



## Regular article

# The Effect of Risk Perception and Perceived Ease of Use on Intention to Use Dana E-Wallet in Medan City with E-Trust as an Intervening Variable Plantation

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## ABSTRACT

Advances in information technology have brought significant transformations in digital payment systems, particularly through the adoption of e-wallets as fast, easy, and secure transaction solutions. Medan, as one of Indonesia's metropolitan cities, has witnessed a growing trend in e-wallet usage, especially the DANA application. However, digital payment technology adoption still faces challenges related to risk perception and user trust. This study aims to analyze the influence of risk perception and perceived ease of use on the intention to use the DANA e-wallet in Medan City, with e-trust as an intervening variable. A quantitative approach with an associative research design was employed. The study population consists of DANA e-wallet users in Medan City (total population of 2,474,166 residents), classified as an infinite population. A sample of 165 respondents was selected through purposive sampling, with the criterion of having used DANA at least twice in the past three months. Data were collected through questionnaires distributed at coffee shops across 21 sub-districts (kecamatan) of Medan. Data analysis was performed using Structural Equation Modeling – Partial Least Squares (SEM-PLS) with SmartPLS 4. The results indicate that: (1) risk perception has a direct negative and insignificant effect on usage intention; (2) risk perception has a negative and insignificant effect on e-trust; (3) perceived ease of use has a direct positive and significant effect on usage intention; (4) perceived ease of use has a positive and significant effect on e-trust; (5) e-trust has a positive and significant effect on usage intention; (6) e-trust does not mediate the relationship between risk perception and usage intention; and (7) e-trust significantly mediates the relationship between perceived ease of use and usage intention. These findings highlight that ease of use and e-trust are the dominant factors driving DANA e-wallet adoption in Medan City.

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## Introduction

Electronic wallets (e-wallets) have emerged as one of the most significant innovations in modern digital payment systems. The rapid advancement of information and communication technology has transformed consumer behavior, particularly in urban areas such as Medan, Indonesia's third-largest city. Applications such as DANA, Gopay, OVO, and LinkAja have become integral parts of daily

transactional activities, especially among Millennial and Generation Z consumers.

DANA, officially launched on December 5, 2018, by PT Espay Debit Indonesia Koe – a subsidiary of PT Elang Mahkota Teknologi Tbk (EMTEK) in partnership with Ant Financial – operates as an open-platform digital wallet. Unlike closed-ecosystem competitors, DANA allows transactions across a wide variety of merchants, including

Bukalapak, Cinema XXI, and utility bill providers. Data from Bank Indonesia shows that e-wallet transaction volumes in Indonesia grew by approximately 90 percent annually over the last five years, reaching a monthly value of IDR 35.1 trillion in 2022 (InsightAsia, 2022).

Despite this rapid growth, digital payment adoption remains constrained by two major psychological barriers: risk perception and insufficient trust in digital systems. Users in Indonesia continue to harbor concerns regarding financial loss, data privacy breaches, and system failures – factors that can suppress adoption intention. Conversely, the perceived ease of using an application is widely recognized as a positive driver of adoption, as posited by Davis's (1989) Technology Acceptance Model (TAM).

This study addresses the gap in empirical evidence regarding how risk perception and perceived ease of use jointly influence intention to use the DANA e-wallet in Medan City, mediated by electronic trust (e-trust). The research specifically targets Generation Z and Millennial users, who accounted for 85% of total e-wallet transactions in Indonesia in 2023 (Katadata Insight Center, 2023). By analyzing data from 165 respondents collected across 21 sub-districts of Medan using SEM-PLS, this study provides actionable insights for e-wallet providers, marketers, and policymakers.

**Method**

*Research Design*

This study adopts a quantitative approach with an associative research design, aiming to identify relationships and influences among variables. The study was conducted at coffee shops across 21 sub-

districts (kecamatan) of Medan City from January to February 2025. Coffee shops were selected as research venues because they attract high concentrations of Millennial and Generation Z consumers who frequently use digital payment methods (Ramadhani & Sari, 2023).

*Population and Sample*

The study population consisted of DANA e-wallet users in Medan City, classified as an infinite population due to the inability to determine the exact number of active users. The total population of Medan City is 2,474,166 residents. A total of 165 respondents were selected using purposive sampling. Two criteria were applied: (1) respondents must be aged 17–44 years (Generation Z and Millennial categories), and (2) respondents must have used the DANA application at least twice in the past three months. The sample size was determined based on Ferdinand (2014) and Ghozali (2016), who recommend a minimum of five observations per indicator. With 33 indicators, the minimum sample was 165 respondents.

*Data Analysis*

Data analysis was performed using Structural Equation Modeling – Partial Least Squares (SEM-PLS) with SmartPLS 4 software. The analysis involved three stages: (1) evaluation of the outer model (measurement model) for construct validity and reliability, including loading factors, Average Variance Extracted (AVE), Composite Reliability (CR), and the HTMT ratio; (2) evaluation of the inner model (structural model) through R<sup>2</sup> determination coefficients and Q<sup>2</sup> predictive relevance; and (3) hypothesis testing via path coefficients with a significance threshold of  $p < 0.05$  (two-tailed t-table = 1.96).

