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REVOLUTIONIZING INDONESIAN TRANSACTIONS: EMBRACING THE DIGITAL WALLET ADOPTION WAVE

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The use of technology has grown rapidly and affects consumer behaviour at this time, and even the topic of the use of technology has become the main topic of marketing practitioners and academics in the last few decades. This study explores several important constructs in the adoption of digital wallets to shift consumer behaviour in Jakarta. This study used a quantitative approach with structural equation model (SEM) analysis techniques using Lisrel software. This study involved 360 consumers in Jakarta, and data were collected online. The results of this study explain that this research model has feasibility indicators for the GFI, RMSEA, NFI, IFI, CFI, RFI, PNFI, and PGFI models, showing good fit, while AGFI shows marginal fit. The results of this study showed that perceived ease of use has a significant influence on trust, attitude, and perceived usefulness. Perceived usefulness did not have a significant effect on trust, attitude, and intention. Trust has a significant effect on attitude but no significant effect on intention. Security has a significant effect on trust and no significant effect on attitudes and intentions. Intention has a significant influence on the actual usage by digital wallet consumers in Indonesia. This study developed a new model for technology adoption, particularly for digital wallets. The implication of this research is that digital wallet companies need to improve several important features to increase consumer adoption of digital wallets.
Keywords: Perceived ease of use, Perceived usefulness, Trust, Security, Attitude, Intention, Actual Usage, Digital Wallet

1. Introduction

Digital wallets are the future as countries move towards a cashless society. In some markets, cash has already been replaced by digital transactions; however, consumers in many developing countries are slower to transition to digital payments (Patil et al., 2020). Mobile-based payment systems are impacting lives globally as one of the fastest innovations in human history, making the digital wallets an integral part of 21st-century society. These innovations are gradually shifting traditional daily transaction activities from physical to mobile-based virtual environments (Thakur & Srivastava, 2014). According to the latest World Payments Report (WPR), global digital wallet transactions saw the highest growth during 2018–2019, reaching a volume of 708.5 billion. However, digital wallets have had limited success in developed countries, such as the UK (Slade et al., 2015), because of the availability of alternative payment methods. Payment systems such as M-Pesa are readily accepted in developing countries such as Kenya, where formal banking penetration is low, offering practical solutions for customers without bank accounts (Cellan-Jones, 2012). Despite their advantages and increasing prevalence among consumers as an emerging

service, digital wallets are far from mainstream (Martin, 2016) and have not seen widespread adoption worldwide, as expected (Zhou, 2014).

In Indonesia, Bank BCA recorded the highest growth in e-channel transactions from the digital wallets. In mid-2019, transactions reached 1.05 billion with an IDR value of 1.47 trillion, a 51.7% increase from the previous year. Bank Mandiri also saw an increase in customers using the Mandiri digital wallet, with 2.51 million users in mid-2019, a 98.6% increase from 1.26 million the previous year (Hutauruk, 2019).

Previous studies examine technology adoption in the context of mobile banking (. J. Lee et al., 2010; Shin, 2009a) and mobile payment, but few have addressed digital wallets, especially in the Indonesian context. Some studies have attempted to test the causal relationship between the antecedents that affect attitudes (N. Singh et al., 2017), and intentions (Madan & Yadav, 2016) to adopt digital wallets. This study proposed a comprehensive model to test its influence on attitudes and intentions. It adopts constructs from the TAM theory to explain digital wallet service adoption in Indonesia. The proposed model includes constructs such as trust and security, which are rarely studied in the digital wallet context and are considered important when considering the population in Jakarta.

Preliminary research in early 2021 revealed that over eighty-five percent of respondents in a brief survey used the Gojek digital wallet, GoPay, which is the highest among similar digital wallets. Eighty percent used OVO and seventy-five percent used DANA for payments. Meanwhile, fifty-three percent and forty-seven percent of the respondents used ShopeePay and LinkAja, respectively. A follow-up study in December 2021 involved more respondents, and OVO emerged as the most used digital wallet application, with fifty-eight percent of digital wallet users using OVO. OVO slightly outperformed GoPay, used by fifty-seven percent of respondents. ShopePay ranked third with fifty-six percent usage.

