EFFECTS OF E-WALLET ADOPTION ON ONLINE MSMEs PERFORMANCE IN INDONESIA

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Abstract:

Background: The present study aims to analyse the causal effect of digital wallet (e-wallet) adoption on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, especially regarding monthly transaction volume and employment dynamics.
Purpose: Analyse the influence of digital wallet (e-wallet) adoption on transaction frequency, non-family labour and intra-family labour of online MSMEs in Indonesia.
Design/Methodology/Approach: The present study employs the Propensity Score Matching (PSM) approach to mitigate selection bias between e-wallet users and non-users. The set of covariates employed in this study encompasses educational attainment, business age, the duration of online order receipt, and digital promotional activities. The data were derived from a national survey of MSMEs, incorporating 31,724 business unit observations.
Findings/Results: The findings indicate that the adoption of e-wallets is associated with a substantial augmentation in the average transaction volume, amounting to 119 transactions per month. Concurrently, there is a discernible decline in the reliance on family labour, signifying an enhancement in operational efficiency.
Conclusions: The adoption of e-wallets is influenced by a number of digital factors, including the implementation of promotions through marketplaces and the duration of receiving online orders. The operational efficiency of the system is marked by a decrease in the number of internal workers. In order to encourage equitable financial inclusion, there is a necessity for the implementation of adaptive policies and comprehensive digital ecosystems.
Originality/Value (State of the Art): This study makes a methodological contribution through the implementation of PSM in measuring the impact of digital financial technology adoption in developing countries. The novelty of this research lies in the integration of user behavior perspectives and empirical evaluations based on observational data, which have not been widely conducted in the context of digital MSMEs in Indonesia.

Keywords: e-wallet, MSME, propensity score matching, transaction frequency, marketplaces

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INTRODUCTION

Advancements in digital technology have had a profound impact on the business landscape in Indonesia, particularly among Micro, Small, and Medium-sized Enterprises (MSMEs). The rapid development of e-commerce platforms has created significant opportunities for UMKM to expand their market reach and enhance operational efficiency. A plethora of studies conducted within both global and regional contexts have indicated that the adoption of digital payment systems, such as e-wallets, has been demonstrated to exert a substantial influence on the performance of small and medium-sized businesses (SMEs). (Ariyanti & Marianingsih (2024) discovered that the adoption of fintech and digital payment systems has a positive impact on the financial performance of UMKM, particularly when combined with a high level of consumer trust. In a further study, Reza et al. (2024) emphasised the importance of user satisfaction, performance expectations, and externalities in promoting the sustainability of e-wallet usage by small businesses. This finding is in accordance with the research conducted by Ramayanti et al. (2025) in Indonesia, which identified the hedonistic motivation and habitual tendency as the primary factors contributing to the adoption of QRIS, a system for mobile payments that utilizes QR technology. The findings of the research indicate that digital wallets have the potential to enhance transaction efficiency, as well as to expand market reach and strengthen customer relationships.

The integration of financial technology and digital payment systems has been demonstrated to have a substantial impact on enhancing financial inclusion and the performance of MSMEs in developing countries. Research conducted by Tran-Truong et al. (2025) underscores the significance of implementing multi-factor authentication (MFA) in digital payment systems as a means of adhering to NIST standards, despite the existence of a discrepancy between theoretical frameworks and practical industry implementation. Research conducted by Abdulai et al. (2024) also found that the use of digital payment platforms had a positive effect on trade credit activities among informal businesses in Ghana, by strengthening efficiency and business linkages. In Russia, the exponential growth of cashless payments is attributed to the government's national digitisation strategy, which aims to reduce geopolitical risks and enhance the efficiency of the financial system (Gorshkov, 2022).

The development of the digital economy and the industrial revolution 4.0 has driven major transformations in payment systems and business behavior, especially in the Micro, Small, and Medium Enterprises (MSMEs) sector. The adoption of technologies such as e-wallets is an important catalyst in improving transaction efficiency and financial performance of MSMEs (Javaid et al. 2024). In the context of food and beverage MSMEs in Manado, (Paat et al. (2022) found that effort expectations and social influence have a significant influence on behavioral intention to use e-wallets, while perceived risks and costs have no significant effect. The study of Ilham et al. (2025) also emphasizes that the integration of fintech and e-commerce can improve the performance of MSMEs, especially in a society that is starting to switch to a cashless transaction system. Financial digitization also plays a role in increasing financial inclusion, as evidenced by Wang & Wang (2022) in China, where e-wallets strengthen households' ability to share risk through remittance efficiency and liquid savings.