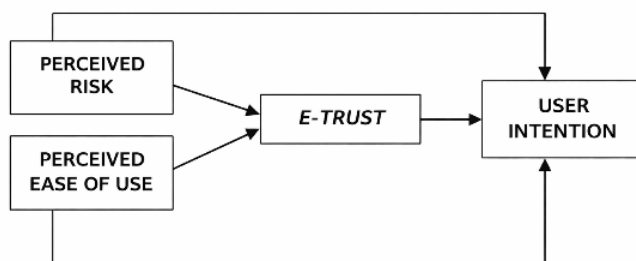


Figure 1 Conceptual framework

**Results**

*Respondent Characteristics*

Of the 165 respondents, 54.5% were female and 45.5% were male. The dominant age group was 25–35 years (46.7%), followed by 19–24 years (32.1%), 18 years (12.7%), and 36–44 years (8.5%). In terms of educational background, 47.3% held an undergraduate degree (S1), 28.5% had completed senior high school (SMA), 17.0% held a master's degree (S2), and 7.3% held a doctoral degree (S3). The geographic distribution of respondents covered all 21 sub-districts, with the highest

representations in Medan Deli and Medan Marelan (13 respondents each).

*Measurement Models (Outer Model)*

All indicator loading factors exceeded the threshold of 0.70, confirming convergent validity. AVE values for all constructs were above 0.50, and Composite Reliability (CR) values exceeded 0.80, while Cronbach's Alpha values were above 0.70, confirming satisfactory internal consistency. The HTMT ratio for all construct pairs remained below 0.85, indicating discriminant validity.

Table 1. Outer Model

Construct	Composite Reliability (CR)	AVE	Cronbach's $\alpha$
Risk Perception	0.871	0.579	0.821
Perceived Ease of Use	0.936	0.644	0.924
E-Trust	0.943	0.671	0.932
Use Intention	0.925	0.674	0.904

Structural Model (Inner Model)

The coefficient of determination ( $R^2$ ) for Usage Intention was 0.697, indicating that the model explains 69.7% of the variance in usage intention. The  $Q^2$  predictive relevance values for all endogenous constructs exceeded 0, confirming the predictive accuracy of the model.

Hypothesis Testing

Table 2 presents the results of hypothesis testing for both direct and indirect effects.

Table 2. Hypothesis Testing Results (Direct and Indirect Effects)

Hypothesis	Path	Coefficient	t-statistics	p-value	Sig.
H1	Risk Perception → Use Intention	-0.124	1.674	0.094	Rejected
H2	Risk Perception → E-Trust	-0.100	1.106	0.269	Rejected
H3	Perceived Ease of Use → Usage Intention	0.277	4.087	0.000	Accepted
H4	Perceived Ease of Use → E-Trust	0.720	14.568	0.000	Accepted
H5	E-Trust → Use Intent	0.614	9.723	0.000	Accepted
H6	Risk Perception → E-Trust → Use Intention	-0.061	1.102	0.270	Rejected
H7	Perceived Ease of Use → E-Trust → Usage Intention	0.442	8.809	0.000	Accepted

Source: SmartPLS 4 Output (2025)

Discussion

The findings reveal that risk perception has a negative but statistically insignificant direct effect on both usage intention ( $\beta = -0.124$ ,  $t = 1.674$ ,  $p = 0.094$ ) and e-trust ( $\beta = -0.100$ ,  $t = 1.106$ ,  $p = 0.269$ ). These results indicate that although users harbor some concerns about system reliability and financial risks, these concerns are insufficient to meaningfully deter adoption. This is consistent with Febriyanti and

Sulistyowati (2021), who found that risk perception does not significantly affect e-wallet usage intention among Millennials, and with Mustofan (2024), who corroborated the non-significance of risk perception in DANA-specific contexts. The established reputation of DANA, combined with multi-layered security features (biometric authentication, data encryption, and real-time transaction monitoring), appears to effectively neutralize risk-related barriers.

Perceived ease of use, on the other hand, emerges as the most powerful direct driver of both usage intention ( $\beta = 0.277$ ,  $t = 4.087$ ,  $p = 0.000$ ) and e-trust ( $\beta = 0.720$ ,  $t = 14.568$ ,  $p = 0.000$ ). This aligns strongly with Davis's (1989) TAM and is consistent with prior research in the Indonesian e-wallet context (Abrilia et al., 2020). Users who perceive DANA as easy to learn, flexible, and visually clear are significantly more inclined to trust the platform and to continue using it.

E-trust itself exerts a strong positive and significant effect on usage intention ( $\beta = 0.614$ ,  $t = 9.723$ ,  $p = 0.000$ ), reinforcing the centrality of trust in digital financial ecosystems. Furthermore, while e-trust does not mediate the risk perception–usage intention relationship (H6 rejected;  $\beta = -0.061$ ,  $t = 1.102$ ,  $p = 0.270$ ), it fully mediates the perceived ease of use–usage intention relationship (H7 accepted;  $\beta = 0.442$ ,  $t = 8.809$ ,  $p = 0.000$ ). This suggests that ease of use builds trust, and trust in turn amplifies usage intention – forming a sequential adoption pathway that practitioners should leverage.

Conclusion

This study provides empirical evidence that perceived ease of use and e-trust are the two principal determinants of DANA e-wallet adoption in Medan City. Specifically: (1) risk perception does not significantly affect usage intention or e-trust, suggesting that DANA's existing security infrastructure has sufficiently addressed user concerns; (2) perceived ease of use significantly and positively influences both usage intention directly and indirectly through e-trust; and (3) e-trust functions as a full mediator in the perceived ease of use–usage intention pathway. These findings carry important strategic implications. DANA and competing e-wallet providers should prioritize continuous user interface improvements, personalized navigation features, and transparent communication of security measures. For academic researchers, this study extends the TAM framework by integrating e-trust as a mediating mechanism in the context of mobile fintech adoption in Indonesia. Future studies are encouraged to explore additional variables such as perceived usefulness, perceived security, service quality, and digital literacy, and to examine these relationships using longitudinal designs or across different urban and rural settings.

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