This study aimed to understand the critical factors of slow digital wallet adoption. This study fills a knowledge gap in the literature related to digital wallet adoption, especially in Indonesia. Although there have been previous studies on mobile payment technologies, the lack of focus on digital wallets and their influence in the local Indonesian context has created room for further research. This dissertation seeks to empirically (Empirical Gap) verify and evaluate the factors influencing digital wallet adoption, particularly among young users in Jakarta. This includes the influence of variables such as perceived ease of use, security, and trust in Jakarta's specific context.

2. Methodology

The population of this study consists of residents of DKI Jakarta who own and use digital wallets for transactions. In the context of this research, given the broad population and practical limitations in data collection, the sampling technique used was non-probability sampling, specifically purposive sampling. This technique allows researchers to select samples based on certain criteria, namely, individuals in Jakarta who have experience using digital wallets. The use of purposive sampling is crucial, as it ensures that each respondent has the relevant information and experience needed for the study. By focusing on digital wallet users in Jakarta, this research can delve deeper

and more specifically into insights regarding their behaviour, attitudes, and perceptions of digital payment technology. This study used a minimum of 350 samples; however, 360 samples were used to increase the precision of the research and to reduce the standard error of the research from mistakes. Since this study used purposive sampling, the questionnaire results collected must meet the above criteria and cannot be generalised. Descriptive statistical analysis was conducted to test the distribution of frequency actions, centralisation, and data regarding the characteristics of the sample (respondents) and variable indicators (Lind et al., 2018a). Descriptive Analysis is used only to empirically describe the variables n, without intending to generalise, which includes the mean, median, mode, and standard deviation values.

3. Result and Discussion

Respondent Profile

The characteristics of the respondents are detailed in this chapter, particularly gender, age, employment status, and the digital wallets used, providing a basis for socio-demographic analysis in the subsequent results and discussion. The respondents had the option to choose whether they wanted to participate in the study. Ultimately, the responses provided yielded the necessary data for this study.

Based on sex, the study involved 172 men and 188 women, comprising 47.7% men and 52.3% women. This indicates that the questionnaire was fairly evenly distributed across genders, which is important because some studies suggest that gender plays a significant role in technology adoption (Hussain et al., 2020). Given that the female sex ratio is higher in Jakarta (Central Bureau of Statistics, 2019), it is natural to have more women than men in this study, because the questionnaire was distributed randomly.

There were 207 aged 15-25 years, 75 aged 26-35 years, 41 aged 36-45 years, and 37 aged over 45 years. The percentages of these age groups were 57.5%, 20.8%, 11.4%, and 10.3%, respectively. This data shows that the majority of respondents are millennials and Generation Z, who are known to be "Tech-Savvy" (Marasco et al., 2018) and have grown up with technological advancements, making them more adaptable to adopting certain technologies, unlike older generations like the Baby Boomers.

Regarding respondents' status, there were 46 students, 145 university students, 151 workers, and 18 housewives. The percentages for students, university students, workers, and housewives were 12.7 %, 40.2%, 41.9%, and 5.2%, respectively. This indicates that digital wallets are linked to a person's income and "purchasing power" (Bagla & Sancheti, 2018b). Students and housewives with lower access to income and paying capacity are less likely to adopt digital wallets, whereas university students and workers have more income and are more likely to use digital wallets as their payment method. Additionally, millennials, who are university students and workers, were the majority in this study.

For digital wallet usage, 59 used OVO, 68 used GoPay, 106 used ShopeePay, 51 used LinkAja, and 76 used Dana. The percentages for each digital wallet are 16.3%, 18.8 %, 29.4 %, 14.4 %, and 21.1% for OVO, GoPay, ShopeePay, LinkAja, and Dana, respectively. This distribution indicates

balanced competition among digital wallets in Indonesia, with no single wallet dominating the market. The integration of digital wallets with SuperApps, such as GoPay with GoJek and Tokopedia, and ShopeePay with E-Commerce Shopee and Sea Bank, is a factor in their adoption. The presented data, including the use of various digital wallet platforms such as OVO, GoPay, ShopeePay, LinkAja, and Dana, with 360 respondents, can be considered representative of respondents in Jakarta. Jakarta, a metropolitan city with a diverse population and high technology adoption rate, is likely to have a widespread use of digital wallets. Representation from various popular digital wallet platforms provides a good picture of user preferences in the city. The sample size of 360 respondents, while not covering the entire population of Jakarta, was large enough to provide relevant insights into digital wallet usage trends in the city.