At the local level, the implementation of QRIS and e-wallets has been shown to result in a significant increase in transaction volume, reaching up to 58% among UMKMs that have received financial literacy digital literacy training (Juwita & Rosita, 2025). The efficacy of e-wallets in enhancing business competitiveness has been demonstrated by the enhancement of service quality and the facilitation of transactions, as evidenced by the research conducted by Prastyawan et al. (2024) in Pasar Sukun, Malang. As posited by Meutia et al. (2024), further research has indicated that perceived convenience, risk, and social influence are the primary factors influencing the decision of MSMEs to utilise digital payments. In the Telaga Ngebel region of Ponorogo, the primary obstacles pertain to the absence of digital literacy skills and the paucity of support from the local government in the provision of infrastructure and training (Laksmi & Triolita, 2025).

Although numerous studies have examined digital payment adoption, empirical evidence applying a causal inference approach to MSMEs in Indonesia remains limited. The novelty of this research lies in the integration of digital behavioral determinants such as duration of receiving online orders and marketplace promotion into a Propensity Score Matching framework. This approach provides a more rigorous measurement

of the causal effect of e-wallet adoption, addressing selection bias that is often ignored in previous MSME digitalization studies.

Given the limited empirical research examining the causal relationship between e-wallet adoption and MSME performance particularly in terms of transaction frequency, labor composition, and revenue this study adopts a rigorous methodological approach to address existing research gaps. The present research utilizes the Propensity Score Matching (PSM) technique to mitigate potential selection bias between e-wallet users and non-users, allowing for a more accurate estimation of the true causal effect of digital payment adoption on MSME performance. Through this approach, the study evaluates how e-wallet utilization affects transaction volume, the number of internal (family) workers, and external (non-family) labor. The expected contribution of this research lies in providing empirical evidence that informs both academic discourse and policy formulation, offering insights into how digital financial tools can foster operational efficiency, equitable financial inclusion, and sustainable growth among Indonesia's MSMEs.

This study specifically focuses on online MSMEs as the analytical unit, with performance indicators measured through monthly transaction volume and the composition of internal and external labor. The analysis relies on the 2023 E-Commerce Survey conducted by the Indonesian Central of Statistics (BPS).This boundary-setting allows the study to concentrate on the direct effects of e-wallet adoption within digitally engaged enterprises.

This research aims to analyze the impact of e-wallet adoption on MSME transaction frequency and labor dynamics (internal and external workers). Second, Identify the key determinants influencing the likelihood of MSMEs adopting e-wallet technology. Third, formulate managerial and policy implications to support digital financial inclusion among MSMEs.

METHODS

The study utilizes secondary data from the 2023 E-Commerce Survey conducted by the Central Bureau of Statistics (BPS). The dataset includes 31,724 MSMEs across Indonesia, of which 798 are e-wallet users (treated group) and 30,926 are non-users (control group). All estimations were conducted using STATA 17 with the psmatch2 command. Common support conditions were applied to ensure comparability between treated and control units.

The data were collected through structured surveys covering variables such as business demographics, financial reporting, education level, business age, digital promotion activities, and e-wallet usage status. The Propensity Score Matching (PSM) approach is utilised to ascertain the causal impact of e-wallet usage on business performance, with specific reference to monthly transaction volume and employment aspects. The variables employed in this study are enumerated in Table 1.

Table 1. Variable operationalization

Treatment Variable	Outcome Variable	Covariate Variable
E-wallet users (dummy)	Monthly transaction volume	Age of entrepreneur (year)
	Number of external workers/paid workers	Level of education
	Number of internal workers/family member	Have financial reports (dummy)
		Business age (year)
		Duration of receiving online orders (year)
		Promotion on social media (dummy)
		Promotion on marketplace (dummy)
		Province

The covariate variable used in this study consist of several MSME characteristics and digital engagement indicators. The variable have financial reports is defined as a dummy that takes the value 1 if MSME maintains formal written financial records, reflecting the enterprise's administrative capacity. The duration of receiving online orders measures the number of years since the MSME first began accepting online orders, capturing the intensity of its digital business experience. Digital promotional activities are represented by two dummy variables: promotion on social media, which equals 1 if the MSME actively promotes its products through social media platforms, and promotion on marketplace, which equals 1 when the MSME utilises promotional features provided by marketplace platforms. Lastly, the province variable represents the MSME's regional administrative location and is included as a fixed effect to control for spatial heterogeneity in digital adoption and market conditions across Indonesia.

