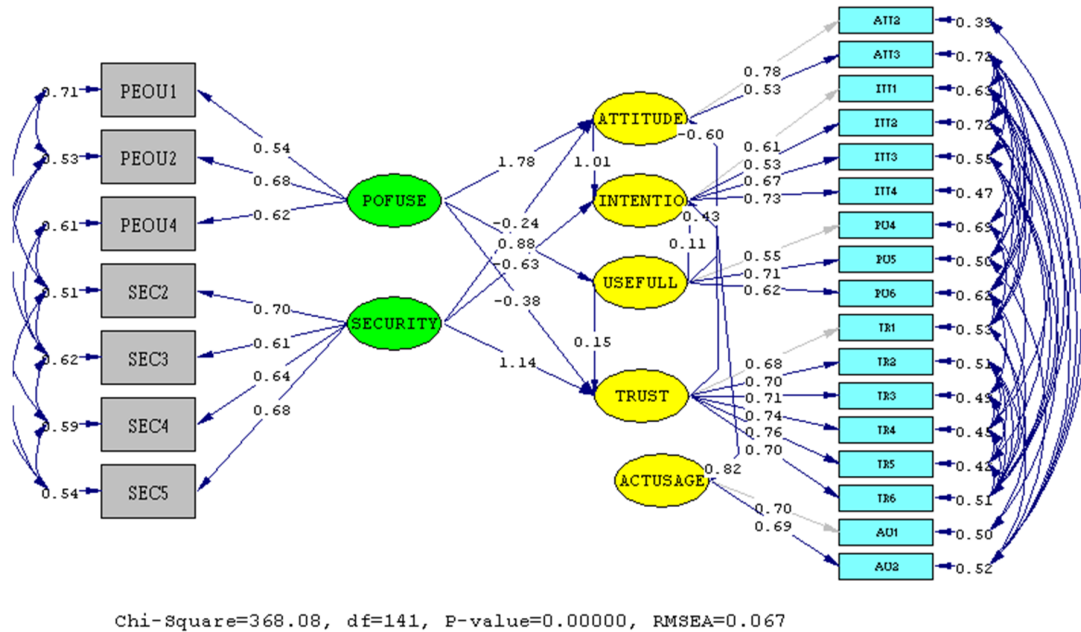

Chi-Square=368.08, df=141, P-value=0.00000, RMSEA=0.067

Fig. 4. The Modification

Path analysis is intended to test whether a variable has a significant effect on other variables. The results of path analysis using LISREL software can be summarized in Table 2 below:

Table 2

Path Analysis

Hypothesis	Path	Coefficients	T-Statistics	*Standard Error*	Result
H1	PEOU→TR	-0.71	-1.48	0.27	Supported
H2	PEOU→ATT	2.13	4.18	0.35	Supported
H3	PEOU→PU	1.12	10.03	0.099	Supported
H4	PU→TR	0.12	0.96	0.17	Not Supported
H5	PU→ATT	-0.51	-1.37	0.55	Not Supported
H6	PU→ITT	0.19	0.86	0.17	Not Supported
H7	TR→ATT	0.89	8.67	0.11	Supported
H8	TR→ITT	0.33	0.54	0.78	Not Supported
H9	SEC→TR	2.01	8.20	0.12	Supported
H10	SEC→ATT	-0.26	-1.37	0.15	Not Supported
H11	SEC→ITT	-0.72	-0.63	0.74	Not Supported
H12	ITT→AT	0.89	8.01	0.12	Supported

LISREL output (see Table 2) of this study explains that PEOU has a significant effect on TR, ATT, and PU. PU has no significant effect on TR, ATT, ITT. TR has a significant effect on ATT and not significant on ITT. SEC has a significant effect on TR and not significant on ATT and ITT. ITT has a significant effect on AT. The practical implications of this study are useful for comparing perceived scores on various antecedents of digital wallet adoption. This study helps identify possible variations in perceptions of the factors that influence digital wallet adoption in Jakarta, especially among the younger generation who make up most respondents. Digital wallets' success or failure is influenced by a variety of ecosystem components as well as consumer-related factors. This comprises companies that offer services for digital wallets, internet companies, governmental organizations, and financial institutions. There are a number of variables that significantly influence the model that appears to affect how users view the adoption of digital wallets, such as the perceived ease of use variable, which significantly influences practically all path analyses. These findings suggest that Jakartan consumers consider digital wallet usability to be the most critical element in the decision to use this technology. You might also take security and trust-related factors into consideration. Trust and security can be viewed from the views of numerous stakeholders, including the community of mobile wallet users, information system security, service providers for mobile wallets, and regulators.

4. Conclusions

This study contributes to the formulation of a new model in explaining the use intention and actual use of consumer behavior towards digital wallets. This research can be used as the basis for developing TAM theory in determining digital wallet adoption and what variables have a significant influence on the model. This study uses a model that has never been done before in other studies, combining two elements of the model, namely the intention to adopt a digital wallet and the actual use of a digital wallet. This study also has a contribution to confirm the theory used in the adoption of digital wallets in Jakarta. It is difficult to determine whether the model or research results will apply to other technologies such as internet banking, mobile banking or e-commerce. To validate the explanatory power of the model, it may be tested on different technologies used in other industries.

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