The following figures provide more detailed descriptive statistics in the form of frequency statistics:

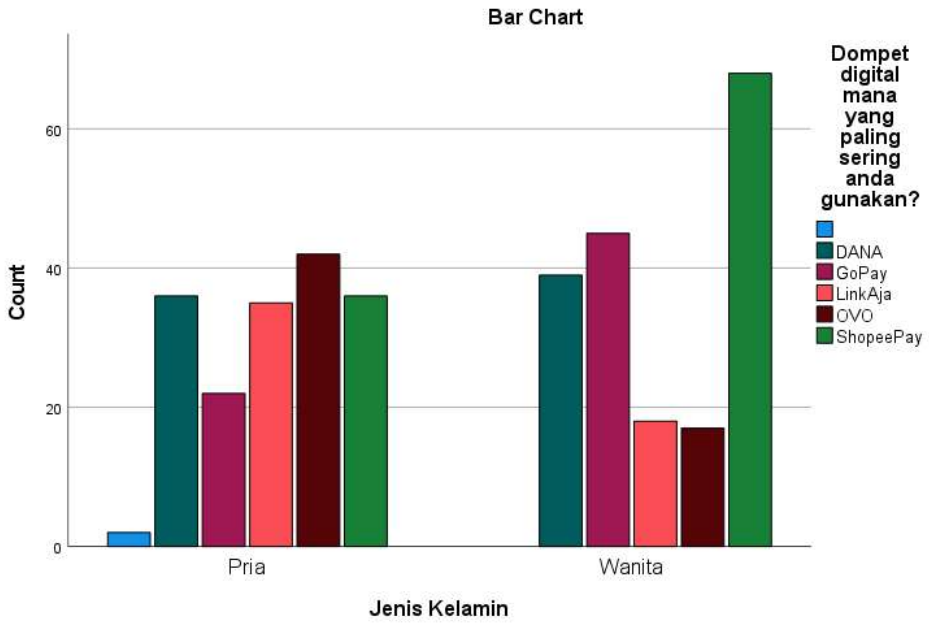

Figure 1. Digital Wallet Usage by Gender

(Source: Author's processed data, 2023)

Figure 1. shows that the majority of men used GoPay compared to other digital wallets, while women preferred ShopeePay, a noticeable difference from other digital wallets among female respondents.

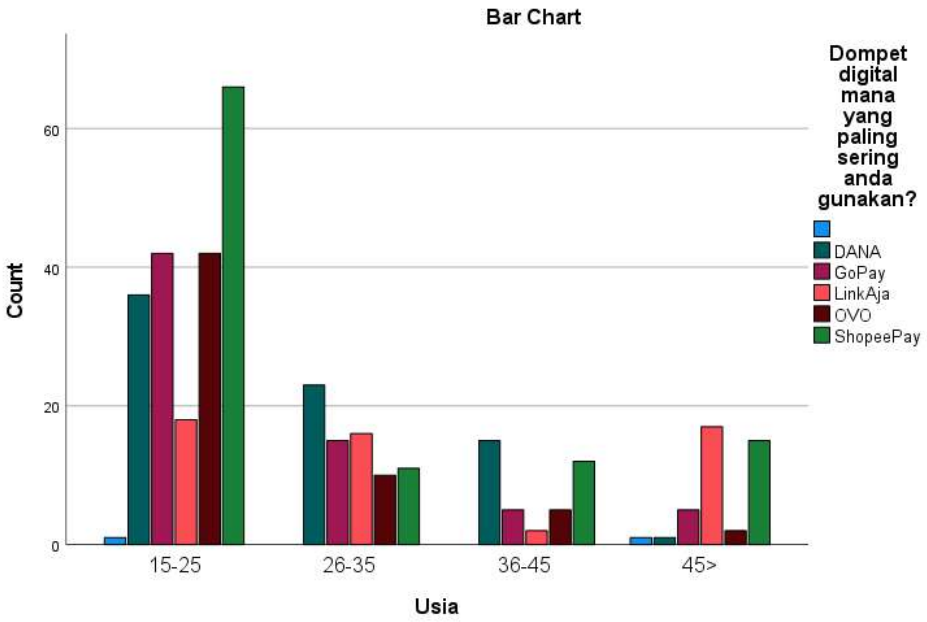

Figure 2. Digital Wallet Usage by Age
(Source: Author's processed data, 2023)

Figure 2 reveals that the majority of those aged 15-25 years use ShopeePay, those aged 26-35 years primarily used DANA, those aged 36-45 years mainly used DANA, and those over 45 years predominantly used LinkAja. This indicates varying preferences for digital wallets among different age groups, although ShopeePay had a high usage rate across most age ranges.