This study employs the Propensity Score Matching (PSM) method as developed by Rosenbaum & Rubin (1983) to estimate the causal impact of e-wallet usage on the performance of Micro, Small, and Medium Enterprises (MSMEs). The analytical procedure begins with the estimation of propensity scores using a logistic regression model, which predicts the probability that a given MSME adopts an e-wallet based on observable characteristics such as business age, education level, financial reporting, and digital promotion activities. Following this, a nearest-neighbour matching technique with a common support condition is applied to ensure comparability between e-wallet users (treated group) and non-users (control group). Finally, the Average Treatment Effect on the Treated (ATT) is computed to quantify the average difference in key performance indicators namely monthly transaction volume, external labor, and internal labor between matched pairs. This approach allows for a more rigorous estimation of the causal effect by reducing selection bias and enhancing the validity of the findings derived from observational data.

Accordingly, the following hypotheses are proposed:
H1: E-wallet adoption positively influences MSME performance, particularly in increasing monthly transaction volume. Previous studies (Abdulai et al. 2024; Ariyanti & Marianingsih, 2024) have shown that digital payment platforms improve business efficiency and transaction intensity. Therefore, MSMEs using e-wallets are expected to experience higher transaction volumes.

H2: E-wallet adoption reduces dependence on internal (family) labor, indicating higher operational efficiency. Digital payment systems streamline financial administration and record keeping, reducing manual work within small family-based MSMEs.

The conceptual model (Figure 1) posits that MSME characteristics including factors such as education level, business age, and financial management practices together with digital engagement variables, such as online promotion and marketplace participation, collectively influence the probability of e-wallet adoption. In turn, the adoption of e-wallet technology is expected to have a direct impact on operational outcomes, particularly in enhancing transaction volume and reshaping the labor structure within MSMEs. This relationship reflects how digital transformation not only improves transactional efficiency but also drives broader organizational changes that contribute to business competitiveness and sustainability in the digital economy.

RESULTS

In the contemporary digital economy, the strategic implementation of payment digitization has emerged as a pivotal factor in propelling the growth and efficiency of MSMEs. The utilization of digital payment systems, such as QRIS and e-wallets, has been demonstrated to facilitate transactions, enhance efficiency, and augment the competitiveness of small businesses (Juwita & Rosita, 2025; Prastyawan et al. 2024). Research conducted in Lhokseumawe City indicates that the primary factors influencing the adoption of digital payments by MSEs are perceived convenience, social influence, and perceived risk. These findings are consistent with the Technology Acceptance Model (TAM) framework (Meutia et al. 2024). This assertion is further substantiated by a study conducted in Ponorogo, which identified the absence of adequate facilities and the lack of support from the local government as the primary impediments to the adoption of digital wallets by businesses (Laksmi & Triolita, 2025).

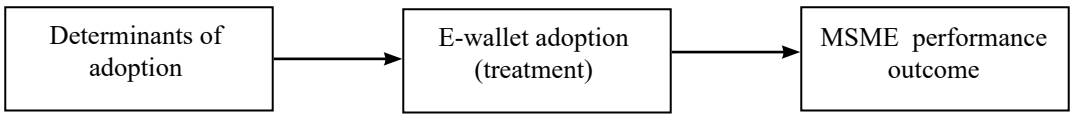

Figure 1. Frame of thought

Research conducted in Malaysia by Reza et al. (2024) demonstrates that factors such as performance expectations, online customer service, and network externalities exert a positive influence on merchants' inclination to persist in utilizing e-wallets. Concurrently, Sharma et al. (2025) revealed that price value and hedonic motivation encourage FinTech adoption among Indian farmers, although digital literacy barriers persist. Bhattarai et al. (2023) conducted research in Nepal, which indicated that perceived security and ease of transactions have a significant impact on the performance of Micro, Small, and Medium Enterprises (MSMEs). However, the study found that digital literacy does not have a substantial effect on MSMEs. The adoption of digital money in Vietnam is influenced by various factors, including access to financial institution accounts and demographic characteristics such as education and income (Nguyen et al. 2025). In Indonesia, Ramayanti et al. (2025) emphasised that hedonic motivation and habit are the primary factors in QRIS usage. Finally, Ariyanti & Marianingsih (2024) demonstrate that the adoption of FinTech and digital payment systems exerts a significant influence on the financial performance of MSMEs, with consumer trust emerging as a pivotal moderating factor.

At both the national and regional levels, digital payment systems are regarded as a means of addressing the limited access to finance experienced by MSMEs, particularly in the aftermath of the pandemic (ESCAP, 2022). In the local context, mentoring and digital literacy programmes have been shown to play a significant role in accelerating the adoption of modern payment technologies (Juwita & Rosita, 2025). These programmes have also been found to optimise branding on digital financial systems in rural MSMEs (Yanuar et al. 2022). Local governments, as evidenced by the case study of Bogor District, have also assumed a facilitative role through policies promoting access to finance and the streamlining of regulatory frameworks (Kilay et al. 2022). The findings in Bekasi confirm that the implementation of accounting information systems and digital wallets has a positive effect on MSME performance, although e-commerce has not shown a significant impact (Haryanto et al. 2025). Furthermore, the integration of digital services, such as e-wallets, has been demonstrated to enhance business competitiveness by improving service quality and promoting social entrepreneurship practices (Prastyawan et al. 2024).

This analysis aims to examine in depth the use of digital wallets (e-wallets) affecting the performance of MSMEs, especially on three main indicators, namely monthly transaction volume, the number of eksternal workers, and the number of internal workers/ family member. Through the Propensity Score Matching (PSM) approach, estimation is conducted to identify the causal impact of e-wallet usage on these indicators. The findings illustrate the important role of digital payment technology (e-wallet) in improving operational efficiency as well as the potential shift in labor structure in MSMEs. In addition, this discussion also includes factors that influence the probability of MSME in adopting e-wallets, such as the duration of receiving online orders, digital promotion strategies through marketplaces and social media, education level, business age, and ownership of financial statements. Information about the influence of each variable on the tendency to use e-wallets can be seen in detail in Table 2, which presents the results of the logistic regression of propensity score estimation.

The analysis demonstrates that the adoption of e-wallets among MSMEs is influenced by several key factors. The duration of receiving online orders and promotions on marketplaces was found to be a significant driver of e-wallet usage, indicating that active engagement in the digital ecosystem is a key factor in the adoption of payment technology. In contrast, more established MSMEs characterised by ownership of financial statements, higher levels of education among owners, and a longer business life tend not to use e-wallets. This suggests a reluctance to embrace digital innovation among this group. Geographical factors have also been identified as influential, suggesting the presence of spatial disparities in e-wallet adoption rates between different regions. It is interesting to note that the promotion through

social media did not have a significant impact, which may be an indication of an absence of integration of promotion with digital payment systems.Following the calculation of the propensity score and the matching of units, the estimation of the effect of e-wallet usage on MSME performance is analysed further through the comparison of the average of the matched sample of users (treated) and non-users (control) groups. This estimation is presented in Table 3, which shows the Average Treatment Effect on the Treated (ATT) value for three main indicators: monthly transaction volume, out-of-family labour, and in-family labour. The ATT value provides an overview of the extent to which the use of e-wallets has a significant impact on outcomes for MSME players in comparison to those who do not use them. The utilisation of electronic wallets has been demonstrated to exert a substantial influence on the augmentation of transactions conducted by micro, small and medium-sized enterprises (MSMEs). This finding suggests that the digitalisation process may be conducive to the creation of a more extensive market. Nevertheless, there was no significant impact on the number of external workers, while there was a substantial increase in the number of family workers. This phenomenon is indicative of enhanced operational efficiency, whereby the role of internal labour is supplanted by digital systems, without any concomitant alteration to the composition of external workers.

Prior to the interpretation of the results, Table 4 presents the distribution of respondents by treatment group following the application of common support, which indicates the number of units utilised in the final analysis. The presentation of this distribution is important to ensure that comparisons are made to groups that have overlapping probabilities of using e-wallets (comparable), so that the causal validity of the results obtained can be methodologically maintaine.

The findings of the analysis employing Propensity Score Matching (PSM) demonstrate that the utilisation of e-wallets by MSME players exerts a substantial influence on the augmentation of monthly transaction volumes, with an Average Treatment Effect on the Treated (ATT) value of 119 transactions per month. This finding is consistent with the results of Abdulai et al. (2024) in Ghana, which shows that the adoption of digital payment platforms is able to increase informal economic activity through expanding access to business credit. This finding suggests that the digitisation of payment systems not only accelerates transaction flows but also fosters a more inclusive and productive business ecosystem.