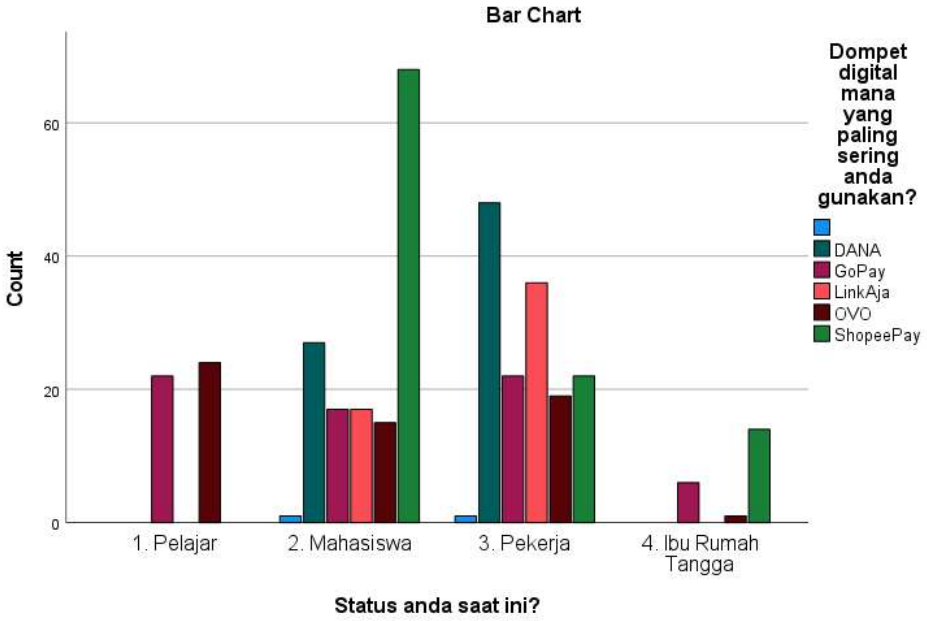

Figure 3. Digital Wallet Usage by Status
(Source: Author's processed data, 2023)

Figure 3 shows that students mainly used GoPay, university students predominantly used ShopeePay, workers mainly used DANA, and housewives primarily used ShopeePay. This

suggests that ShopeePay dominates across most respondent statuses, particularly among university students.

Descriptive Analysis

Descriptive statistics are crucial for classifying raw data in research (Lind et al., 2018a), as it would be difficult to visualise the data without categorising them based on data order and categories, especially when there are many data points. Therefore, descriptive statistics allow this dissertation to present data in a more meaningful way, thus simplifying data interpretation (Sekaran & Bougie, 2016). Using descriptive statistics, one can determine the frequency of responses to each questionnaire item from respondents, as well as the cumulative number and percentage of these responses. The standard deviation for each item can be determined in other parts. The standard deviation is used for data variability and is often used to understand the data spread. The higher the standard deviation, the poorer is the data spread. The mean or average is essentially the average of a set of two or more numbers and is basically used to understand the data trend or which majority of the data choose which answer and how significant it can be known from the mean value. The larger the standard deviation, the more varied the values on the item or the less accurate the mean; conversely, the smaller the standard deviation, the more similar the values on the item or the more accurate the mean (Burns and Burns, 2008).

Descriptive Statistics of Attitude Variable

The Attitude (ATT) variable consists of five items rated on a 1-5 Likert scale, as shown in the following table:

Table 1. Descriptive Statistics of Attitude Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
ITT1	360	1	5	4.08	.817
ITT2	360	1	5	4.57	.688
ITT3	360	1	5	4.40	.685
ITT4	360	2	5	4.32	.775

(Source: Author's processed data, 2023)

In the descriptive statistics of the attitude (ATT) variable above, it is known that item ATT2 has the best value with a mean of 4.75 and a standard deviation of 0.562. This result explains why most respondents agree and strongly agree on this item because it ranges on scales 4 and 5 which are quite high, and the level of standard deviation is low or almost close to the mean. The statement on ATT2 is "I believe that step-by-step navigation of digital wallet applications is easy to understand" so it can be said that almost all respondents agreed that step-by-step navigation of digital wallet applications is easy to understand.

Descriptive Statistics of Intention Variable

The Intention (ITT) variable consists of four items with a 1-5 Likert scale, as shown in the following table:

Table 2. Descriptive Statistics of Intention Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
PEOU1	360	2	5	4.26	.641
PEOU2	360	2	5	4.68	.612
PEOU3	360	1	5	4.22	.762
PEOU4	360	1	5	4.43	.680
PEOU5	360	1	5	4.31	.856

(Source: Author's processed data, 2023)

In the descriptive statistics of the intention (ITT) variable above, it is known that item ITT2 has the best value, with a mean of 4.57, and ITT3 has the best value, with a standard deviation of 0.685. This result explains why most respondents agree and strongly agree on these two items because they range on scales 4 and 5 which are quite high and the level of standard deviation is low or almost close to the mean. The statement on ITT2 is "Very likely to use my smartphone for payments" while ITT3 is "I often use digital wallets in the future" so it can be said that almost all respondents agree that using a smartphone for payment has become a routine and the continuity of using digital wallets in the future.

Descriptive Statistics of Perceived Ease of Use Variable

The Perceived Ease of Use (PEOU) variable consists of 5 items with a 1-5 Likert scale, as shown in the following table:

Table 3. Descriptive Statistics of Perceived Ease of Use Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
PEOU1	360	2	5	4.26	.641
PEOU2	360	2	5	4.68	.612
PEOU3	360	1	5	4.22	.762
PEOU4	360	1	5	4.43	.680
PEOU5	360	1	5	4.31	.856

(Source: Author's processed data, 2023)

In the descriptive statistics of the Perceived Ease of Use (PEOU) variable above, it is known that item PEOU2 has the best value with a mean of 4.68 and a standard deviation of 0.612. This result explains why most respondents agree and strongly agree on this item because it ranges on scales 4 and 5 which are quite high, and the level of standard deviation is low or almost close to the mean. The statement on PEOU2 is "I believe learning to use a digital wallet is easy", so it can be said that almost all respondents agree that learning to use a digital wallet is easy.

Descriptive Statistics of Perceived Usefulness Variable

The Perceived Usefulness (PU) variable consists of six items rated on a 1-5 Likert scale, as shown in the following table:

Table 4. Descriptive Statistics of Perceived Usefulness Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation

PU1	360	2	5	4.36	.652
PU2	360	1	5	4.59	.565
PU3	360	1	5	4.46	.715
PU4	360	2	5	4.27	.698
PU5	360	1	5	4.69	.591
PU6	360	1	5	4.38	.785

(Source: Author's processed data, 2023)

In the descriptive statistics of the Perceived Usefulness (PU) variable above, it is known that item PU5 has the best value with a mean of 4.68, and PU2 has the best standard deviation value with a standard deviation of 0.565. This result explains why most respondents agree and strongly agree on these items because they range on scales 4 and 5 which are quite high and the level of standard deviation is low or almost close to the mean. The statement on PU5 is "In my opinion, using a digital wallet makes it easier for me to make online payments" and PU2 is "I am confident that digital wallets are useful for online transactions" so it can be said that almost all respondents agree that digital wallets facilitate online payments and are useful in conducting online transactions.

Descriptive Statistics of Security Variable

The Security (SEC) variable consists of five items with a 1-5 Likert scale, as shown in the following table:

Table 5. Descriptive Statistics of Security Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
SEC1	360	2	5	4.20	.720
SEC2	360	1	5	4.29	.850
SEC3	360	1	5	4.28	.899
SEC4	360	1	5	4.35	.786
SEC5	360	1	5	4.11	.893

(Source: Author's processed data, 2023)

In the descriptive statistics of the security (SEC) variable above, it is known that item SEC4 has the best value with a mean of 4.35, and item SEC1 has the best standard deviation value with a standard deviation of 0.720. This result explains why most respondents agree and strongly agree on these items because they range on scales 4 and 5 which are quite high and the level of standard deviation is low or almost close to the mean. The statement on SEC4 is "I believe that transactions made through digital wallets are safe" and SEC1 is "I am confident in making payments through digital wallets" so it can be said that almost all respondents agree that transactions made through digital wallets are safe and they are confident in making payments through digital wallets.