Table 2. Logistic regression results of propensity score estimation

E-wallet users	Coefficient	Std. Error	z	P> |z|	[95% Confidence Interval]	
Age of entrepreneur	.0026889	.003305	0.81	0.416	-.0037888	.0091665
Level of education	-.1011293	.0488605	-2.07	0.038	-.1968943	-.0053644
Have financial reports	-.6818153	.0978504	-6.97	0.000	-.8735986	-.4900319
Duration of receiving online orders	.14886677	.0197825	7.52	0.000	.1098948	.1874406
Promotion on social media	-1.151476	.0859512	-13.40	0.000	-1.319937	-.9830145
Promotion on marketplace	4.108644	.1245814	32.98	0.000	3.864469	4.352819
Province	-.0115847	.0020667	-5.61	0.000	-.0156354	-.0075341
Business age	-.122434	.0151548	-8.08	0.000	-.1521368	-.0927311
Cons	-4.614358	.2067133	-22.32	0.000	-5.019509	-4.209208

Table 3. ATT Estimates of the impact of e-wallet adoption on MSME performance

Variable	Treated	Controls	ATT	Std. Error	t-statistic
Monthly transaction volume	267.35	148.33	119.02	28.75	4.14
Number of external workers/paid workers	2.57	3.74	-1.17	1.63	-0.72
Number of internal workers/family member	0.31	0.51	-0.20	0.045	-4.36

Table 4. Distribution of respondents by treatment group

Category	Number of respondents
Treated	798
Control	30.926
Total	31.724

The findings indicate that promotion variables within the marketplace, in conjunction with the duration of receiving online orders, exert a substantial influence on the probability of utilising e-wallets. These findings serve to reinforce the argument proposed by Gorshkov (2022), which posits that the proliferation of cashless payments in developing countries, such as Russia, is precipitated by the expansion of e-commerce and the digitisation of payment systems, a process that is facilitated by the relevant financial authorities. In the Indonesian context, the role of marketplaces as a catalyst for MSME digitalisation is of increasing relevance, given the geographical distribution and high adoption of online platforms in the post-pandemic era. Table 3 reveals a significant decrease in the number of in-house labor among e-wallet-using MSMEs. This can be interpreted as a consequence of the process efficiency generated through digitalization, which allows businesses to reduce dependence on internal labour, especially for transaction recording, payment, and information distribution activities. This finding supports previous research that the adoption of digital technology by MSMEs is strongly influenced by digital literacy factors and online promotion habits (Juwita & Rosita, 2025; Meutia et al. 2024). In addition, the existence of infrastructure and encouragement of social media-based promotions have proven effective in encouraging the use of digital payments, which in turn can significantly improve the performance of MSME transactions. Kilani et al. (2023) study using the extended UTAUT2 model also underlines that e-wallet adoption is strongly influenced by perceptions of efficiency, habit, and trust in technology. With increasing convenience and perceived ease, MSME players tend to adopt digital payment technology on an ongoing basis.

It is evident that the level of education and the existence of financial statements have a significant impact on the probability of utilising e-wallets, as evidenced by the characteristics of business actors. This finding appears to be at odds with the extant literature, which posits that digital and financial literacy support technology adoption. However, a study conducted by Nguyen et al. (2025) in Vietnam demonstrated that mobile money adoption is, in fact, more prevalent among individuals with secondary education and those with a middle income. This suggests that MSMEs that are administratively and financially established may feel less of a pressing need to digitally transform or may exhibit a higher degree of risk aversion to technological change.

The results of this study corroborate the findings of various previous studies that underscore that the successful adoption of digital payment technology by MSMEs is contingent not only on the existence of the technology itself, but also on the ecosystem that encompasses infrastructure, literacy, trust, and risk perception. Tran-Truong et al. (2025) underscored the significance of security aspects through the Multi-Factor Authentication (MFA) approach. This approach, although implemented at the system architecture level, holds substantial implications for the perceptions of MSME users who continue to harbor reservations regarding data protection and cyber risks. This perception of security is further substantiated by Fadhilla & Purwanto (2023), who determined that the level of digital literacy and perceptions of personal data security directly influence MSME decisions to adopt e-wallets.