Descriptive Statistics of Trust Variable

The Trust (TR) variable consisted of six items with a 1-5 Likert scale, as shown in the following table:

Table 6. Descriptive Statistics of Trust Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
TR1	360	2	5	4.21	.685
TR2	360	1	5	4.17	.851
TR3	360	2	5	4.27	.721
TR4	360	2	5	4.14	.795
TR5	360	1	5	4.37	.807
TR6	360	2	5	4.46	.695

(Source: Author's processed data, 2023)

In the descriptive statistics for the Trust (TR) variable mentioned above, it is noted that item TR6 has the best value with a mean of 4.46 and item TR1 has the best standard deviation value with a standard deviation of 0.685. This result indicates that the majority of respondents agree or strongly agree with these items, as they fall within the high range of scales 4 and 5, and the level of standard deviation is low or close to the mean. The statement for TR6 is "I believe that digital wallet service providers comply with consumer laws," and TR1 is "I believe in the transactions made through digital wallets." Therefore, it can be said that almost all respondents agree that consumers believe digital wallets comply with laws and trust transactions through digital wallets.

Descriptive Statistics of Actual Usage Variable

The Actual Usage (AU) variable consists of three items with a 1-5 Likert scale, as shown in the following table:

Table 7. Descriptive Statistics of Actual Usage Variable

Item	N	Minimum	Maximum	Mean	Std. Deviation
AU1	360	1	5	4.03	.867
AU2	360	1	5	4.00	1.120
AU3	360	1	5	4.46	.707

(Source: Author's processed data, 2023)

In the descriptive statistics for the Actual Usage (AU) variable above, it is observed that item AU3 has the best value with a mean of 4.46 and a standard deviation of 0.707. This result explains that for this item, the majority of respondents agree or strongly agree as the responses range on scales 4 and 5 which are quite high, and the level of standard deviation is low or close to the mean. The statement for AU3 is "I use a digital wallet for online transactions", indicating that almost all respondents agreed that they use digital wallets for online transactions.

Discussion

This study introduces a novel approach for formulating a comprehensive new model regarding the adoption of digital wallets among consumers in Jakarta on a massive scale. The findings highlight ease of use and security as key elements driving consumers to choose digital wallets as their primary transaction method. Uniquely, in Jakarta, perceived ease of use is identified as a crucial determinant in influencing consumer trust in digital wallet products. This is reflected in consumer preferences for platforms that offer simple user experience, attractive promotional features, and

transaction efficiency. Perceived ease of use not only influences trust, but also affects consumer attitudes, which, in turn, influences the choice to use digital wallets in Jakarta. These results expand the academic discourse on the influence of perceived ease of use on perceived usefulness, affirming that, for digital wallets to provide added value to consumers, their features must be intuitive and easily adoptable by various segments of society. This aligns with the findings of previous studies (Singh, 2014), but with added contextual insights into consumers with dynamic financial activities, as observed in Jakarta.

Another finding supporting the novelty of this study is the identification of trust as a primary driver in forming consumer attitudes toward the adoption of digital wallet technology. This analysis complements and deepens previous research by Choudrie et al. (2018) and Singh et al. (2017), highlighting that in environments where financial crimes are frequent, such as Indonesia, the security factor becomes a central pillar in building trust and encouraging the use of digital wallets, especially in Jakarta. This study presented new insights into the influence of intention on actual usage. With a strong intention, the use of digital wallets is not just sporadic but also continuous, creating long-term value for digital wallet service providers. This transformation reflects a significant shift in consumer behaviour influenced by various external factors, including support from merchants, promotions, and stakeholder engagement in promoting a cashless transaction culture. This creates vital momentum for digital wallet companies to further optimise their services to support sustainable adoption growth in Jakarta and other areas.

4. Conclusions

The importance of considering all elements of the ecosystem in the success or failure of digital wallets emphasises the need for collaboration among digital wallet service providers, technology providers, government agencies, and financial institutions. Managers must recognise that factors such as ease of use (perceived ease of use), which have a significant influence in almost all path analyses, are critical aspects that need attention in the development and improvement of services. In addition, this study highlights the importance of security and trust factors. In a managerial context, this means that companies should not only focus on the technical aspects of security, but also build trust with consumers. This can be achieved through effective communication regarding the system's security, cooperation with the user community, and adherence to existing regulations. By paying attention to the various perspectives of stakeholders, managers can design more effective strategies to increase adoption and consumer trust in the digital wallets.

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