These findings are consistent with those of studies employing an extended Unified Theory of Acceptance and Use of Technology (UTAUT) approach, as evidenced by the works of Muhammad et al. (2024) and Paramita & Cahyadi (2024). These studies substantiated that performance expectations, social influence, ease of use, and facilitating conditions are the predominant factors in influencing behavioral intentions and the practical implementation of QRIS as a digital payment method. It has been demonstrated that habitual behaviors and hedonic motivations are also significant factors in the development of loyalty to digital payment systems. This suggests that psychological elements and user experience play a crucial role in fostering user commitment to these systems.

Concurrently, the efficacy of QRIS implementation by MSMEs at the local level is influenced by communication strategies and policy support. Firdaus & Buono (2025) demonstrate that the provision of cost incentives and promotional media by Bank Indonesia and PJSP constitutes the primary mechanism for the effective implementation of QRIS within the culinary sector in Bogor City. This strategy must be complemented by area-based interventions, given the diversity of provincial characteristics in adoption patterns (Tran-Truong et al. 2025). Consequently, an effective digital financial inclusion policy must be contextual and responsive to regional dynamics.

In practice, the adoption of digital payment systems such as Go-Pay and QRIS has also been shown to contribute significantly to the financial performance of MSMEs (Maharani & Yuliati, 2024; Mahastanti & Utoyo, 2022), especially through increased transaction efficiency and more systematic financial accountability (Sari & Aziza, 2024). Ilham et al. (2025) also emphasized that the utilization of fintech and e-wallets is a substantial predictor of MSME performance, particularly in communities that have become habituated to non-cash transactions. The findings of this study demonstrate that in order to maximize the impact on digital transformation and small business competitiveness in Indonesia, the adoption of e-wallets and QRIS in the MSME sector must be reinforced by considering the technological, social, psychological, and policy dimensions concurrently.

The hypothesis testing confirms both proposed hypotheses. H1 is supported as e-wallet adoption increases monthly transactions by 119 per month ($p < 0.01$). H2 is also supported as internal labor decreases by 0.20 workers on average ($p < 0.01$), indicating improved operational efficiency. These findings align with the Technology Acceptance Model (TAM) and UTAUT theory, which highlight efficiency, perceived ease-of-use, and digital habit formation as critical determinants of technology-driven performance improvements. The reduction in internal labor reflects process simplification and automation enabled by digital payments, consistent with theories of transaction cost efficiency and organizational digital transformation.

Managerial Implications

The findings of this study underscore several important implications for enhancing the performance and competitiveness of MSMEs in the digital era. First, the development of digital capabilities is essential, as MSME managers need to invest in digital literacy and adopt data-driven financial management practices to fully leverage the benefits of e-wallet utilization. Second, establishing strategic partnerships with fintech providers and online marketplaces can significantly improve business competitiveness through the integration of digital payment systems and promotional platforms. Third, the adoption of e-wallets encourages operational restructuring, enabling managers to streamline administrative processes and reallocate human resources toward more strategic functions, such as marketing, product development, and innovation. Lastly, the study highlights the importance of policy synergy between government institutions and financial service providers, emphasizing the need for targeted incentives such as transaction fee reductions, infrastructure support, and digital mentoring programs to accelerate the adoption of e-wallet technology, particularly among MSMEs in rural and semi-urban regions.

CONCLUTIONS AND RECOMMENDATIONS

Conclutions

This study concludes that e-wallet adoption significantly increases MSME monthly transaction volume by 119 transactions and reduces dependence on internal labor, indicating enhanced operational efficiency. These results are consistent with previous findings such as Abdulai et al. (2024) and Prastyawan et al. (2024), who documented similar improvements in transaction flow and business competitiveness driven by digital payments. However, the negative association between education and e-wallet adoption diverges from findings in Vietnam (Nguyen et al. 2025), suggesting that the Indonesian MSME context reflects different behavioral and structural dynamics. Theoretically, this study contributes to the diffusion of innovation and fintech adoption literature by providing rigorous causal evidence using PSM on a large national dataset.

Recommendations

In order to encourage the adoption of digital payment systems among Micro, Small, and Medium Enterprises (MSMEs), targeted strategic steps are required. Firstly, it is necessary to increase awareness and training on the use of digital wallets (e-wallets) so that MSME players have sufficient understanding and adequate skills in utilizing this technology. Secondly, the government and private sector are advised to provide incentives that support the integration of digital payment infrastructure, such as device subsidies, reduced transaction fees, or strategic partnerships with digital financial service providers. It is imperative that cybersecurity and data protection measures are strengthened as a matter of urgency in order to engender consumer and user confidence in digital payment systems. This is the only way to establish a safe and sustainable ecosystem for digital economic growth.

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